



APPENDIX A
ILLINOIS NOISE REGULATIONS

**TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE H: NOISE
CHAPTER I: POLLUTION CONTROL BOARD**

**PART 900
GENERAL PROVISIONS**

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900.101	Definitions
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900.104	Burden of Persuasion Regarding Exceptions
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900.106	Incorporation by Reference

APPENDIX A Old Rule Numbers Referenced

AUTHORITY: Implementing Section 25 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/25 and 27].

SOURCE: Originally filed as Part 1 of Chapter 8: Noise Pollution, effective August 10, 1973; amended at 2 Ill. Reg. 27, p. 223, effective June 26, 1978; amended at 5 Ill. Reg. 6371, effective June 1, 1981; amended at 5 Ill. Reg. 8533, effective August 10, 1981; amended at 6 Ill. Reg. 10960, effective September 1, 1982; codified at 7 Ill. Reg. 13579; amended in R83-7 at 11 Ill. Reg. 3121, effective January 28, 1987; amended in R03-8 at 27 Ill. Reg. 16247, effective October 8, 2003.

Section 900.101 **Definitions**

Except as stated and unless a different meaning of a term is clear from its context, the definitions of terms used in this Chapter are the same as those used in the Environmental Protection Act. All definitions of acoustical terminology must be in conformance with those contained in American National Standards Institute (ANSI) S1.1 – 1994 (R1999) “American National Standard Acoustical Terminology” and S12.9- 1988 (R1998) “American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound - Part 1,” incorporated by reference at Section 900.106. As used in 35 Ill. Adm. Code 900 through 910, the following terms mean:

A-Weighted Sound Level: 10 times the logarithm to the base 10 of the square of the ratio of the A-weighted (and time-averaged) sound pressure, to the reference sound pressure of 20 micropascal. The frequency and time weighting must be specified in accordance with ANSI S1.4–1983 (R2001) “American National Standard Specification for Sound Level Meters”, incorporated by reference at Section 900.106. The unit of sound level is the decibel (dB) with the letter (A) appended to the decibel unit symbol to indicate the frequency weighting and written as dB(A).

Ambient: the all-encompassing sound associated with a given environment without contributions from the noise source or sources of interest.

Angle of incidence: the orientation of the microphone relative to the sound source.

ANSI: American National Standards Institute or its successor bodies.

Antique vehicle: a motor vehicle that is more than 25 years of age or a bona fide replica thereof and which is driven on the highways only going to and returning from an antique auto show or an exhibition, or for servicing or demonstration, or a fire-fighting vehicle more than 20 years old which is not used as fire-fighting equipment but is used only for the purpose of exhibition or demonstration.

Background ambient sound level: means the ambient sound level, measured in accordance with the procedures specified in 35 Ill. Adm. Code 910.

Bus: every motor vehicle designed for carrying more than 10 passengers and used for the transportation of passengers; and every motor vehicle, other than a taxicab, designed and used for the transportation of persons for compensation.

C-weighted sound level: in decibels, a frequency-weighted sound pressure level, determined by the use of the metering characteristics and C-weighted network specified in ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters," incorporated by reference at Section 900.106.

Construction: on-site erection, fabrication, installation, alteration, demolition or removal of any structure, facility, or addition thereto, including all related activities including, but not restricted to, clearing of land, earth-moving, blasting and landscaping.

Daytime hours: 7:00 am to 10:00 pm, local time.

dB(A): see "A-weighted sound level in decibels."

Dealer: every person engaged in the business of selling vehicles to persons who purchase such vehicles for purposes other than resale, and who has an established place of business for such activity in this state.

Decibel (dB): a unit of measure, on a logarithmic scale to the base 10, of the ratio of the magnitude of a particular sound pressure to a standard reference pressure, which, for purposes of this Chapter, shall be 20 micronewtons per square meter ($\mu\text{N}/\text{m}^2$) or 20 micropascals (μPa).

Discrete tone: a sound wave whose instantaneous sound pressure varies essentially as a simple sinusoidal function of time.

Exhaust system: the system comprised of a combination of components which provides for the enclosed flow of exhaust gas from engine parts to the atmosphere.

Existing property-line-noise-source: any property-line-noise-source, the construction or establishment of which commenced prior to August 10, 1973. For the purposes of this sub-section, any property-line-noise-source whose A, B or C land use classification changes, on or after August 10, 1973, is not considered an existing property-line-noise-source.

Farm tractor: every motor vehicle designed and used primarily as a farm implement for drawing wagons, plows, mowing machines and other implements of husbandry, and every implement of husbandry which is self-propelled.

Fast Dynamic Characteristic: the dynamic characteristic specified as fast in ANSI S1.4-1983 (R-2001) "American National Standard Specification for Sound Level Meters," incorporated by reference at Section 900.106.

Fast meter response: as specified in ANSI, S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters," incorporated by reference at Section 900.106.

Fluctuating sound: a class of nonsteady sound where sound pressure level varies over a range greater than 6 decibels (dB) with the "slow" meter characteristic, and where the meter indication does not equal the ambient level more than once during the period of observation.

Frequency-weighted sound pressure: root mean square of the instantaneous sound pressure which is frequency-weighted (i.e., filtered) with a standard frequency characteristic (e.g., A or C) and exponentially time-weighted in accordance with the standardized characteristics slow (S), fast (F), impulse (I) or peak, with both weightings specified in accordance with ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters," incorporated by reference at Section 900.106. The frequency weighting used shall be specified explicitly (e.g., A, C or octave band). The unit frequency-weighted sound pressure is the pascal (Pa).

Gross Vehicle Weight (GVW): the maximum loaded weight for which a motor vehicle is registered or, for vehicles not so registered, the value specified by the manufacturer as the loaded weight of the vehicle.

Highly Impulsive Sound: either a single pressure peak or a single burst (multiple pressure peaks) for a duration usually less than one second. Examples of highly impulsive sound sources are drop forge hammer and explosive blasting.

Highway: the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

IHRA: International Hot Rod Association or its successor body.

Intermittent sound: a class of nonsteady sound where the meter indicates a sound pressure level equal to the ambient level two or more times during the measurement period. The period of time during which the level of the sound remains at a value different from that of the ambient is of the order of one second or more.

LBCS: the Land-Based Classification Standards which designate land, use functions by means of numeric codes.

L_{eq} : equivalent continuous sound pressure level in decibels: 10 times the logarithm to the base 10 of the ratio of a time mean square sound pressure, during the specified time period, to the square of reference sound pressure. The reference sound pressure is 20 microneutons per square meter or equivalent continuous frequency-weighted sound pressure.

L_{eq} (A): A-weighted time-average (equivalent-continuous) sound pressure level.

L_{eq} (octave band-Hz): time-average (equivalent-continuous) sound pressure level in the octave band specified by its center frequency e.g. L_{eq} (125-Hz).

Measurement Period: the time interval during which acoustical data are obtained. The measurement period is determined by the characteristics of the noise being measured and must be at least ten times as long as the response time of the instrumentation. The greater the variation in indicated sound level, the longer must be the observation time for a given expected precision of the measurement.

Motor driven cycle: every motorcycle, motor scooter, or bicycle with motor attached, with less than 150 cubic centimeter piston displacement.

Motor vehicle: every vehicle which is self-propelled and any combination of vehicles which are propelled or drawn by a vehicle which is self-propelled.

Motorcycle: every motor vehicle having a seat or saddle for the use of the rider and designed to travel on not more than 3 wheels in contact with the ground, but excluding a tractor.

Muffler: a device for abating the sounds of escaping gases of an internal combustion engine.

New snowmobile: a snowmobile, the equitable or legal title to which has never passed to a person who purchases it for purposes other than resale.

Nighttime hours: 10:00 pm to 7:00 am, local time.

Noise floor: the electrical noise (in decibels) of the sound measurement system. When the noise floor is determined by placing a calibrator over the microphone of the sound measurement system, the noise floor may include acoustic noise due to leakage around the calibrator.

Noise pollution: the emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity.

Non-steady sound: a sound whose sound pressure level shifts significantly during the measurement period. Meter variations are greater than +/- 3 dB using the "slow" meter characteristic.

Octave band sound pressure level: the sound pressure level for the sound being measured contained within the specified octave band. The reference pressure is 20 micronewtons per square meter.

Pascal (Pa): a unit of pressure. One pascal is equal to one newton per square meter.

Passenger car: a motor vehicle designed for the carrying of not more than ten persons, including a multi-purpose passenger vehicle, except any motor vehicle of the second division as defined in 625 ILCS 5/1-146, and except any motorcycle or motor driven cycle.

Person: any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other State or political subdivision or agency thereof or any legal successor, representative, agent or agency of the foregoing.

Preferred frequencies: those frequencies in Hertz preferred for acoustical measurements which, for the purposes of this Chapter, consist of the following set of values: 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10,000, 12,500.

Prominent discrete tone: sound, having a one-third octave band sound pressure level which, when measured in a one-third octave band at the preferred frequencies, exceeds the arithmetic average of the sound pressure levels of the

two adjacent one-third octave bands on either side of such one-third octave band by:

5 dB for such one-third octave band with a center frequency from 500 Hertz to 10,000 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band, or;

8 dB for such one-third octave band with a center frequency from 160 Hertz to 400 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band, or;

15 dB for such one-third octave band with a center frequency from 25 Hertz to 125 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band.

Property-line-noise-source: any equipment or facility, or combination thereof, which operates within any land used as specified by 35 Ill. Adm. Code 901.101. Such equipment or facility, or combination thereof, must be capable of emitting sound beyond the property line of the land on which operated.

Quasi-steady sound: a train of two or more acoustical impulses. Examples of quasi-steady sound are that from riveting and pneumatic hammer.

Reflective surface: any building, hillside, or similar object (other than the flat ground surface) that reflects sufficient sound to affect the sound pressure level readings obtained from a noise source. Not included as reflective surfaces are small objects such as trees, posts, chain-linked fences, fire hydrants, vegetation such as bushes and shrubs, or any similar object.

Registered: a vehicle is registered when a current registration certificate or certificates and registration plates have been issued for it under the laws of any state pertaining to the registration of vehicles.

Residential dwelling unit: all land used as specified by the Land-Based Classification Standards (LBCS) Codes 1100 through 1340 and those portions of land used as specified by LBCS Code 6222 used for sleeping.

SAE: Society of Automotive Engineers.

Slow Dynamic Characteristic: the dynamic characteristic specified as "Slow" in ANSI S1.4-1983 (R2001) " American National Standard Specification for Sound Level Meters," incorporated by reference at Section 900.106.

Snowmobile: a self-propelled device designed for travel on snow or ice or natural terrain steered by skis or runners, and supported in part by skis, belts, or cleats.

Sound: a physical disturbance causing an oscillation in pressure in a medium (e.g., air) that is capable of being detected by the human ear or a sound measuring instrument.

Sound exposure (SE): time integral of squared, frequency-weighted instantaneous sound pressure over a given time interval. The time period of integration must be specified: when the sound exposure of the background noise is a significant contributor to the total sound exposure; or when the threshold sound level of the instrument (a level below which the instrument does not accumulate contributions to the integral) used is above the level of the background noise; or when such data is needed to identify a source; or when the time period of integration is otherwise useful. The customary unit for sound exposure is pascal-squared second ($\text{Pa}^2\text{-s}$).

Sound exposure level (SEL or L_{eT}): 10 times the logarithm to the base 10 of the ratio of sound exposure to the reference sound exposure (E_0) of 400 micropascal-squared seconds ($\mu\text{Pa}^2\text{-s}$). For a given measurement time period of T seconds, the sound exposure level (L_{eT}) is related to the time-average sound level (L_{pT}) as follows: $L_{eT} = L_{pT} + \log(T/t_0)$ where t_0 is the reference duration of 1 second. The time period of integration (T) must be specified. The frequency weighting used must be specified explicitly (e.g., A, C or octave band). The A-weighted SEL and C-weighted SEL are abbreviated ASEL and CSEL respectively. An octave band SEL is expressed in terms of the center frequency (e.g., SEL at 125-Hz). The unit for sound exposure level is decibel (dB).

Sound level (weighted sound pressure level): 20 times the logarithm to the base 10 of the ratio of the frequency-weighted (and time-averaged) sound pressure to the reference pressure of 20 micropascals. The frequency weighting used shall be specified explicitly (e.g., A, C or octave band). The unit for sound level is decibel (dB).

Sound pressure: the root mean square of the instantaneous sound pressures during a specified time interval in a stated frequency band. The unit for sound pressure is pascal (Pa).

Sound pressure level: 20 times the logarithm to the base 10 of the ratio of the particular sound pressure to the reference sound pressure of 20 micropascals. ANSI S12.9- 1988 (R1998) "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound - Part 1," incorporated by reference at Section 900.106, reserves the term sound pressure level to denote the unweighted sound pressure. The unit for sound pressure level is decibel (dB).

Special mobile equipment: every vehicle not designed or used primarily for the transportation of persons or property and only incidentally operated or moved over a highway, including but not limited to: ditch digging apparatus, well-boring apparatus and road construction and maintenance machinery such as asphalt spreaders, bituminous mixers, bucket loaders, tractors other than truck tractors, leveling graders, finishing machines, motor graders, road rollers, scarifiers, earth-moving carryalls and scrapers, power shovels and drag lines, and self-propelled cranes and other earth-moving equipment.

Steady sound: a sound whose sound pressure level remains essentially constant (that is, meter fluctuations are negligibly small) during the measurement period. Meter variations are less than or equal to ± 3 dB using the "slow" meter characteristic.

Tactical military vehicle: every vehicle operated by any federal or state military organization and designed for use in field operations, but not including vehicles such as staff cars and personnel carriers designed primarily for normal highway use.

Time-average sound level (or equivalent-continuous sound level or equivalent-continuous frequency-weighted sound pressure level): 20 times the logarithm to the base 10 of the ratio of the time-average (frequency-weighted) sound pressure to the reference pressure of 20 micropascal. The frequency weighting used must be specified explicitly (e.g., A, C or octave band). The unit of time-average sound level is the decibel (dB).

Time-average (frequency-weighted) sound pressure: square root of the quotient of the time integral of frequency-weighted squared instantaneous sound pressures divided by the time period of integration; or the square root of the quotient of the sound exposure, in pascal-squared seconds ($\text{Pa}^2 \text{--s}$), in a specified time period, divided by the time period of integration in seconds. The frequency weighting used must be specified explicitly (e.g., A, C or octave band). The unit of time-average sound pressure is the pascal (Pa).

Unregulated safety relief valve: a safety relief valve used and designed to be actuated by high pressure in the pipe or vessel to which it is connected and which is used and designed to prevent explosion or other hazardous reaction from pressure buildup, rather than being used and designed as a process pressure blowdown.

Used motor vehicle: a motor vehicle that is not a new motor vehicle.

Vehicle: every device in, upon, or by which any person or property is or may be transported or drawn upon a highway.

Weekday: any day which occurs during the period of time commencing at 10:00 p.m. Sunday and ending at 10:00 p.m. Friday during any particular week.

Weekend day: any day which occurs during the period of time commencing at 10:00 p.m. Friday and ending at 10:00 p.m. Sunday during any particular week.

Well-maintained muffler: any muffler which is free from defects which affect its sound reduction. Such muffler shall be free of visible defects such as holes and other acoustical leaks.

(Source: Amended at 27 Ill. Reg. 16247, effective October 8, 2003)

Section 900.102 Prohibition of Noise Pollution

No person shall cause or allow the emission of sound beyond the boundaries of his property, as property is defined in Section 25 of the Illinois Environmental Protection Act, so as to cause noise pollution in Illinois, or so as to violate any provision of this Chapter.

Section 900.103 Measurement Procedures

- a) Procedures Applicable to all of 35 Ill. Adm. Code: Subtitle H, Chapter I

The Agency may adopt procedures which set forth criteria for the measurement of sound for all Parts except 35 Ill. Adm. Code 900 and 901. Such procedures shall be in substantial conformity with standards and recommended practices established by the American National Standards Institute, Inc. (ANSI) or the Society of Automotive Engineers, Inc. (SAE), incorporated by reference at Section 900.106. Such procedures shall be revised from time to time to reflect current engineering judgment and advances in noise measurement techniques. Such procedures, and revisions, thereof, shall not become effective until filed with the Administrative Code Division of the Office of the Secretary of State as required by the Illinois Administrative Procedure Act [5 ILCS 100]. Measurement procedures for 35 Ill. Adm. Code 900 and 901 shall conform to 35 Ill. Adm. Code 910.

- b) Procedures Applicable only to 35 Ill. Adm. Code 901

- 1) All measurement and all measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 901 shall, with the exception of measurements to determine whether emissions of sound comply with 35 Ill. Adm. Code 901.109, be based on L_{eq} averaging, as defined in 35 Ill. Adm. Code 900.101, using a reference time as follows:

- A) Except as specified in subsection (b)(1)(B) for steady sound, a reference time of at least 1 hour shall be used for all sound measurements and measurement procedures.
 - B) For measurement of steady sound as defined in Section 101 of this Part, the reference time shall be at least 10 minutes.
- 2) All measurements and measurement procedures under subsection (b)(1)(B) of this Section must correct, or provide for the correction of such emissions for the presence of ambient or background noise in accordance with the procedures in 35 Ill. Adm. Code 910. All measurements must be in conformity with the following ANSI standards, incorporated by reference at Section 900.106:
- A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) ANSI S1.6-1984 (R2001) "American National Standard Preferred Frequencies, Frequency Levels, and Band Numbers for Acoustical Measurements."
 - C) ANSI S1.11-1986 (R1998) "American National Standard Specification for Octave-Band and Fractional-Octave-Band Analog and Digital Filters."
 - D) ANSI S1.13-1995 (R1999) "American National Standard Measurement of Sound Pressure Level in Air."
 - E) ANSI S12.9-1993 (R1998) "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound - Part 3: Short-Term Measurements With an Observer Present."
- c) Procedures Applicable only to 35 Ill. Adm. Code 902
- 1) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 902.120 through 902.123 must be in conformity with the following ANSI standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) ANSI S1.13-1995 (R1999) "American National Standard Measurement of Sound Pressure Level in Air."

- 2) The procedures for sound measurement under 35 Ill. Adm. Code 902.123 must conform to the ANSI standards prescribed in subsection (c)(1), above, provided that the procedures are in conformity with those established by the U.S. Department of Transportation under 49 CFR 325 pursuant to Section 17 of the Federal Noise Control Act of 1972, 42 USC §4901 et seq.
 - 3) The Board may provide for measurement at distances other than the 50 feet specified in 35 Ill. Adm. Code 902.120 through 902.123 provided that correction factors are applied so that the sound levels so determined are substantially equivalent to those measured at 50 feet and the measurement distance does not exceed 100 feet. The correction factors used shall be consistent with California Highway Patrol Sound Measurement Procedures HPH 83.1 (October 1, 1973, as amended November 9, 1975), incorporated by reference at Section 900.106.
- d) Procedures Applicable only to 35 Ill. Adm. Code 905
- 1) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 905.102(a) and 905.103(a)(1) must be in conformity with the following standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) SAE Recommended Practice J192 "Exterior Sound Level for Snowmobiles." March 1985.
 - 2) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 905.102(b) and 905.103(a)(2) shall be in substantial conformity with the following standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) SAE/ANSI Recommended Practice J1161 "Operational Sound Level Measurement Procedure for Snow Vehicles", March 1983.
 - 3) The Agency may establish criteria for measuring at distances other than the 50 feet specified in 35 Ill. Adm. Code 905.102 and 905.103, provided that correction factors are applied so that the sound levels so determined are substantially equivalent to those

measured at 50 feet. In adopting new or revised criteria, the Agency shall comply with the requirements of the Illinois Administrative Procedure Act, [5 ILCS 100].

(Source: Amended at 27 Ill. Reg. 16247, effective October 8, 2003)

Section 900.104 Burden of Persuasion Regarding Exceptions

In any proceeding pursuant to this Chapter, if an exception stated in this Chapter would limit an obligation, limit a liability, or eliminate either an obligation or a liability, the person who would benefit from the application of the exception shall have the burden of persuasion that the exception applies and that the terms of the exception have been met. The Agency shall cooperate with and assist persons in determining the application of the provisions of this Chapter.

Section 900.105 Severability

If any provision of these rules or regulations is adjudged invalid, or if the application thereof to any person or in any circumstances is adjudged invalid, such invalidity shall not affect the validity of this Chapter as a whole or of any part, sub-part, sentence or clause thereof not adjudged invalid.

Section 900.103 Measurement Procedures

- a) Procedures Applicable to all of 35 Ill. Adm. Code: Subtitle H, Chapter I

The Agency may adopt procedures which set forth criteria for the measurement of sound for all Parts except 35 Ill. Adm. Code 900 and 901. Such procedures shall be in substantial conformity with standards and recommended practices established by the American National Standards Institute, Inc. (ANSI) or the Society of Automotive Engineers, Inc. (SAE), incorporated by reference at Section 900.106. Such procedures shall be revised from time to time to reflect current engineering judgment and advances in noise measurement techniques. Such procedures, and revisions, thereof, shall not become effective until filed with the Administrative Code Division of the Office of the Secretary of State as required by the Illinois Administrative Procedure Act [5 ILCS 100]. Measurement procedures for 35 Ill. Adm. Code 900 and 901 shall conform to 35 Ill. Adm. Code 910.

- b) Procedures Applicable only to 35 Ill. Adm. Code 901

- 1) All measurement and all measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 901 shall, with the exception of measurements to determine whether emissions of sound comply with 35 Ill. Adm. Code 901.109, be

based on L_{eq} averaging, as defined in 35 Ill. Adm. Code 900.101, using a reference time as follows:

- A) Except as specified in subsection (b)(1)(B) for steady sound, a reference time of at least 1 hour shall be used for all sound measurements and measurement procedures.
 - B) For measurement of steady sound as defined in Section 101 of this Part, the reference time shall be at least 10 minutes.
- 2) All measurements and measurement procedures under subsection (b)(1)(B) of this Section must correct, or provide for the correction of such emissions for the presence of ambient or background noise in accordance with the procedures in 35 Ill. Adm. Code 910. All measurements must be in conformity with the following ANSI standards, incorporated by reference at Section 900.106:
- A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) ANSI S1.6-1984 (R2001) "American National Standard Preferred Frequencies, Frequency Levels, and Band Numbers for Acoustical Measurements."
 - C) ANSI S1.11-1986 (R1998) "American National Standard Specification for Octave-Band and Fractional-Octave-Band Analog and Digital Filters."
 - D) ANSI S1.13-1995 (R1999) "American National Standard Measurement of Sound Pressure Level in Air."
 - E) ANSI S12.9-1993 (R1998) "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound - Part 3: Short-Term Measurements With an Observer Present."
- c) Procedures Applicable only to 35 Ill. Adm. Code 902
- 1) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 902.120 through 902.123 must be in conformity with the following ANSI standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."

- B) ANSI S1.13-1995 (R1999) "American National Standard Measurement of Sound Pressure Level in Air."
- 2) The procedures for sound measurement under 35 Ill. Adm. Code 902.123 must conform to the ANSI standards prescribed in subsection (c)(1), above, provided that the procedures are in conformity with those established by the U.S. Department of Transportation under 49 CFR 325 pursuant to Section 17 of the Federal Noise Control Act of 1972, 42 USC §4901 et seq.
 - 3) The Board may provide for measurement at distances other than the 50 feet specified in 35 Ill. Adm. Code 902.120 through 902.123 provided that correction factors are applied so that the sound levels so determined are substantially equivalent to those measured at 50 feet and the measurement distance does not exceed 100 feet. The correction factors used shall be consistent with California Highway Patrol Sound Measurement Procedures HPH 83.1 (October 1, 1973, as amended November 9, 1975), incorporated by reference at Section 900.106.
- d) Procedures Applicable only to 35 Ill. Adm. Code 905
- 1) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 905.102(a) and 905.103(a)(1) must be in conformity with the following standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) SAE Recommended Practice J192 "Exterior Sound Level for Snowmobiles." March 1985.
 - 2) Measurement procedures to determine whether emissions of sound comply with 35 Ill. Adm. Code 905.102(b) and 905.103(a)(2) shall be in substantial conformity with the following standards incorporated by reference at Section 900.106:
 - A) ANSI S1.4-1983 (R2001) "American National Standard Specification for Sound Level Meters."
 - B) SAE/ANSI Recommended Practice J1161 "Operational Sound Level Measurement Procedure for Snow Vehicles", March 1983.

- 3) The Agency may establish criteria for measuring at distances other than the 50 feet specified in 35 Ill. Adm. Code 905.102 and 905.103, provided that correction factors are applied so that the sound levels so determined are substantially equivalent to those measured at 50 feet. In adopting new or revised criteria, the Agency shall comply with the requirements of the Illinois Administrative Procedure Act, [5 ILCS 100].

(Source: Added at 27 Ill. Reg. 16247, effective October 8, 2003)

Section 900.APPENDIX A Old Rule Numbers Referenced

The following table is provided to aid in referencing old Board rule numbers to section numbers pursuant to codification.

Old Part 1 of Chapter 8	35 Ill. Adm. Code Part 900
Rule 101	Section 900.101
Rule 102	Section 900.102
Rule 103	Section 900.103
Rule 104	Section 900.104
Rule 105	Section 900.105

**TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE H: NOISE
CHAPTER I: POLLUTION CONTROL BOARD**

**PART 901
SOUND EMISSION STANDARDS AND LIMITATIONS FOR PROPERTY LINE-
NOISE-SOURCES**

Section

901.101	Classification of Land According to Use
901.102	Sound Emitted to Class A Land
901.103	Sound Emitted to Class B Land
901.104	Impulsive Sound
901.105	Impact Forging Operations
901.106	Prominent Discrete Tones
901.107	Exceptions
901.108	Compliance Dates for Part 901
901.109	Impulsive Sound from Explosive Blasting
901.110	Amforge Operational Level
901.111	Modern Drop Forge Operational Level
901.112	Wyman-Gordon Operational Level
901.113	Wagner Casting Site-Specific Operational Level
901.114	Moline Forge Operational Level
901.115	Cornell Forge Hampshire Division Site-Specific Operational Level
901.116	Forgings and Stampings, Inc. Operational Level
901.117	Rockford Drop Forge Company Operational Level
901.118	Atlas Forgings Division of Scot Forge Operational Level
901.119	Clifford-Jacobs Operational Level
901.120	C.S. Norcross Operational Level
901.121	Vaughan & Bushnell Operational Level

APPENDIX A	Old Rule Numbers Referenced
APPENDIX B	Standard Land Use Coding System

AUTHORITY: Implementing Section 25 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1985, ch. 111 1/2 pars. 1025 and 1027).

SOURCE: Originally filed as Part 2 of Chapter 8: Noise Pollution, effective August 10, 1973; amended at 2 Ill. Reg. 27, p. 223, effective June 26, 1978; amended at 5 Ill. Reg. 6371, effective June 1, 1981; amended at 5 Ill. Reg. 8533, effective August 10, 1981; amended at 6 Ill. Reg. 10960, effective September 1, 1982; codified at 7 Ill. Reg. 13646; amended at 7 Ill. Reg. 14519, effective October 17, 1983; amended in R83-35 at 8 Ill. Reg. 18893, effective September 25, 1984; amended in R83-33, 26, 29, 30 and R83-34 at 9 Ill. Reg. 1405, effective January 17, 1985; Section 901.105(f)(1), (2) and

(3) recodified to Sections 901.110, 901.111 and 901.112 at 9 Ill. Reg. 7147; amended in R83-25, 31 and 32 at 9 Ill. Reg. 7149, effective May 7, 1985; amended in R83-7 at 11 Ill. Reg. 3136, effective January 28, 1987.

Section 901.101 Classification of Land According to Use

- a) Class A land shall include all land used as specified by SLUCM Codes 110 through 190 inclusive, 651, 674, 681 through 683 inclusive, 691, 711, 762, 7121, 7122, 7123 and 921.
- b) Class B land shall include all land used as specified by SLUCM Codes 397, 471 through 479 inclusive, 511 through 599 inclusive, 611 through 649 inclusive, 652 through 673 inclusive, 675, 692, 699, 7124, 7129, 719, 721, 722 except 7223, 723 through 761 inclusive except 7311, 769 through 790 inclusive, and 922.
- c) Class C land shall include all land used as specified by SLUCM Codes 211 through 299 inclusive, 311 through 396 inclusive, 399, 411 except 4111, 412 except 4121, 421, 422, 429, 441, 449, 460, 481 through 499 inclusive, 7223 and 7311 used for automobile and motorcycle racing, and 811 through 890 inclusive.
- d) A parcel or tract of land used as specified by SLUCM Code 81, 83, 91, or 922, when adjacent to Class B or C land may be classified similarly by action of a municipal government having zoning jurisdiction over such land. Notwithstanding any subsequent changes in actual land use, land so classified shall retain such B or C classification until the municipal government removes the classification adopted by it.

Section 901.102 Sound Emitted to Class A Land

- a) Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound during daytime hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

Octave Band Center Frequency (Hertz) Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from

	Class C Land	Class B Land	Class A Land
31.5	75	72	72
63	74	71	71
125	69	65	65
250	64	57	57
500	58	51	51
1000	52	45	45
2000	47	39	39
4000	43	34	34
8000	40	32	32

- b) Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound during nighttime hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

Octave Band Center Frequency (Hertz) Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from

	Class C Land	Class B Land	Class A Land
31.5	69	63	63
63	67	61	61
125	62	55	55
250	54	47	47
500	47	40	40
1000	41	35	35
2000	36	30	30
4000	32	25	25
8000	32	25	25

Section 901.103 Sound Emitted to Class B Land

Except as elsewhere in this Part provided, no person shall cause or allow the emission of sound from any property-line-noise-source located on any Class A, B or C land to any receiving Class B land which exceeds any allowable octave band sound pressure level specified in the following table, when measured at any point within such receiving Class

B land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class B Land from		
	Class C Land	Class B Land	Class A Land
31.5	80	79	72
63	79	78	71
125	74	72	65
250	69	64	57
500	63	58	51
1000	57	52	45
2000	52	46	39
4000	48	41	34
8000	45	39	32

Section 901.104 Impulsive Sound

Except as elsewhere in this Part provided, no person shall cause or allow the emission of impulsive sound from any property-line-noise-source located on any Class A, B, or C land to any receiving Class A or B land which exceeds the allowable A-weighted sound levels, measured with fast dynamic characteristic, specified in the following table when measured at any point within such receiving Class A or B land, provided, however, that no measurement of sound levels shall be made less than 25 feet from such property-line-noise-source.

Classification of Land on which Property-Line Noise-Source is Located	Allowable A-weighted Sound Levels in Decibels of Impulsive Sound Emitted to Receiving Class A or B Land		
	Class B Land	Class A Land	
		Daytime	Nighttime
Class A Land	50	50	45
Class B Land	57	50	45
Class C Land	61	56	46

(Source: Amended at 11 Ill. Reg. 3136, effective January 28, 1987)

Section 901.105 Impact Forging Operations

- a) For purposes of this rule only the following are applicable:

- 1) Daytime hours shall mean any continuous 16 hour period between 6:00 a.m. and 11:00 p.m. local time; and
 - 2) Nighttime hours shall mean those 8 hours between 10:00 p.m. and 7:00 a.m. which are not part of the 16 continuous daytime hours.
 - 3) The reference time for Leq, as defined in 35 Ill. Adm. Code 900.101 is one hour.
 - 4) New Impacting Forging Operation is that property-line-noise-source comprised of impact forging operation on which construction began after September 1, 1982.
 - 5) Existing Impact Forging Operation is that property-line-noise-source comprised of impact forging operations which are in existence on September 1, 1982,
- b) Emission Limitations for New Impact Forging Operation No impact forging operation shall cause or allow the emission of impulsive sound to any receiving Class A or B land which exceeds the allowable sound levels specified in the following table when measured at any point within such receiving land, provided however, that no measurement of sound levels shall be made less than 25 feet from such new impact forging operation's property-line.

Allowable Impulsive Sound Levels Emitted
To Class A or B Land from New
Impact Forging Operation

Class B Land	Class A Land	
	Daytime	Nighttime
59.5Leq	53.5 Leq	48.5 Leq

- c) c) Limitations for Existing Impact Forging Operation

No existing impact forging operation shall cause or allow the emission of impulsive sound to any receiving Class A or B land which exceeds the allowable sound levels specified in the following table, when measured at any point within such receiving land, provided however, that no measurement of sound levels shall be made less than 25 feet from such existing impact forging operation's property-line, unless such forging operation is granted a permanent site specific allowable operational level pursuant to subparagraph (d).

Allowable Impulsive Sound Levels Emitted
To Class A or B Land from Existing
Impact Forging Operation

Class B Land

Class A Land

64.5Leq

Daytime
58.5Leq

Nighttime
53.5 Leq

- d) Site Specific Allowable Operational Level for Existing Impact Forging Operation
- 1) An existing impact forging operation which does not comply with subparagraph (c) may seek a permanent site specific allowable operational level from the Board. A permanent site specific level is that level of operation allowed petitioner after review and approval by the Board and after implementation of abated measures, if any, approved by the Board.
 - 2) Any existing impact forging operation seeking a permanent site specific operational level must submit as its petition the following:
 - A) The location of the petitioner, a description of the surrounding community, and a map locating the petitioner within the community;
 - B) A description of the petitioner's operations, the number and size of the petitioner's forging hammers, the current hours of hammer operation, the approximate number of forgings manufactured during each of the three prior calendar years and the approximate number of hammer blows used to manufacture the forgings.
 - C) A description of any existing sound abatement measure.
 - D) The sound levels in excess of those permitted by subparagraph (c) emitted by the petitioner into the community, in 5 decibel increments measured in Leq, shown on the map of the community.
 - E) The number of residences exposed to sound levels in excess of those permitted by subparagraph (c);
 - F) A description of other significant sources of noise (mobile and stationary) and their location shown on the map of the community;

- G) A description of the proposed operational level and proposed physical abatement measures, if any, a schedule for their implementation and their costs;
 - H) The predicted improvement in community sound levels as a result of implementation of the proposed abatement measures; and
 - I) A description of the economic and technical considerations which justify the permanent site specific allowable operational level sought by petitioner.
- 3) An existing impact forging operation seeking a permanent site specific operational level shall prepare and file its petition with the Board and Agency as applicable no later than December 1, 1983.
 - 4) The Agency shall prepare a written evaluation regarding each petition seeking a permanent site specific operational level and shall file said evaluation within ninety (90) days following receipt of the petition with both the Board and the petitioner.
- e) Land Use Classifications Preserved

The land use classifications in effect within a one-mile radius of an existing impact forging operation on September 1, 1982 shall remain the applicable land use classification for enforcement of these rules against an existing forging operation and any future modification thereof, regardless of actual subsequent changes in land use unless such actual changes would impose less restrictive limitations on the impact forging operations.
 - f) Site-Specific Operational Levels Each individual existing forging operation identified in Sections 901.110, 901.111 and 901.112 must comply with the site-specific operational level defined, or is otherwise subject to Section 901.105(c).

(Source: Section 901.105(f)(1), (2), and (3) recodified to Sections 901.110, 901.111 and 901.112 at 9 Ill. Reg. 7147)

Section 901.106 Prominent Discrete Tones

- a) No person shall cause or allow the emission of any prominent discrete tone from any property-line-noise-source located on any Class A, B or C land to any receiving Class A, B or C land, provided, however, that no measurement of one-third octave band sound pressure levels shall be made less than 25 feet from such property-line source.

- b) This rule shall not apply to prominent discrete tones having a one-third octave band sound pressure level 10 or more dB below the allowable octave band sound pressure level specified in the applicable tables in Sections 901.102 through 901.104 for the octave band which contains such one-third octave band. In the application of this sub-section, the applicable table for sound emitted from any existing property-line noise source to receiving Class A land, for both daytime and nighttime operations shall be found in Section 901.102(a).

Section 901.107 Exceptions

- a) Sections 901.102 through 901.106 inclusive shall not apply to sound emitted from land used as specified by SLUCM Codes 110, 140, 190, 691, and 742 except 7424 and 7425.
- b) Sections 901.102 through 901.106 inclusive shall not apply to sound emitted from emergency warning devices and unregulated safety relief valves.
- c) Sections 901.102 through 901.106 inclusive shall not apply to sound emitted from lawn care maintenance equipment and agricultural field machinery used during daytime hours. For the purposes of this sub-section, grain dryers operated off the farm shall not be considered agricultural field machinery.
- d) Sections 901.102 through 901.106 inclusive shall not apply to sound emitted from equipment being used for construction.
- e) Section 901.102(b) shall not apply to sound emitted from existing property-line-noise-sources during nighttime hours, provided, however, that sound emitted from such existing property-line-noise-sources shall be governed during nighttime hours by the limits specified in Section 901.102.
- f) Sections 901.102 through 901.106 inclusive shall not apply to the operation of any vehicle registered for highway use while such vehicle is being operated within any land used as specified by Section 901.101 in the course of ingress to or egress from a highway.
- g) Sections 901.102 through 901.106 inclusive shall not apply to sound emitted from land used as specified by SLUCM Codes 7223 and 7311 when used for automobile and motorcycle racing; and, any land used for contests, rallies, time trials, test runs or similar operations of any self-propelled device, and upon or by which any person is or may be transported or drawn, when such self-propelled device is actually being used for sport or recreation and is actually participating in an activity or

event organized, regulated, and supervised under the sponsorship and sanction of a club, organization or corporation having national or statewide recognition; provided, however, that the exceptions granted in this subparagraph shall not apply to any automobile and motorcycle race, contest, rally, time trial, test run or similar operation of any self-propelled device if such event is started between the hours of 10:30 p.m. to 7:00 a.m., local time weekdays, or between the hours of 11:00 p.m. and 7:00 a.m., local time, weekend days.

- h) Section 901.104 shall not apply to impulsive sound produced by explosive blasting activities conducted on any Class C land used as specified by SLUCM codes 852 and 854, but such operations shall be governed by Section 901.109..
- i) Sections 901.102 through 901.106 inclusive, shall not apply to sound emitted from snowmobiles.

(Source: Amended at 6 Ill. Reg. 10960, effective September 1, 1982)

Section 901.108 Compliance Dates for Part 901

- a) Except as provided in subparagraphs (g), (i), and (j), every owner or operator of a new property-line-noise-source shall comply with the standards and limitations of this Part on and after August 10, 1973.
- b) Except as otherwise provided in this rule, every owner or operator of an existing property-line-noise-source shall comply with the standards and limitations of this Part on and August 10, 1974.
- c) Every owner or operator of an existing property-line-noise-source who emits sound which exceeds any allowable octave band sound pressure level of Section 901.102 or 901.103 by 10 dB or more in any octave band with a center frequency of 31.5 Hertz, 63 Hertz or 125 Hertz shall comply with the standards and limitations of this Part on and after February 10, 1975.
- d) Except as provided in subparagraphs (g) and (h), every owner or operator of an existing property-line-noise-source required to comply with Section 901.104 shall comply with the standards and limitations of this Part on and after February 10, 1975.
- e) Every owner or operator of an existing property-line-noise-source required to comply with Section 901.106 shall comply with the standards and limitations of this Part on and after February 10, 1975.
- f) Repealed

- g) Every owner or operator of Class C land now and hereafter used as specified by SLUCM Code 4112 shall have until August 10, 1976 to bring the sound from railroad car coupling in compliance with Section 901.104.
- h) Existing impact forging operations as defined in Section 901.105 which do not seek permanent site specific allowable operational levels shall comply with Section 901.105 by December 1, 1983. Those seeking permanent site specific allowable operational levels pursuant to Section 901.105(d) shall comply as of the effective date of the site specific rule granted or denied.
- i) Every owner or operator of Class C land now or hereafter used as specified by SLUCM Code 291 shall comply with the standards and limitations of this Part on August 10, 1975.
- j) Every owner or operator of Class C land now or hereafter used as specified by SLUCM Code 7223 and 7311 when used for automobile and motorcycle racing shall comply with the standards and limitations of this Part on February 10, 1976.

(Source: Amended at 6 Ill. Reg. 10960, effective September 1, 1982)

Section 901.109 Impulsive Sound From Explosive Blasting

- a) During the daytime hours, after sunrise and before sunset, no person shall cause or allow any explosive blasting conducted on any Class C land used as specified by SLUCM Codes 852 and 854 so as to allow the emission of sound to any receiving Class A or B land which exceeds the allowable outdoor C-weighted sound levels, measured with the slow dynamic characteristic, specified in the following table, when measured at any point, of reasonable interference with the use of such receiving Class A or B land.

Allowable Outdoor C-Weighted
Sound Levels in Decibels of Explosive
Blasting Sounds Emitted to Receiving
Class A or B Land from Any Class C Land
Used as Specified by SLUCM Code 852 or 854

Receiving Class A Land	Receiving Class B Land
109	114

- b) Compliance with outdoor peak sound pressure level limits in the following table shall constitute prima facie level limits of this rule when measured on such receiving Class A or B land.

Equivalent Maximum Sound Pressure Level (Peak) Limits in Decibels

Lower Frequency Limit of Measuring System for Flat Response, a Variation from Linear Response of \pm or - 3dB (Hz)	Receiving Class A Land (dB)	Receiving Class B Land (dB)
\leq 0.1	135	140
\leq 2.0 but greater than 0.1	132	137
\leq 6.0 but greater than 2.0	130	135

- c) During the nighttime hours, after sunset and before sunrise, the allowable sound level limits in subparagraphs (a) and (b) shall be reduced by 10 decibels except in emergency situations where rain, lightning, other atmospheric conditions, or operator or public safety requires unscheduled nighttime hour explosive blasting.
- d) Persons causing or allowing explosive blasting to be conducted on any Class C land used as specified by SLUCM code 852 or 854 shall notify the local public of such blasting prior to its occurrence, except when emergency situations require unscheduled blasting, by publication of a

blasting schedule, identifying the work days or dates and time periods when explosives are expected to be detonated, at least every three months in a newspaper of general circulation in the locality of the blast site.

(Source: Amended at 6 Ill. Reg. 10960, effective September 1, 1982)

Section 901.110 Amforge Operational Level

Amforge Division of Rockwell International located at 119th Street, Chicago, Illinois shall:

- a) Operate only ten forging hammers at any one time; and
- b) Operation of its forging hammers is limited to the hours of 7:00 a.m. through 11:00 p.m., with occasional operations beginning at 6:00 a.m. and ending at midnight, Monday through Saturdays; and
- c) Sound absorptive materials shall be installed on each of the forging hammer structures as each is routinely overhauled, but no later than January 1, 1987.

(Source: Recodified from Section 901.105(f)(1) at 9 Ill. Reg. 7147)

Section 901.111 Modern Drop Forge Operational Level

Modern Drop Forge Company located at 139th Street and Western Avenue in Blue Island, Illinois shall:

- a) Operate only twenty-one forging hammers at any one time; and
- b) Operate its forging hammers only during the hours of 6:00 a.m. through midnight, Mondays through Fridays, and 6:30 a.m. until 7:30 p.m. on Saturdays.

(Source: Recodified from Section 901.105(f) (2) at 9 Ill. Reg. 7147)

Section 901.112 Wyman-Gordon Operational Level

Wyman-Gordon Company located at 147th Street and Wood Street, Harvey, Illinois shall:

- a) Operate only six forging hammer units, each consisting of two hammers, after January 1, 1984.
- b) Operate forging units in Buildings 6 and 7, located at the southern perimeter of the Wyman-Gordon Company's Harvey facility, to produce no more than 20% of the total annual hammer production at the Harvey facility;
- c) Operate forging units between the hours of 6:00 a.m. and midnight; limit forging operations on Saturdays and Sundays to no more than half a year's total; and limit forging operations during the hours of 6:00 a.m. and 7:00

a.m. and 11:00 p.m. and midnight to less than 2% of the Harvey's facility total annual hammer production; and

- d) Consolidate the two existing steel inventory yards at the one located north of Building 75 no later than January 1, 1984.

(Source: Recodified from Section 901.105(f)(3) at 9 Ill. Reg. 7147)

Section 901.113 Wagner Casting Site-Specific Operational Level

Wagner Casting Company and future owners of the forging facility located at the southeast corner of Sangamon and Jasper Streets in Decatur, Illinois, must comply with the following site-specific operational level or are otherwise subject to Section 901.105(c):

- a) Shall operate no more than nine forging hammers at any one time; and
- b) Shall operate its forging hammers only between the hours of 5:00 a.m. Monday through 9:00 p.m. Saturday.

(Source: Added at 8 Ill. Reg. 18893, effective September 2, 1984).

Section 901.114 Moline Forge Operational Level

Moline Forge and future owners of the forging facility located at 4101 Fourth Avenue, Moline, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than nine forging hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. until 11:00 p.m. Monday through Friday and from 6:00 a.m. until 3:30 p.m. on Saturdays.

(Source: Added at 9 Ill. Reg. 1405, effective January 17, 1985)

Section 901.115 Cornell Forge Hampshire Division Site-Specific Operational Level

Cornell Forge, Hampshire Division and future owners of the forging facility located at Walker Road, Hampshire, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than seven forging hammers at any one time; and

- b) Operate its forging hammers only on Monday through Saturday between the hours of 7:00 a.m. to 3:30 p.m. with an additional shift that may run from either 3:30 p.m. to 12:00 p.m. or from 10:30 p.m. to 7:00 a.m.

(Source: Added at 9 Ill. Reg. 1405, effective January 17, 1985)

Section 901.116 Forgings and Stampings, Inc. Operational Level

Forgings and Stampings, Inc. and future owners of the forging facility located at 1025 23rd Avenue, Rockford, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than six forging hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 6:00 p.m. Monday through Friday and 6:00 a.m. and 2:00 p.m. on Saturday.

(Source: Added at 9 Ill. Reg. 1405, effective January 17, 1985)

Section 901.117 Rockford Drop Forge Company Operational Level

Rockford Drop Forge Company and future owners of the forging facility located at 2031 Ninth Street, Rockford, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than twelve forging hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 10:00 p.m. Monday through Saturday.

(Source: Added at 9 Ill. Reg. 1405, effective January 17, 1985)

Section 901.118 Atlas Forgings Division of Scot Forge Operational Level

Atlas Forge Division of Scot Forge and future owners of the forging facility located at 1501 South 55th Court, Cicero, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than three forging hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 6:00 p.m. Monday through Saturday.

(Source: Added at 9 Ill. Reg. 1405, effective January 17, 1985)

Section 901.119 Clifford-Jacobs Operational Level

Clifford-Jacobs Forging Company and future owners of the forging facility located at North Market Street, Champaign, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than fourteen hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 11:00 p.m. Monday through Saturday.

(Source: Added at 9 Ill. Reg. 7149, effective May 7, 1985)

Section 901.120 C.S. Norcross Operational Level

C.S. Norcross & Sons Company and future owners of the forging facility located at the intersection of Davis and Dean Streets, Bushnell, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than twelve forging hammers at any one time; and
- b) Operate its forging hammers only between the hours of 7:00 a.m. and 1:00 a.m. Monday through Saturday.

(Source: Added at 9 Ill. Reg. 7149, effective May 7, 1985)

Section 901.121 Vaughan & Bushnell Operational Level

Vaughan & Bushnell Manufacturing Company and the future owners of the forging facility located at the intersection of Davis and Main Streets, Bushnell, Illinois, shall comply with the following site-specific operational level:

- a) Operate no more than ten hammers at any one time; and
- b) Operate its forging hammers only between the hours of 6:00 a.m. and 1:30 p.m. Monday through Saturday.

(Source: Added at 9 Ill. Reg. 7149, effective May 7, 1985)

Section 901.APPENDIX A Old Rule Numbers Referenced

The following table is provided to aid in referencing old Board rule numbers to section numbers pursuant to codification.

Old Part 2 of Chapter 8

35 Ill. Adm. Code Part 901

Rule 201	Section 901.101
Rule 202	Section 901.102(a)
Rule 203	Section 901.102(b)
Rule 204	Section 901.103
Rule 205	Repealed
Rule 205 (was old 206)	Section 901.104
Rule 206 (new rule)	Section 901.105
Rule 207	Section 901.106
Rule 208	Section 901.107
Rule 209	Section 901.108
Rule 210	Section 901.109
Added in Codification	Appendix A
Unnumbered Appendix to Chapter 8, Part 2	Appendix B

Section 901.APPENDIX B Standard Land Use Coding System

APPENDIX B

STANDARD LAND USE CODING SYSTEM

U.S. Department of Transportation

Federal Highway Administration
Reprinted 1969

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
11	Household units.	110	Household units.	1100	Household units. ²	----	A
12	Group quarters.	121	Rooming and boarding houses.	1210	Rooming and boarding houses. ³	7021	
		122	Membership lodgings.	1221	Fraternity and sorority houses.	⁴ Incl. 7041	
				1229	Other membership lodgings, NEC. ⁵	Incl. 7041	
		123	Residence halls or dormitories.	1231	Nurses' homes.	----	
				1232	College dormitories.	----	
				1239	Other residence halls or dormitories, NEC.	----	
		124	Retirement homes and orphanages.	1241	Retirement homes.	----	
1242	Orphanages.			----			
125	Religious quarters.	1251	Convents.	----			
		1252	Monasteries.	----			
		1253	Rectories.	----			
		1259	Other religious quarters, NEC.	----			
129	Other group quarters, NEC.	1290	Other group quarters, NEC.	----			
13	Residential hotels.	130	Residential hotels.	1300	Residential hotels. ⁶	Incl. 7011	
14	Mobile home parks or courts.	140	Mobile home parks or courts.	1400	Mobile home parks or courts.	7031	
15	Transient lodgings.	151	Hotels, tourist courts, and motels.	1510	Hotels, tourist courts, and motels.	7011	
		159	Other transient lodgings, NEC.	1590	Other transient lodgings, NEC. ⁷		
19	Other residential, NEC.	190	Other residential, NEC.	1900	Other residential, NEC.	----	A

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, Sec. A3, "The Use of Standard and Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 1100--"Household units" are defined as a house, and apartment, or other group of rooms, or a single room that is intended for occupancy as separate living quarters. Occupants of "Household units" do not live and eat with other persons in the structure (such as in a boarding house), and there is either (1) direct access from the outside or through a common hall, or (2) there is a kitchen or cooking equipment for the exclusive use of the occupants of the unit. The occupants may be a family, a group of unrelated persons, or a person living alone. Mobile homes not in "Mobile home parks or courts" (code 14), but resting on a permanent type of foundation (e.g., a brick or concrete block foundation) are included as well as units that are vacant or that are used on a seasonal basis. Farm homes are also included under "household units" and should be identified separately from the remainder of the farm which is coded under "Agriculture," code 81.

*"Land Class" refers to Rule 201 Classifications. "A" denotes a Class A Land, "B" denotes a Class B Land and "C" denotes a Class C Land. "U" denotes a Land unclassified in rule 201. (Added by IEPA.)

³Code 1210----"Rooming and boarding houses" are those that have 5 or more persons renting rooms, with or without board, and not related to the had or person in charge. Where there are less than 5 roomers, the total quarters are considered as one "Household unit" and is coded 1100.

⁴Incl. 7041" is an abbreviation which indicates that the 4-digit land use activity category is only one of several categories of establishments that are included under SIC code 7041.

⁵NEC" is an abbreviation for "not elsewhere coded."

⁶Code 1300--"Residential hotels" are those that have 75 percent or more of the available accommodations occupied by permanent guests (i.e., persons who reside more than 30 days). Hotels with less than 75 percent are included under code 15, "Transient lodgings."

⁷Code 1590--"Other transient lodgings, NEC" includes such establishments as the YMCA, YWCA, and YMHA when 50 percent or more of the floor area is devoted to lodging and associated activities and when less than 75 percent of the accommodations are occupied by permanent guests. If 75 percent or more of the guests are permanent, use code 1300. If 50 percent or more of the floor area is devoted to recreational activity, use code 7424, "Recreation centers (general)."

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
21	Food and kindred products--manufacturing.	211	Meat products -- manufacturing.	2111	Meat packing -- manufacturing.	2011	C
				2112	Sausages and other prepared meat products--manufacturing.	2013	
				2113	Poultry and small game dressing and packing.	2015	
		212	Dairy products--manufacturing.	2121	Creamery butter--manufacturing.	2021	
				2122	Cheese, natural and processed.	2022	
				2123	Condensed and evaporated milk--manufacturing.	2023	
				2124	Ice cream and frozen desserts--manufacturing.	2024	
				2125	Fluid milk processing.	2026	
		213	Canning and preserving of fruits, vegetables, and seafoods.	2131	Canning and curing seafoods.	2031	
				2132	Canning specialty foods.	2032	
				2133	Canning fruits, vegetables, preserves, jams, and jellies.	2033	
				2134	Drying and dehydrating fruits and vegetables.	2034	
				2135	Pickling fruits and vegetables; vegetable sauces and seasonings; salad dressings--manufacturing.	2035	
				2136	Fresh or frozen packaged fish and seafoods.	2036	
				2137	Frozen fruits, fruit juices, vegetables, and specialties.	2037	
		214	Grain mill products--manufacturing.	2141	Flour and other grain mill products.	2041	
				2142	Preparing feeds for animals and fowls.	2042	
2143	Cereal preparations.			2043			
2144	Rice milling.			2044			
				2145	Blending and preparing flour.	2045	

		2146	Wet corn milling.			2046	
215	Bakery products--manufacturing.	2150	Bakery products--manufacturing.			205	
216	Sugar--manufacturing.	2160	Sugar--manufacturing.			206	
217	Confectionery and related products--manufacturing.	2171	Candy and other confectionery products--manufacturing.			2071	
		2172	Chocolate and cocoa products--manufacturing.			2072	
		2173	Chewing gum--manufacturing.			2073	
218	Beverage--manufacturing.	2181	Malt liquors--manufacturing.			2082	
		2182	Malt--manufacturing.			2083	
		2183	Wine, brandy, and brandy spirits--manufacturing.			2084	
		2184	Distilling, rectifying, and blending liquors.			2085	
		2185	Bottling and canning soft drinks and carbonated waters.			2086	
		2186	Flavor extracts and flavoring sirups manufacturing, NEC.			2087	
219	Other food preparations and kindred products manufacturing, NEC.	2191	Cottonseed oil milling.			2091	
		2192	Soybean oil milling.			2092	
		2193	Vegetable oil milling (except cottonseed and soybean).			2093	
		2194	Animal and marine fats and oils (including grease and tallow)--manufacturing.			2094	
		2195	Roasting coffee and coffee products--manufacturing.			2095	
		2196	Shortening, table oils, margarine, and other edible fats and oils--manufacturing.			2096	
		2197	Ice--manufacturing			2097	
		2198	Macaroni, spaghetti, vermicelli, and noodles--manufacturing.			2098	
		2199	Other food preparations and kindred products manufacturing, NEC.			2099	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
22	Textile mill products--manufacturing.	221	Broad and narrow woven fabrics and other small wares (cotton, manmade fibers, silk, and wool)--manufacturing.	2210	Broad and narrow woven fabrics and other small wares (cotton, manmade fibers, silk, and wool)--manufacturing.	221,222,223 ⁹ and 224	C
		222	Knit goods--manufacturing.	2220	Knit goods--manufacturing.	225	
		223	Dyeing and finishing of textiles (except wool fabrics and knit goods).	2230	Dyeing and finishing of textiles (except wool fabrics and knit goods).	226	
		224	Floor coverings (rugs and carpets) manufacturing.	2240	Floor coverings (rugs and carpets)--manufacturing.	227	
		225	Yarns and threads--manufacturing.	2250	Yarns and threads--manufacturing.	228	

		229	Other textile goods manufacturing, NEC.			2291	Felt goods (except woven felts and hats)--manufacturing.	2291	
						2292	Lace Goods--manufacturing.	2292	
						2293	Padding and upholstery filling--manufacturing.	2293	
						2294	Processing waste and recovering fibers and flock.	2294	
						2295	Artificial leather and oil cloth manufacturing and other impregnating and coating fabrics (except rubberizing).	2295	
						2296	Tire cording and fabric--manufacturing.	2296	
						2297	Wool scouring, worsted combing, and towing to top.	2297	
						2299	Other textile goods manufacturing, NEC.	2299	
23	Apparel and other finished products made from fabrics, leather, and similar materials-- manufacturing.	231	Men's, youths' and boys' suits, coats, and overcoats--manufacturing.	2310	Men's, youth's, and boys' suits, coats, and overcoats--manufacturing.			231	
		232	Men's, youths', and boys' furnishings, work clothing, and allied garments--manufacturing.	2320	Men's, youths', and boys' furnishings, work clothing, and allied garments--manufacturing.			232	
		233	Women's, misses', juniors', girls', children's, and infants' outerwear--manufacturing.	2330	Women's, misses', juniors', girls', children's, and infants' outerwear--manufacturing.			233 and 236	
		234	Women's, misses', children's, and infants' undergarments--manufacturing.	2340	Women's, misses', children's, and infants' undergarments--manufacturing.			234	
		235	Hats, caps, and millinery--manufacturing.	2350	Hats, caps, and millinery--manufacturing.			235	
		236	Leather and leather products--manufacturing.	2361	Leather tanning and finishing.			3111	
				2362	Industrial leather belting and packing--manufacturing.			3121	
				2363	Boot and shoe cut stock and findings--manufacturing.			3131	
				2364	Footwear (except rubber)--manufacturing.			314	
				2365	Leather gloves and mittens--manufacturing.			315	
				2366	Luggage--manufacturing.			316	
				2367	Handbags and other personal leather goods--manufacturing.			317	
				2369	Other leather products manufacturing, NEC.			319	
		237		2370	Fur goods--manufacturing.			237	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
23	Apparel and other finished products made from fabrics, leather, and similar	238	Miscellaneous apparel and accessories--manufacturing.	2381	Dress and work gloves (except knit and all leather)--manufacturing.	2381	C
				2382	Robes and dressing gowns--manufacturing.	2384	

			2383	facturing. Raincoats and other waterproof outer garments--manufacturing.	2385	
			2384	Leather and sheep lined clothing--manufacturing.	2386	
			2385	Apparel belts--manufacturing.	2387	
			2389	Other miscellaneous apparel and accessory manufacturing, NEC.	2389	
	239	Other fabricated textile products manufacturing, NEC.	2391	Curtains and draperies--manufacturing.	2391	
			2392	House furnishings (except curtains and draperies)--manufacturing.	2392	
			2393	Textile bags--manufacturing.	2393	
			2394	Canvas products--manufacturing.	2394	
			2395	Pleating, decorative and novelty stitching and tucking for the trade.	2395	
			2396	Apparel findings and related products--manufacturing.	2396	
			2399	Other fabricated textile products manufacturing, NEC.	2397 and 2399	
24	Lumber and wood products (except furniture)--manufacturing.	241	Logging camps and logging contractors.	2410	Logging camps and logging contractors.	241
		242	Sawmills and planing mills.	2421	Sawmills and planing mills, general.	2421
				2422	Hardwood dimension and flooring--manufacturing.	2426
				2429	Special sawmill products manufacturing, NEC.	2429
		243	Millwork, veneer, plywood, and prefabricated structural wood products--manufacturing.	2431	Millwork.	2431
				2432	Veneer and plywood--manufacturing.	2432
				2433	Prefabricating wooden buildings and structural members--manufacturing.	2433
		244	Wooden containers--manufacturing.	2440	Wooden containers--manufacturing.	244
		249	Other lumber and wood products (except furniture) manufacturing, NEC.	2491	Wood preserving.	2491
				2499	Other lumber and wood products (except furniture) manufacturing, NEC.	2499
25	Furniture and fixtures--manufacturing.	251	Household furniture--manufacturing.	2510	Household furniture--manufacturing.	251
		252	Office furniture--manufacturing.	2520	Office furniture--manufacturing.	252
		253	Public building and related furniture--manufacturing.	2530	Public building and related furniture--manufacturing.	2531
		254	Partitions, shelving, lockers, and office and store fixtures--manufacturing.	2540	Partitions, shelving, lockers, and office and store fixtures--manufacturing.	254
		259	Other furniture and fixtures manufacturing, NEC.	2591	Venetian blinds and shades--manufacturing.	2591
				2599	Other furniture and fixtures manufacturing, NEC.	2599
26	Paper and allied products--manufacturing.	261	Pulp--manufacturing.	2610	Pulp--manufacturing.	261
		262	Paper (except building paper)--manufacturing.	2620	Paper (except building paper)--manufacturing.	262

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>	
26	Paper and allied products-- manufacturing--Continued	263	Paperboard--manufacturing.	2630	Paperboard--manufacturing.	263	C	
		264	Converted paper and paperboard products (except containers and boxes)--manufacturing.	2641	Paper coating and glazing.	2641		2641
				2642	Envelope--manufacturing.	2642		2642
				2643	Bags (except textile bags)--manu- facturing.	2643		2643
				2644	Wallpaper--manufacturing.	2644		2644
				2645	Die cut paper and paperboard; and cardboard--manufacturing.	2645		2645
				2646	Pressed and molded pulp goods-- manufacturing.	2646		2646
				2647	Sanitary paper products--manufac- turing.	2647		2647
				2649	Other converted paper and paper- board products (except containers and boxes) manufacturing, NEC.	2649		2649
				265	Paperboard containers and boxes-- manufacturing.	2650		Paperboard containers and boxes-- manufacturing.
266	Building paper and building board--manufacturing.	2660	Building paper and building board-- manufacturing.	266	266			
27	Printing, publishing, and allied industries.	271	Newspapers: publishing, publish- ing and printing.	2710	Newspapers: publishing, publishing and printing.	271		
		272	Periodicals: publishing, publishing and printing.	2720	Periodicals: publishing, publishing and printing.	272		
		273	Books: publishing, publishing and printing.	2730	Books: publishing, publishing and printing.	273		
		274	Commercial printing.	2740	Commercial printing.	275		
		275	Manifold business forms--manu- facturing.	2750	Manifold business forms--manufac- turing.	276		
		276	Greeting card--manufacturing.	2760	Greeting card--manufacturing.	277		
		277	Bookbinding and related indus- tries--manufacturing.	2771	Blankbooks, looseleaf binders, and devices--manufacturing.	2782	2782	
				2772	Bookbinding and miscellaneous re- lated work--manufacturing.	2789	2789	
		278	Printing trade service industries.	2781	Typesetting.	2791	2791	
				2782	Photoengraving.	2793	2793	
2783	Electrotyping and stereotyping.			2794	2794			
2789	Other printing trade service indus- tries, NEC.			2799	2799			
279	Other printing and publishing, NEC.	2790	Other printing and publishing, NEC.	274				
28	Chemicals and allied prod- ucts--manufacturing.	281	Industrial inorganic and organic chemicals--manufacturing.	2810	Industrial inorganic and organic chemicals--manufacturing.	281		
		282	Plastics materials and synthetic	2820	Plastics materials and synthetic	282		

	resins, synthetic rubber, synthetic and other manmade fibers (except glass)--manufacturing.		resins, synthetic rubber, synthetic and other manmade fibers (except glass)--manufacturing.		
283	Drug--manufacturing.	2831	Biological products--manufacturing.	2831	
		2832	Medicinal chemicals and botanical products--manufacturing.	2833	
		2833	Pharmaceutical preparations--manufacturing.	2834	
284	Soap, detergents, and cleaning preparations, perfumes, cosmetics, and other toilet preparations--manufacturing.	2841	Soap and detergents (except specialty cleaners)--manufacturing.	2841	
		2842	Specialty cleaning, polishing, and sanitation preparations (except soap and detergents)--manufacturing.	2842	
		2843	Surface active agents, finishing agents, sulfonated oils, and assistants--manufacturing.	2843	
		2844	Perfumes, cosmetics, and other toilet preparations--manufacturing.	2844	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
28	Chemicals and allied products--manufacturing--Continued.	285	Paints, varnishes, lacquers, enamels, and allied products--manufacturing.	2850	Paints, varnishes, lacquers, enamels, and allied products--manufacturing.	285	C
		286	Gum and wood chemicals--manufacturing.	2860	Gum and wood chemicals--manufacturing.	286	
		287	Agricultural chemicals--manufacturing.	2870	Agricultural chemicals--manufacturing.	287	
		289	Other chemicals and allied products--manufacturing, NEC.	2891	Glue and gelatin--manufacturing.	2891	
				2892	Explosives--manufacturing.	2892	
				2893	Printing ink--manufacturing.	2893	
				2894	Carbon black--manufacturing.	2895	
				2899	Other chemicals and allied products manufacturing, NEC.	2899	
29	Petroleum refining and related industries.	291	Petroleum refining.	2910	Petroleum refining.	291	
		292	Paving and roofing materials--manufacturing.	2921	Paving mixtures and blocks--manufacturing.	2951	
				2922	Asphalt felts and coatings--manufacturing.	2952	
		299	Other petroleum refining and related industries, NEC.	2991	Lubricating oils and greases--manufacturing.	2992	
				2999	Other petroleum and coal products manufacturing, NEC.	2999	
31	Rubber and miscellaneous plastic products--manufacturing.	311	Tires and inner tubes--manufacturing.	3110	Tires and inner tubes--manufacturing.	301	
		312	Rubber footwear--manufacturing.	3120	Rubber footwear--manufacturing.	302	
		313	Reclaiming rubber.	3130	Reclaiming rubber.	303	
		314	Miscellaneous plastic products--manufacturing.	3140	Miscellaneous plastic products--manufacturing.	307	

		319	Other fabricated rubber products manufacturing, NEC.	3190	Other fabricated rubber products manufacturing, NEC.	306	
32	Stone, clay, and glass products--manufacturing.	321	Flat glass--manufacturing.	3210	Flat glass--manufacturing.	3211 and incl. 3231	
		322	Glass and glassware (pressed or blown)--manufacturing.	3221	Glass containers--manufacturing.	3221 and incl. 3231	
				3229	Other glass and glassware (pressed or blown) manufacturing, NEC.	3229 and incl. 3231	
		323	Cement (hydraulic)--manufacturing.	3230	Cement (hydraulic)--manufacturing.	324	
		324	Structural clay products--manufacturing.	3241	Brick and structural clay tile--manufacturing.	3251	
				3242	Ceramic wall and floor tile--manufacturing.	3253	
				3243	Clay refractories--manufacturing.	3255	
				3249	Other structural clay products manufacturing, NEC.	3259	
		325	Pottery and related products--manufacturing.	3251	Vitreous china plumbing fixtures, china, earthenware fittings, and bathroom accessories--manufacturing.	3261	
				3252	Vitreous china table and kitchen articles--manufacturing.	3262	
				3253	Fine earthenware (whiteware) table and kitchen articles--manufacturing.	3263	
				3254	Porcelain electrical supplies--manufacturing.	3264	
				3259	Other pottery and related products manufacturing, NEC.	3269	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
32	Stone, clay, and glass products--manufacturing--Continued.	326	Concrete, gypsum, and plaster products--manufacturing.	3261	Concrete brick and block--manufacturing.	3271	C
				3262	Concrete products (excluding brick and block)--manufacturing.	3272	
				3263	Concrete (ready mixed)--manufacturing.	3273	
				3264	Lime products--manufacturing.	3274	
				3265	Gypsum products--manufacturing.	3275	
		327	Cut stone and stone products--manufacturing.	3270	Cut stone and stone products--manufacturing.	328	
		328	Abrasive, asbestos, and miscellaneous nonmetallic mineral products--manufacturing.	3280	Abrasive, asbestos, and miscellaneous nonmetallic mineral products--manufacturing.	329	
33	Primary metal industries.	331	Blast furnaces, steel works, and the rolling and finishing of ferrous metals.	3311	Blast furnaces (including coke ovens), steel works, and the rolling of ferrous metals.	3312	
				3312	Electrometallurgical products--manufacturing.	3313	
				3313	Steel wire drawing and steel nails and spikes--manufacturing.	3315	
				3314	Cold rolled sheet, strip, and bars--	3316	

					manufacturing.		
				3315	Steel pipe and tubes--manufacturing.	3317	
	332	Iron and steel foundries.		3320	Iron and steel foundries.	332	
	333	Primary smelting and refining of nonferrous metals.		3331	Primary smelting and refining of copper.	3331	
				3332	Primary smelting and refining of lead.	3332	
				3333	Primary smelting and refining of zinc.	3333	
				3334	Primary production of aluminum.	3334	
				3339	Other primary smelting and refining of nonferrous metals, NEC.	3339	
	334	Secondary smelting and refining of nonferrous metals and alloys.		3340	Secondary smelting and refining of nonferrous metals and alloys.	334	
	335	Rolling, drawing, and extruding of nonferrous metals.		3351	Rolling drawing, and extruding of copper.	3351	
				3352	Rolling, drawing, and extruding of aluminum.	3352	
				3353	Rolling, drawing, and extruding of nonferrous metals (except copper and aluminum).	3356	
				3354	Drawing and insulating of nonferrous wire.	3357	
	336	Nonferrous foundries.		3360	Nonferrous foundries.	336	
	339	Other primary metal industries, NEC.		3390	Other primary metal industries, NEC.	339	
34	Fabricated metal products--manufacturing.	341	Ordinance and accessories.	3411	Guns, howitzers, mortars, and related equipment--manufacturing.	191	
				3412	Ammunition (except small arms) manufacturing and complete assembling of guided missiles and space vehicles.	192	
				3413	Tanks and tank components--manufacturing.	193	
				3414	Sighting and fire control equipment--manufacturing.	194	
				3415	Small arms--manufacturing.	195	
				3416	Small arms ammunition--manufacturing.	196	
				3419	Other ordinance and accessories manufacturing, NEC.	199	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
34	Fabricated metal products--manufacturing--Continued.	342	Machinery (except electrical)--manufacturing.	3421	Engines and turbines--manufacturing.	351	C
				3422	Farm machinery and equipment--manufacturing.	352	
				3423	Construction, mining, and materials handling machinery and equipment--manufacturing.	353	
				3424	Metalworking machinery and equipment--manufacturing.	354	

		3425	Special industry machinery (except metalworking machinery)--manufacturing.	355	
		3426	General industrial machinery and equipment--manufacturing.	356	
		3427	Office, computing, and accounting machines--manufacturing.	357	
		3428	Service industry machines--manufacturing.	358	
		3429	Other machinery --manufacturing (except electrical), NEC.	359	
343	Electrical machinery, equipment, and supplies--manufacturing.	3431	Electrical transmission and distribution equipment--manufacturing.	361	
		3432	Electrical industrial apparatus--manufacturing.	362	
		3433	Household appliances--manufacturing.	363	
		3434	Electric lighting and wiring equipment--manufacturing.	364	
		3435	Radio and television receiving sets (except communication types)--manufacturing.	365	
		3436	Communication equipment--manufacturing.	366	
		3437	Electronic components and accessories--manufacturing.	367	
		3439	Other electrical machinery, equipment, and supplies manufacturing, NEC.	369	
344	Transportation equipment--manufacturing.	3441	Motor vehicles and motor vehicle equipment--manufacturing.	371	
		3442	Aircraft and parts--manufacturing.	372	
		3443	Ship and boat building and repairing.	373	
		3444	Railroad equipment--manufacturing.	374	
		3445	Motorcycles, bicycles, and parts--manufacturing.	375	
		3449	Other transportation equipment manufacturing, NEC.	379	
349	Other fabricated metal products manufacturing, NEC.	3491	Metal cans--manufacturing.	341	
		3492	Cutlery, hand tools, and general hardware--manufacturing.	342	
		3493	Heating apparatus (except electrical) and plumbing fixtures--manufacturing.	343	
		3494	Fabricated structural metal products--manufacturing.	344	
		3495	Screw machine products and bolts, nuts, screws, rivets, and washers--manufacturing.	345	
		3496	Metal stamping--manufacturing.	346	
		3497	Coating, engraving, and allied services.	347	
		3498	Fabricated wire products (miscellaneous products)--manufacturing.	348	
		3499	Other fabricated metal products manufacturing, NEC.	349	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

SIC Land*

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Reference</i> ¹	<i>Class</i>
35	Professional, scientific, and controlling instruments: photographic and optical goods; watches and clocks--manufacturing.	351	Engineering, laboratory, and scientific and research instruments and associated equipment--manufacturing.	3510	Engineering, laboratory, and scientific and research instruments and associated equipment--manufacturing.	381	C
		352	Instruments for measuring, controlling, and indicating physical characteristics--manufacturing.	3521	Mechanical measuring and controlling instruments (except automatic temperature controls)--manufacturing.	3821	
				3522	Automatic temperature controls--manufacturing.	3822	
				3530	Optical instruments and lenses--manufacturing.	383	
		354	Surgical, medical, and dental instruments and supplies--manufacturing.	3541	Surgical and medical instruments and apparatus--manufacturing.	3841	
				3542	Orthopedic, prosthetic, and surgical appliances and supplies--manufacturing.	3842	
				3543	Dental equipment and supplies--manufacturing.	3843	
		355	Ophthalmic goods--manufacturing.	3550	Ophthalmic goods--manufacturing.	385	
		356	Photographic equipment and supplies--manufacturing.	3560	Photographic equipment and supplies--manufacturing.	386	
		357	Watches, clocks, clockwork operated devices, and parts--manufacturing.	3570	Watches, clocks, clockwork operated devices, and parts--manufacturing.	387	
39	Miscellaneous manufacturing, NEC.	391	Jewelry, silverware, and plated ware--manufacturing.	3911	Jewelry and precious metals--manufacturing.	3911	
				3912	Jewelers' findings and materials--manufacturing.	3912	
				3913	Lapidary work.	3913	
				3914	Silverware and plated ware--manufacturing.	3914	
		392	Musical instruments and parts--manufacturing.	3920	Musical instruments and parts--manufacturing.	393	
		393	Toys, amusement, sporting, and athletic goods--manufacturing.	3930	Toys, amusement, sporting, and athletic goods--manufacturing.	394	
		394	Pens, pencils, and other office and artists' materials--manufacturing.	3940	Pens, pencils, and other office and artists' materials--manufacturing.	395	
		395	Costume jewelry, costume novelties, buttons, and miscellaneous notions (except precious metals)--manufacturing.	3950	Costume jewelry, costume novelties, buttons, and miscellaneous notions (except precious metals)--manufacturing.	396	
		396	Tobacco--manufacturing.	3961	Cigarettes--manufacturing.	211	
				3962	Cigars--manufacturing.	212	
				3963	Tobacco (chewing and smoking) and snuff--manufacturing.	213	
				3964	Tobacco stemming and redrying.	214	C
		397	Motion picture production.	3970	Motion picture production.	7811	B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
39	Miscellaneous manufacturing, NEC--Continued.	399	Other miscellaneous manufacturing, NEC.	3991	Brooms and brushes--manufacturing.	3981	C
				3992	Linoleum, asphalted-felt base, and other hard surface floor cover manufacturing, NEC.	3982	
				3993	Matches--manufacturing.	3983	
				3994	Lamp shades--manufacturing.	3987	
				3995	Mortician's goods-manufacturing.	3988	
				3996	Fur dressing and dyeing	3992	
				3997	Signs and advertising displays--manufacturing.	3993	
				3998	Umbrellas, parasols, and canes--manufacturing.	3995	
				3999	Other miscellaneous manufacturing, NEC.	3984 and 3999	
41	Railroad, rapid rail transit, and street railway transportation.	411	Railroad transportation.	4111	Railroad right-of-way (excluding switching and marshaling yards).	----	U
				4112	Railroad switching and marshaling yards.	----	C
				4113	Railroad terminals (passenger).	----	
				4114	Railroad terminals (freight).	----	
				4115	Railroad terminals (passenger and freight).	----	
				4116	Railroad equipment and maintenance.	----	
				4119	Other railroad transportation, NEC.	----	C
		412	Rapid rail transit and street railway transportation.	4121	Rapid rail transit and street railway right-of-way. ²	----	U
				4122	Rapid rail transit and street railway passenger terminals. ³	----	C
				4123	Rapid rail transit and street railway equipment maintenance.	----	
				4129	Other rapid rail transit and street railway transportation, NEC.	----	
42	Motor vehicle transportation.	421	Bus transportation.	4211	Bus passenger terminals (intercity). ⁴	----	
				4212	Bus passenger terminals (local). ⁴	----	
				4213	Bus passenger terminals (intercity and local). ⁴	----	
				4214	Bus garaging and equipment maintenance.	----	
				4219	Other bus transportation, NEC.	----	
		422	Motor freight transportation.	4221	Motor freight terminals.	----	
				4222	Motor freight garaging and equipment maintenance.	----	
				4229	Other motor freight transportation,	----	C

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, Sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>		
42	Motor vehicle transportation--Continued	429	Other motor vehicle transportation, NEC.	4291	Taxicab transportation.	4121	C		
				4299	Other motor vehicle transportation, NEC.	----	C		
43	Aircraft transportation.	431	Airports and flying fields.	4311	Airport and flying field landing/takeoff fields.	----	U		
				4312	Airport and flying field terminals (passenger).	----			
				4313	Airport and flying field terminals (freight).	----			
				4314	Airport and flying field terminals (passenger and freight).	----			
				4315	Aircraft storage and equipment maintenance.	----			
				4319	Other airports and flying fields, NEC.	----			
				439	Other aircraft transportation, NEC.	4391	Helicopter landing/takeoff pads. ⁵	----	U
				4399	Other aircraft transportation, NEC.	4399	Other aircraft transportation, NEC.	----	
44	Marine craft transportation. ⁸	441	Marine terminals. ⁷	4411	Marine terminals (passenger). ⁸	----	C		
				4412	Marine terminals (freight).	----			
				4413	Marine terminals (passenger and freight).	----			
				4414	Marine terminals (commercial fishing).	----			
				4419	Other marine terminals, NEC.	----			
				449	Other marine craft transportation, NEC.	4490	Other marine craft transportation, NEC.	----	C
				4490	Other marine craft transportation, NEC.	4490	Other marine craft transportation, NEC.	----	
45	Highway and street right-of-way.	451	Freeways.	4510	Freeways. ⁹	----	U		
				452	Expressways.	4520	Expressways. ¹⁰	----	
				453	Parkways.	4530	Parkways. ¹¹	----	
				454	Arterial streets.	4540	Arterial streets. ¹²	----	
				455	Collector/distributor streets.	4550	Collector/distributor streets. ¹³	----	
				456	Local access streets.	4560	Local access streets. ¹⁴	----	

	457	Alleys.	4570	Alleys.15	----	
	459	Other highway and street right-of-way, NEC.	4590	Other highway and street right-of-way, NEC.	----	U
46	Automobile parking.	460	Automobile parking.	4600	Automobile parking.16	C
47	Communication.	471	Telephone communication.	4711	Telephone exchange stations.	B
				4712	Telephone relay towers (microwave).	
				4719	Other telephone communication, NEC.	
		472	Telegraph communication.	4721	Telegraph message centers.	
				4722	Telegraph transmitting and receiving stations (only).	
				4729	Other telegraph communication, NEC.	
		473	Radio communication.	4731	Radio broadcasting studios (only).	
				4732	Radio transmitting stations and towers.	
				4739	Other radio communication, NEC.	
		474	Television communication.	4741	Television broadcasting studios (only).	
				4742	Television transmitting stations and relay towers.	
				4749	Other television communication, NEC.	
		475	Radio and television communication (combined systems).	4751	Radio and television broadcasting studios, only (combined systems).	
				4759	Other combined radio and television communication, NEC.	
		479	Other communication, NEC.	4790	Other communication. NEC.	B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
48	Utilities	481	Electric utility.	4811	Electric transmission right-of-way.17	----	C
				4812	Electric generation plants.	----	
				4813	Electricity regulating substations.	----	
				4819	Other electric utility, NEC.	----	
		482	Gas utility.	4821	Gas pipeline right-of-way.17	----	
				4822	Gas production plants.	----	
				4823	Natural or manufactured gas storage and distribution points.	----	
				4824	Gas pressure control stations.	----	
				4829	Other gas utilities, NEC.	----	
		483	Water utilities and irrigation.	4831	Water pipeline right-of-way.17	----	
				4832	Water treatment plants (purification).	----	
				4833	Water storage.18	----	
				4834	Irrigation distribution channels.	----	
				4835	Water pressure control stations.	----	
				4839	Other water utilities and irrigation, NEC.	----	

	484	Sewage disposal.	4841	Sewage treatment plants.	----
			4842	Sewage sludge drying beds.	----
			4843	Sewage pressure control stations.	----
			4849	Other sewage disposal, NEC.	----
	485	Solid waste disposal.	4851	Refuse incineration.	----
			4852	Central garbage grinding stations.	----
			4853	Compositing plants.	----
			4854	Sanitary landfills.	----
			4855	Refuse disposals.	----
			4856	Industrial waste disposals.	----
			4857	Active slag dumps and mineral waste disposals.	----
			4859	Other solid waste disposal, NEC.	----
	489	Other utilities, NEC.	4890	Other utilities, NEC.	----
49	Other transportation, communication, and utilities, NEC.	491	Other pipeline right-of-way and pressure control stations, NEC.	4911	Petroleum pipeline right-of-way. ¹⁷ ----
				4912	Petroleum pressure control stations. ----
				4919	Other pipeline right-of-way and pressure control stations, NEC. ----
	492	Transportation services and arrangements.	4921	Freight forwarding services.	4041 and 4712
			4922	Packing and crating services.	4783
			4923	Travel arranging services.	472
			4924	Transportation ticket services. 18	----
			4929	Other transportation services and arrangements, NEC.	----
	499	Other transportation, communication, and utilities, NEC.	4900	Other transportation, communication, and utilities, NEC.	----

C

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, Sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 4121--"Rapid rail transit and street railway right-of-way" includes only that land which is not within public right-of-way (e.g., within a public street right-of-way). Railroad right-of-way used by rapid rail transit is considered to be railroad right-of-way and is coded 4111.

³Code 4122--"Rapid rail transit and street railway passenger terminals" identifies only those terminals that are not located within public right-of-way (e.g., within a public street right-of-way).

⁴Codes 4211, 4212, 4213--"Bus passenger terminals" identifies only those terminals that are not located on the public right-of-way (e.g., within a public street right-of-way).

⁵Code 4391--"Heliport landing/takeoff pads" are identified only when they are separate activities and not a part of code 431, "Airports and flying fields."

⁶Code 44--"Marine craft transportation." The maintenance and repair of marine craft should be coded 3443, "Ship and boat building and repairing."

⁷Code 441--"Marine terminals" include all docking facilities (e.g., wharves, piers, and docks) and associated areas that are used by commercial passenger, freight, and fishing craft. Docking facilities that primarily serve recreational type of marine craft are identified under code 744, "Marinas."

⁸Code 4411--"Marine terminals (passenger)" include ferry terminals.

⁹Code 4510--"Freeways" are divided highways for through traffic with full control of access and no cross traffic at grade.

¹⁰Code 4520--"Expressways" are divided highways for through traffic with full or partial control of access with grade separations at major crossroads.

Footnotes continued on following page.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

¹¹Code 4530--"Parkways" are highways for noncommercial traffic, with full or partial control of access. They are located within a park or within a ribbon of parklike development.

¹²Code 4540--"Arterial streets" are those streets which serve movements of traffic and are not freeways, expressways, and parkways. Generally there is no control of access.

¹³Code 4550--"Collector/distributor streets" are those streets that collect traffic from the local streets and channel it into the arterial

17 parking spaces), and that serves no other single type of activity.

This code includes parking on open lots, parking within parking structures, parking within structures that also house other activities (e.g., parking area in an office building), and the parking area at shopping centers. Parking areas of less than 5,000 square feet are not identified as a separate activity.

¹⁷Codes 4811, 4821, 4831, 4911--These codes identify those areas where the *surface is devoted exclusively to the right-of-way* of the respec-

system. These streets also provide necessary cross-connections between arterials. The collector/distributor street does not handle long through trips, and it is not continuous for any great length.

¹⁴Code 4560--"Local access streets" are those used primarily for access to residences, businesses, or other abutting activities.

¹⁵Code 4570--"Alleys" are minor narrow streets usually without sidewalks and on which building adjoin from the rear. identified only when they are a separate and distinct activity, not

¹⁶Code 4600--"Automobile parking" includes nonresidential off-street parking that is 5,000 square feet or greater (or approximately

tive activities and is used for no other purposes.

¹⁸Code 4833--"Water storage" includes impounded surface water areas or water tanks used for storage. Lakes or other natural water formations are identified under code 93, "Water areas."

¹⁹Code 4924--"Transportation ticket services" include the ticket offices of any of the transportation systems. The ticket offices are located within one of the transportation terminals.

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
51	Wholesale trade.2	511	Motor vehicles and automotive equipment--wholesale.	5111	Automobiles and other motor vehicles--wholesale.	5012	B
				5112	Automotive equipment--wholesale.	5013	
				5113	Tires and tubes--wholesale.	5014	
		512	Drugs, chemicals, and allied products--wholesale.	5121	Drugs, drug proprietaries and druggists' sundries--wholesale.	5022	
				5122	Paints and varnishes--wholesale.	5028	
				5129	Other drugs, chemicals, and allied products, wholesale, NEC.	5029	
		513	Dry goods and apparel--wholesale.	5131	Dry goods, piece goods, and notions--wholesale.	5032	
				5132	Apparel and accessories, hosiery, and lingerie--wholesale.	5035	
				5133	Footwear--wholesale.	5039	
		514	Groceries and related products--wholesale.	5141	Groceries (general line)--wholesale.	5042	
				5142	Dairy products--wholesale.	5043	
				5143	Poultry and poultry products--wholesale.	5044	
				5144	Confectionery--wholesale.	5045	
				5145	Fish and seafoods--wholesale.	5046	
				5146	Meats and meat products--wholesale.	5047	
				5147	Fruits and vegetables (fresh)--wholesale.	5048	
				5149	Other groceries and related products wholesale, NEC.	5049	
		515	Farm products (raw materials)--wholesale.	5151	Cotton--wholesale.	Incl. 5051	
				5152	Grain--wholesale.	Incl. 5051	
				5153	Hides, skins, and raw furs-wholesale.	Incl. 5051	
				5154	Leaf tobacco--wholesale.	Incl. 5051	
				5155	Wool and mohair--wholesale.	Incl. 5051	
				5156	Livestock--wholesale.	Incl. 5051	
				5157	Horses and mules--wholesale.	Incl. 5051	
				5159	Other farm products wholesale, NEC.	Incl. 5051	
		516	Electrical goods--wholesale.	5161	Electrical apparatus and equipment, wiring supplies, and construction materials--wholesale.	5063	
				5162	Electrical appliances, television, and radio sets--wholesale.	5064	
				5163	Electronic parts and equipment--wholesale.	5065	
		517	Hardware, plumbing, heating equipment, and supplies--wholesale.	5171	Hardware--wholesale.	5072	
				5172	Plumbing and heating equipment and supplies--wholesale.	5074	

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
51	Wholesale trade 2-- Continued	518	Machinery, equipment, and supplies--wholesale.	5181	Commercial and industrial machin- ery, equipment, and supplies-- wholesale.	5082	B
				5182	Farm machinery and equipment-- wholesale.	5083	
				5183	Professional equipment and sup- plies--wholesale.	5086	
				5184	Equipment and supplies for service establishments--wholesale.	5087	
				5185	Transportation equipment and sup- plies (except motor vehicles)-- wholesale.	5088	
				5189	Other machinery, equipment, and supplies wholesale, NEC.	5089	
		519	Other wholesale trade, NEC.	5191	Metals and minerals (except petro- leum products and scrap)--whole- sale.	5091	
				5192	Petroleum bulk stations and termi- nals--wholesale.	5092	
				5193	Scrap and waste materials--whole- sale.	5093	
				5194	Tobacco and tobacco products-- wholesale.	5094	
				5195	Beer, wine, and distilled alcoholic beverages--wholesale.	5095	
				5196	Paper and paper products--whole- sale.	5096	
				5197	Furniture and home furnishings-- wholesale.	5097	
				5198	Lumber and construction materials-- wholesale.	5098	
		5199	Other wholesale trade, NEC.	5099			
52	Retail trade--building ma- terials, hardware, and farm equipment.	521	Lumber and other building ma- terials--retail.	5211	Lumber years-retail	5211	
				5212	Building materials--retail.	5212	
		522	Heating and plumbing equip- ment--retail.	5220	Heating and plumbing equipment-- retail.	522	
		523	Paint, glass, and wallpaper-- retail.	5230	Paint, glass, and wallpaper--retail.	523	
		524	Electrical supplies--retail.	5240	Electrical supplies--retail.	524	
525	Hardware and farm equip- ment--retail.	5251	Hardware--retail	5251			
		5252	Farm equipment retail.	5252			
53	Retail trade--general mer- chandise.	531	Department stores--retail.	5310	Department stores--retail.	531	
				5320	Mail order houses--retail.	532	
		533	Limited price variety stores-- retail.	5330	Limited price variety stores--retail.	533	

		534	Merchandise vending machine operators--retail.	5340	Merchandise vending machine operators--retail.	534	
		535	Direct selling organizations--retail.	5350	Direct selling organizations--retail.	535	
		539	Other retail trade--general merchandise, NEC.	5391	Dry goods and general merchandise--retail.	5392	
				5392	General stores--retail.	5393	
54	Retail trade--food.	541	Groceries (with or without meat)--retail	5410	Groceries (with or without meat)--retail.	541	
		542	Meats and fish--retail.	5421	Meats--retail.	5422	
				5422	Fish and seafoods--retail.	5423	B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
54	Retail trade--food--Continued	543	Fruits and vegetables--retail.	5430	Fruits and vegetables--retail.	543	B
		544	Candy, nut, and confectionery--retail.	5440	Candy, nut, and confectionery--retail.	544	
		545	Dairy products--retail.	5450	Dairy products--retail.	545	
		546	Bakeries--retail.	5461	Bakeries (manufacturing)--retail. ³	5462	
				5462	Bakeries (nonmanufacturing)--retail. ⁴	5463	
		549	Other retail trade--food, NEC.	5491	Egg and poultry--retail.	5491	
				5499	Other retail trade--food, NEC.	5499	
55	Retail trade--automotive, marine craft, aircraft, and accessories.	551	Motor vehicles--retail.	5511	Motor vehicles (new and used cars)--retail.	551	
				5512	Motor vehicles (used cars only)--retail.	552	
		552	Tires, batteries, and accessories--retail.	5520	Tires, batteries, and accessories--retail.	553	
		553	Gasoline service stations.	5530	Gasoline service stations.	554	
		559	Other retail trade--automotive, marine craft, aircraft, and accessories, NEC.	5591	Marine craft and accessories--retail	Incl. 5599	
				5592	Aircraft and accessories--retail.	Incl. 5599	
				5599	Other retail trade--automotive, marine craft, aircraft, and accessories, NEC.	Incl. 5599	
56	Retail trade--apparel and accessories.	561	Men's and boys' clothing and furnishings--retail.	5610	Men's and boys' clothing and furnishings--retail.	561	
		562	Women's ready-to-wear--retail.	5620	Women's ready-to-wear--retail.	562	
		563	Women's accessories and specialties--retail.	5630	Women's accessories and specialties--retail.	563	
		564	Children's and infants' wear--	5640	Children's and infants' wear--retail.	564	

		retail.					
	565	Family clothing--retail.	5650	Family clothing--retail.	565		
	566	Shoes--retail.	5660	Shoes--retail.	566		
	567	Custom tailoring.	5670	Custom tailoring.	567		
	568	Furriers and fur apparel--retail.	5680	Furriers and fur apparel--retail.	568		
	569	Other retail trade--apparel and accessories, NEC.	5690	Other retail trade--apparel and accessories, NEC.	569		
57	Retail trade--furniture, home furnishings, and equipment.	571	Furniture, home furnishings, and equipment--retail.	5711	Furniture--retail.	5712	
				5712	Floor coverings--retail.	5713	
				5713	Draperies, curtains, and upholstery--retail.	5714	
				5714	China, glassware, and metalware---retail.	5715	
				5719	Other furniture, home furnishings, and equipment retail, NEC.	5719	
	572	Household appliances--retail.	5720	Household appliances--retail.	572		
	573	Radios, televisions, and music supplies--retail.	5731	Radios and televisions--retail.	5732		
			5732	Music supplies--retail.	5733		
58.	Retail trade--eating and drinking.	581	Eating places.	5810	Eating places.5	5812	
		582	Drinking places (alcoholic beverages).	5820	Drinking places (alcoholic beverages).	5813	B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
59	Other retail trade, NEC.	591	Drug and proprietary--retail.	5910	Drug and proprietary--retail.	591	B
		592	Liquor--retail.	5920	Liquor--retail.	592	
		593	Antiques and secondhand merchandise--retail.	5931	Antiques--retail.	5932	
				5932	Secondhand merchandise retail.	5933	
		594	Book and stationery--retail.	5941	Books--retail.	5942	
				5942	Stationery--retail.	5943	
		595	Sporting goods and bicycles--retail.	5951	Sporting goods--retail.	5952	
				5952	Bicycles--retail.	5953	
		596	Farm and garden supplies--retail.	5961	Hay, grains, and feeds--retail.	5962	
				5969	Other farm and garden supplies retail, NEC.	5969	
		597	Jewelry--retail.	5970	Jewelry--retail.	597	
		598	Fuel and ice--retail.	5981	Fuel and ice dealers (except fuel oil and bottled gas dealers)--retail.	5982	
				5982	Fuel oil--retail.	5983	
				5983	Bottled gas--retail.	5984	
		599	Other retail trade, NEC.	5991	Florists--retail.	5992	

				5992	Cigars and cigarettes--retail.	5993	
				5993	Newspapers and magazines--retail.	5994	
				5994	Cameras and photographic supplies--retail.	5996	
				5995	Gifts, novelties, and souvenirs--retail.	5997	
				5996	Optical goods--retail.	5998	
				5999	Other retail trade, NEC.	5999	
61	Finance, insurance, and real estate services.	611	Banking and bank-related functions.	6111	Banking services.	601, 602, 603, and 604	
				6112	Bank-related functions.	605	
		612	Credit services (other than banks).	6121	Savings and loan associations.	612	
				6122	Agricultural, business, and personal credit services (including credit unions).	613, 614 and 615	
				6129	Other credit services (other than banks), NEC.	611 and 616	
		613	Security and commodity brokers, dealers, exchanges, and services.	6131	Security brokers, dealers, and flotation services.	6211	
				6132	Commodity contracts brokers and dealers services.	6221	
				6133	Security and commodity exchanges.	623	
				6134	Security and commodity allied services.	628	
		614	Insurance carriers, agents, brokers, and services.	6141	Insurance carriers.	63	
				6142	Insurance agents, brokers, and services.	64	B

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. 111, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 51--"Wholesale trade." A code of "0" is used in the auxiliary position for those wholesalers who maintain a definite storage area on

the premises. For example, 5122-0 is a wholesaler of paints and varnishes who has a definite storage area set aside for his merchandise.

³Code 5461--"bakeries (manufacturing)--retail" include only those bakeries that produce on the premises some or all of the products sold.

⁴Code 5462--"Bakeries (nonmanufacturing)--retail" include only those bakeries that do not produce on the premises the products that are sold.

⁵Code 5810--"Eating places" include both establishments serving only food as well as those serving both food and alcoholic beverages.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
61	Finance, insurance, and real estate services--Continued.	615	Real estate and related services.	6151	Real estate operators (except developers) and lessors.	651	B
				6152	Real estate agents, brokers, and management services.	653	
				6153	Title abstracting services.	654	
				6154	Real estate subdividing and developing services.	655	
				6155	Real estate operative builders.	656	
				6156	Combinations of real estate, insurance, loan, and law services.	661	

		6159	Other real estate and related services, NEC.	----
	616	Holding and investment services.	6160	Holding and investment services. 67
	619	Other finance, insurance, and real estate services, NEC.	6190	Other finance, insurance, and real estate services, NEC. ----
62	Personal services.	621	Laundrying, dry cleaning, and dyeing services.	6211 Laundrying, dry cleaning, and dyeing services (except rugs). 7211, 7212, and 7216 6212 Linen supply and industrial laundry services. 7213 6213 Diaper services. 7214 6214 Laundrying and dry cleaning (self-service). 7215 6215 Rug cleaning and repair services. 7217
	622	Photographic services (including commercial).	6220	Photographic services (including commercial). 722
	623	Beauty and barber services.	6231 Beauty services. 723 6232 Barber services. 724	
	624	Funeral and crematory services; cemeteries.	6241 Funeral and crematory services. 726 6242 Cemeteries. ----	
	625	Apparel repair, alteration and cleaning pickup services; shoe repair services.	6251 Pressing, alteration, and garment repair; laundry and dry cleaning pickup services (only). 7271 6252 Fur repair and storage services. 7272 6253 Shoe repair, shoe shining, and hat cleaning services. 725	
	629	Other personal services, NEC.	6290	Other personal services, NEC. 729
63	Business services.	631	Advertising services.	6311 Advertising services (general). 7311 6312 Outdoor advertising services. 7312 6319 Other advertising services, NEC. 7319
	632	Consumer and mercantile credit reporting services, adjustment and collection services.	6320	Consumer and mercantile credit reporting services; adjustment and collection services. 7321
	633	Duplicating mailing and stenographic services.	6331 Direct mail advertising services. 7331 6332 Blueprinting and photocopying service. 7332 6339 Stenographic services and other duplicating and mailing services, NEC. 7339	
	634	Dwelling and other building services.	6341 Window cleaning services. 7341 6342 Disinfecting and exterminating services. 7342 6349 Other dwelling and building services, NEC. 7349	
	635	News syndicate services.	6350	News syndicate services. 735
	636	Employment services.	6360	Employment services. 736

B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>				
63	Business services-- Continued	637	Warehousing and storage serv- ices. ²	6371	Farm products warehousing and storage (excluding stockyards).	4221	B				
				6372	Stockyards.	4731					
				6373	Refrigerated warehousing (except food lockers).	4222					
				6374	Food lockers (with or without food preparation facilities).	4223					
				6375	Household goods warehousing and storage.	4224					
				6376	General warehousing and storage.	4225					
				6379	Other warehousing and storage, NEC.	4226					
				639	Other business services, NEC.	6391	Research, development, and testing services.	7391			
						6392	Business and management consulting services.	7392			
		6393	Detective and protective services.			7393					
		6394	Equipment rental and leasing serv- ices.			7394					
		6395	Photofinishing services.			7395					
		6396	Trading stamp services.			7396					
		6397	Automobile and truck rental serv- ices.			7511					
		6398	Motion picture distribution and services.			7812 and 782					
		6399	Other business services, NEC.			7399					
		64	Repair services.			641	Automobile repair and services.	6411	Automobile repair services.	753	
				6412	Automobile wash services.			Incl. 7541			
				6419	Other automobile services (except re- pair and wash), NEC.			Incl. 7541			
649	Other repair services, NEC.			6491	Electrical repair services (except radio and television).			Incl. 7621			
				6492	Radio and television repair services.	7622					
				6493	Watch, clock, and jewelry repair services.	763					
				6494	Reupholstery and furniture repair services.	764					
				6495	Armature rewinding services.	7694					
				6499	Other repair services, NEC.	7699	B				
				65	Professional services.	651	Medical and other health serv- ices.	6511	Physicians' services.	801, 803, A and 804	A
								6512	Dental services.	802	
								6513	Hospital services.	806	
6514	Medical laboratory services.							8071			
6515	Dental laboratory services.	8072									
6516	Sanitariums, convalescent, and rest home services.	8092									
6517	Medical clinics--out-patient services.	---									
6519	Other medical and health services, NEC.	8099	A								
652	Legal services.	811	B								
659	Other professional services, NEC.	6591	Engineering and architectural serv- ices.			891					
		6592	Educational and scientific research services.			892					

				6593	Accounting, auditing, and book-keeping services.	893	
				6594	Urban planning services.	Incl. 899	
				6599	Other professional services, NEC.	Incl. 899	
66	Contract construction services.	661	General contract construction services.	6611	Building construction--general contractor services.	151	
				6619	Other general construction contractor services, NEC.	16	B

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
66	Contract construction services--Continued	662	Special construction trade services.	6621	Plumbing, heating, and air conditioning services.	171	B
				6622	Painting, paper hanging, and decorating services.	172	
				6623	Electrical services.	173	
				6624	Masonry, stonework, tile setting, and plastering service.	174	
				6625	Carpentering and wood flooring.	175	
				6626	Roofing and sheet metal services.	176	
				6627	Concrete services.	177	
				6628	Water well drilling services.	178	
				6629	Other special construction trade services, NEC.	179	
67	Governmental services.	671	Executive, legislative, and judicial functions.	6710	Executive, legislative, and judicial functions. ³	Incl. 919, 929, and 939	
		672	Protective functions and their related activities.	6721	Police protection and related activities.	Incl. 919, 929, and 939	
				6722	Fire protection and related activities.	Incl. 919, 929, and 939	
				6723	Civil defense and related activities.	Incl. 919, 929, and 939	
		673	Postal services.	6730	Postal services.	Incl. 919	B
		674	Correctional institutions.	6741	Prisons.	Incl. 919, 929, and 939	A
				6749	Other correctional institutions, NEC.	Incl. 919, 929, and 939	A
		675	Military bases and reservations. ⁴	6751	Military training bases.	Incl. 919 and 929	B
				6752	Military defense installations.	Incl. 919 and 929	
				6753	Military storage depots and transportation centers.	Incl. 919 and 929	
				6754	Military maintenance centers.	Incl. 919 and 929	
				6755	Military administration or command centers.	Incl. 919 and 929	
				6756	Military communication centers.	Incl. 919 and 929	
				6759	Other military bases and reservations, NEC.	Incl. 919 and 929	B
68	Educational services.	681	Nursery, primary, and secondary	6811	Nursery schools.	Incl. 821	A

	education.	6812	Primary (elementary) schools. ⁵	Incl. 821	
		6813	Secondary schools. ⁶	Incl. 821	
682	University, college, junior college, and professional school education.	6821	Universities and colleges.	Incl. 8221	
		6822	Junior colleges.	Incl. 8222	
		6823	Professional schools.	Incl. 8221	
683	Special training and schooling.	6831	Vocational or trade schools.	8242	
		6832	Business and stenographic schools.	Incl. 8299	
		6833	Barber and beauty schools.	Incl. 723 and 724	
		6834	Art and music schools.	Incl. 8299	
		6835	Dancing schools.	Incl. 7911	
		6836	Driving schools.	Incl. 8299	
		6837	Correspondence schools.	8241	
		6839	Other special training and schooling, NEC.	Incl. 8299	A

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
69	Miscellaneous services.	691	Religious activities. ⁷	6911	Churches, synagogues, and temples.	Incl. 866	A
				6919	Other religious activities, NEC.	Incl. 866	A
		692	Welfare and charitable services.	6920	Welfare and charitable services.	867	B
		699	Other miscellaneous services, NEC.	6991	Business associations.	861	
				6992	Professional membership organizations.	862	
				6993	Labor unions and similar labor organizations.	863	
				6994	Civic, social, and fraternal associations.	864	
				6999	Other miscellaneous services, NEC.	----	B

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 637--"Warehousing and storage services" include only those facilities that are used by or are open to the public. When warehousing and storage is functionally and organizationally linked to another activity (e.g., a general contractor or an apparel manufacturer), the facilities are identified and coded the same as the parent activity and with a code of 4 (warehousing and storage) in the auxiliary position. For example, 2310-4 is a warehouse and storage area of a manufacturer of men's, youths', and boys' suits, coats, and overcoats.

³Code 6710--"Executive, legislative, and judicial functions" include only the central and administrative office activities of the agencies or special authorities involved in government functions, including the

legislature and courts. All operational activities (e.g., shipbuilding, schools, or hospitals) should be identified separately under the respective activity codes.

⁴Code 675--"Military bases and reservations" include the installations used by both the active military as well as the Reserves and the National Guard.

⁵Code 6812--"Primary (elementary) schools" may or may not include a kindergarten, but they do include grades 1 through 6.

⁶Code 6813--"Secondary schools" are schools that include grades 7 through 12, popularly known as junior and senior high schools.

⁷Code 691--"Religious activities" include only those places operated for worship or for the promotion of religious activities. Activities maintained by the religious organizations (e.g., schools, hospitals, publishing houses, etc.) should be identified separately under the respective activity codes.

71	Cultural activities and nature exhibitions.	711	Cultural activities.	7111	Libraries	823	A	
				7112	Museums.	Incl. 841		
				7113	Art galleries. ²	Incl. 841		
				7119	Other cultural activities, NEC.	----		
		712	Nature exhibitions.			7121	Planetaria.	----
						7122	Aquariums.	Incl. 8421
						7123	Botanical gardens and arboretums.	Incl. 842
						7124	Zoos.	----
						7129	Other nature exhibitions, NEC.	----
		719	Other cultural activities and nature exhibitions, NEC.			7191	Historic and monument sites. ³	----
7199	Other cultural activities and nature exhibitions, NEC.					----		
72	Public assembly.	721	Entertainment assembly.	7211	Amphitheaters.	----		
				7212	Motion picture theaters.	Incl. 7831		
				7213	Drive-in movies.	Incl. 7831		
				7214	Legitimate theaters.	----		
				7219	Other entertainment assembly, NEC.	----		
		722	Sports assembly. ⁴			7221	Stadiums. ⁵	Incl. 7941
						7222	Arenas and field houses.	----
						7223	Race tracks. ⁶	Incl. 7948
						7229	Other sports assembly, NEC.	----
		723	Public assembly, miscellaneous purposes.			7231	Auditoriums.	----
						7232	Exhibition halls.	----
						7239	Other miscellaneous assembly, NEC.	----
		729	Other public assembly, NEC.	7290	Other public assembly, NEC.	----	B	
73	Amusements.	731	Fairgrounds and amusement parks.	7311	Fairgrounds.	Incl. 7949	*	
				7312	Amusement parks.	Incl. 7949	B	

*Fairgrounds are Class B Land; when used for automobile and motorcycle racing, Fairgrounds are Class C Land.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference¹</i>	<i>Land* Class</i>	
73	Amusements--Continued	739	Other amusements, NEC.	7391	Penny arcades.	Incl. 7949	B	
				7392	Miniature golf.	Incl. 7949		
				7393	Golf driving ranges.	Incl. 7949		
				7394	Go-cart tracks.	Incl. 7949		
				7399	Other amusements, NEC	Incl. 7949		
74	Recreational activities.	741	Sports activities.	7411	Golf courses (without country club).	7942		
				7412	Golf courses (with country club).	7947		
				7413	Tennis courts.	----		
				7414	Ice skating	Incl. 7945		
				7415	Roller skating	Incl. 7945		
				7416	Riding stables.	----		
				7417	Bowling	Incl. 7931		
				7418	Skiing and tobogganing.	----		
				7419	Other sports activities, NEC.	----		
		742	Playgrounds and athletic areas.			7421	Play lots or tot lots. ⁷	----
						7422	Playgrounds. ⁸	----
						7423	Playfields or athletic fields. ⁹	----

			7424	Recreation centers (general). 10	----	
			7425	Gymnasiums and athletic clubs.	Incl. 7949	
			7429	Other playground and athletic areas, NEC.	----	
	743	Swimming areas.	7431	Swimming beaches. 11	----	
			7432	Swimming pools. 12	7944	
	744	Marinas. 13	7441	Yachting clubs.	Incl. 7949	
			7442	Boat rentals and boat access sites.	----	
			7449	Other marinas, NEC.	----	
	749	Other recreation, NEC.	7491	Camping and picnicking areas. 14	----	
			7499	Other recreation, NEC.	----	
75	Resorts and group camps.	751	Resorts.	7511	General resorts. 15	----
				7512	Dude ranches.	Incl. 7032
				7513	Health resorts.	Incl. 8092
				7514	Ski resorts.	----
				7515	Hunting and fishing clubs. 18	Incl. 7032
				7519	Other resorts, NEC.	----
		752	Group or organized camps.	7520	Group or organized camps. 17	Incl. 7032
76	Parks.	761	Parks--general recreation.	7610	Parks--general recreation. 18	---- B
		762	Parks--leisure and ornamental.	7620	Parks--leisure and ornamental. 19	---- A
		769	Other parks, NEC.	7690	Other parks, NEC.	---- B
79	Other cultural, entertainment, and recreational activities, NEC.	790	Other cultural, entertainment, and recreational activities, NEC.	7900	Other cultural, entertainment, and recreational activities, NEC.	---- B

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III. sec. A3, "The Use of Standard Industrial Classification Nomenclature,") A dash indicates that there is no corresponding SIC code.

²Code 7113--"Art galleries" do not include those galleries that sell art objects commercially. Commercial sales are coded 5999, "Other retail trade, NEC."

³Code 7191--"Historic and monument sites" include those locations set aside for no other purpose than to commemorate an historical event, activity, or person.

⁴Code 722--"Sports assembly" includes only the public assembly areas used for nonparticipating sports.

⁵Code 7221--"Stadiums" include those used for individual sports, e.g., baseball or football, as well as those used for several sports activities.

⁶Code 7223--"Race tracks" include those used for individual racing activities, e.g., horse racing and automobile racing, as well as those used for several racing activities.

⁷Code 7421--"Play lots or tot lots" are small areas developed especially for preschool or elementary school aged children. They may

contain such facilities as sand boxes, slides, teeters, swings, climbing apparatus, etc. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g. apartment house or playground).

⁸Code 7422--"Playgrounds" are areas that have been developed for active play and recreation. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g., a school).

⁹Code 7423--"Playfields or athletic fields" contain a playground as well as a field(s) or court(s) for competitive sports (e.g., baseball, football, or tennis). Bleachers or grandstands may be provided. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g., a school).

¹⁰Code 7414--"Recreation centers (general)" include diversified recreation for a wide variety of activities for all ages and interests. The recreation centers may contain, but are not limited to a gymnasium, social or play rooms, game rooms, arts and craft shops, etc.

¹¹Code 7431--"Swimming beaches" are beach areas that have been set aside specifically for the purpose of swimming. They are identified only when they are not a part of a larger activity (e.g., a park).

¹²Code 7432--"Swimming Pools" are separately identified if they are
Footnotes continued on following page.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

independent of other functions (e.g., code 72, "Public assembly" or code 11, "Household units"). They may be indoor or outdoor pools.

¹³Code 744--"Marinas" include marine terminals and associated areas that are primarily for recreational marine craft. The sale and repair of recreational marine craft is coded 5591, "Marine craft and accessories--retail" and code 3443, "Ship and boat building and re-

¹⁶Code 7515--"Hunting and fishing clubs" include areas on which artificially propagated game or fish are released for purposes of hunting or fishing. If there are other uses made of the property (e.g., agricultural use), these "other" uses should take priority in identifying the activity of the parcel.

¹⁷Code 7520--"Group or organized camps" include general camps for

pairing," respectively.

14Code 7491--"Camping and picnicking areas" are separately identified if they are not a part of a larger activity (e.g., a park).

15Code 7511--"General resorts" have rooms for 20 or more persons and have provision for at least 2 types of recreational activities, excluding lawn games, children's playgrounds, and swimming pools.

children, as well as Boy Scout and Girl Scout camps.

18Code 7610--"Parks--general recreation" may include, but are not limited to, picnic areas, bathing beaches, playfields, hiking trails, camping grounds, and other manmade recreation facilities.

19Code 7620--"Parks--leisure and ornamental"are largely for scenic or leisure purposes. They may contain beaches, children's play facilities, monuments, or statues.

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
81	Agriculture. ²	811	Farms (predominant crop, fibers). ³	8111	Farms (predominant crop, cotton).	----	C
				8119	Farms (other type fiber crops).	----	
		812	Farms (predominant crop, cash grains). ³	8120	Farms (predominant crop, cash grains).	----	
				813	Farms (field crops other than fiber or cash grain crops). ³	8130	
		814	Farms (predominant crop, fruits, tree nuts, or vegetables). ³			8141	
				8142	Farms (predominant crop, tree nuts).	----	
				8143	Farms (predominant crop, vegetables).	----	
		815	Farms (predominantly dairy products). ³	8150	Farms (predominantly dairy products).	----	
						816	
		8162	Farms and ranches (predominantly hog).	----			
		8163	Farms and ranches (predominantly sheep).	----			
		8164	Farms and ranches (predominantly goat).	----			
		8169	Farms and ranches (other livestock), NEC.	----			
		817	Farms (predominantly poultry). ³	8170	Farms (predominantly poultry).	----	
		818	Farms (general--no predominance). ³	8180	Farms (general--no predominance).	----	
		819	Other agriculture and related activities, NEC.	8191	Range and grassland pastures (not farm or ranch). ⁴	----	
					Horticultural specialties.	0192	
					Apiary farms.	Incl. 0193	
					Farms and ranches (predominantly horse raising).	Incl. 0193	
Other agriculture and related activities, NEC.	----						
82	Agricultural related activities.	821	Agricultural processing. ³	8211	Cotton ginning and compressing.	0712	
				8212	Grist milling services.	0713	
				8213	Corn shelling, hay baling, and threshing services.	0714	
				8214	Contract sorting, grading, and packaging services (fruits and vegetables).	0715	
				8219	Other agricultural processing services, NEC.	0719	

822	Animal husbandry services.	8221	Veterinarian services.	Incl. 0722	
		8222	Animal hospital services.	Incl. 0722	
		8223	Poultry hatchery services.	0723	
		8229	Other animal husbandry services, NEC.	0729	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>
82	Agricultural related activities--Continued	829	Other agricultural related activities, NEC.	8291	Horticultural services.	0731	C
				8299	Other agricultural related activities, NEC.	----	
83	Forestry activities and related services. ⁶	831	Commercial forestry production. ⁷	8311	Timber production--predominantly for pulp wood.	----	
				8312	Timber production--predominantly for saw logs.	----	
				8313	Timber production--predominantly for veneer logs.	----	
				8314	Timber production--mixed uses.	----	
				8315	Tree products production--predominantly gum extracting (except pine gum) and bark.	0842	
				8316	Tree products production--predominantly pine gum extraction.	0843	
				8317	Timber and tree products production--mixed uses.	----	
				8319	Other commercial forestry production, NEC.	----	
		832	Forestry services.	8321	Forest nurseries.	0822	
				8329	Other forestry services, NEC.	0851	
		839	Other forestry activities and related services, NEC.	8390	Other forestry activities and related services, NEC.	----	
84	Fishing activities and related services.	841	Fisheries and marine products. ⁸	8411	Finfish fisheries.	0912	
				8412	Shellfish fisheries.	0913	
				8419	Other fisheries and marine products, NEC.	0914 and 0919	
		842	Fishery services.	8421	Fish hatcheries.	Incl. 0989	
				8429	Other fishery services, NEC.	Incl. 0989	
		849	Other fishery activities and related services, NEC.	8490	Other fishery activities and related services, NEC.	----	
85	Mining activities and related services.	851	Metal ore mining.	8511	Iron ore-mining.	101	
				8512	Copper ore mining.	102	
				8513	Lead and zinc ore mining.	103	
				8514	Gold and silver ore mining.	104	
				8515	Bauxite and other aluminum ore mining.	105	
				8516	Ferroalloy ore (except vanadium) mining.	106	
				8519	Other metal ore mining, NEC.	109	
		852	Coal mining.	8521	Anthracite coal mining.	111	
				8522	Bituminous coal mining.	1211	
				8523	Lignite coal mining.	1212	
		853	Crude petroleum and natural gas.	8530	Crude petroleum and natural gas.	131	
		854	Mining and quarrying of non-	8541	Dimension stone.	141	

		metallic minerals (except fuels).	8542	Crushed and broken stone (including riprap)--quarrying.	142		
			8543	Sand and gravel--quarrying.	144		
			8544	Clay, ceramic, and refractory minerals--mining.	145		
			8545	Chemical and fertilizers (mineral)--mining.	147		
			8549	Other mining and quarrying of non-metallic minerals (except fuels), NEC.	148		
	855	Mining services.	8551	Metal mining services.	108		
			8552	Coal mining services.	1112 and 1213		
			8553	Crude, petroleum and gas field services.	138		
			8554	Nonmetallic mining (except fuel)--services.	148		
			8559	Other mining services, NEC.	---		
89	Other resource production and extraction, NEC.	890	Other resource production and extraction, NEC.	8900	Other resource production and extraction, NEC.	---	C

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES -- TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, Se. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 81--"Agriculture." A parcel of land is considered to be in agricultural use if 10 or more acres are under cultivation, in tree or bush crops, or are used for livestock or poultry purposes. The 10 acres may include the area of the residence, if there is one, and the immediate associated area surrounding the residence. coded.

³A farm may consist of several ownership or rented parcels of land that are noncontiguous. However, each parcel should be linked together as one "farm management unit," and identified by only one 3- or 4-digit category, e.g., code 8120, "Farms (predominant crops, cash grains)."

Using the "Farm use" categories in app. 2 of this report, farm (i.e., the farm management units) are to be classified by the most predominant use made of the land (the farm use taking up the greatest percentage of farm area) excluding the areas used by farm residences and associated buildings, nonresident farm buildings, areas in feed crops, and grazed and nongrazed forested areas. Exceptions to this rule are:

- a. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of dairy products, or the sale of cows and calves, the farm is identified as "Farm (predominantly dairy products)," code 8150.
- b. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of livestock, wool, or mohair, the farm is identified as "Farms and ranches (livestock, other than the farm is identified as "Farms and ranches (livestock, other than dairy)," code 816.
- c. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of poultry and eggs, the farm is identified as "Farms (predominantly poultry)," code 8170.
- d. If the percentage of dairy, livestock, and poultry products, each came to less than 50 percent of the value of the farm products sold in the previous years, and if there are 3 or more "Farm uses" (e.g., corn crop, cotton crop, etc.) within a farm, none of which takes up 25 percent of the total farm area (excluding those areas referred to above), the farm is identified as "Farms (general--no predominance)," code 8180.

⁴Code 8191--"Range and grass land pastures (not form or ranch)"

farm or ranch. These areas are usually part of the public domain in which grazing has been permitted.

⁵Code 821--"Agricultural processing" includes only preliminary processing of agricultural products. Any extensive processing, packing, canning, or manufacturing is coded 21, "Food and kindred products--manufacturing."

⁶Code 83--"Forestry activities and related services." The categories in this classification are based upon primary use of the land. It is recognized that other activities, e.g., recreation or the grazing of livestock may also be taking place within these forested areas. However, these types of activities are considered secondary in nature and not Activities such as mining (code 85), permanent camping areas (code 7491), and logging camps (code 2410), located within the forested areas should be separately identified.

⁷Code 831--"Commercial forestry production" includes those forested areas not on the farms or ranches that are being managed or have been set aside to grow tree crops for "industrial wood" or to obtain tree products such as sap, bark, or seeds. "Industrial wood" includes commercial roundwood products, such as saw logs and pulpwood, but excludes fuel wood and fence posts. "Forest reserves," i.e., areas withdrawn from any commercial use of the trees, are coded 921. "Parks," e.g., national or State parks, are also a type of forest reserve, but because of their designation for recreational activity, they should be identified as "Parks" under code 76. Forested areas not on farms, ranches, or estates with no commercial use made of the trees are coded 922, "nonreserve forests (undeveloped)."

⁸Code 841--"Fisheries and marine products" include those establishments primarily engaged in commercial fishing, the catching or taking of shellfish, or the gathering of seaweed, sponges, turtles, frogs, etc. These activities may include some preliminary processing, e.g., salting. However, any extensive processing, packing, canning, or manufacturing of these products should be coded under "Food and kindred products--manufacturing," code 21. These categories also include the docking facilities and their associated areas when these facilities are an integral part of a single fishery operation. When docking facilities serve several separate fishery establishments, they are coded 4414, "Marine terminals (predominantly fishing vessels)."

⁹Code 85--"Mining activities and related services" include those surface areas being used for mining or drilling purposes. the process may be tunnel excavation, strip mining, quarrying, or by drilling. These categories also include those areas where preliminary processing of raw materials (e.g., washing, crushing, screening, etc.) are taking place if these processes are an integral part of the mining operation.

include grasslands used for grazing purposes that are not a part of a

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIC Reference</i> ¹	<i>Land* Class</i>		
91	Undeveloped and unused land area (excluding non-commercial forest development).	910	Undeveloped and unused land area (excluding noncommercial forest development).	9100	Undeveloped and unused land area (excluding noncommercial forest development). ²	----	U		
92	Noncommercial forest development.	921	Forest reserves. ³	9211	Forest reserves (wilderness areas).	----	A		
				9212	Forest reserves (wildlife refuges).	----	A		
				9219	Other forest reserves, NEC.	----	A		
92		922	Nonreserve forests (undeveloped).	9220	Nonreserve forests (undeveloped). ⁴	----	B		
93	Water areas.	931	Rivers, streams, or creeks.	9310	Rivers, streams, or creeks.	----	U		
				932	Lakes.	9320	Lakes. ⁵	----	
						9330	Bays or lagoons.	----	
						9340	Oceans and seas.	----	
						9390	Other water areas, NEC.	----	
940	Vacant floor area.	9400	Vacant floor area.	----					
95	Under construction.	951	Under construction (residential).	9510	Under construction (residential). ⁶	----			
				9520	Under construction (nonresidential). ⁷	----			
99	Other undeveloped land and water areas, NEC.	990	Other undeveloped land and water areas, NEC.	9900	Other undeveloped land and water areas, NEC.	----	U		

See footnotes on following page.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES – TWO-, THREE-, AND FOUR-DIGIT LEVELS -- Continued

FOOTNOTES

¹The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, Se. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

²Code 9100--"Undeveloped and unused land area (excluding non-commercial forest development)" identifies those parcels of land that appear to be undeveloped or if previously developed, are presently vacant and unused. This category includes such areas as vacant lands that once were farms, as well as vacant parcels where structures have been demolished. Vacant nonresidential buildings are coded 9400, "Vacant floor area."

³Code 921--"Forest reserves" are forested areas withdrawn from commercial utilization, and which are reserved through statute or administrative regulation for specific conservation purposes. Forested areas designated as park sites may also be restricted from commercial forestry production, but because of their designation for recreational activity they should be identified and coded as "Parks" (code 76).

⁴Code 9220--"Nonreserve forests (undeveloped)" are major forested areas not on a farm, ranch, or large estate with no commercial use made of the trees. It is recognized that other activities such as recreation or the grazing of livestock may also be taking place within these forested areas. However, these types of activities are considered secondary in nature and not coded. Activities such as mining (code 85), permanent camping areas (code 7491), and logging camps (code 2410), located within these forested areas should be separately identified.

⁵Code 9320--"Lakes" include permanent lakes (natural or manmade) with a minimum size of 1 acre. Impounded surface water areas used for storage should be identified as "Water storage," code 4833.

⁶Code 9510--Residential facilities under construction are considered to be completed when all exterior windows and doors are installed and the usable floors are in place. If construction has not reached this point, the parcel should be identified as "Under construction (residential)," code 9510

⁷Code 9520--"Under construction (nonresidential)" is used only if there is no means of identifying the activity or activities that will occupy the structure when it is completed.



APPENDIX B
SUBSTATION ACOUSTIC COMPLIANCE ANALYSIS

DeKalb Substation

The proposed Lee-DeKalb WEC substation will be located within a 21-acre plot located off of Haumesser Road in DeKalb, Illinois. The site has historically been used for agricultural production (corn and soybean crops). The substation will be constructed in the northern portion of the parcel. A fenced in area will house circuit breaker bays and switches, bus supports, transformers, and a control building to house communications and equipment. Additional acreage will surround the fenced area to provide a buffer zone.

Transformers produce a steady state sound that is omnidirectional resulting from core vibration. The sound generated by electrical transformers is a function of the surface area, mounting technique, whether the transformer is air-filled or oil-filled, and the power rating. Transformer sound is caused by a phenomenon called magnetostriction. A transformer is magnetically excited by an alternating voltage and current so that it becomes extended and contracts twice during a full cycle of magnetization. The transformer is vibrating at twice the frequency of the supply. For example, a 60 cycles per second supply frequency will emit principal sound energy at 120 Hz. This is defined as the fundamental sound frequency. Since the core is not symmetrical and the magnetic effects are complex the sound or vibration produced is not only composed of the 120 cycles per second frequency, but at the multiples of the fundamental frequency harmonics. It is the first and third harmonics that dominate the frequency spectrum.

Transformer cooling fans and oil pumps are often required at larger transformer stations and can generate sound, but use is typically limited to periods when additional equipment cooling is required. The sound generated by the fan is considered broadband and is relatively low level, considered secondary to transformer hum. Switchgear noise is generated by the operation of circuit breakers used to break high-voltage connections at 132 kV and above. The result is a short term impulsive noise event. These events may occur during an electrical fault due to line overloads, but are expected to occur infrequently over the life of the WEC Project. In addition to the transformers at the substation, smaller transformers will be pad mounted at the base of each turbine; however, they are not expected to be a significant source of sound.

To assess the potential impacts of the DeKalb electrical substation operation on nearby residential receptors, a screening level acoustic analysis was conducted using the CadnaA acoustic model. Transformer sound source levels were estimated using preliminary Project design data as provided by the equipment manufacturer. These data specified a National Electrical Manufacturers Association (NEMA) rating of 82 dBA as determined by near-field sound pressure test measurement data. The NEMA broadband data were corrected to octave band center frequencies using standard engineering technical guidelines with source level results summarized in Table B-1.

Table B-1. Transformer Sound Source Levels per NEMA

	Sound Power Data by Octave Band Center Frequency (dBL)								
	31	63	125	250	500	1000	2000	4000	8000
Transformer Source Level	100	106	108	103	103	97	92	87	80

Received sound levels at closest residential receptors locations in relation to the substation footprint by octave band center frequency are presented in Table B-2. These results demonstrate feasibility of the Project electrical substation to operate in compliance with the applicable IPCB Standards and voluntary EPA Guidelines at the proposed siting location.



Table B-2 Summary of Substation Acoustic Model Output at Closest Receptor Locations

ID	Figure ID	UTM Coordinates		Broadband dBA	31 Hz dBL	63 Hz dBL	125 Hz dBL	250 Hz dBL	500 Hz dBL	1k Hz dBL	2k Hz dBL	4k Hz dBL	8k Hz dBL	Number of Potential Exceedances Identified
		Easting	Northing											
1033300003	D069	341742	4630249	13	22	28	22	14	12	2	<0	<0	<0	<0
1020200003	D070	341749	4634246	13	26	32	21	13	13	4	<0	<0	<0	<0
1028300001	D078	342053	4631545	15	18	23	24	16	15	5	<0	<0	<0	<0
1304100004	D079	342130	4629617	11	15	21	22	13	11	<0	<0	<0	<0	<0
1021100003	D080	342213	4634642	14	26	32	22	14	13	4	<0	<0	<0	<0
1021300003	D083	342367	4633170	16	24	30	24	17	15	7	<0	<0	<0	<0
1033100003	D085	342462	4631427	18	26	32	25	18	18	10	<0	<0	<0	<0
1016300001	D086	342465	4634764	12	21	27	22	14	11	<0	<0	<0	<0	<0
1028100003	D087	342533	4633061	18	29	35	25	18	18	12	<0	<0	<0	<0
1033400007	D090	343235	4630050	17	25	31	25	17	17	8	<0	<0	<0	<0
1028400001	D091	343259	4631922	21	22	28	29	22	21	13	<0	<0	<0	<0
1303100001	D092	343282	4629641	14	17	23	24	16	14	3	<0	<0	<0	<0
1027300002	D093	343400	4631670	22	23	28	29	22	22	14	<0	<0	<0	<0
1027300007	D094	343415	4631815	24	27	33	30	23	24	17	2	<0	<0	<0
1034100002	D102	343535	4631022	20	22	28	29	21	20	12	<0	<0	<0	<0
1027400005	D106	344367	4631505	28	28	34	35	28	28	22	11	<0	<0	<0
1034200002	D107	344861	4631036	28	32	38	34	27	28	22	10	<0	<0	<0
1022400003	D108	344878	4633109	30	36	42	35	28	30	25	15	<0	<0	<0
1026300003	D111	345133	4631554	34	36	42	40	33	34	29	21	3	<0	<0
1035100003	D113	345360	4631277	30	32	38	36	29	29	24	14	<0	<0	<0
1026100005	D114	345633	4632995	27	30	36	34	27	27	21	11	<0	<0	<0
1311200001	D117	345935	4628082	11	15	21	21	12	11	<0	<0	<0	<0	<0
1035200002	D119	346191	4631354	24	24	30	31	25	24	17	4	<0	<0	<0
1035200003	D120	346289	4631324	23	24	30	31	24	23	16	2	<0	<0	<0
1026200002	D122	346322	4632722	27	34	40	31	25	26	21	9	<0	<0	<0
1035200004	D123	346394	4631325	22	23	29	30	23	23	15	<0	<0	<0	<0
1035400003	D126	346449	4630393	20	28	34	27	20	20	13	<0	<0	<0	<0



Table B-2 Summary of Substation Acoustic Model Output at Closest Receptor Locations

ID	Figure ID	UTM Coordinates		Broadband dBA	31 Hz dBL	63 Hz dBL	125 Hz dBL	250 Hz dBL	500 Hz dBL	1k Hz dBL	2k Hz dBL	4k Hz dBL	8k Hz dBL
		Eastings	Northing										
1302200001	D127	346453	4629646	17	26	32	25	17	17	9	<0	<0	<0
1023400004	D128	346497	4633252	23	33	38	29	22	23	18	3	<0	<0
1035200005	D129	346505	4631328	22	23	29	30	23	22	14	<0	<0	<0
1036100002	D132	346628	4630064	18	27	33	25	18	18	11	<0	<0	<0
1025100001	D135	346642	4632539	25	33	38	30	23	24	19	5	<0	<0
1036200005	D146	348033	4630896	13	17	23	23	15	13	2	<0	<0	<0
1024400003	D147	348044	4633032	16	27	33	24	16	16	8	<0	<0	<0
1036400003	D148	348082	4630516	13	16	22	23	15	12	<0	<0	<0	<0
1406100003	D151	348481	4629041	10	23	28	20	11	10	<0	<0	<0	<0
1131200003	D157	349062	4631159	10	15	20	21	12	9	<0	<0	<0	<0
1119400004	D159	349072	4633379	10	17	23	21	12	9	<0	<0	<0	<0
1130200004	D160	349092	4632904	12	25	31	21	13	12	2	<0	<0	<0
	D227	333768	4631529	6	13	18	18	9	5	<0	<0	<0	<0
	D228	333766	4631541	8	18	24	19	10	7	<0	<0	<0	<0
	D229	333759	4631550	9	15	21	20	11	7	<0	<0	<0	<0
	D230	333750	4631557	4	11	17	17	7	2	<0	<0	<0	<0
				EPA Guideline	IPC 31 Hz Limit	IPC 63 Hz Limit	IPC 125 Hz Limit	IPC 250 Hz Limit	IPC 500 Hz Limit	IPC 1000 Hz Limit	IPC 2000 Hz Limit	IPC 4000 Hz Limit	IPC 8000 Hz Limit
				48.6 dBA	69 dBL	67 dBL	62 dBL	54 dBL	47 dBL	41 dBL	36 dBL	32 dBL	32 dBL
Number of Potential Exceedances Identified				None	None	None	None	None	None	None	None	None	None

**EDUCATION**

MS, Aeronautical and Astronautical Engineering, University of Illinois, 1971
BS, Aeronautical and Astronautical Engineering, University of Illinois, 1966

PROFESSIONAL REGISTRATIONS

Registered Professional Engineer, Illinois, #62039661, 1981
Institute of Noise Control Engineers, Board Certified, 1984

PROFESSIONAL SUMMARY

Mr. Hellweg is a Senior Consultant at Epsilon Associates, Inc. and is an experienced noise control engineer with skills and leadership in environmental noise control, noise measurements, product noise control, noise acceptability, noise standards and regulations, low frequency noise, and underwater sound. Mr. Hellweg has experience with environmental noise assessment and control for a variety of industries, including refineries, utilities, power plants, pipe-lines, wind-turbines, co-generation facilities, forge plants, and commercial facilities. Mr. Hellweg is an internationally recognized expert in noise control technology with a thorough understanding of customer and regulatory requirements. He is a leader in corporate acoustics technical activities, professional organizations, and national and international acoustics standards organizations. He understands what is required to achieve goals in a practical and cost-effective manner. Mr. Hellweg has taught numerous seminars and workshops on noise control including environmental noise control. He is the author of more than 60 technical papers and publications including noise measurements, product, industrial, and environmental noise control techniques, environmental noise, and acceptability of noise.

PROJECT EXPERIENCE***Epsilon Experience***

- ◆ *MCI Cedar Junction, Walpole, Massachusetts.* Performed noise measurements at property lines, analyzed data to determine conformance with state noise requirements, performed analyses to determine feasible noise control and made recommendations to client on implementation for an existing cogeneration unit and emergency generator.
- ◆ *Advanced Power, Brockton, Massachusetts.* Determined sound power levels of roof top ventilating fans at a 350 MW power plant building. Performed analyses to determine compliance with state regulations including mitigation methods. Recommended noise

control to meet state requirements by using readily available and easy to install louvered enclosure.

- ◆ *Verizon Wireless Facility, Roslindale, Massachusetts.* Determined emission sound power levels from vendor sound pressure levels; analyzed data; supervised noise modeling of community noise, and prepared report documenting compliance of emergency generator to state and local noise requirements.
- ◆ *Verizon Wireless Facility, Westborough, Massachusetts.* Recommended procedures and feasible noise control methods for reducing noise of existing emergency generator to resolve complaints in the community. Performed measurements at the facility and in the community, predicted community noise emissions, and documented recommendations for client and for submission to local authorities.
- ◆ *Aggregate Industries, Peabody, Massachusetts.* Performed analyses to determine rock quarry equipment sound power levels based on field sound pressure level measurements. Developed procedures for determining sound power levels from field sound pressure measurements.
- ◆ *Wind Turbine projects.* Provided recommendations on measurement procedures and evaluation techniques for several Epsilon Associates, Inc. wind turbine projects. Developed spreadsheet model to determine distances at which proposed wind turbine projects meet local criteria. Performed critical review of existing wind turbine studies on acceptability criteria and recommended metrics for clients to use. Researched low frequency noise emissions from wind turbine farms to determine possible effects and criteria, and analyzed low frequency data from wind farms; co-authored comprehensive report on low frequency noise from wind farms.
- ◆ *Cornell University Wilson Laboratory.* Prepared noise impact report on proposed energy recovery linac project. Performed analyses to estimate source levels, available noise control technology, and potential impact. Directed measurement program and computer analysis. Noise sources included several large high pressure compressors within a building and cooling towers and large transformers.
- ◆ *Weaver's Cove LNG project.* Prepared underwater noise impact assessment analysis and report for proposed offshore berth. Determined source sound levels for construction activities (pile-driving, dredging, pipe-laying) and operations (ship traffic) and practical mitigation methods for pile-driving. Reviewed literature on effects of and regulations of underwater noise on marine mammals and fish, and recommended criteria for underwater sound at Weaver's Cove. Prepared underwater noise attenuation spreadsheet to determine distances at which criteria are met.

Illinois Environment Protection Agency Experience

- ◆ Performed numerous noise measurements and noise control analyses to determine practical noise reduction techniques available for developing regulation limits and for conformance of the limits by Illinois industrial, commercial, and utility companies.
- ◆ Testified at numerous hearings on technically and economically feasible noise control methods for industrial and commercial sources including refineries, utilities, power plants, pipe-lines, and forge plants; motor vehicles; and airports. Also testified on the effects of noise.
- ◆ Performed and supervised IEPA analytical and experimental noise control research.
- ◆ Participated in and led development of state-wide noise regulations and measurement procedures.
- ◆ Reviewed and critiqued the noise sections of draft environmental impact statements and analyses and made recommendations on their content, procedures, and conclusions.
- ◆ Supervised noise technical operations and standards section – performed detailed analyses, and provided guidance and leadership.

Hewlett Packard (formerly Compaq and Digital Equipment Corporation)

- ◆ Led acoustic HP activities as corporate acoustics engineer. Worked closely with and provided support to acoustic engineers in other HP business units and technology centers. Provided leadership, corporate positions, coordination and communication of external noise regulations and standards activities, advanced noise technologies, noise testing and reporting, noise control techniques and product noise design goals.
- ◆ Provided noise control consulting to product development teams: determine product acoustic goals (considering regulations, customer acceptability, and quality), recommend feasible noise control techniques (considering other product constraints such as thermal, reliability, and cost), perform noise control experiments and analyses, verify design meeting goal through analyses and testing. Performed successful consulting on numerous products, including: personal computers, workstations, servers, computer systems, printers, network devices and storage devices.
- ◆ Directed corporate acoustical advanced development activities and acoustical reverse engineering activities to support product development.
- ◆ Measured and evaluated HP and customer computer rooms for potential occupational noise concerns – both hearing loss and productivity; made recommendations to mitigate and prevent problems which were successfully implemented.

- ◆ Made recommendations for a corporate emergency generator to meet Massachusetts environmental noise requirements. Reviewed consultants' report, performed analyses, and recommended solutions. Recommendations resulted in considerable savings to company by not having to perform unnecessary noise control.

EXPERT TESTIMONY EXPERIENCE

Expert witness before the Illinois Pollution Control Board at numerous public hearings for statewide property-line noise regulations. Testified on technically and economically feasible noise control methods for numerous types of industrial and commercial sources.

PROFESSIONAL ORGANIZATIONS AND COMMITTEES

Institute of Noise Control Engineers, Board Certified member, President (2002), Secretary (1997-2000), Board of Directors (2001-2004).
Acoustical Society of America, Fellow; Vice-Chair of ASA Committee on Standards American Standards Committee S12 Noise, Chair; S12 Working Groups 3, 15, 41 and 50.
ISO Technical Committee 43 Acoustics, Subcommittee 1 Noise, WG23, WG28, WG45
National Association of Noise Control Officials, past Board of Directors, past Secretary
National Academy of Engineers study committee on "Technology for a Quieter America"
ITIC Technical Committee on Noise TC6, past chair
Ecma International Technical Committee on Noise TC26, past vice-chair.

PREVIOUS EMPLOYERS

Hewlett Packard (formerly Compaq and DEC), Consulting Engineer- Acoustics 1981 – 2007
Illinois Environmental Protection Agency, Noise Division, Environ. Protection Engineer IV, Head of Noise Technical Operations and Standards Section, 1972-1981
Martin Marietta, Senior Engineer, Acoustics Section 1971-1972
McDonnell Douglas, Engineer/Scientist, Shock, Vibration and Acoustics Section, 1967-1971.

PAPERS (PARTIAL LISTING)

"Considering the risk to hearing from listening to music on earphones from IT Equipment", (co-author) NOISE-CON 2007, Reno NV, October 2007.

"Sound pressure level criteria for earphones from IT equipment?", (co-author), proceedings of INTER-NOISE 2007, Istanbul, Turkey, August 2007

"Classroom acoustics: personal computer, printer, and portable equipment", (co-author), proceedings of Occupational Noise risks forum, Lille, France, July 2007.

"Personal computer, printer, and portable equipment noise in classrooms", (co-author), *Noise News International*, September 2006, pp 96-100.

"Requirements for Information Technology (IT) Equipment Noise", (co-author) proceedings of INTER-NOISE 2005, Rio de Janeiro, Brazil, August 2005

"Modification to procedures for determining prominent discrete tones", (co-author), proceedings of INTER-NOISE 2002, Dearborn, Mich., August 2002.

- "A comparison of two methods for the evaluation of prominent discrete tones – Recommendations", (co-author), proceedings of INTER-NOISE 2001, The Hague, The Netherlands, August 2001.
- "A comparison of two methods for the evaluation of prominent discrete tones – Phase 2", (co-author), proceedings of INTER-NOISE 2000, Nice France, August 2000.
- "A comparison of two methods for the evaluation of prominent discrete tones", (co-author), proceedings of INTER-NOISE 1999, Fort Lauderdale, Florida, December 1999.
- "A New Approach to Low Frequency Room Noise Criteria", 135th ASA meeting, Seattle, June, 1998.
- "Acceptability of Noises from Office Machines", proceedings of Sound Quality Symposium 98, p 113 - 118, Ypsilanti, Mich., April, 1998.
- "Resolving Differences in Room Noise Criteria - A Status Report", (co-author), proceedings of INTER-NOISE 97, Budapest, August, 1997
- "Room Noise Criteria- A New Approach at Low Frequencies", (co-author), ASA 133rd meeting/NOISE-CON 97, p 279 - 284, State College, PA., June, 1997.
- "Room Sound Pressure Levels from Computer and Business Equipment Meeting Sound Power Level Criteria", proceedings of NOISE-CON-96, p 79 - 84, Bellevue, Wash., October, 1996.
- "Precision of a New Method to Measure Fan Structureborne Vibration", (co-author), proceedings of INTER-NOISE 96, p191, Liverpool, UK, July 1996.
- "Statistical Analysis of Noise Level Measurements Made on Variations of the ISO/DIS 10302 Fan Plenum Box", (Co-author), proceedings of INTER-NOISE 92, p 461 - 464, July, 1992.
- "Inter-Laboratory Variability in the Measurement of Sound Emissions from Computers and Business Equipment", proceedings of INTER-NOISE 84, San Francisco, CA, p 1261-1266, December 1984.
- "Regulating Impulsive Sounds", NANCO-81, Washington D.C., 1981
- "Community Noise Regulations for Impulsive Forging Noises", 11th Annual Forging Technical Conference, Chicago, 1980
- "A Comprehensive State Noise Control Program", First Annual Noise Control Forum of the Noise Control Association, New Brunswick, N.J., 1979

- "Economic Impact Analysis of Community Noise Regulations for the Motor Racing Industry" (Co-author), Proceedings INTER-NOISE 1978, p.559-564, 1978.
- "An Evaluation of a State Noise Control Program" (Co-author), NOISEXPO 78, Chicago, 1978
- "Annual Day-Night Sound Levels near Illinois Commercial Airports" (Co-author), Illinois EPA DNPC Tech. Rept N78-1, Springfield, Illinois, 1978
- "Regulation of Impulsive Forging Noises" (Co-author) NOISEXPO 77, Chicago, 1977
- "Neighborhood Noise Levels for Forge Plants in the State of Illinois" (Co-author), International Conference on Forging Noise Control, Atlanta, 1976
- "Neighborhood Noise Regulations in the United States" (Co-author), International Conference on Forging Noise Control, Atlanta, 1976.
- "Community Noise Survey of Illinois Forge Plants" (three volumes) (Co-author), Illinois EPA DNPC Technical Reports 76-1, 76-2, 76-3, Springfield, Illinois, 1976.
- "Noise Control of Water and Wastewater Equipment for Compliance with the Illinois Noise Pollution Control Regulations" (Co-author), Water and Wastewater Equipment Manufacturers' Assoc., Third Annual Conference, Chicago, 1975
- "Control of Noise from Motor Vehicles" (Co-author) Illinois, Inst. for Environmental Quality IIEQ Document 74-42, 1974
- "1974 Illinois Motor Vehicle Noise Survey" (Co-author), 88th Meeting of the Acoustical Society of America, St. Louis, 1974
- "Illinois Noise Pollution Control Regulations" (Co-author), 86th Meeting of the Acoustical Society of America, Los Angeles, 1973
- "Skylab Interior Acoustic Environment" (Co-author), Martin Marietta Report ED-2002-1200-5, Littleton, Colorado, 1971
- "Prediction of UpSTAGE Random Vibration Environment Using a Statistical Energy Approach" (Co-author), 41st Symposium on Shock and Vibration, 1970



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Title: Summary of Findings on Wind Turbine Low Frequency Noise and Infrasonic

Prepared For: NextEra Energy Resources, LLC

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Early down-wind wind turbines in the US created low frequency noise (LFN); however current up-wind wind turbines generate considerably less LFN. The results of Epsilon Associates, Inc. (Epsilon) analysis and field testing indicate that there is no audible infrasound either outside or inside homes at the any of the measurement sites – the closest site was approximately 900 feet from a wind farm. Wind farms at distances beyond 1000 feet meet ANSI standards for low frequency noise in bedrooms, classrooms, and hospitals; they will not cause more than minimal annoyance (if any) from low frequency noise, and there should be no window rattles or perceptible vibration of light-weight walls or ceilings within homes. In homes there may be slightly audible low frequency noise (depending on other sources of low frequency noise); however, the levels are below criteria and recommendations for low frequency noise within homes. In accordance with the above findings and in conjunction with our extensive literature search of scientific papers and reports, there should be no adverse public health effects from infrasound or low frequency noise at distances greater than 1000 feet from any of the three wind turbine types measured by Epsilon: GE 1.5sle, GE 1.5xle, and Siemens SWT 2.3-93.

Summary

This summary is limited to the Epsilon measured noise levels from two wind farms containing GE 1.5sle and GE 1.5xle turbines.

GE 1.5sle. Outdoor measurements of GE 1.5sle wind turbines under high output and low ground wind speed (which minimized effects of wind noise) at 1000 feet indicate that infrasound is inaudible to the most sensitive people (more than 20 dB lower than median thresholds of hearing); that outdoor equivalent ANSI/ASA S12.2 perceptible vibration criteria are met; that the low frequency sounds are compatible with ANSI S12.9 Part 4 levels for minimal annoyance and beginning of rattles; and that levels meet or are within 1 dB of outdoor equivalent UK Department of Environment, Food, and Rural Affairs (DEFRA) disturbance based guidelines for use by Environmental Health

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Officers. The low frequency sound was "steady" according to DEFRA procedures and might be audible in some cases. Figures 1 and 2 present these comparisons. Conclusion: There are no LFN problems from GE 1.5sle wind turbines at 1000 feet or beyond.

Indoor measurements with windows open and closed of GE 1.5sle wind turbines at approximately 950 feet (under moderate output, maximum noise, and high ground winds) and at approximately 1025 feet (under moderate output, within 1.5 dBA of maximum noise, and at high ground winds) indicate infrasound is inaudible to the most sensitive people (more than 25 dB lower than median thresholds of hearing). The LFN at or above 50 or 63 Hz might be slightly audible depending on background noises within the home or other external noises. The ANSI/ASA 12.2 low frequency criteria for bedrooms, classrooms and hospitals were met, as were the criteria for moderately perceptible vibrations in light-weight walls and ceilings. DEFRA disturbance based guidelines were met for steady sounds and non-steady sounds. Figures 3 and 4 present these comparisons. Conclusion: There are no LFN problems indoors for GE 1.5sle wind turbines at distances beyond 950 feet.

GE 1.5xle. GE 1.5 xle wind turbines were measured outdoors under high output and low ground speed (which minimized effects of wind noise). The data at 1500 feet indicate that infrasound is inaudible to the most sensitive people (more than 25 dB lower than median thresholds of hearing); that outdoor equivalent ANSI/ASA S12.2 perceptible vibration criteria are met; that the low frequency sounds are compatible with ANSI S12.9 Part 4 levels for minimal annoyance and beginning of rattles; and that levels meet outdoor equivalent DEFRA disturbance based guidelines for use by Environmental Health Officers. The low frequency sound was "steady" according to DEFRA procedures and might be audible in some cases. Figures 5 and 6 present these comparisons.

Based on 1) the similarity of the guaranteed sound power noise emissions of the GE 1.5xle and the GE 1.5sle wind turbines (low frequency and A-weighted sound power levels of the GE 1.5xle are equal to or lower than those for the GE 1.5sle and 2) a comparison of measured data at 1500 feet, we conclude that the results from the GE 1.5sle are appropriate for the GE 1.5xle. Conclusion: There are no LFN problems from GE 1.5xle outdoors at distances beyond 1000 feet and indoors at distances beyond 950 feet.

Conclusions

GE 1.5sle and GE 1.5xle wind turbines at maximum noise at a distance more than 1000 feet from the nearest residence do not create a low frequency noise problem. At this distance the wind turbines:

- meet ANSI S12.2 indoor levels for low frequency sound for bedrooms, classrooms and hospitals
- meet ANSI S12.2 indoor levels for moderately perceptible vibrations in light-weight walls and ceilings
- meet ANSI S12.9 Part 4 thresholds for minimal annoyance and beginning of rattles
- meet UK DEFRA disturbance based guidelines
- have no audible infrasound to the most sensitive listeners
- might have slightly audible low frequency noise at frequencies above 50 or 63 Hz depending on other sources of low frequency noises in homes, such as refrigerators or external traffic or airplanes

A document prepared for the World Health Organization states that "there is no reliable evidence that infrasounds below the hearing threshold produce physiological or psychological effects. Infrasounds slightly above detection threshold may cause perceptual effects but these are of the same character as for 'normal' sounds. Reactions caused by extremely intense levels of infrasound can resemble those of mild stress reaction and may include bizarre auditory sensations, describable as pulsation and flutter" [Berglund (1995) p 41].

The sound levels in the infrasound region measured at 1000 feet and 1500 feet from GE 1.5sle and GE 1.5xle wind turbines, respectively, are well below the hearing threshold; therefore, there will be no physiological or psychological effects at these distances due to infrasound.

The scientific papers and studies reviewed by Epsilon arrive at the conclusion that there is insignificant evidence linking the low frequency sound and infrasound attributable to wind turbines with health effects. The infrasound and low frequency sound levels measured by Epsilon of GE 1.5sle and GE 1.5xle wind turbines at distances of 950 – 1000 feet are consistent with the data used in developing the conclusions in these papers.

Therefore, based on the scientific literature on this topic and our analysis and evaluation with respect to existing criteria, there are no health effects,

disturbance, moderately perceptible vibrations or rattles expected due to infrasound or low frequency sound from the GE 1.5xle and GE 1.5sle wind turbines at distances greater than 1000 feet¹.

EPSILON ASSOCIATES, INC.



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Attachments: Figures 1 – 6

¹ *Wind turbines at the Lee-DeKalb wind farm are the GE 1.5xle, and 1000 feet is less than the distance of the closest non-participating landowners' residences.*

Figure 1

Evaluation of Outdoor Sound Levels at 1000 feet from GE 1.5 sle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and Minimal Background Noise

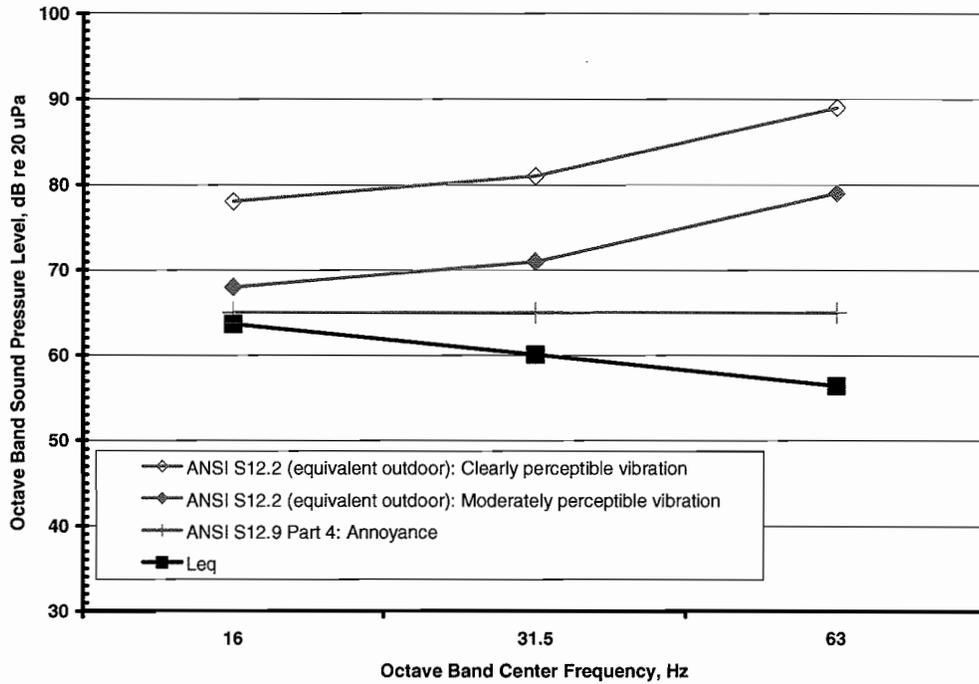


Figure 2

Evaluation of Outdoor Sound Levels at 1000 feet from GE 1.5 sle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and Minimal Background Noise

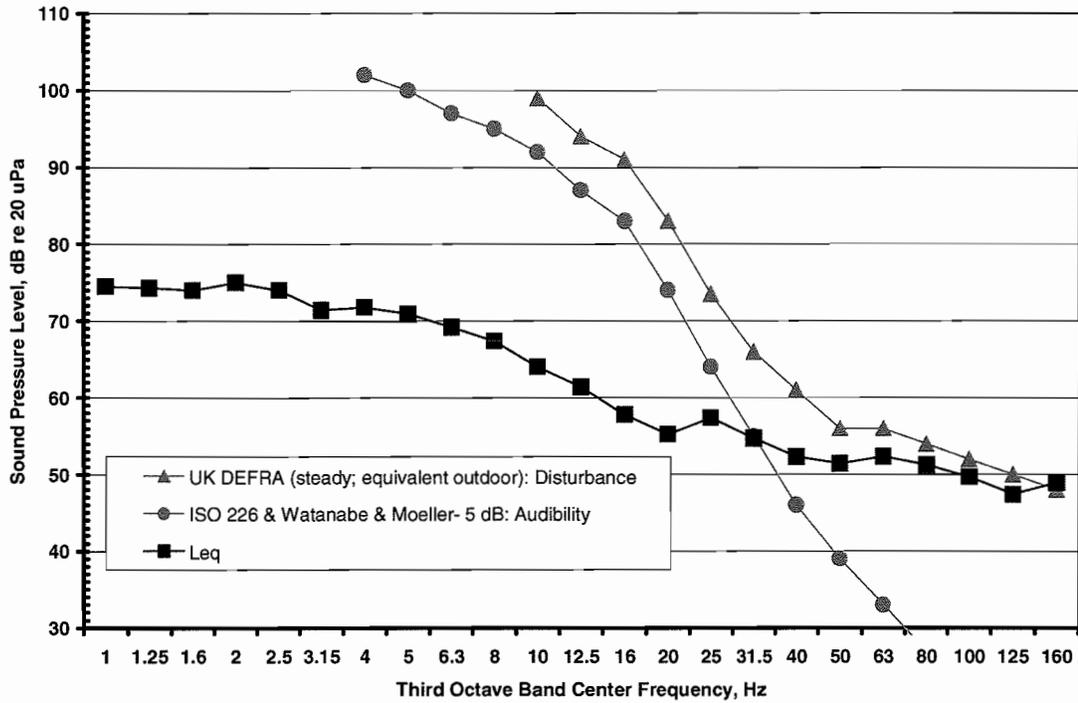


Figure 3

Evaluation of Indoor Sound Levels Approximately 950 feet from GE 1.5 sle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and Minimal Background Noise

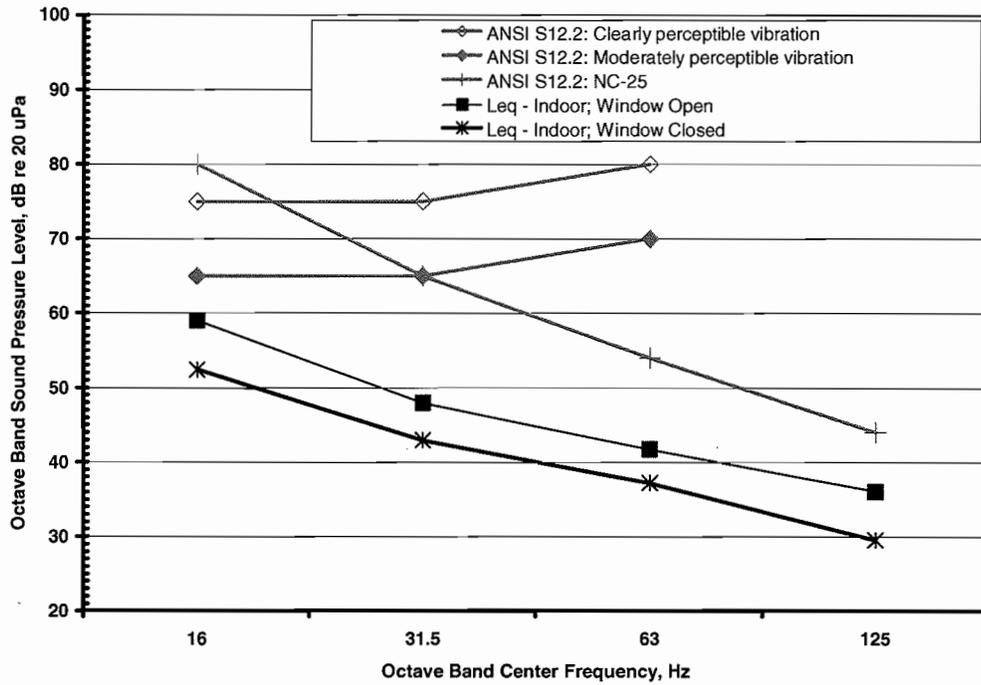


Figure 4

Evaluation of Indoor Sound Levels Approximately 950 feet from GE 1.5 sle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and High Ground Level Wind Speeds

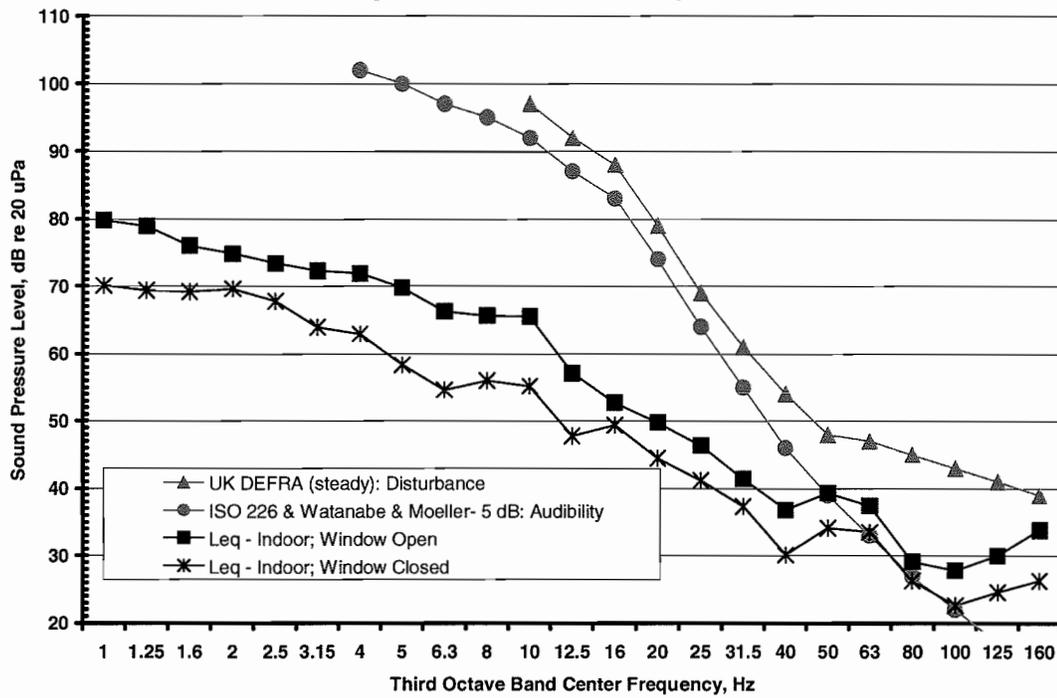


Figure 5

Evaluation of Outdoor Sound Levels at 1500 feet from GE 1.5 xle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and Minimal Background Noise

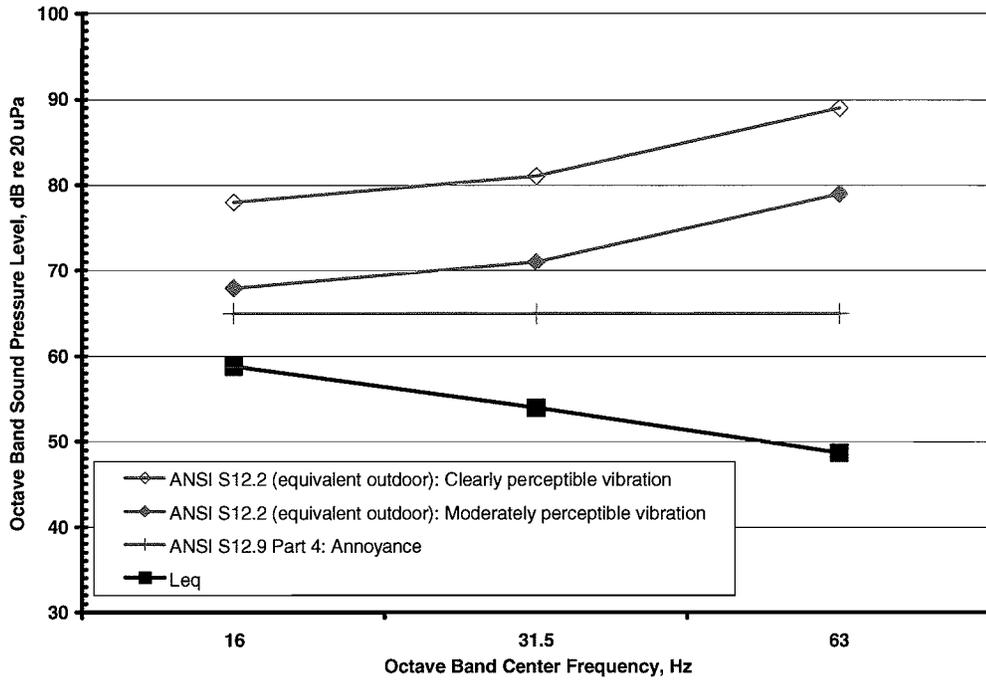
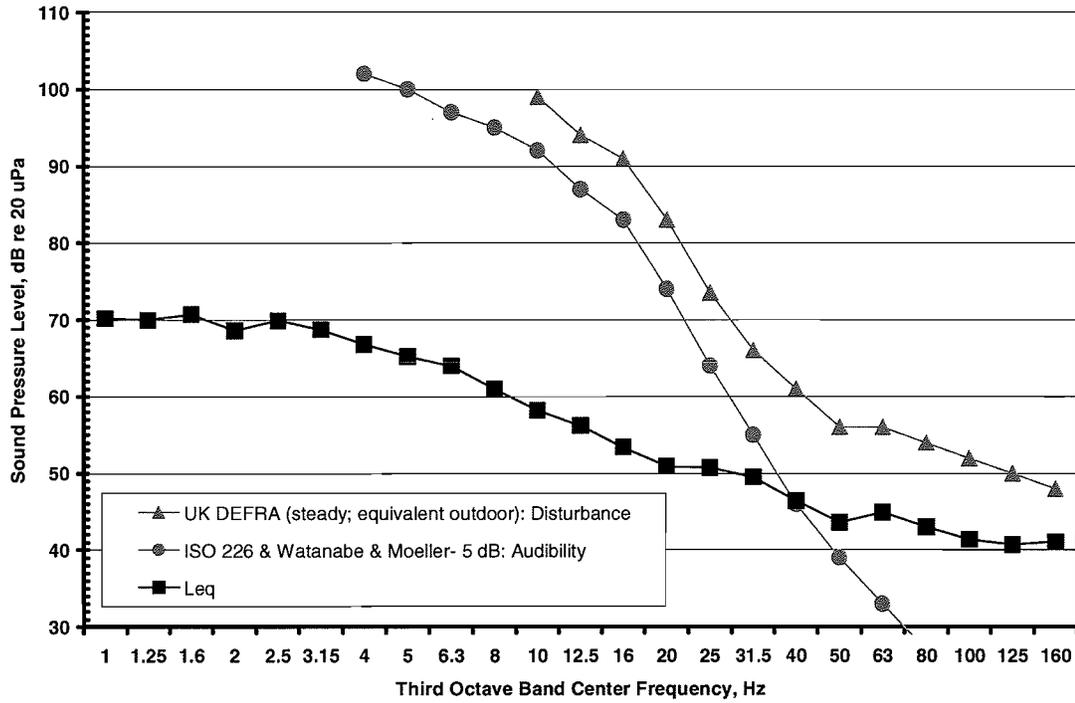


Figure 6

Evaluation of Outdoor Sound Levels at 1500 feet from GE 1.5 xle Wind Turbines with Respect to Low Frequency Noise Criteria under High Output and Minimal Background Noise





March 20, 2009

Ref. 2549-GES-0901

Title: Summary of Findings on Wind Turbine Low Frequency Noise and Infrasound

Prepared For: NextEra Energy Resources, LLC

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Early down-wind wind turbines in the US created low frequency noise (LFN); however current up-wind wind turbines generate considerably less LFN. The results of Epsilon Associates, Inc. (Epsilon) analysis and field testing indicate that there is no audible infrasound either outside or inside homes at the any of the measurement sites – the closest site was approximately 900 feet from a wind farm. Wind farms at distances beyond 1000 feet meet ANSI standards for low frequency noise in bedrooms, classrooms, and hospitals; they will not cause more than minimal annoyance (if any) from low frequency noise, and there should be no window rattles or perceptible vibration of light-weight walls or ceilings within homes. In homes there may be slightly audible low frequency noise (depending on other sources of low frequency noise); however, the levels are below criteria and recommendations for low frequency noise within homes. In accordance with the above findings and in conjunction with our extensive literature search of scientific papers and reports, there should be no adverse public health effects from infrasound or low frequency noise at distances greater than 1000 feet from any of the three wind turbine types measured by Epsilon: GE 1.5sle, GE 1.5xle, and Siemens SWT 2.3-93.

Summary

This summary is limited to the Epsilon measured noise levels from two wind farms containing GE 1.5sle and GE 1.5xle turbines.

GE 1.5sle. Outdoor measurements of GE 1.5sle wind turbines under high output and low ground wind speed (which minimized effects of wind noise) at 1000 feet indicate that infrasound is inaudible to the most sensitive people (more than 20 dB lower than median thresholds of hearing); that outdoor equivalent ANSI/ASA S12.2 perceptible vibration criteria are met; that the low frequency sounds are compatible with ANSI S12.9 Part 4 levels for minimal annoyance and beginning of rattles; and that levels meet or are within 1 dB of outdoor equivalent UK Department of Environment, Food, and Rural Affairs (DEFRA) disturbance based guidelines for use by Environmental Health

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Officers. The low frequency sound was "steady" according to DEFRA procedures and might be audible in some cases. Figures 1 and 2 present these comparisons. Conclusion: There are no LFN problems from GE 1.5sle wind turbines at 1000 feet or beyond.

Indoor measurements with windows open and closed of GE 1.5sle wind turbines at approximately 950 feet (under moderate output, maximum noise, and high ground winds) and at approximately 1025 feet (under moderate output, within 1.5 dBA of maximum noise, and at high ground winds) indicate infrasound is inaudible to the most sensitive people (more than 25 dB lower than median thresholds of hearing). The LFN at or above 50 or 63 Hz might be slightly audible depending on background noises within the home or other external noises. The ANSI/ASA 12.2 low frequency criteria for bedrooms, classrooms and hospitals were met, as were the criteria for moderately perceptible vibrations in light-weight walls and ceilings. DEFRA disturbance based guidelines were met for steady sounds and non-steady sounds. Figures 3 and 4 present these comparisons. Conclusion: There are no LFN problems indoors for GE 1.5sle wind turbines at distances beyond 950 feet.

GE 1.5xle. GE 1.5 xle wind turbines were measured outdoors under high output and low ground speed (which minimized effects of wind noise). The data at 1500 feet indicate that infrasound is inaudible to the most sensitive people (more than 25 dB lower than median thresholds of hearing); that outdoor equivalent ANSI/ASA S12.2 perceptible vibration criteria are met; that the low frequency sounds are compatible with ANSI S12.9 Part 4 levels for minimal annoyance and beginning of rattles; and that levels meet outdoor equivalent DEFRA disturbance based guidelines for use by Environmental Health Officers. The low frequency sound was "steady" according to DEFRA procedures and might be audible in some cases. Figures 5 and 6 present these comparisons.

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Conclusions

GE 1.5sle and GE 1.5xle wind turbines at maximum noise at a distance more than 1000 feet from the nearest residence do not create a low frequency noise problem. At this distance the wind turbines:

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The scientific papers and studies reviewed by Epsilon arrive at the conclusion that there is insignificant evidence linking the low frequency sound and infrasound attributable to wind turbines with health effects. The infrasound and low frequency sound levels measured by Epsilon of GE 1.5sle and GE 1.5xle wind turbines at distances of 950 – 1000 feet are consistent with the data used in developing the conclusions in these papers.

Therefore, based on the scientific literature on this topic and our analysis and evaluation with respect to existing criteria, there are no health effects,

disturbance, moderately perceptible vibrations or rattles expected due to infrasound or low frequency sound from the GE 1.5xle and GE 1.5sle wind turbines at distances greater than 1000 feet¹.

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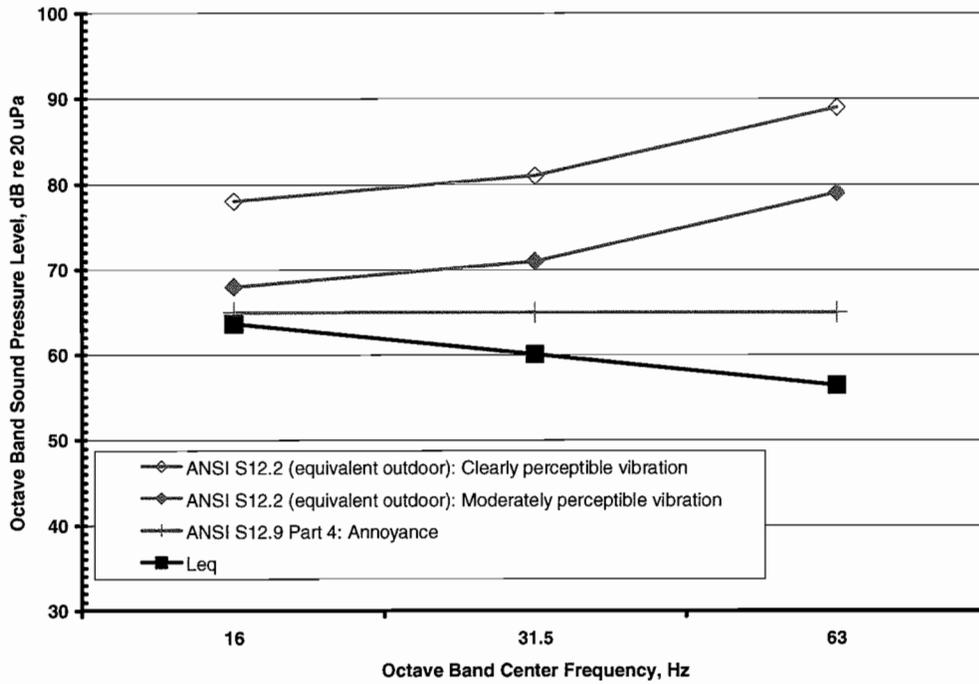


Figure 2

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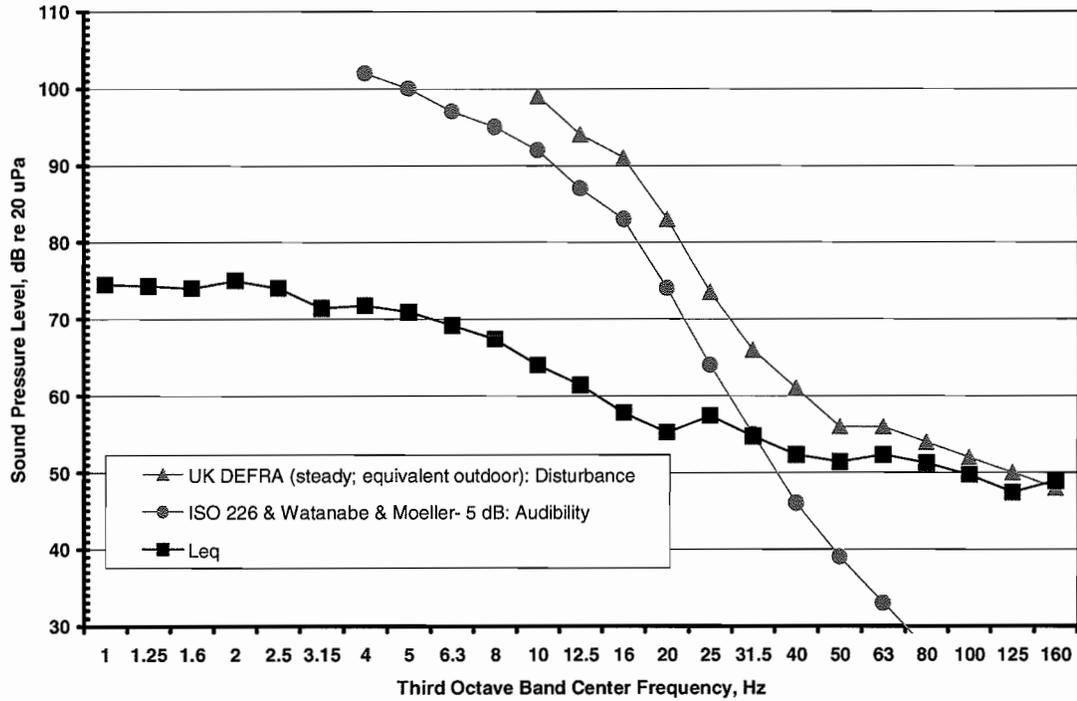


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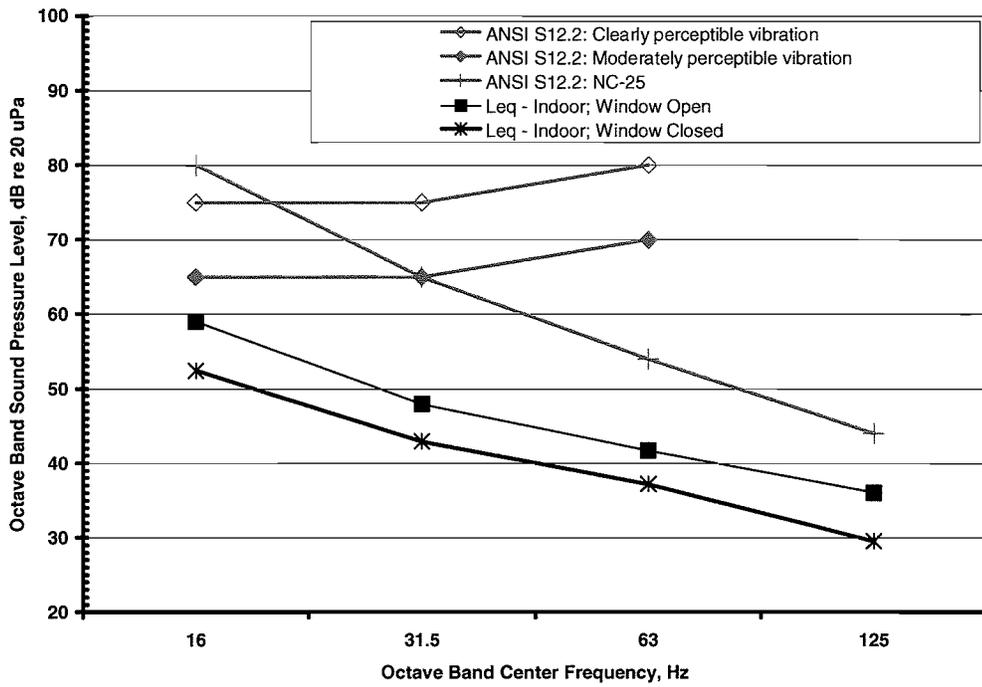


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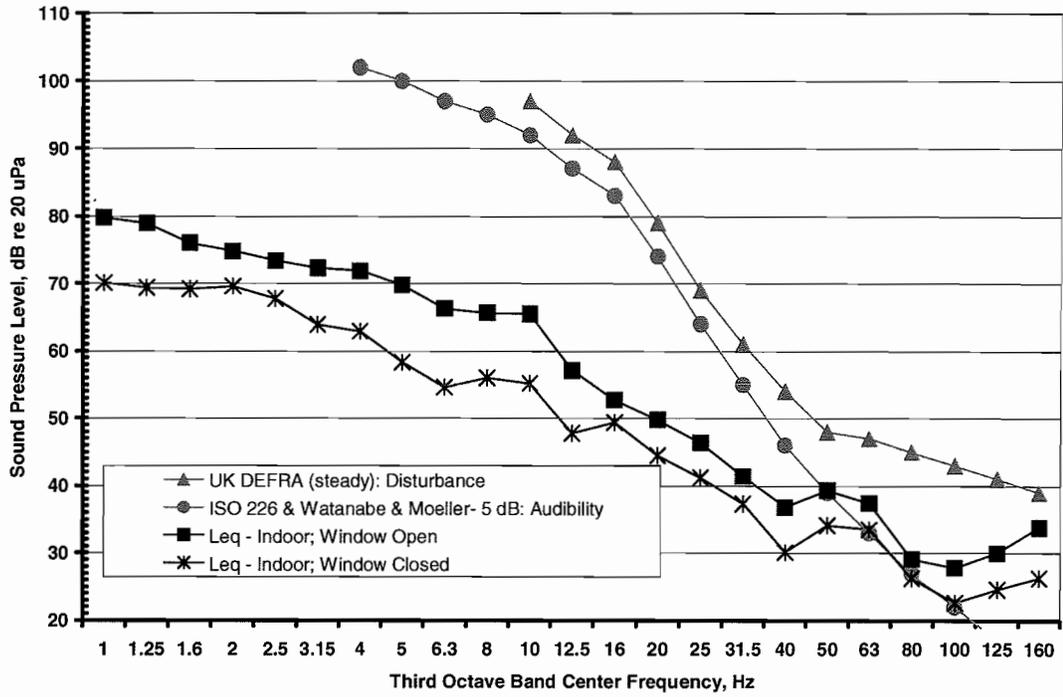


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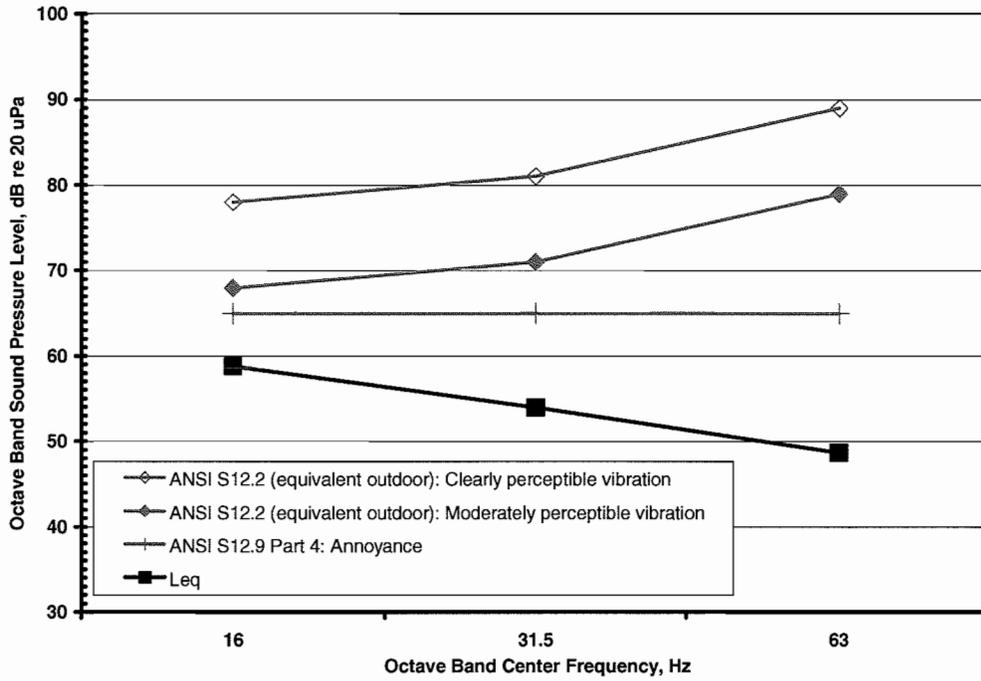


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