Technical Data Report

Acoustic Environment

ENBRIDGE NORTHERN GATEWAY PROJECT

AMEC Earth & Environmental
A division of AMEC Americas Limited
Calgary, Alberta

Richard Palczynski, Ph.D., P.Eng.

2010

Table of Contents

List of Tables

List of Figures

Abbreviations

ANSI ..... American National Standards Institute
cps ..... cycle per second
dB ..... decibel
dBA ..... decibel, A-weighted
dBC ..... decibel, C-weighted
dBF ..... decibel, no frequency compensation (Flat)
ERCB ..... Energy Resources Conservation Board
ESA ..... environmental and socio-economic assessment
ESD ..... extreme studentized deviate
GPS ..... global positioning system
Hz ..... hertz
IEC ..... International Electrotechnical Commission
ISO ..... International Standards Organization
KP ..... kilometre post
L_{eq} ..... energy equivalent sound level
L_{max} ..... maximum energy equivalent sound level
L_{min} ..... minimum energy equivalent sound level
L_{10} ..... energy equivalent sound level exceeded 10% of the time
L_{50} ..... energy equivalent sound level exceeded 50% of the time
L_{90} ..... energy equivalent sound level exceeded 90% of the time
Pa ..... pascals
PNL ..... perceived noise level
PWL ..... sound power level
RTA ..... real-time analyzer
SLM ..... sound level meter
SPL ..... sound pressure level
SSA ..... sound spectrum analyzer
STC ..... sound transmission class
TL ..... transmission lost
UTM ..... Universal Transverse Mercator
W ..... watts

Glossary

ambient sound level	The composite of the outdoor sound from all sources near and far. The normal or existing level of environmental sound at a given location.
A-weighted sound pressure level, dBA	The sound pressure level in decibels as measured on a sound-level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low- and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed.
C-weighted sound pressure level, dBC	C-weighting is an adjustment made to sound level measurement to provide subjective data for very high sound levels. The C scale is practically linear over several octaves of the hearing range.
continuous equivalent sound level	The steady A-weighted sound level over any specified period (not necessarily 24 hours) that has the same acoustic energy as the fluctuating noise during that period (with no consideration of night-time weighting).
flat (unweighted) sound pressure level	The sound pressure level in decibels as directly measured on a sound-level meter without the weighting filter giving unweighted, flat (F) response over the whole frequency range.
far field	A region in free space at a much greater distance from a sound source than the linear dimensions of the source itself where the sound intensity obeys the inverse-square law (this is equivalent to the sound pressure level decreasing by 6 dB with each doubling of distance from the source). In this region the sound particle velocity is in phase with the sound pressure and the sound waves can be considered planar.
L_{10}, L_{50}, L_{90}	Statistical values of the A-weighted sound-pressure levels that are exceeded 10, 50, and 90% of the time during the measurement period.
L_{eq}	The A-weighted equivalent sound level.
L_{min}, L_{max}	The A-weighted lowest and highest noise levels recorded during the measurement time.
near field	The part of a sound field, usually within about two wavelengths of a noise source, where there is no simple relationship between sound level and distance. In the near field, the sound intensity does not obey the inverse square law (equivalent to a 6 dB SPL drop when distance from the source is doubled) and depends on source geometry.

octave-band frequency	Groups of frequencies named by the centre frequency where the upper limit is always twice the lower limit of the range (i.e. separated by an octave). Test data for performance of acoustical materials are standardized for comparison at the centre frequencies.
sound intensity	The sound intensity in a specified direction is the amount of sound energy flowing through a unit area normal to that direction. The sound intensity is normally measured in watts per square metre.
sound frequency spectrum	Sound frequency spectrum refers to a graph or table of sound levels given for each frequency included in the frequency band.
sound level meter	An instrument designed and calibrated to respond to sound and to give objective, reproducible measurements of sound pressure level. It normally has several features that will enable its frequency response and average times to be changed to make it suitable to simulate the response of the human ear.
sound power level	Sound power level (PWL or L_w) is identified as the total sound power emitted by a source in all directions. Sound power is measured in watts or, more usefully, in picowatts (10^{-12} W).
sound pressure	The sound pressure is the amplitude of the sound pressure wave, measured in Pa (N/m^2). It is proportional to the square of the sound intensity.
sound pressure level, dB	A measure of the amplitude of sound, equal to 20 times the base-10 logarithm of the ratio of the pressure of the sound to the reference pressure in air, which is 20 µPa.
sound transmission class	A single number expressed in decibels characterizing the sound transmission loss of sound insulation provided by a structural configuration. It facilitates comparison of the performance of different partitions.
watt	Unit of power equal to 1.34×10^{-3} horse power (hp).

1 Introduction

This report provides an overview of the environmental acoustics, existing baseline sound levels and anticipated operational noise of particular interest in the region of the Enbridge Northern Gateway Project (the Project). It deals with specific numerical data related to ambient noise surveys, detailed calculations and technical aspects of acoustical predictions by numerical analyses and computer-based models.

1.1 Acoustics Concepts and Terminology

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and can be sensed by the human ear. Whether that sound is interpreted as pleasant or unpleasant depends largely on the listener's current activity, past experience and attitude toward the source of that sound. An unpleasant sound unwanted by the recipient is defined as noise. "Noise" and "sound" are interchangeable and the terms are used arbitrarily throughout this report depending on circumstances.

A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources.

Several noise measurement scales are used to describe noise in a particular location. The most common is the A-weighted sound level or decibel (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. For a summary of decibel scales and typical examples of equivalent noise sources, see Table 1-1.

Table 1-1 Decibel Scale and Typical Examples of Equivalent Noise Sources

Decibels (dBA)	**Typical Examples**
140	Jet engine - close up Threshold of pain
120	Plane on airport runway Threshold of discomfort
110	Rock band, power tools
100	Pneumatic hammer
90	Heavy truck 1 foot away
80	Busy road traffic
60	Conversational speech 1 foot away
50	Average office
40	Living room
30	Quiet office
20	Quiet countryside
10	Quiet recording studio
0	Threshold of hearing

The sound level of 0 dBA corresponds roughly to the threshold of hearing. The sound level of a quiet countryside is about 20 dBA, whereas a calm environment has sound levels between 30 and 50 dBA. Above 70 dBA, noise becomes very disruptive (ISO 1969; US EPA 1974). Some construction sources (e.g., pneumatic hammers) produce noise levels around 100 dBA.

Addition of Sound Levels

Sound levels in decibels are logarithmic quantities and do not follow normal algebraic rules for addition. Instead, the sound levels in decibels are first converted to energy equivalents, the energy equivalents are added algebraically and then the total energy equivalent is converted back to its decibel values.

The formula for addition of sounds simultaneously emitted from multiple sources is:

$$L_{Total} = 10 \log (10^{0.1 L_1} + 10^{0.1 L_2} + \cdots + 10^{0.1 L_n})$$

where: $L_1, L_2 \ldots L_n$ = sound pressure level (SPL) at individual source in dBA
n = the number of sources

For example, addition of two noise sources 80 dBA each will result in a combined 83 dBA level (logarithmic addition) and not 160 dBA (algebraic addition).

Equivalent Sound Level (L_{eq})

Because sound levels can vary markedly over a short period, a method for describing either the average character of the sound or the statistical behaviour of the variations must be used. Environmental sounds are most commonly described by an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound-noise descriptor is called the equivalent sound level (L_{eq}). The most common averaging period for L_{eq} is hourly; however, L_{eq} can describe any series of noise events for any selected duration such as daytime (07:00 to 22:00) and nighttime (22:00 to 07:00). The L_{eq} is particularly useful to describe the subjective sound change in an environment where the source of sound remains the same, but where the level of activity changes (Passchier-Vermeer and Passchier 2000).

A single-number representation of the cumulative acoustical energy measured over time intervals is expressed as L_{eq}. The daytime/nighttime ambient sound levels and the frequency analysis for this report were calculated using the following formula, which incorporates the logarithmic definition of sound units:

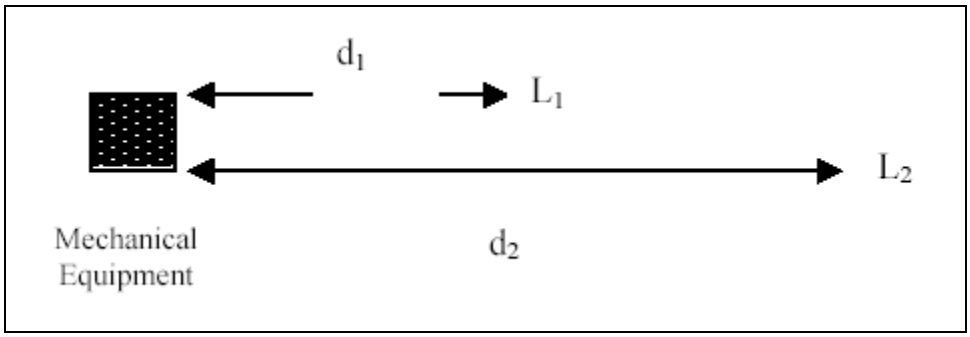
$$L_{eq} = 10 \log \left(\sum_{i=1}^{n} f_i \, 10^{L_i / 10} \right)$$

where: f_i = fraction of total time the constant level Li is present
L_i = sound level in dBA at f_i
n = number of time intervals

For example, 24-hour equivalent sound level ($L_{eq,\ 24\ h}$) for daytime (07:00 to 22:00) $L_{eq,\ 15\ h}$ of 43.1 dBA and nighttime (22:00 to 07:00) $L_{eq,\ 9\ h}$ of 40.9 dBA will be 42.4 dBA $L_{eq,\ 24h}$:

$$L_{eq,\ 24h} = 10 \log [(15/24)\ 10^{43.1/10} + (9/24)\ 10^{40.9/10}] = 42.4 \text{ dBA}$$

Sound Level at Specified Location



The noise level L_2 (in dBA) at distance d_2 can be computed from the noise level L_1 (in dBA) measured at distance d_1 by the equation:

(a) Point source $L_2 = L_1 - 20 \log (d_2 / d_1)$

(b) Linear source $L_2 = L_1 - 10 \log (d_2 / d_1)$

Sound Intensity

The subjective noisiness or loudness of a sound has a relationship with its intensity. Each 10-dBA increase in sound level is perceived as approximately a doubling of loudness over a wide range of intensities (Bell and Bell 1994). Sound intensity is defined as the sound power per unit area (W/m^2). Sound intensity measurements are made relative to a standard threshold of hearing intensity equal to 10^{-12} W/m^2 (1 pW/m^2). Sound intensity decreases with $1/r^2$, where r is the distance from an acoustic point source, while the sound pressure decreases only with 1/r for an acoustic point source. The sound intensity can be measured directly or calculated from SPL measurements and the distance from noise source. The sound intensity of project noise sources such as oil and condensate pumps is essential in the noise modelling process (see Section 4).

Sound intensity is most commonly measured using the logarithmic decibel scale. A decibel (dB) is the base-10 logarithm of the ratio of a given sound intensity (in W/m^2) to the threshold of hearing intensity (10^{-12} W/m^2), multiplied by 10. Therefore, this threshold takes the value 0 dB (the logarithm of one is always zero). Accordingly, a sound that is 10 times more intense (10×10^{-12} W/m^2) has assigned a sound level of 10 dB ($10 \log_{10}(10) = 10$).

Sound Frequency Spectrum

The frequency of a sound refers to the number of complete pressure fluctuations per second in the sound wave. The unit of measurement is the cycle per second (cps) or hertz (Hz). Most sound in the

environment consists of a broad band of frequencies at different levels. A sound spectrum can be split into frequency bands, to identify the frequency content of the noise. These frequency bands are called octave bands because the centre frequencies of each band are separated by an octave. Both octave and 1/3 octave (where each octave band is further split into three) bands are commonly used (Bell and Bell 1994), to separate the audible frequency range for humans (about 20 to 20,000 Hz).

Most environmental noise is a combination of sound from distant noise sources, resulting in a relatively steady background noise with no identifiable source. These distant sources may include aircraft, industrial activities, wind in trees, and bird and animal noises, each representing a distinctive sound frequency spectrum. They are relatively constant from moment to moment. As natural forces change or as human activity follows its daily cycle, the sound level may vary slowly from hour to hour. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities such as a single helicopter or aircraft flyover or snowmobile operation. Each single activity causes the environmental noise level to vary from instant to instant.

The presence of a prevailing, specific, discrete frequency in the broadband noise results in a perception of noise loudness and noise character such as a rumble, roar or hiss. Individual octave-band noisiness estimates are combined to give an overall perceived noise level (PNL) that is intended to estimate accurately the subjective evaluations of the same sound. PNL values will vary with time (e.g., when an aircraft flies by a measuring point). The frequency spectrum values add both a duration correction and a tone correction to PNL values. The duration correction ensures that longer duration events are rated as more disturbing. Similarly, noise spectra that seem to have prominent tonal components are rated as more disturbing by the tone-correction procedure.

Time-Varying Character of Sound

Many environmental noises vary over time, such as at different times of the day or from season to season. For example, noise from service road traffic may be considerably louder during certain hours of the day, but much quieter at night. Aircraft noise may vary with the season because of different numbers of aircraft operations. It is usually not possible to measure SPLs continuously over a period long enough to completely define the environmental noise exposure. In practice, measurements usually sample only some part of the total exposure.

Statistical noise descriptors were developed for the time-varying character of environmental noise. L_{10} is the A-weighted sound level that is equal to or exceeded during 10% of the measurement period. L_{10} gives a good measure of the maximum sound levels caused by intermittent or intrusive noise. L_{50} is the A-weighted sound level that is equal to or exceeded 50% of the measurement period; it is the median sound level. L_{90} is the A-weighted sound level that is equal to or exceeded 90% of the measurement period. Because this is most of the time, L_{90} is a good measure of the background noise at a site.

To determine the daily measure of environmental noise, it is important to account for the different responses of people to daytime and nighttime noise. During the nighttime, exterior background noise levels are generally lower than in the daytime; however, most household noise also decreases at night, thus, exterior noise intrusions again become noticeable. Further, most people trying to sleep at night are more sensitive to noise. To account for human sensitivity to nighttime noise levels, the day–night average sound level is used.

2 Background Noise Surveys

2.1 Survey Methodology

A baseline noise survey is a fundamental requirement of the assessment of noise in the environment. The project team carried out baseline monitoring according to the following guidelines for environmental sound surveys:

- American National Standard Institute (ANSI) S12.18-1994 (ANSI 1994) reaffirmed by ANSI 6/23/04, Procedures for Outdoor Measurement of Sound Pressure Level.
- Alberta Energy Resources Conservation Board (ERCB) Directive 038: Noise Control (ERCB 2007).

The ANSI standard:

- advises on measurement duration
- defines desired environmental conditions
- describes the effects of terrain
- recommends sound meter or analyzer configuration and installation, calibration and verification procedures
- recommends data reduction, error analysis and reporting procedures

Directive 038 advises on baseline noise monitoring site selection and specifies weather parameters that should exist during the monitoring session.

2.1.1 Monitoring Equipment

The Sound Level Meter and Real Time Analyzer, System 824 was used for baseline noise surveys. It combines the features of a precision sound level meter (SLM) and a real-time frequency analyzer (RTA). This battery-powered instrument can be operated in several modes, including as an integrated SLM, which can measure 48 sound pressure parameters, a sound spectrum analyzer (SSA) with real-time 1/3-octave frequency analysis capability, and a logging SLM that automatically gathers data of broadband SPL over user-defined time intervals. The System 824 meets ANSI S1.4-1983, International Electrotechnical Commission (IEC) 60651-2001 and IEC 60804-2000 specifications for Type 1 sound level meters. As required by the ERCB Directive 038 and ANSI S12.18, the microphone was mounted with a windscreen to reduce the potential for wind-induced noise.

The unit was programmed for the following operational parameters:

- continuous 24-hour operation with 5-minute intervals and 1-hour summary reports
- statistical exceedances report
- measurement range from 20 dBA to 100 dBA
- slow time weighting
- A-weighting scale
- SLM measurement mode

- energy exchange rate Q = 3
- enabled profile storage
- summary profile

The instrument was calibrated in the field before starting the survey, and checked at the completion of the survey, with the CAL200 acoustical calibrator. The calibrator provides a way to check the sensitivity of the entire acoustic instrumentation system (i.e., microphone, cables and recording instrumentation) by producing a known SPL (referred to as the calibrator's reference level) at a known frequency, which was 114 dB at 1 kHz (kilohertz).

The survey data were stored in the instrument data logger and downloaded to a notebook computer after completing the 24-hour survey. Digital audio recordings of the sounds measured during the long-term survey at each monitoring location were made to identify the origin of the maximum sound peaks infrequently appearing in the measurement data.

2.1.2 Meteorological Conditions

Environmental noise propagation depends on numerous factors, including meteorological parameters such as wind speed and direction, temperature gradient, atmospheric pressure, humidity and precipitation. Generally, ambient noise surveys are not recommended:

- when wind speeds exceed 4 m/s (15 km/h) at a height of 2 ± 0.2 m above the ground
- during precipitation events (snow or rain)
- at subzero temperatures
- at relative humidity over 95%

So that the measurements were taken under the required conditions, a series of meteorological measurements were taken during the 24-hour surveys with a Kestrel 3000 hand-held weather station. For the hourly weather parameters at the monitored locations, see Appendices A to D.

2.1.3 Ground Conditions

If sound is propagating over ground, attenuation will occur because of acoustic energy absorption. The magnitude of the energy losses will depend on the surface. Smooth, hard surfaces will produce little absorption, whereas thick grass may result in reduction of sound levels up to 10 dB per 100 m at 2,000 Hz. High frequencies generally attenuate more than low frequencies. When the source and receiver are both close to the ground sound levels can be reduced through destructive interference between the direct and reflected waves. This effect (called the ground effect) is normally observable over distances of several hundred metres and more, and in the frequency range of 200 to 600 Hz.

The ground was hard at all sites during the measurements. The terrain within the Cherhill and Bruderheim areas is flat with some vegetation, whereas the Kitimat area is hilly and covered with dense forest. Consequently, the Kitimat area provides natural attenuation of sound propagation.

2.1.4 Measurement Uncertainty

The uncertainty of SPL measurements depends on the sound source and the measurement time interval, the weather conditions, the distance from the source, and the measurement method and instrumentation. The background-noise measurement uncertainty was determined in compliance with the ISO Guide to Uncertainty in Measurements (ISO 1995), which includes:

- use of Type 1 sound level meter meeting relevant ANSI standards
- on-site calibration with certified calibrator
- on-site measurement of weather parameters
- measurement performed by the same operator, same instrument and same place where wind conditions do not change often
- measurement of intermittent sound levels (every one or five minutes) over 24-hour period to determine the repeatability of standard deviation

Maximum sound pressure levels L_{max} were dismissed as outliers when they failed the statistical criteria for the true population defined by Grubbs (Grubbs 1979). The Grubbs' test, also called the ESD method (extreme studentized deviate), determines whether a value in the baseline sound measurement data is a significant outlier in the Gaussian population. Outliers were identified for a standard significance level alpha (α) that equals 0.05.

2.2 Background Sound Levels

With reference to the project design parameters and ERCB Directive 038 (ERCB 2007), the following three locations were selected for 24-hour background sound surveys along the RoW:

- along the pipeline route in rural Alberta
- at the initiating pump station near Bruderheim, Alberta
- near the Kitimat Terminal in British Columbia

The Universal Transverse Mercator (UTM) coordinates of the measurement locations were confirmed on-site using a global positioning system (GPS) receiver.

The survey site in rural Alberta was near Cherhill, at Kilometre Post (KP) 116.6, approximately 2 km north of Highway 43. This area is considered a typical country example, featuring natural and distant anthropogenic noise sources. The area is away from large human settlements, but includes individual farms. Some farming activities, highway and service road traffic and natural gas collection facilities contribute to combined noise levels. The 24-hour survey took place on October 28 and 29, 2005 (see Appendix A for the results).

The survey site near Bruderheim was 800 m west of the proposed initiating pump station location, along Ridge Road 214 and south of Township Road 561A. The site was chosen because it was close to the proposed site of the pump station and in an open area away from tall trees. The 24-hour survey was conducted on May 18 and 19, 2006 (see Appendix B for the survey results). The survey was repeated on July 25 and 26, 2008 because recent industrial developments in the area that may have altered the 2006

baseline sound levels (see Appendix C for the survey results, which include six sets of frequency spectrum records to assure that any short-term variation in sound frequency levels was identified).

In British Columbia, the baseline noise survey was carried out approximately 12 km south of the Kitimat Terminal. The area is quiet and far from anthropogenic sources, making it similar to other areas in British Columbia where pump stations will be constructed. The survey started on December 13, 2005 at 13:25 and ended the next day at 14:24 (see Appendix D for the survey results).

In all cases the logged data were processed to determine daytime and nighttime equivalent sound levels (L_{eq}). The average daytime and nighttime baseline ambient sound levels (L_{eq}) were calculated using the formula defined in Section 1.1.

For a summary of the acoustic survey results, see Table 2-1.

Table 2-1 Summary of Background Sound Level Surveys

Location		KP 117 Cherhill, AB	KP 0 Bruderheim, AB		KP 1144 Kitimat, BC
Date		October 28-29, 2005	May 18-19, 2006	July 25-26, 2008	December 13-14, 2005
Daytime Sound Level (dBA)	$L_{eq, 15\ h}$	32.2	39.0	43.1	21.5
	L_{90}	24.2	33.1	34.0	17.8
	L_{50}	29.4	37.6	41.8	18.6
	L_{10}	36.8	42.4	46.8	24.0
	L_{min}	20.7	29.6	30.7	17.4
	L_{max}	39.7	48.9	51.1	32.0
Nighttime Sound Level (dBA)	$L_{eq, 9\ h}$	25.9	40.5	40.9	18.6
	L_{90}	21.1	36.1	36.8	17.7
	L_{50}	25.0	40.1	40.0	18.3
	L_{10}	27.5	43.0	44.0	19.2
	L_{min}	20.2	30.8	34.9	17.4
	L_{max}	35.2	46.1	47.0	24.2

NOTES:
L_{eq} The equivalent noise level is the summation of noise events and integrated over a selected period.
L_{90} The level of noise exceeded by 90% of the period.
L_{50} The level of noise exceeded by 50% of the period.
L_{10} The level of noise exceeded by 10% of the period.
L_{min} The minimum sound pressure level measured over a selected period.
L_{max} The maximum sound pressure level measured over a selected period.

In addition to the A-weighted sound pressure level, it is necessary to identify the characteristics of the sound by frequency analysis. The purpose of the octave-band sound survey is to check for tonal components in the noise spectrum. Also, octave-band, frequency-specific sound data is required for modelling sound propagation because the rate of sound-wave propagation is frequency dependent.

Survey results show the short-term tonal components in the noise spectrum range from 12.5 Hz to 20 kHz at each surveyed location. The System 824 monitor was operated in SLM and RTA mode and recorded 1/3 and 1/1 octave-band spectra during short-time sessions (see Appendices A to D for the survey results).

3 Sound Attenuation in Project Buildings

Pumps and electric motors at pump stations and terminals will be placed inside prefabricated industrial buildings made of corrugated steel panels. Because of its high density, steel is an effective sound absorber. Acoustical assessment of the typical industrial steel building considered for the Project was based on acoustics engineering guidelines and standards described in Bies and Hansen (2003) and Bell and Bell (1994).

All materials have some sound-absorbing properties. The parameter that describes the isolation or sound-stopping capability of a wall or roof is the transmission lost (TL), which for an infinite single barrier can be predicted by the mass law:

$$TL = 20\log_{10}\left(\frac{tp\pi f}{p_0 c_0}\right)$$

where: t = thickness of the barrier [m]
ρ = density of the barrier [kg/m^3]
f = frequency [Hz]
ρ_0 = density of air [kg/m^3]
c_0 = speed of sound in air [m/s]

The mass law shows that doubling the thickness of a barrier increases the transmission loss by 6 dB. If a partition is made up of different areas with different transmission loss performances, the total transmission loss for the partition can be calculated given the following formula:

$$TL_{composite} = -10\log\sum\frac{S_i}{S_{tot}}10^{\frac{-R_i}{10}}$$

where: S_i = area of i^{th} panel in barrier [m^2]
R_i = transmission loss of i^{th} panel in barrier [dB]
S_{tot} = total area of the barrier [m^2]

Materials that act as sound barriers are tested and rated for their sound transmission loss capability. Their effectiveness as sound barriers is expressed as an STC (sound transmission class). The STC is a number stated in decibels. A higher number signifies a better barrier. STC is derived from decibel-loss data at several frequencies.

The STC number is determined from TL values using an algebraic formula for maximum or sum of deficiencies. It is heavily weighted in favour of the speech frequency range between 125 and 400 Hz, correlating with human hearing acuity. The weighting decreases with increasing frequency up to a maximum of 4,000 Hz.

The octave-band sound transmission losses of the corrugated steel pumphouses were obtained using Engineering Noise Control Design Software Module 5 (Hansen and Qiu 2004). See Figure 3-1 for the graphical and tabular results.

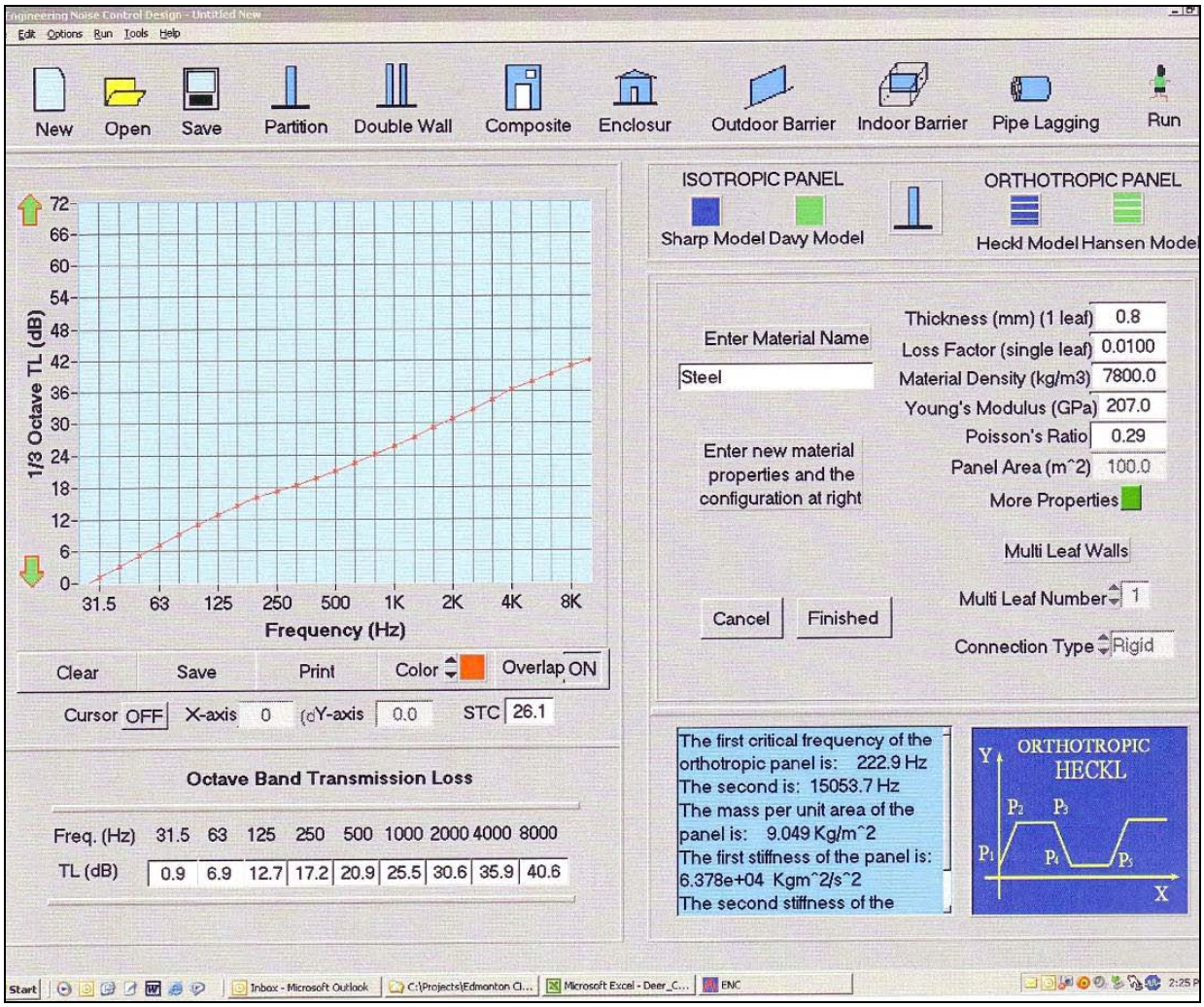


Figure 3-1 Sound Transmission Loss in Pumphouse Steel Panel Walls

The noise reduction modelling for the pumphouse started with an assessment of internal acoustic conditions. The SPM9613 model was used to calculate acoustic conditions at the Whitecourt and Smoky River pump stations because these stations contain the most pumps and, therefore, represent the worst acoustic case. Model input data included sound power levels for each pump and electric motor, their geometry and location on the building floor. Figure 3-2 shows the model output showing noise isopleths in dBA, where the oil pumps are numbered 1 to 5 and condensate pumps are numbered 6 and 7.

In addition to dBA values, the model predicts a sound-power level over a 1/1 octave band from 31.5 Hz to 8 kHz.

Finally, with the SPM9613 model, outdoor SPLs in dBA were obtained, accounting for transmission losses through the walls of the building. Figure 3-3 is the model printout showing the near-field SPLs as contour isopleths in dBA. The near field is defined as a region close to the noise source where the inverse-square law (equivalent to 6-dBA decrease in SPL per doubling of distance) does not apply. The near-field SPL is also controlled by the dimensions of the source.

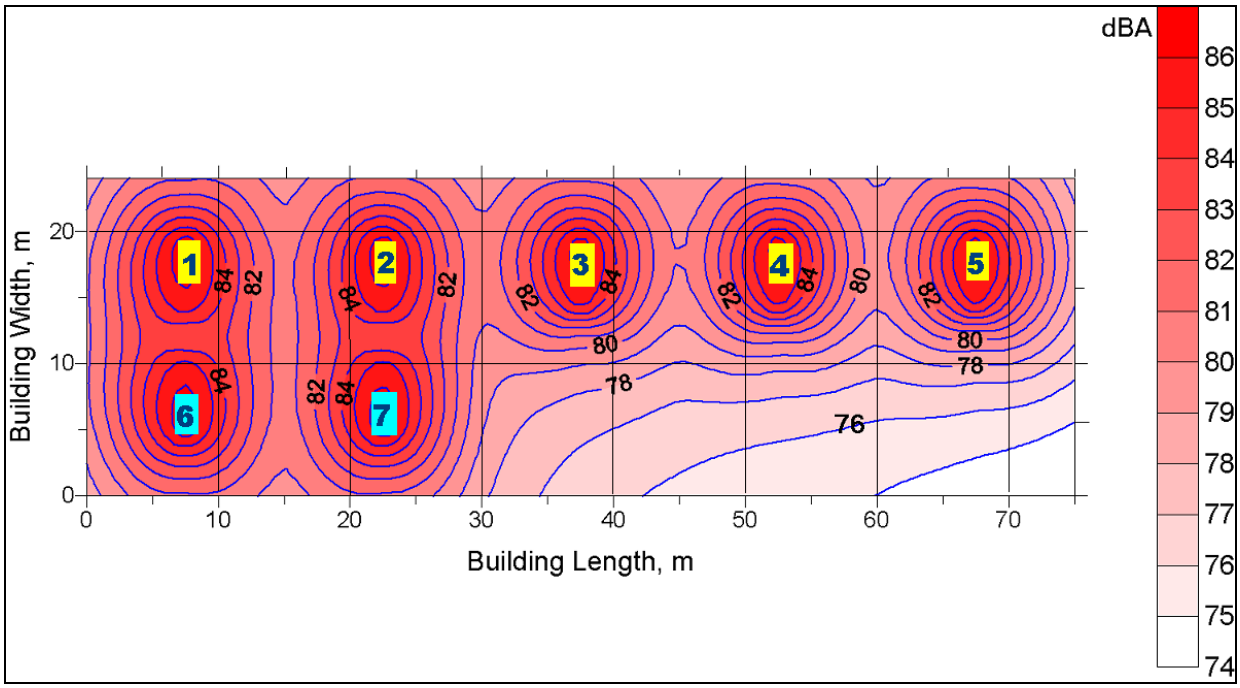


Figure 3-2 Noise Isopleths inside the Pumphouse

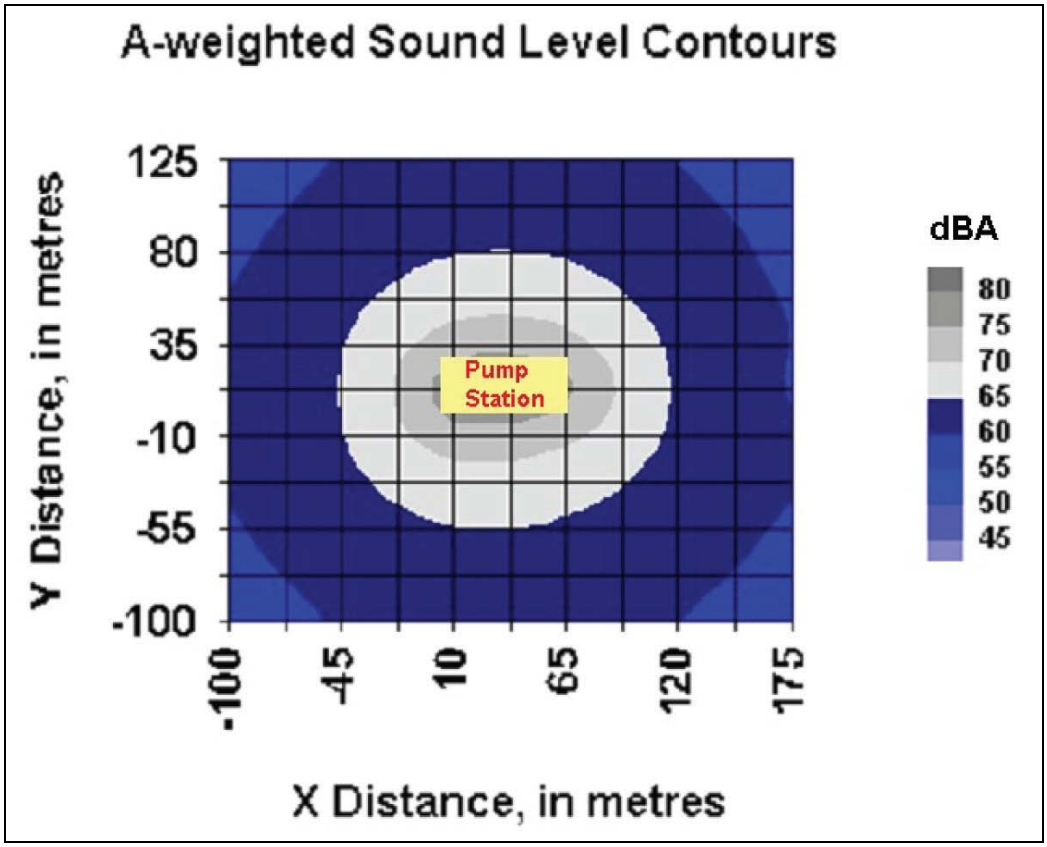


Figure 3-3 Ambient Sound Level Contours at the Smoky River Pump Station

4 Noise Modelling for Kitamaat Village and Bear Lake Pump Station

This section addresses the sound-level predictions in Kitamaat Village and Bear Lake.

4.1 Sound Levels at Kitamaat Village

Project sound levels at Kitamaat Village were predicted using the SPM9613 noise mapping software for normal operation of the Kitimat Terminal. The model inputs included numerical definition of the study area (modelling domain), acoustical data of noise sources, surface hardness (land and water) and terrain elevations (see Figure 4-1) with 12:1 vertical exaggeration (i.e., the vertical scale is 12 times larger than the horizontal scale). The noise sources at the Kitimat Terminal and the receptors at Kitamaat Village are in line-of-sight, so sound waves propagate without any obstruction and are subjected exclusively to attenuation in air (free-field case).

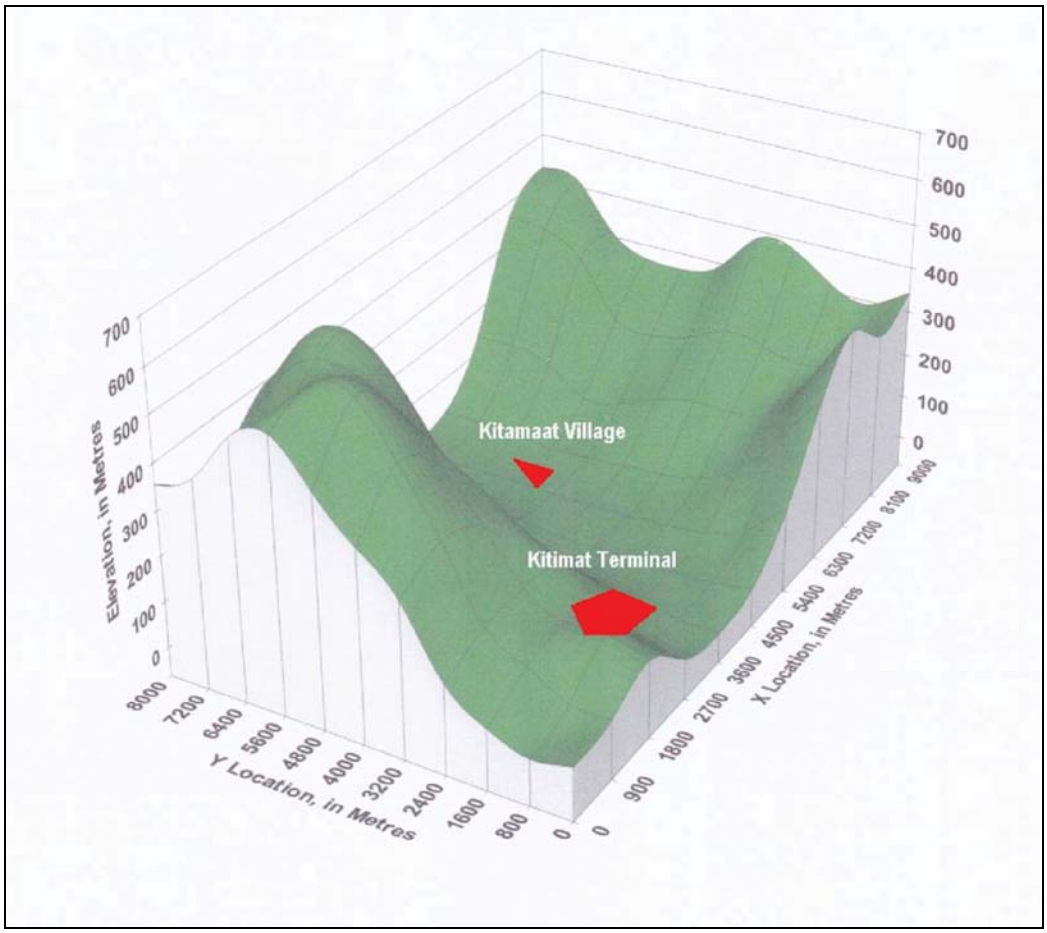


Figure 4-1 Terrain Elevation and Sound Receptors Network in Kitimat Arm Basin Area

The operational noise sources that were modelled are listed in Table 4-1 (see Volume 6A, Section 5 for details of operational acoustic sources). The model considers that pumps will be housed in steel-panel pumphouses, which will act as noise absorbers (see Section 3). SPLs of the main noise sources were entered into the SPM9613 model along with the area topography, surface hardness (land and water) and relevant meteorological parameters. To include the noise sources located within the terminal and Kitamaat Village (the receptor), the modelling domain was set to 9 km by 8 km.

Figure 4-2 shows the model output representing two-dimensional distribution of SPL isopleths (L_{eq}) in dBA generated during operation of Kitimat Terminal. Sound will propagate further over open water than over ground because of sound-blocking objects in the sound path on land, such as hills and foliage.

The SPM9613 model was used to predict sound levels at each octave-frequency band for each noise source for Kitamaat Village (see Table 4-1).

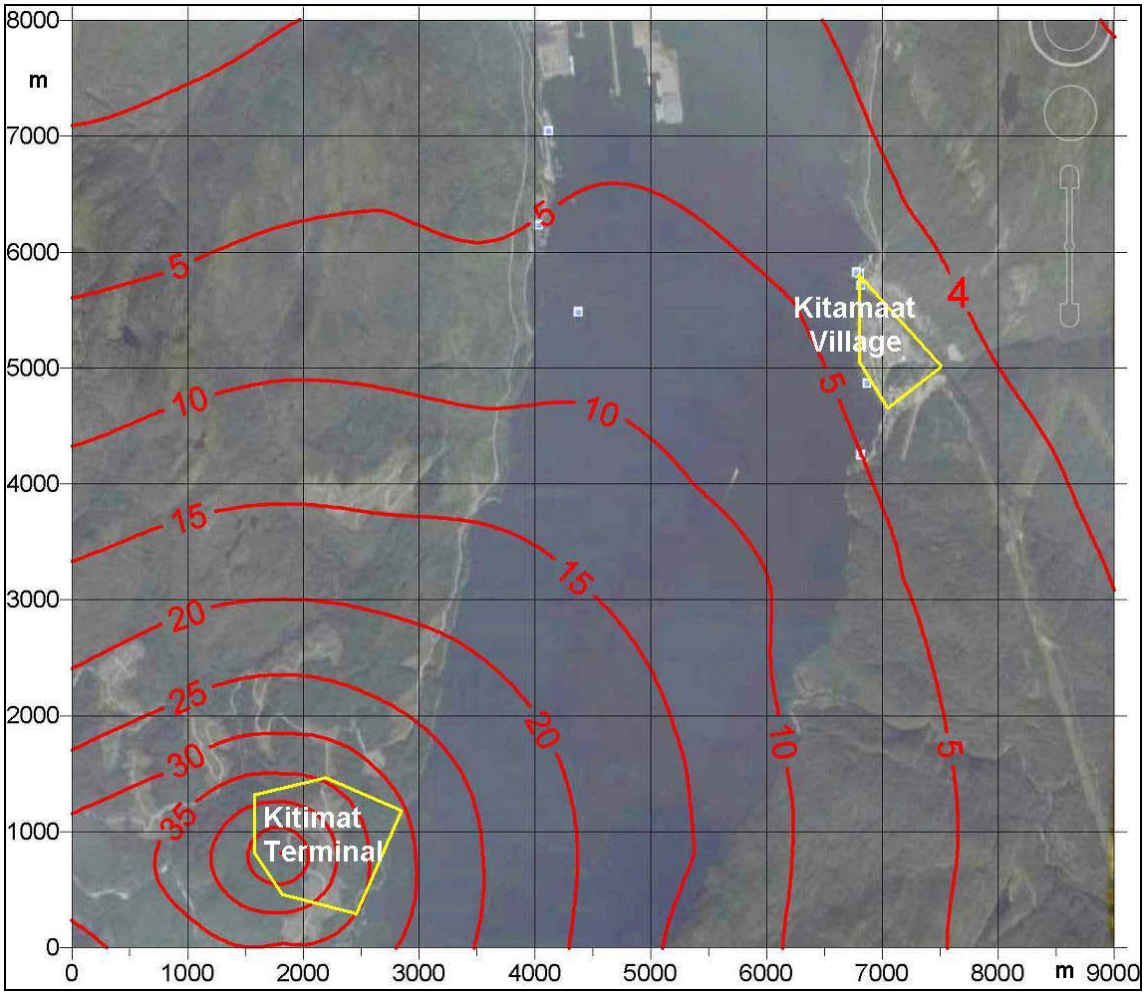


Figure 4-2 Sound Pressure Levels (dBA) in Kitimat Arm Basin Area

Table 4-1 Sound Characteristics at Kitamaat Village from Noise Originating at the Kitimat Terminal

Source	SPL(dB) per Octave Frequency Band (Hz)									SPL (dBA)	SPL (dBC)
	31.5	**63**	**125**	**250**	**500**	**1,000**	**2,000**	**4,000**	**8,000**		
Combined All Sources	17.8	17.2	11.9	9.5	3.1	0	0	0	0	***4.8***	20.0
G2 - Recovered Oil Pump	9.3	9.7	6.7	4.8	0	0	0	0	0	0.5	13.1
G1 - Recovered Oil Pump	9.3	9.6	6.7	4.8	0	0	0	0	0	0.5	13.1
F - Condensate Pumps Building	14.3	12.7	5.9	2.7	0	0	0	0	0	0	15.4
A - Pond Water Pump	3.3	3.1	0	0	0	0	0	0	0	0	6.4
B - Condensate Pipeline Pumps	8.0	10.3	0	0	0	0	0	0	0	0	11.1
E - Substation Transformer	0	0	0	0	0	0	0	0	0	0	1.0
D - Booster Pumps Building	8.9	4.2	0	0	0	0	0	0	0	0	8.1
C - Transformer	0	0	0	0	0	0	0	0	0	0	0.0

NOTES:
dBA – decibel, A-weighted
dBC – decibel, C-weighted

Only low-frequency sound waves will reach Kitamaat Village (see Table 4-1) because sound propagation in the atmosphere is frequency (or wavelength) dependent (in addition to factors such as air temperature and humidity). Table 4-2 gives attenuation in decibels over a path length of 1 km for pure tones as a function of frequency. Sound attenuation calculations assume a relative humidity of 70%, a temperature of 20°C and a pressure of 1 standard atmosphere (101,325 Pa) (ISO 1996).

Table 4-2 Sound Attenuation in Air at Different Frequencies

Frequency (Hz)	63	125	250	500	1,000	2,000	4,000	8,000
Attenuation (dB/1 km)	0.1	0.3	1.1	2.8	5.0	9.0	22.2	76.6

For an illustration of the sound contours that are attributed to the Kitimat Terminal noise sources with no consideration to background sound, see Figure 4-2. As described in Section 2.2, a 24-hour background sound level survey was conducted in the area of the proposed location of the Kitimat Terminal on December 13 and 14, 2005. The survey revealed a background daytime (07:00 to 22:00) SPL of 21.5 dBA and a nighttime (22:00. to 07:00) SPL of 19.0 dBA ($L_{eq,\ B}$). Actual audible and measurable sound levels in the area ($SPL_{combined}$) will be the combined sound level resulting from logarithmic addition of the project noise at the levels predicted by SPM9613 ($L_{eq\ P}$) (see Figure 4-2) plus a steady background noise level determine during the survey ($L_{eq\ B}$). For an illustration of these combined sound contours, see Figure 4-3.

Figure 4-3 shows the sound level at Kitimat Village at the same level as the measured background noise as the addition of a project-related 5 dBA to 19 dBA of background noise results in 19 dBA as per the following calculation:

$$SPL_{combined} = 10 \log (10^{L_{eq\ P}/10} + 10^{L_{eq\ B}/10}) = 10 \log (10^{5/10} + 10^{19/10}) = 19 \text{ dBA}$$

The calculation result confirms the graphical prediction of 19 dBA, shown in Figure 4-3.

4.2 Sound Levels at Bear Lake

Bear Lake pump station at KP 715.8 will be constructed on a 4 ha site near the community of Bear Lake, British Columbia. The proposed location of the station is relatively close to some dwellings.

The following acoustical and geometrical data were used as the SPM9613 noise model input parameters:

- two 5,000 HP electric motors and oil pumps operating continuously
- two 4,000 HP electric motors and condensate pumps operating continuously
- pumps enclosed in a building (pumphouse) made of constructive corrugated steel panels
- a pumphouse approximately 30-m long, 24-m in wide and 10-m high
- the building will be completely enclosed, serving as noise barriers (closed doors, no windows, roof vents)

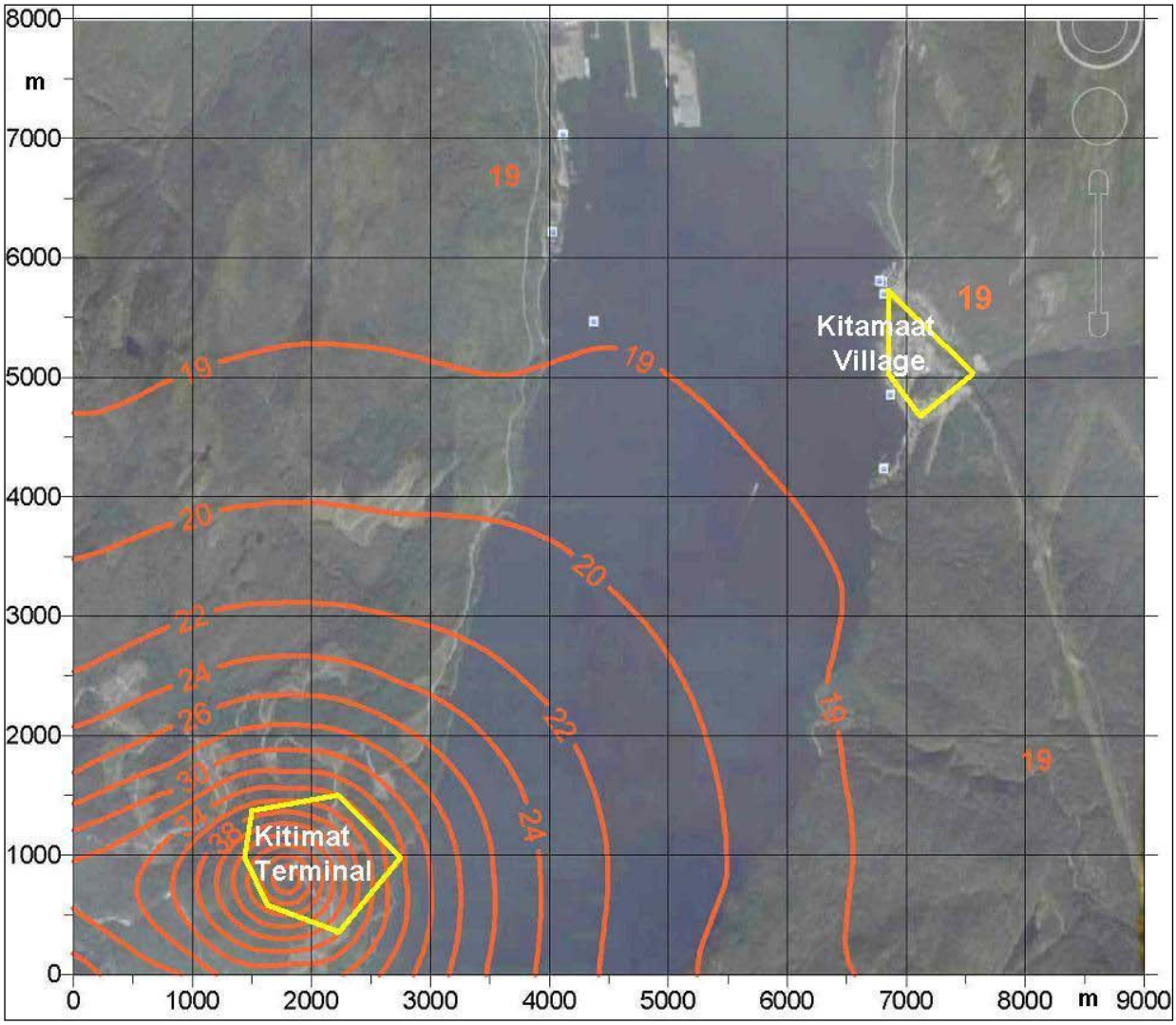


Figure 4-3 Combined Sound Pressure Levels (dBA) in Kitimat Arm Basin Area

Outdoor structures, forest or hills that could act as additional noise barriers were not considered (conservative assumption). The pumps' acoustic spectrum was the same as similar pumps operating at Enbridge Athabasca Terminal in Fort McMurray.

Figure 4-4 shows the modelled sound level contours in dBA at distances up to 500 m from the pump station. At locations 400 m north and east of the station (shown as white dots) the predicted SPLs range between 25 and 30 dBA. The nighttime permissible sound level (L_{eq}) is 40 dBA under ERCB Directive 038 (ERCB 2007). Sound levels attributable to the Bear Lake pump station will be below that level at distances approximately 100 m and beyond.

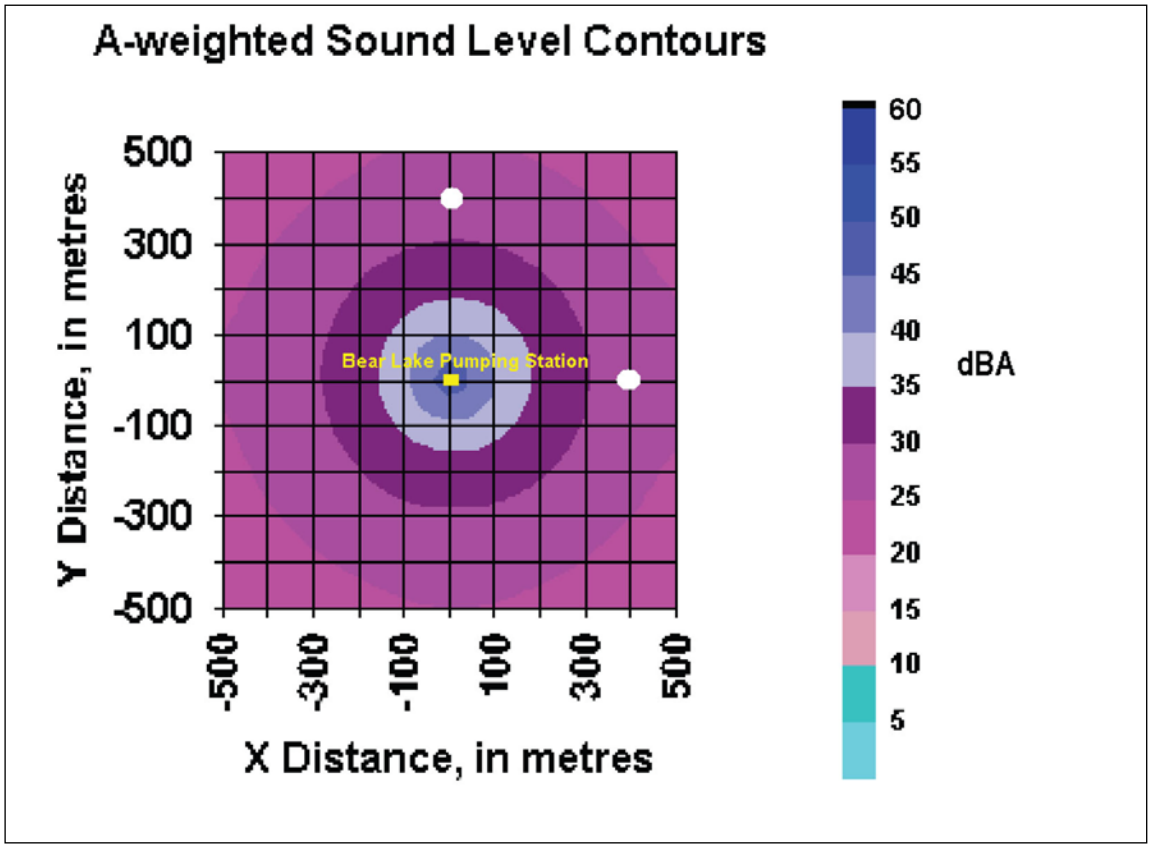


Figure 4-4 Predicted Ambient Sound Pressure Levels in the Area of Bear Lake Pump Station

For a summary of the detailed acoustical data near the Bear Lake pump station, see Table 4-3. This table shows sound properties, including the overall SPLs in dBA and dBC, and unweighted SPLs for each octave band at 100-m intervals up to 500 m from the pump station.

The SPL prediction indicates that sound levels less than 40 dBA will be observed at approximately 100 m and beyond. The sound level at 400 m will be at approximately 27 dBA. The absence of sound picks in a narrow frequency band indicates that pump station noise will be a broad-band harmonic at a steady level with no pitching or whistling. It will be continuously audible at a constant level as a humming sound at distances over 100 m when approaching the background level.

Additional acoustical data is provided for the indoor noise levels and outdoor levels in the immediate vicinity of the pumphouse (near-field geometry; see Figure 4-5).

The model predicts indoor levels up to 85 dBA. Outdoor levels in the immediate vicinity are expected to be approximately 75 dBA. The difference in these sound levels is due to sound absorption in the wall of the pumphouse building, as explained in Section 3.

Table 4-3 Sound Properties in the Area of Bear Lake Pump Station

Parameter		Distance from Pump Station (m)									
		North					East				
		100	200	300	400	500	100	200	300	400	500
SPL (dBA)		40.2	34.0	30.2	27.4	25.2	40.5	34.2	30.4	27.6	25.5
SPL (dBC)		47.4	41.8	38.5	36.2	34.4	47.9	42.1	38.9	36.5	34.8
SPL (dB) per Octave Frequency Band (Hz)	16	48.7	43.3	40.0	37.6	35.8	49.0	43.4	40.1	37.7	35.8
	31.5	35.5	29.5	26.1	23.7	22.0	36.0	29.9	26.5	24.1	22.3
	63	44.0	38.3	35.0	32.8	31.1	44.7	38.9	35.7	33.5	31.9
	125	39.2	33.8	30.6	28.5	26.9	39.6	33.8	30.6	28.5	26.9
	250	35.3	30.0	26.8	24.6	23.0	35.8	30.5	27.5	25.4	23.8
	500	36.6	31.2	27.9	25.4	23.5	36.9	31.4	28.1	25.7	23.9
	1,000	35.5	29.7	26.1	23.4	21.1	35.7	29.8	26.2	23.4	21.2
	2,000	33.6	26.9	22.4	18.7	15.5	33.9	27.0	22.4	18.7	15.5
	4,000	29.4	19.3	11.3	4.2	0	29.9	19.5	11.5	4.4	0
	8,000	6.1	0	0	0	0	7.0	0	0	0	0

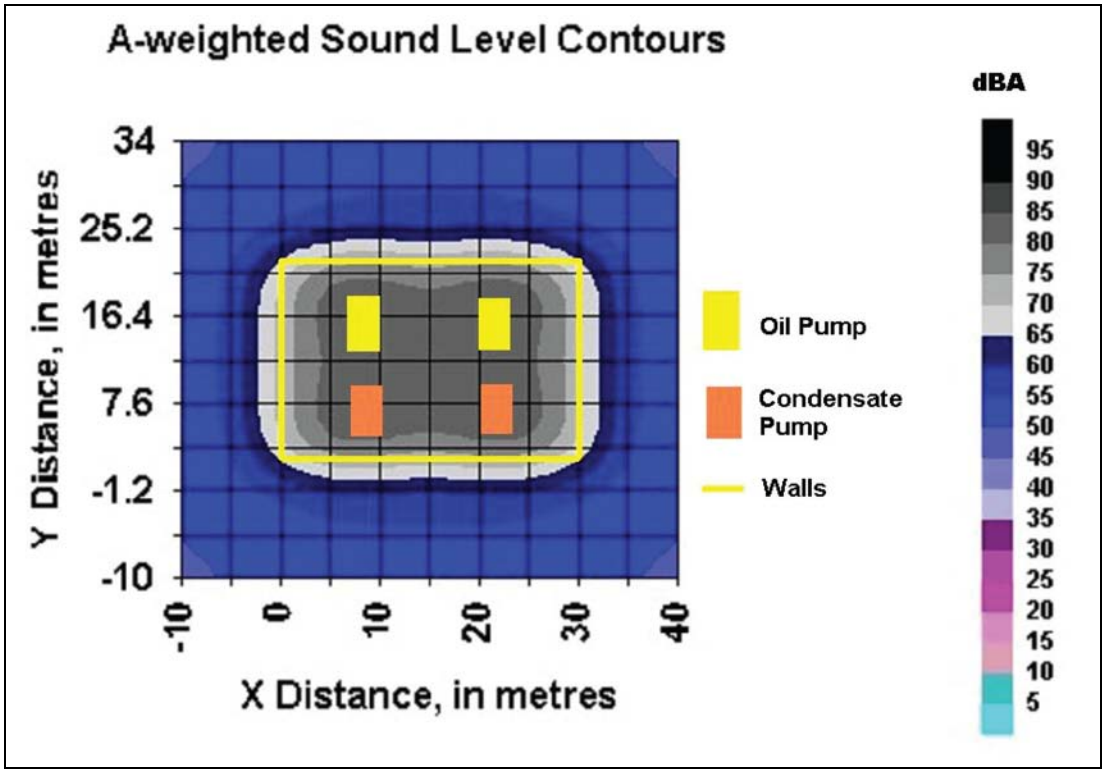


Figure 4-5 Predicted Ambient Sound Levels Inside the Bear Lake Pump Station and at Near-Field Area

5 References

Alberta Energy Resources Conservation Board (ERCB). 2007. *Directive 038: Noise Control. Bulletin 2007-04, February 16, 2007*. Calgary, AB.

American National Standard Institute (ANSI). 1994. *Procedures for Outdoor Measurement of Sound Pressure Level*. American National Standard Institute. S/No.12.18. Reaffirmed June 23, 2004.

Bell, L.H. and D.H. Bell. 1994. *Industrial Noise Control*. Marcel Dekker. New York, NY.

Bies, D. and C.H. Hansen. 2003. *Engineering Noise Control: Theory and Practice.* E & FN Spon. London, UK.

Grubbs, F.E. 1979. Procedures for Detecting Outlying Observations. In *Army Statistics Manual DARCOM, 706—103.* U.S. Army Research and Development Center, Aberdeen Proving Ground, MD 21005.

Hansen, C.H. and X. Qiu 2004. *Engineering Noise Control Software Version 2.0*. Casual Systems, Rundle Mall, SA, Australia.

International Standards Organization (ISO). 1996. *Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General Method of Calculation*.

International Standards Organization (ISO). 1995. *Guide 98: The Expression of Uncertainty in Measurement*. GUM. 1 Rue Varambé, Case Postale 56, CH 1221, Geneva, Switzerland.

International Standards Organization (ISO). 1969. *Noise Assessment with Respect to Community Responses.* Publication ISO/TC 43. New York, NY.

Passchier-Vermeer, W. and W.F. Passchier. 2000. *Noise Exposure Environmental Health Perspectives*. 108 (Supp 1). March 2000.

United States Environmental Protection Agency (US EPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. U.S. Environmental Protection Agency, Office of Noise Abatement and Control (ONAC). Report EPA550/9-74-004. Washington, DC.

Appendix A Background Sound Survey Results Cherhill, AB 2005

Table A-1 Hourly Sound Data - Cherhill, 2005 Survey

824 Logging Sound Level Meter Intervals
File Translated: F:\GEM\Field Work\Pumps_2\824\28Oct21l.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.1
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: GEM2.log
Setup Descr: GEM2
Location: Cherhill, AB
Note 1: All sound values in dBA

Rec #	Date	Time	Duration	Leq	SEL	Min	Max	L5.00	L50.00	L90.00
1	28-Oct-05	21:50:25	0:01:19	Rejected						
2	28-Oct-05	22:00:00	0:59:59	30.6	66.2	20.8	55.0	35.1	25.7	22.7
3	28-Oct-05	23:00:00	1:00:00	25.4	60.9	21.3	41.9	28.7	24.1	22.2
4	29-Oct-05	0:00:00	1:00:00	28.3	63.9	20.1	58.3	29.5	25.0	20.8
5	29-Oct-05	1:00:00	1:00:00	22.5	58.1	19.5	41.3	25.8	21.0	20.1
6	29-Oct-05	2:00:00	1:00:00	25.5	61.1	19.8	44.9	28.2	23.9	20.5
7	29-Oct-05	3:00:00	1:00:00	25.3	60.9	19.3	50.2	27.1	24.7	20.5
8	29-Oct-05	4:00:00	1:00:00	23.0	58.6	19.0	39.1	26.8	21.8	19.6
9	29-Oct-05	5:00:00	1:00:00	24.4	60.0	19.3	39.7	27.4	23.7	20.3
10	29-Oct-05	6:00:00	0:59:00	24.8	60.3	19.1	38.5	27.2	25.1	20.4
11	29-Oct-05	7:00:00	0:59:59	27.0	62.5	19.7	58.5	26.0	21.6	20.3
12	29-Oct-05	8:00:00	1:00:00	35.6	70.9	19.9	63.3	35.7	24.0	21.6
13	29-Oct-05	9:00:00	1:00:00	36.6	72.2	19.8	68.5	39.7	27.2	22.6
14	29-Oct-05	10:00:00	1:00:00	35.9	71.5	21.5	59.3	42.0	31.9	25.7
15	29-Oct-05	11:00:00	1:00:00	30.3	65.9	21.0	50.5	36.5	27.2	22.5
16	29-Oct-05	12:00:00	1:00:00	31.4	67.0	22.1	54.4	35.3	29.1	25.8
17	29-Oct-05	13:00:00	1:00:00	28.4	64.0	20.8	50.1	32.3	26.4	22.8
18	29-Oct-05	14:00:00	1:00:00	32.8	68.3	20.8	54.4	39.3	24.8	21.8
19	29-Oct-05	15:00:00	1:00:00	36.8	72.4	21.4	57.8	42.9	29.4	25.7
20	29-Oct-05	16:00:00	1:00:00	30.4	66.0	21.8	55.6	32.8	26.2	24.0
21	29-Oct-05	17:00:00	1:00:00	31.2	66.8	22.9	56.6	34.8	25.9	24.4
22	29-Oct-05	18:00:00	1:00:00	35.1	70.7	23.3	53.0	41.3	30.5	25.6
23	29-Oct-05	19:00:00	1:00:00	36.1	71.7	23.7	55.0	41.5	31.3	25.6
24	29-Oct-05	20:00:00	1:00:00	34.6	70.1	24.2	57.9	40.3	28.9	26.1
25	29-Oct-05	21:00:00	0:59:00	28.6	64.1	22.9	50.8	30.6	26.2	24.3
26	29-Oct-05	22:00:00	0:29:21	Rejected						

Table A-2 SLM and RTA Summary - Cherhill, 2005 Survey

File Translated:	F:\GEM\Field Work\Station_2\28Oct14s.slmdl		
Model Number:	824		
Serial Number:	A2824		
Firmware Rev:	4.1		
Software Version:	3.12		
Name:	AMEC Earth & Environmental		
Descr1:	4810 - 93 Street		
Descr2:	Edmonton AB T6E 5M4		
Setup:	BMD_RTAD.ssa		
Setup Descr:	BMD Real-Time Analyzer		
Location:	Cherhill, AB		
Note 1:	Spectra sound values in dB		
Overall Any Data			
Start Time:	28-Oct-05	14:07:21	
Elapsed Time:	10:11.3		
	A Weight	C Weight	Flat
Leq:	33.8 dBA	48.4 dBC	52.0 dBF
SEL:	61.6 dBA	76.3 dBC	79.9 dBF
Peak:	70.0 dBA	70.9 dBC	73.4 dBF
	10/28/2005 14:11	10/28/2005 14:11	10/28/2005 14:13
Lmax (slow):	45.3 dBA	55.0 dBC	62.7 dBF
	10/28/2005 14:07	10/28/2005 14:13	10/28/2005 14:13
Lmin (slow):	32.1 dBA	44.9 dBC	46.9 dBF
	10/28/2005 14:08	10/28/2005 14:10	10/28/2005 14:10
Lmax (fast):	49.2 dBA	59.1 dBC	67.5 dBF
	10/28/2005 14:07	10/28/2005 14:13	10/28/2005 14:14
Lmin (fast):	32.0 dBA	43.3 dBC	45.2 dBF
	10/28/2005 14:08	10/29/2005 14:10	10/28/2005 14:10
Lmax (impulse):	51.8 dBA	61.4 dBC	70.4 dBF
	10/28/2005 14:11	10/28/2005 14:13	10/28/2005 14:14
Lmin (impulse):	32.0 dBA	45.5 dBC	47.9 dBF
	10/28/2005 14:08	10/28/2005 14:10	10/28/2005 14:10

Table A-2 SLM and RTA Summary - Cherhill, 2005 Survey (cont'd)

Spectra

Start Time:	28-Oct-05	14:07:21	Run Time:	10:11.3		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	44.0		40.9		23.8	
16	43.2	48.6	45.7	50.1	25.9	31.3
20	44.3		47.3		28.5	
25	42.3		44.8		26.9	
31.5	40.2	45.9	44.0	48.7	26.6	32.9
40	40.6		42.8		30.0	
50	40.8		42.3		30.5	
63	39.4	45.0	43.5	47.6	30.2	35.2
80	40.4		42.6		30.7	
100	35.9		38.4		28.2	
125	31.3	37.9	34.2	40.3	23.1	29.7
160	29.7		30.5		18.2	
200	27.5		26.1		17.7	
250	28.7	31.9	25.9	30.8	16.8	21.2
315	24.0		26.1		14.1	
400	20.3		26.7		12.0	
500	22.8	26.6	34.9	38.8	15.3	19.1
630	22.1		36.0		14.9	
800	21.2		38.2		13.3	
1000	18.7	24.1	34.3	40.7	12.4	17.2
1250	17.3		34.1		11.2	
1600	16.4		30.7		11.9	
2000	17.0	22.3	34.0	40.5	13.0	17.8
2500	18.7		38.8		13.9	
3150	19.5		40.2		14.5	
4000	18.9	23.7	37.6	42.9	15.2	20.0
5000	18.3		35.2		15.9	
6300	18.7		38.0		16.3	
8000	19.0	23.7	37.1	41.7	16.9	21.8
10000	19.2		35.2		17.7	
12500	19.6		32.7		18.0	
16000	20.5	25.5	29	34.8	19.5	24.5
20000	21.9		25.8		21.1	

Lmax (impulse): 51.8 dBA 61.4 dBC 70.4 dBF

Table A-2 SLM and RTA Summary - Cherhill, 2005 Survey (cont'd)

	10/29/2005 14:11	10/29/2005 14:13	10/29/2005 14:14
Lmin (impulse):	32.0 dBA	45.5 dBC	47.9 dBF
	10/29/2005 14:08	10/29/2005 14:10	10/29/2005 14:10
Calibrated:	9/30/2005 7:49	Offset: -46.7 dB	
Checked:	10/28/2005 10:44	Level: 114.1 dB	
Calibrator	3943	Level: 114.0 dB	
Cal Records Count:	0		
Interval Records:	Enabled	Number Interval Reco	11
History Records:	Enabled	Number History Recor	3
Run/Stop Records:		Number Run/Stop Reco	2

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey

File Translated: F:\GEM\Field Work\Pumps_2\824\28Oct21l.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.1
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: GEM2.log
Setup Descr: GEM2
Location: Cherhill, AB
Note 1:

Rec #	Date	Time	Leq	Comment
1	28-Oct-05	21:50:25	Run:Key	
2	28-Oct-05	21:50:25	49.6	Rejected
3	28-Oct-05	21:51:45	Stop:Key	
4	28-Oct-05	22:00:00	Run:Timer	
5	28-Oct-05	22:00:00	35.2	
6	28-Oct-05	22:05:00	27.0	
7	28-Oct-05	22:10:00	29.0	
8	28-Oct-05	22:15:00	25.4	
9	28-Oct-05	22:20:00	30.7	
10	28-Oct-05	22:25:00	30.2	
11	28-Oct-05	22:30:00	27.4	
12	28-Oct-05	22:35:00	29.0	
13	28-Oct-05	22:40:00	33.7	
14	28-Oct-05	22:45:00	31.9	
15	28-Oct-05	22:50:00	29.8	
16	28-Oct-05	22:55:00	25.2	
17	28-Oct-05	23:00:00	27.5	
18	28-Oct-05	23:05:00	26.1	
19	28-Oct-05	23:10:00	25.5	
20	28-Oct-05	23:15:00	26.3	
21	28-Oct-05	23:20:00	27.4	
22	28-Oct-05	23:25:00	25.0	
23	28-Oct-05	23:30:00	23.0	
24	28-Oct-05	23:35:00	23.5	
25	28-Oct-05	23:40:00	23.5	
26	28-Oct-05	23:45:00	22.6	
27	28-Oct-05	23:50:00	23.9	
28	28-Oct-05	23:55:00	26.3	
29	29-Oct-05	0:00:00	36.6	Rejected
30	29-Oct-05	0:05:00	22.8	
31	29-Oct-05	0:10:00	23.7	
32	29-Oct-05	0:15:00	25.9	
33	29-Oct-05	0:20:00	26.2	
34	29-Oct-05	0:25:00	25.9	
35	29-Oct-05	0:30:00	26.0	
36	29-Oct-05	0:35:00	26.3	
37	29-Oct-05	0:40:00	26.9	
38	29-Oct-05	0:45:00	24.5	
39	29-Oct-05	0:50:00	24.2	
40	29-Oct-05	0:55:00	20.8	
41	29-Oct-05	1:00:00	20.8	
42	29-Oct-05	1:05:00	20.8	

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey (cont'd)

Rec #	Date	Time	Leq	Comment
43	29-Oct-05	1:10:00	20.9	
44	29-Oct-05	1:15:00	20.5	
45	29-Oct-05	1:20:00	20.2	
46	29-Oct-05	1:25:00	22.5	
47	29-Oct-05	1:30:00	22.7	
48	29-Oct-05	1:35:00	24.0	
49	29-Oct-05	1:40:00	22.2	
50	29-Oct-05	1:45:00	21.1	
51	29-Oct-05	1:50:00	24.6	
52	29-Oct-05	1:55:00	25.6	
53	29-Oct-05	2:00:00	25.4	
54	29-Oct-05	2:05:00	26.8	
55	29-Oct-05	2:10:00	27.2	
56	29-Oct-05	2:15:00	26.0	
57	29-Oct-05	2:20:00	30.1	
58	29-Oct-05	2:25:00	23.8	
59	29-Oct-05	2:30:00	22.5	
60	29-Oct-05	2:35:00	25.2	
61	29-Oct-05	2:40:00	24.3	
62	29-Oct-05	2:45:00	22.1	
63	29-Oct-05	2:50:00	21.8	
64	29-Oct-05	2:55:00	22.5	
65	29-Oct-05	3:00:00	21.7	
66	29-Oct-05	3:05:00	28.4	
67	29-Oct-05	3:10:00	22.7	
68	29-Oct-05	3:15:00	23.0	
69	29-Oct-05	3:20:00	24.0	
70	29-Oct-05	3:25:00	25.1	
71	29-Oct-05	3:30:00	26.1	
72	29-Oct-05	3:35:00	25.6	
73	29-Oct-05	3:40:00	25.9	
74	29-Oct-05	3:45:00	26.2	
75	29-Oct-05	3:50:00	25.9	
76	29-Oct-05	3:55:00	25.0	
77	29-Oct-05	4:00:00	22.0	
78	29-Oct-05	4:05:00	20.7	
79	29-Oct-05	4:10:00	21.8	
80	29-Oct-05	4:15:00	23.7	
81	29-Oct-05	4:20:00	21.8	
82	29-Oct-05	4:25:00	24.9	
83	29-Oct-05	4:30:00	21.6	
84	29-Oct-05	4:35:00	20.8	
85	29-Oct-05	4:40:00	22.2	
86	29-Oct-05	4:45:00	22.8	
87	29-Oct-05	4:50:00	24.6	
88	29-Oct-05	4:55:00	26.0	
89	29-Oct-05	5:00:00	26.5	
90	29-Oct-05	5:05:00	26.7	
91	29-Oct-05	5:10:00	26.5	
92	29-Oct-05	5:15:00	26.2	
93	29-Oct-05	5:20:00	25.3	
94	29-Oct-05	5:25:00	22.5	
95	29-Oct-05	5:30:00	20.9	
96	29-Oct-05	5:35:00	23.2	
97	29-Oct-05	5:40:00	21.0	
98	29-Oct-05	5:45:00	23.2	
99	29-Oct-05	5:50:00	21.9	

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey (cont'd)

Rec #	Date	Time	Leq	Comment
100	29-Oct-05	5:55:00	22.6	
101	29-Oct-05	6:00:00	20.7	
102	29-Oct-05	6:05:00	22.1	
103	29-Oct-05	6:10:00	22.5	
104	29-Oct-05	6:15:00	21.8	
105	29-Oct-05	6:20:00	21.8	
106	29-Oct-05	6:25:00	26.6	
107	29-Oct-05	6:30:00	26.7	
108	29-Oct-05	6:35:00	26.4	
109	29-Oct-05	6:40:00	26.0	
110	29-Oct-05	6:45:00	26.0	
111	29-Oct-05	6:50:00	25.9	
112	29-Oct-05	6:55:00	25.7	
113	29-Oct-05	6:59:00	Stop:Timer	
114	29-Oct-05	7:00:00	Run:Timer	
115	29-Oct-05	7:00:00	28.2	
116	29-Oct-05	7:05:00	35.7	
117	29-Oct-05	7:10:00	20.7	
118	29-Oct-05	7:15:00	21.7	
119	29-Oct-05	7:20:00	21.8	
120	29-Oct-05	7:25:00	21.6	
121	29-Oct-05	7:30:00	22.0	
122	29-Oct-05	7:35:00	21.3	
123	29-Oct-05	7:40:00	21.9	
124	29-Oct-05	7:45:00	20.9	
125	29-Oct-05	7:50:00	22.4	
126	29-Oct-05	7:55:00	24.3	
127	29-Oct-05	8:00:00	24.5	
128	29-Oct-05	8:05:00	23.9	
129	29-Oct-05	8:10:00	24.4	
130	29-Oct-05	8:15:00	23.9	
131	29-Oct-05	8:20:00	24.2	
132	29-Oct-05	8:25:00	23.5	
133	29-Oct-05	8:30:00	21.5	
134	29-Oct-05	8:35:00	26.8	
135	29-Oct-05	8:40:00	41.6	Rejected
136	29-Oct-05	8:41:27	Pause:Key	
137	29-Oct-05	8:42:08	Cont:Key	
138	29-Oct-05	8:42:08	50.0	Rejected
139	29-Oct-05	8:42:56	Pause:Key	
140	29-Oct-05	8:43:57	Cont:Key	
141	29-Oct-05	8:43:57	49.0	Rejected
142	29-Oct-05	8:44:50	Pause:Key	
143	29-Oct-05	8:46:29	Cont:Key	
144	29-Oct-05	8:46:29	30.4	
145	29-Oct-05	8:47:20	Pause:Key	
146	29-Oct-05	8:47:43	Cont:Key	
147	29-Oct-05	8:47:43	29.1	
148	29-Oct-05	8:52:43	33.6	
149	29-Oct-05	8:57:43	31.5	
150	29-Oct-05	9:02:43	28.1	
151	29-Oct-05	9:07:43	26.9	
152	29-Oct-05	9:12:43	26.9	
153	29-Oct-05	9:17:43	35.2	
154	29-Oct-05	9:22:43	45.3	Rejected
155	29-Oct-05	9:27:43	32.0	
156	29-Oct-05	9:32:43	25.7	

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey (cont'd)

Rec #	Date	Time	Leq	Comment
157	29-Oct-05	9:37:43	29.5	
158	29-Oct-05	9:42:43	30.8	
159	29-Oct-05	9:47:43	34.7	
160	29-Oct-05	9:52:43	36.1	
161	29-Oct-05	9:57:43	41.2	Rejected
162	29-Oct-05	10:02:43	29.4	
163	29-Oct-05	10:07:43	31.5	
164	29-Oct-05	10:12:43	33.2	
165	29-Oct-05	10:17:43	34.0	
166	29-Oct-05	10:22:43	37.7	
167	29-Oct-05	10:27:43	36.8	
168	29-Oct-05	10:32:43	39.7	
169	29-Oct-05	10:37:43	36.8	
170	29-Oct-05	10:42:43	34.2	
171	29-Oct-05	10:47:43	32.5	
172	29-Oct-05	10:52:43	31.3	
173	29-Oct-05	10:57:43	29.0	
174	29-Oct-05	11:02:43	29.6	
175	29-Oct-05	11:07:43	28.6	
176	29-Oct-05	11:12:43	32.3	
177	29-Oct-05	11:17:43	29.5	
178	29-Oct-05	11:22:43	26.2	
179	29-Oct-05	11:27:43	25.0	
180	29-Oct-05	11:32:43	24.1	
181	29-Oct-05	11:37:43	24.2	
182	29-Oct-05	11:42:43	31.7	
183	29-Oct-05	11:47:43	35.6	
184	29-Oct-05	11:52:43	31.6	
185	29-Oct-05	11:57:43	29.5	
186	29-Oct-05	12:02:43	29.4	
187	29-Oct-05	12:07:43	29.3	
188	29-Oct-05	12:12:43	29.0	
189	29-Oct-05	12:17:43	28.7	
190	29-Oct-05	12:22:43	33.7	
191	29-Oct-05	12:27:43	29.6	
192	29-Oct-05	12:32:43	31.5	
193	29-Oct-05	12:37:43	33.4	
194	29-Oct-05	12:42:43	32.0	
195	29-Oct-05	12:47:43	32.5	
196	29-Oct-05	12:52:43	33.4	
197	29-Oct-05	12:57:43	28.0	
198	29-Oct-05	13:02:43	28.3	
199	29-Oct-05	13:07:43	27.2	
200	29-Oct-05	13:12:43	29.0	
201	29-Oct-05	13:17:43	29.3	
202	29-Oct-05	13:22:43	28.2	
203	29-Oct-05	13:27:43	30.7	
204	29-Oct-05	13:32:43	22.2	
205	29-Oct-05	13:37:43	24.6	
206	29-Oct-05	13:42:43	27.0	
207	29-Oct-05	13:47:43	31.7	
208	29-Oct-05	13:52:43	28.0	
209	29-Oct-05	13:57:43	29.6	
210	29-Oct-05	14:02:43	28.9	
211	29-Oct-05	14:07:43	38.2	
212	29-Oct-05	14:12:43	37.0	
213	29-Oct-05	14:17:43	35.7	

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey (cont'd)

Rec #	Date	Time	Leq	Comment
214	29-Oct-05	14:22:43	33.0	
215	29-Oct-05	14:27:43	22.6	
216	29-Oct-05	14:32:43	24.4	
217	29-Oct-05	14:37:43	25.5	
218	29-Oct-05	14:42:43	25.5	
219	29-Oct-05	14:47:43	23.9	
220	29-Oct-05	14:52:43	32.0	
221	29-Oct-05	14:57:43	32.7	
222	29-Oct-05	15:02:43	38.5	
223	29-Oct-05	15:07:43	36.1	
224	29-Oct-05	15:12:43	35.3	
225	29-Oct-05	15:17:43	37.0	
226	29-Oct-05	15:22:43	42.5	Rejected
227	29-Oct-05	15:27:43	40.6	Rejected
228	29-Oct-05	15:32:43	36.7	
229	29-Oct-05	15:37:43	29.9	
230	29-Oct-05	15:42:43	27.4	
231	29-Oct-05	15:47:43	29.3	
232	29-Oct-05	15:52:43	27.9	
233	29-Oct-05	15:57:43	26.3	
234	29-Oct-05	16:02:43	31.7	
235	29-Oct-05	16:07:43	29.3	
236	29-Oct-05	16:12:43	31.5	
237	29-Oct-05	16:17:43	34.6	
238	29-Oct-05	16:22:43	24.6	
239	29-Oct-05	16:27:43	24.5	
240	29-Oct-05	16:32:43	26.6	
241	29-Oct-05	16:37:43	27.3	
242	29-Oct-05	16:42:43	28.5	
243	29-Oct-05	16:47:43	26.6	
244	29-Oct-05	16:52:43	27.5	
245	29-Oct-05	16:57:43	36.7	
246	29-Oct-05	17:02:43	37.2	
247	29-Oct-05	17:07:43	28.6	
248	29-Oct-05	17:12:43	25.7	
249	29-Oct-05	17:17:43	27.2	
250	29-Oct-05	17:22:43	26.8	
251	29-Oct-05	17:27:43	26.2	
252	29-Oct-05	17:32:43	31.1	
253	29-Oct-05	17:37:43	28.4	
254	29-Oct-05	17:42:43	35.2	
255	29-Oct-05	17:47:43	26.7	
256	29-Oct-05	17:52:43	25.9	
257	29-Oct-05	17:57:43	28.3	
258	29-Oct-05	18:02:43	31.1	
259	29-Oct-05	18:07:43	32.1	
260	29-Oct-05	18:12:43	38.3	
261	29-Oct-05	18:17:43	38.2	
262	29-Oct-05	18:22:43	34.7	
263	29-Oct-05	18:27:43	37.4	
264	29-Oct-05	18:32:43	36.2	
265	29-Oct-05	18:37:43	34.6	
266	29-Oct-05	18:42:43	33.5	
267	29-Oct-05	18:47:43	34.3	
268	29-Oct-05	18:52:43	30.5	
269	29-Oct-05	18:57:43	28.9	
270	29-Oct-05	19:02:43	26.7	

Table A-3 824 Logging Sound Level Meter Time History - Cherhill, 2005 Survey (cont'd)

Rec #	Date	Time	Leq	Comment
271	29-Oct-05	19:07:43	28.9	
272	29-Oct-05	19:12:43	39.2	Rejected
273	29-Oct-05	19:17:43	39.7	Rejected
274	29-Oct-05	19:22:43	38.7	Rejected
275	29-Oct-05	19:27:43	37.5	Rejected
276	29-Oct-05	19:32:43	33.9	
277	29-Oct-05	19:37:43	32.0	
278	29-Oct-05	19:42:43	30.5	
279	29-Oct-05	19:47:43	30.5	
280	29-Oct-05	19:52:43	38.1	
281	29-Oct-05	19:57:43	37.2	
282	29-Oct-05	20:02:43	29.1	
283	29-Oct-05	20:07:43	28.7	
284	29-Oct-05	20:12:43	29.4	
285	29-Oct-05	20:17:43	30.7	
286	29-Oct-05	20:22:43	34.3	
287	29-Oct-05	20:27:43	32.7	
288	29-Oct-05	20:32:43	39.0	
289	29-Oct-05	20:37:43	29.8	
290	29-Oct-05	20:42:43	38.6	
291	29-Oct-05	20:47:43	37.7	
292	29-Oct-05	20:52:43	33.4	
293	29-Oct-05	20:57:43	31.7	
294	29-Oct-05	21:02:43	29.5	
295	29-Oct-05	21:07:43	33.8	
296	29-Oct-05	21:12:43	28.8	
297	29-Oct-05	21:17:43	27.1	
298	29-Oct-05	21:22:43	26.4	
299	29-Oct-05	21:27:43	27.0	
300	29-Oct-05	21:32:43	25.6	
301	29-Oct-05	21:37:43	25.9	
302	29-Oct-05	21:42:43	26.3	
303	29-Oct-05	21:47:43	26.4	
304	29-Oct-05	21:52:43	25.4	
305	29-Oct-05	21:57:43	24.2	
306	29-Oct-05	21:59:00	Stop:Timer	
307	29-Oct-05	22:00:00	Run:Timer	Rejected
308	29-Oct-05	22:00:00	31.7	Rejected
309	29-Oct-05	22:05:00	31.9	Rejected
310	29-Oct-05	22:10:00	28.9	Rejected
311	29-Oct-05	22:15:00	28.9	Rejected
312	29-Oct-05	22:20:00	29.4	Rejected
313	29-Oct-05	22:25:00	32.7	Rejected
314	29-Oct-05	22:29:21	Stop:Key	Rejected

Table A-4 Weather Conditions - Cherhill, 2005 Survey				
Date & Hour	Temp (°C)	Humidity (%)	Dew Point (°C)	Wind (km/h)
30 Oct 2005 12:00 MST	8	34	-7	W 18
30 Oct 2005 11:00 MST	6	41	-6	W 17
30 Oct 2005 10:00 MST	4	55	-5	WSW 14
30 Oct 2005 9:00 MST	1	66	-4	WSW 12
30 Oct 2005 8:00 MST	-1	77	-4	WSW 13
30 Oct 2005 7:00 MST	-2	81	-5	WSW 12
30 Oct 2005 6:00 MST	-1	75	-5	WSW 10
30 Oct 2005 5:00 MST	0	76	-4	WSW 10
30 Oct 2005 4:00 MST	0	79	-3	WSW 7
30 Oct 2005 3:00 MST	0	72	-4	W 10
30 Oct 2005 2:00 MST	1	70	-4	WNW 10
30 Oct 2005 1:00 MST	1	68	-4	W 12
30 Oct 2005 00:00 MST	2	67	-4	WNW 10
29 Oct 2005 23:00 MST	4	64	-2	W 13
29 Oct 2005 22:00 MST	4	64	-3	WSW 9
29 Oct 2005 21:00 MST	4	60	-3	WSW 10
29 Oct 2005 20:00 MST	6	56	-2	WSW 5
29 Oct 2005 20:00 MDT	6	53	-3	calm
29 Oct 2005 19:00 MDT	7	50	-3	WNW 3
29 Oct 2005 18:00 MDT	8	44	-4	WNW 4
29 Oct 2005 17:00 MDT	11	35	-4	WNW 6
29 Oct 2005 16:00 MDT	11	38	-3	NW 9
29 Oct 2005 15:00 MDT	11	38	-3	WNW 12
29 Oct 2005 14:00 MDT	10	46	-1	W 12

Appendix B Background Sound Survey Results Bruderheim, AB 2006

Table B-1 Hourly Sound Data - Bruderheim, 2006 Survey

824 Logging Sound Level Meter Intervals
File Translated: T:\Vivek\GEM\4_Logging.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.261
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: Logging.log
Setup Descr: Untitled
Location: Bruderheim, AB
Note 1: All sound values in dBA

Rec #	Date	Time	Duration	Leq	SEL	Min	Max	L1.00	L5.00	L50.00	L90.00
1	18-May-06	15:02:50	1:00:00	55.8	91.4	31.3	89.3	62.9	52	37.5	33.5
2	18-May-06	16:02:50	1:00:00	38.0	73.5	30.3	62.0	46.3	41.9	34.8	32.1
3	18-May-06	17:02:50	1:00:00	38.1	73.7	28.1	62.0	50.2	42.1	32.9	30.6
4	18-May-06	18:02:50	1:00:00	35.3	70.9	28.1	54.7	43.8	39.7	32.8	30.4
5	18-May-06	19:02:50	1:00:00	36.2	71.8	27.9	53.9	45.2	40.8	33.0	30.5
6	18-May-06	20:02:50	1:00:00	35.4	71.0	29.1	51.3	41.2	38.7	34.4	31.4
7	18-May-06	21:02:50	1:00:00	38.1	73.7	33.0	47.5	43.9	41.2	37.3	35.2
8	18-May-06	22:02:50	1:00:00	37.8	73.4	32.9	48.6	41.7	40.2	37.7	35.1
9	18-May-06	23:02:50	1:00:00	38.9	74.4	35.5	49.7	42.5	40.9	38.5	36.9
10	19-May-06	0:02:50	1:00:00	38.9	74.5	35.0	53.3	42.7	41.1	38.4	36.9
11	19-May-06	1:02:50	1:00:00	41.4	76.9	36.5	51.2	45.9	43.2	41.1	39.2
12	19-May-06	2:02:50	1:00:00	42.2	77.8	37.7	46.0	45.0	44.2	42.1	39.9
13	19-May-06	3:02:50	1:00:00	41.8	77.4	37.1	47.8	44.9	43.9	41.7	39.3
14	19-May-06	4:02:50	1:00:00	42.0	77.6	37.7	46.8	45.6	44.2	41.8	39.8
15	19-May-06	5:02:50	1:00:00	41.2	76.8	35.5	50.8	45.5	44.3	40.6	38.2
16	19-May-06	6:02:50	1:00:00	42.7	78.2	37.2	52.1	46.8	45.0	42.4	40.0
17	19-May-06	7:02:50	1:00:00	44.0	79.5	35.8	66.2	47.2	46.2	43.6	38.6
18	19-May-06	8:02:50	1:00:00	40.7	76.3	33.6	60.3	50.3	43.7	38.4	36.3
19	19-May-06	9:02:50	1:00:00	39.4	75.0	33.7	58.3	49.4	42.2	37.7	36.0
20	19-May-06	10:02:50	1:00:00	36.8	72.4	31.0	55.2	43.6	39.6	35.7	33.5
21	19-May-06	11:02:50	1:00:00	38.7	74.3	31.9	55.0	45.9	42.3	37.2	35.0
22	19-May-06	12:02:50	1:00:00	38.5	74.1	31.9	59.3	46.8	41.8	36.6	34.3
23	19-May-06	13:02:50	1:00:00	41.3	76.9	32.8	59.7	52.2	44.7	38.6	35.6
24	19-May-06	14:02:50	1:00:00	40.0	75.6	33.2	60.4	48.2	43.5	38.0	35.1
25	19-May-06	15:02:50	1:00:00	40.4	76.0	32.9	60.2	50.0	44.8	37.7	35.0
26	19-May-06	16:02:50	0:24:44	47.3	79.0	35.7	67.5	59.4	51.5	41.1	37.2

Table B-2 SLM and RTA Summary - Bruderheim, 2006 Survey

File Translated:	C:\Projects\Calgary\CE03210 GEM\Field Work\Bruderheim\18 May19s.slmdl		
Model Number:	824		
Serial Number:	A2824		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	AMEC Earth & Environmental		
Descr1:	4810 - 93 Street		
Descr2:	Edmonton AB T6E 5M4		
Setup:	SLM&RTA.ssa		
Setup Descr:	SLM & Real-Time Analyzer		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Start Time:	19-May-06	16:36:29	
Elapsed Time:	01:04.6		
	A Weight	C Weight	Flat
Leq:	38.8 dBA	51.5 dBC	55.4 dBF
SEL:	56.9 dBA	69.6 dBC	73.5 dBF
Peak:	59.7 dBA	65.8 dBC	69.3 dBF
	5/19/2006 16:37	5/19/2006 16:36	5/19/2006 16:37
Lmax (slow):	41.7 dBA	54.4 dBC	59.4 dBF
	5/19/2006 16:37	5/19/2006 16:36	5/19/2006 16:37
Lmin (slow):	37.9 dBA	50.3 dBC	53.4 dBF
	5/19/2006 16:37	5/19/2006 16:36	5/19/2006 16:37
Lmax (fast):	46.6 dBA	55.8 dBC	62.2 dBF
	5/19/2006 16:37	5/19/2006 16:37	5/19/2006 16:37
Lmin (fast):	37.4 dBA	49.0 dBC	51.5 dBF
	5/19/2006 16:37	5/19/2006 16:36	5/19/2006 16:37
Lmax (impulse):	50.0 dBA	57.8 dBC	64.4 dBF
	5/19/2006 16:37	5/19/2006 16:37	5/19/2006 16:36
Lmin (impulse):	37.6 dBA	50.7 dBC	54.8 dBF
	5/19/2006 16:37	5/19/2006 16:36	5/19/2006 16:37

Table B-2 SLM and RTA Summary - Bruderheim, 2006 Survey (cont'd)

Spectra

Start Time:	19-May-06	16:36:29	Run Time:	01:04.6		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	48.5		54.2		28.4	
16	47.2	52.3	50.5	57.4	35.8	39.3
20	46.7		52.3		36.0	
25	46.5		51.6		35.4	
31.5	45.2	50.0	51.2	55.2	36.3	40.3
40	43.6		47.4		34.9	
50	42.3		46.6		34.7	
63	43.4	46.9	46.0	50.1	36.1	39.6
80	40.2		42.3		33.0	
100	37.5		38.8		32.0	
125	36.2	40.4	40.0	43.0	29.8	34.6
160	30.9		33.7		25.5	
200	29.0		34.5		23.9	
250	24.6	31.3	28.5	37.2	20.5	26.8
315	24.1		32.4		20.7	
400	27.0		42.6		23.1	
500	30.3	35.5	44.6	47.6	27.0	31.7
630	33.0		40.3		28.9	
800	32.3		33.3		29.9	
1000	30.1	34.9	30.5	35.7	27.5	32.3
1250	25.5		26.6		22.5	
1600	22.6		23.9		19.8	
2000	21.2	26.3	23.3	28.5	19.1	23.8
2500	20.6		23.9		18.0	
3150	21.4		24.1		18.8	
4000	20.9	25.7	27.1	30.9	18.3	23.1
5000	20.5		26.7		17.7	
6300	20.1		25.3		17.6	
8000	20.8	25.4	26.8	30.7	18.4	23.0
10000	20.9		25.5		18.7	
12500	21.4		25.5		19.6	
16000	22.0	27.0	25.5	30.1	20.5	25.8
20000	23.2		25.1		22.4	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey

File Translated: H:\Projects\Gateway\Field\Bruderheim\4_Logging.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.261
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: Logging.log
Setup Descr: Untitled
Location: Bruderheim, AB
Note 1:
Note 2:

Rec #	Date	Time	Leq (dBA)	Comment
1	18-May-06	15:02:50	Run:Key	
2	18-May-06	15:02:50	73.1	Rejected
3	18-May-06	15:03:50	53.2	Rejected
4	18-May-06	15:04:50	58.7	Rejected
5	18-May-06	15:05:50	58.4	Rejected
6	18-May-06	15:06:50	43.6	
7	18-May-06	15:07:50	40.3	
8	18-May-06	15:08:50	40.8	
9	18-May-06	15:09:50	38.1	
10	18-May-06	15:10:50	38.2	
11	18-May-06	15:11:50	35.8	
12	18-May-06	15:12:50	37.5	
13	18-May-06	15:13:50	40.0	
14	18-May-06	15:14:50	37.8	
15	18-May-06	15:15:50	38.3	
16	18-May-06	15:16:50	42.0	
17	18-May-06	15:17:50	42.4	
18	18-May-06	15:18:50	41.7	
19	18-May-06	15:19:50	40.1	
20	18-May-06	15:20:50	39.0	
21	18-May-06	15:21:50	40.2	
22	18-May-06	15:22:50	38.2	
23	18-May-06	15:23:50	38.0	
24	18-May-06	15:24:50	35.9	
25	18-May-06	15:25:50	37.4	
26	18-May-06	15:26:50	35.8	
27	18-May-06	15:27:50	35.1	
28	18-May-06	15:28:50	42.4	
29	18-May-06	15:29:50	40.2	
30	18-May-06	15:30:50	41.2	
31	18-May-06	15:31:50	37.5	
32	18-May-06	15:32:50	39.8	
33	18-May-06	15:33:50	33.6	
34	18-May-06	15:34:50	34.9	
35	18-May-06	15:35:50	36.4	
36	18-May-06	15:36:50	38.4	
37	18-May-06	15:37:50	38.2	
38	18-May-06	15:38:50	41.5	
39	18-May-06	15:39:50	42.2	
40	18-May-06	15:40:50	34.9	
41	18-May-06	15:41:50	37.2	
42	18-May-06	15:42:50	43.2	
43	18-May-06	15:43:50	40.8	
44	18-May-06	15:44:50	41.7	
45	18-May-06	15:45:50	39.8	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
46	18-May-06	15:46:50	40.6	
47	18-May-06	15:47:50	36.6	
48	18-May-06	15:48:50	33.5	
49	18-May-06	15:49:50	33.5	
50	18-May-06	15:50:50	33.2	
51	18-May-06	15:51:50	33.9	
52	18-May-06	15:52:50	37.4	
53	18-May-06	15:53:50	36.9	
54	18-May-06	15:54:50	35.2	
55	18-May-06	15:55:50	34.3	
56	18-May-06	15:56:50	37.0	
57	18-May-06	15:57:50	49.5	
58	18-May-06	15:58:50	49.2	
59	18-May-06	15:59:50	37.6	
60	18-May-06	16:00:50	36.7	
61	18-May-06	16:01:50	34.7	
62	18-May-06	16:02:50	36.4	
63	18-May-06	16:03:50	32.3	
64	18-May-06	16:04:50	34.3	
65	18-May-06	16:05:50	38.1	
66	18-May-06	16:06:50	35.3	
67	18-May-06	16:07:50	34.6	
68	18-May-06	16:08:50	34.8	
69	18-May-06	16:09:50	35.3	
70	18-May-06	16:10:50	34.3	
71	18-May-06	16:11:50	35.3	
72	18-May-06	16:12:50	37.5	
73	18-May-06	16:13:50	42.1	
74	18-May-06	16:14:50	38.3	
75	18-May-06	16:15:50	48.9	
76	18-May-06	16:16:50	36.9	
77	18-May-06	16:17:50	37.9	
78	18-May-06	16:18:50	40.2	
79	18-May-06	16:19:50	37.1	
80	18-May-06	16:20:50	38.4	
81	18-May-06	16:21:50	40.7	
82	18-May-06	16:22:50	37.8	
83	18-May-06	16:23:50	40.5	
84	18-May-06	16:24:50	37.5	
85	18-May-06	16:25:50	42.2	
86	18-May-06	16:26:50	37.0	
87	18-May-06	16:27:50	33.4	
88	18-May-06	16:28:50	33.7	
89	18-May-06	16:29:50	35.8	
90	18-May-06	16:30:50	33.7	
91	18-May-06	16:31:50	32.1	
92	18-May-06	16:32:50	32.4	
93	18-May-06	16:33:50	32.9	
94	18-May-06	16:34:50	34.5	
95	18-May-06	16:35:50	37.9	
96	18-May-06	16:36:50	35.7	
97	18-May-06	16:37:50	34.3	
98	18-May-06	16:38:50	38.4	
99	18-May-06	16:39:50	34.7	
100	18-May-06	16:40:50	33.8	
101	18-May-06	16:41:50	33.6	
102	18-May-06	16:42:50	31.5	
103	18-May-06	16:43:50	32.1	
104	18-May-06	16:44:50	34.3	
105	18-May-06	16:45:50	34.6	
106	18-May-06	16:46:50	34.7	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
107	18-May-06	16:47:50	35.1	
108	18-May-06	16:48:50	34.0	
109	18-May-06	16:49:50	35.2	
110	18-May-06	16:50:50	37.9	
111	18-May-06	16:51:50	36.7	
112	18-May-06	16:52:50	34.3	
113	18-May-06	16:53:50	40.1	
114	18-May-06	16:54:50	36.5	
115	18-May-06	16:55:50	43.6	
116	18-May-06	16:56:50	41.9	
117	18-May-06	16:57:50	36.1	
118	18-May-06	16:58:50	31.9	
119	18-May-06	16:59:50	32.2	
120	18-May-06	17:00:50	31.9	
121	18-May-06	17:01:50	34.4	
122	18-May-06	17:02:50	31.4	
123	18-May-06	17:03:50	31.7	
124	18-May-06	17:04:50	32.4	
125	18-May-06	17:05:50	34.5	
126	18-May-06	17:06:50	35.0	
127	18-May-06	17:07:50	34.6	
128	18-May-06	17:08:50	33.5	
129	18-May-06	17:09:50	30.8	
130	18-May-06	17:10:50	33.0	
131	18-May-06	17:11:50	35.2	
132	18-May-06	17:12:50	35.0	
133	18-May-06	17:13:50	35.4	
134	18-May-06	17:14:50	39.5	
135	18-May-06	17:15:50	35.2	
136	18-May-06	17:16:50	34.0	
137	18-May-06	17:17:50	48.2	
138	18-May-06	17:18:50	36.0	
139	18-May-06	17:19:50	34.1	
140	18-May-06	17:20:50	33.3	
141	18-May-06	17:21:50	32.6	
142	18-May-06	17:22:50	32.5	
143	18-May-06	17:23:50	39.6	
144	18-May-06	17:24:50	37.8	
145	18-May-06	17:25:50	31.9	
146	18-May-06	17:26:50	34.0	
147	18-May-06	17:27:50	35.3	
148	18-May-06	17:28:50	30.4	
149	18-May-06	17:29:50	33.5	
150	18-May-06	17:30:50	38.3	
151	18-May-06	17:31:50	40.3	
152	18-May-06	17:32:50	51.3	Rejected
153	18-May-06	17:33:50	43.0	
154	18-May-06	17:34:50	36.4	
155	18-May-06	17:35:50	32.6	
156	18-May-06	17:36:50	37.0	
157	18-May-06	17:37:50	34.8	
158	18-May-06	17:38:50	31.8	
159	18-May-06	17:39:50	33.3	
160	18-May-06	17:40:50	38.3	
161	18-May-06	17:41:50	36.0	
162	18-May-06	17:42:50	32.8	
163	18-May-06	17:43:50	38.1	
164	18-May-06	17:44:50	33.9	
165	18-May-06	17:45:50	32.4	
166	18-May-06	17:46:50	32.6	
167	18-May-06	17:47:50	31.9	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
168	18-May-06	17:48:50	31.1	
169	18-May-06	17:49:50	30.8	
170	18-May-06	17:50:50	33.3	
171	18-May-06	17:51:50	31.3	
172	18-May-06	17:52:50	31.8	
173	18-May-06	17:53:50	31.4	
174	18-May-06	17:54:50	31.4	
175	18-May-06	17:55:50	33.0	
176	18-May-06	17:56:50	32.2	
177	18-May-06	17:57:50	32.7	
178	18-May-06	17:58:50	31.9	
179	18-May-06	17:59:50	33.4	
180	18-May-06	18:00:50	34.1	
181	18-May-06	18:01:50	34.1	
182	18-May-06	18:02:50	35.1	
183	18-May-06	18:03:50	36.1	
184	18-May-06	18:04:50	40.2	
185	18-May-06	18:05:50	34.6	
186	18-May-06	18:06:50	38.0	
187	18-May-06	18:07:50	31.8	
188	18-May-06	18:08:50	30.9	
189	18-May-06	18:09:50	31.1	
190	18-May-06	18:10:50	33.9	
191	18-May-06	18:11:50	37.8	
192	18-May-06	18:12:50	33.8	
193	18-May-06	18:13:50	34.1	
194	18-May-06	18:14:50	42.4	
195	18-May-06	18:15:50	37.2	
196	18-May-06	18:16:50	34.6	
197	18-May-06	18:17:50	37.2	
198	18-May-06	18:18:50	40.2	
199	18-May-06	18:19:50	35.9	
200	18-May-06	18:20:50	32.3	
201	18-May-06	18:21:50	32.4	
202	18-May-06	18:22:50	31.9	
203	18-May-06	18:23:50	31.6	
204	18-May-06	18:24:50	31.8	
205	18-May-06	18:25:50	34.2	
206	18-May-06	18:26:50	33.5	
207	18-May-06	18:27:50	33.6	
208	18-May-06	18:28:50	33.4	
209	18-May-06	18:29:50	34.8	
210	18-May-06	18:30:50	33.8	
211	18-May-06	18:31:50	37.8	
212	18-May-06	18:32:50	33.5	
213	18-May-06	18:33:50	30.8	
214	18-May-06	18:34:50	33.2	
215	18-May-06	18:35:50	31.6	
216	18-May-06	18:36:50	29.6	
217	18-May-06	18:37:50	31.5	
218	18-May-06	18:38:50	41.3	
219	18-May-06	18:39:50	39.0	
220	18-May-06	18:40:50	31.5	
221	18-May-06	18:41:50	31.7	
222	18-May-06	18:42:50	32.4	
223	18-May-06	18:43:50	36.8	
224	18-May-06	18:44:50	37.6	
225	18-May-06	18:45:50	33.8	
226	18-May-06	18:46:50	37.0	
227	18-May-06	18:47:50	37.0	
228	18-May-06	18:48:50	34.6	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
229	18-May-06	18:49:50	34.8	
230	18-May-06	18:50:50	32.2	
231	18-May-06	18:51:50	33.4	
232	18-May-06	18:52:50	33.1	
233	18-May-06	18:53:50	32.0	
234	18-May-06	18:54:50	32.4	
235	18-May-06	18:55:50	32.3	
236	18-May-06	18:56:50	34.8	
237	18-May-06	18:57:50	34.5	
238	18-May-06	18:58:50	32.8	
239	18-May-06	18:59:50	30.2	
240	18-May-06	19:00:50	30.5	
241	18-May-06	19:01:50	31.7	
242	18-May-06	19:02:50	29.9	
243	18-May-06	19:03:50	30.8	
244	18-May-06	19:04:50	37.8	
245	18-May-06	19:05:50	34.6	
246	18-May-06	19:06:50	31.7	
247	18-May-06	19:07:50	33.5	
248	18-May-06	19:08:50	31.5	
249	18-May-06	19:09:50	31.8	
250	18-May-06	19:10:50	33.4	
251	18-May-06	19:11:50	34.9	
252	18-May-06	19:12:50	36.4	
253	18-May-06	19:13:50	32.1	
254	18-May-06	19:14:50	32.9	
255	18-May-06	19:15:50	33.8	
256	18-May-06	19:16:50	33.7	
257	18-May-06	19:17:50	32.8	
258	18-May-06	19:18:50	38.7	
259	18-May-06	19:19:50	35.7	
260	18-May-06	19:20:50	34.0	
261	18-May-06	19:21:50	38.0	
262	18-May-06	19:22:50	35.5	
263	18-May-06	19:23:50	32.7	
264	18-May-06	19:24:50	32.5	
265	18-May-06	19:25:50	35.4	
266	18-May-06	19:26:50	39.6	
267	18-May-06	19:27:50	35.4	
268	18-May-06	19:28:50	39.2	
269	18-May-06	19:29:50	37.7	
270	18-May-06	19:30:50	40.0	
271	18-May-06	19:31:50	33.6	
272	18-May-06	19:32:50	32.0	
273	18-May-06	19:33:50	32.6	
274	18-May-06	19:34:50	31.8	
275	18-May-06	19:35:50	34.2	
276	18-May-06	19:36:50	47.5	Rejected
277	18-May-06	19:37:50	37.2	
278	18-May-06	19:38:50	38.6	
279	18-May-06	19:39:50	38.7	
280	18-May-06	19:40:50	34.4	
281	18-May-06	19:41:50	33.6	
282	18-May-06	19:42:50	32.7	
283	18-May-06	19:43:50	32.7	
284	18-May-06	19:44:50	32.6	
285	18-May-06	19:45:50	35.4	
286	18-May-06	19:46:50	36.5	
287	18-May-06	19:47:50	32.9	
288	18-May-06	19:48:50	31.7	
289	18-May-06	19:49:50	30.4	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
290	18-May-06	19:50:50	36.8	
291	18-May-06	19:51:50	41.3	
292	18-May-06	19:52:50	35.4	
293	18-May-06	19:53:50	29.6	
294	18-May-06	19:54:50	30.2	
295	18-May-06	19:55:50	31.8	
296	18-May-06	19:56:50	32.7	
297	18-May-06	19:57:50	33.0	
298	18-May-06	19:58:50	32.9	
299	18-May-06	19:59:50	33.6	
300	18-May-06	20:00:50	34.6	
301	18-May-06	20:01:50	30.8	
302	18-May-06	20:02:50	31.2	
303	18-May-06	20:03:50	33.8	
304	18-May-06	20:04:50	37.7	
305	18-May-06	20:05:50	35.6	
306	18-May-06	20:06:50	34.1	
307	18-May-06	20:07:50	33.3	
308	18-May-06	20:08:50	32.2	
309	18-May-06	20:09:50	31.5	
310	18-May-06	20:10:50	32.8	
311	18-May-06	20:11:50	32.4	
312	18-May-06	20:12:50	33.0	
313	18-May-06	20:13:50	31.7	
314	18-May-06	20:14:50	31.7	
315	18-May-06	20:15:50	32.5	
316	18-May-06	20:16:50	32.7	
317	18-May-06	20:17:50	31.2	
318	18-May-06	20:18:50	34.5	
319	18-May-06	20:19:50	31.9	
320	18-May-06	20:20:50	32.1	
321	18-May-06	20:21:50	33.2	
322	18-May-06	20:22:50	34.1	
323	18-May-06	20:23:50	33.3	
324	18-May-06	20:24:50	32.3	
325	18-May-06	20:25:50	34.2	
326	18-May-06	20:26:50	33.7	
327	18-May-06	20:27:50	34.3	
328	18-May-06	20:28:50	34.0	
329	18-May-06	20:29:50	33.0	
330	18-May-06	20:30:50	33.7	
331	18-May-06	20:31:50	40.0	
332	18-May-06	20:32:50	35.0	
333	18-May-06	20:33:50	35.1	
334	18-May-06	20:34:50	34.3	
335	18-May-06	20:35:50	34.0	
336	18-May-06	20:36:50	33.8	
337	18-May-06	20:37:50	34.0	
338	18-May-06	20:38:50	38.2	
339	18-May-06	20:39:50	38.7	
340	18-May-06	20:40:50	34.8	
341	18-May-06	20:41:50	34.6	
342	18-May-06	20:42:50	35.0	
343	18-May-06	20:43:50	36.4	
344	18-May-06	20:44:50	34.5	
345	18-May-06	20:45:50	35.1	
346	18-May-06	20:46:50	36.6	
347	18-May-06	20:47:50	38.0	
348	18-May-06	20:48:50	37.4	
349	18-May-06	20:49:50	36.9	
350	18-May-06	20:50:50	37.7	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
351	18-May-06	20:51:50	38.3	
352	18-May-06	20:52:50	37.0	
353	18-May-06	20:53:50	37.2	
354	18-May-06	20:54:50	37.3	
355	18-May-06	20:55:50	36.4	
356	18-May-06	20:56:50	36.7	
357	18-May-06	20:57:50	36.8	
358	18-May-06	20:58:50	38.7	
359	18-May-06	20:59:50	37.0	
360	18-May-06	21:00:50	38.0	
361	18-May-06	21:01:50	36.7	
362	18-May-06	21:02:50	37.7	
363	18-May-06	21:03:50	37.9	
364	18-May-06	21:04:50	36.9	
365	18-May-06	21:05:50	37.1	
366	18-May-06	21:06:50	37.0	
367	18-May-06	21:07:50	39.1	
368	18-May-06	21:08:50	40.7	
369	18-May-06	21:09:50	38.6	
370	18-May-06	21:10:50	37.7	
371	18-May-06	21:11:50	37.9	
372	18-May-06	21:12:50	37.5	
373	18-May-06	21:13:50	39.0	
374	18-May-06	21:14:50	37.5	
375	18-May-06	21:15:50	37.6	
376	18-May-06	21:16:50	37.9	
377	18-May-06	21:17:50	39.2	
378	18-May-06	21:18:50	39.1	
379	18-May-06	21:19:50	39.2	
380	18-May-06	21:20:50	40.6	
381	18-May-06	21:21:50	37.2	
382	18-May-06	21:22:50	39.1	
383	18-May-06	21:23:50	38.8	
384	18-May-06	21:24:50	39.1	
385	18-May-06	21:25:50	40.2	
386	18-May-06	21:26:50	39.7	
387	18-May-06	21:27:50	39.2	
388	18-May-06	21:28:50	39.9	
389	18-May-06	21:29:50	40.5	
390	18-May-06	21:30:50	39.9	
391	18-May-06	21:31:50	39.6	
392	18-May-06	21:32:50	39.4	
393	18-May-06	21:33:50	39.3	
394	18-May-06	21:34:50	38.9	
395	18-May-06	21:35:50	38.2	
396	18-May-06	21:36:50	37.4	
397	18-May-06	21:37:50	37.1	
398	18-May-06	21:38:50	36.7	
399	18-May-06	21:39:50	36.1	
400	18-May-06	21:40:50	35.8	
401	18-May-06	21:41:50	36.0	
402	18-May-06	21:42:50	36.1	
403	18-May-06	21:43:50	36.4	
404	18-May-06	21:44:50	35.4	
405	18-May-06	21:45:50	38.6	
406	18-May-06	21:46:50	43.3	
407	18-May-06	21:47:50	35.6	
408	18-May-06	21:48:50	36.3	
409	18-May-06	21:49:50	35.8	
410	18-May-06	21:50:50	35.9	
411	18-May-06	21:51:50	36.3	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
412	18-May-06	21:52:50	36.7	
413	18-May-06	21:53:50	35.9	
414	18-May-06	21:54:50	36.3	
415	18-May-06	21:55:50	35.7	
416	18-May-06	21:56:50	35.8	
417	18-May-06	21:57:50	36.4	
418	18-May-06	21:58:50	36.4	
419	18-May-06	21:59:50	36.2	
420	18-May-06	22:00:50	35.0	
421	18-May-06	22:01:50	34.5	
422	18-May-06	22:02:50	34.3	
423	18-May-06	22:03:50	34.9	
424	18-May-06	22:04:50	35.5	
425	18-May-06	22:05:50	35.1	
426	18-May-06	22:06:50	35.5	
427	18-May-06	22:07:50	35.4	
428	18-May-06	22:08:50	36.0	
429	18-May-06	22:09:50	35.2	
430	18-May-06	22:10:50	36.9	
431	18-May-06	22:11:50	36.0	
432	18-May-06	22:12:50	36.5	
433	18-May-06	22:13:50	36.0	
434	18-May-06	22:14:50	36.2	
435	18-May-06	22:15:50	35.4	
436	18-May-06	22:16:50	35.8	
437	18-May-06	22:17:50	35.9	
438	18-May-06	22:18:50	35.5	
439	18-May-06	22:19:50	36.2	
440	18-May-06	22:20:50	36.3	
441	18-May-06	22:21:50	37.1	
442	18-May-06	22:22:50	39.2	
443	18-May-06	22:23:50	38.1	
444	18-May-06	22:24:50	38.3	
445	18-May-06	22:25:50	38.2	
446	18-May-06	22:26:50	37.7	
447	18-May-06	22:27:50	37.2	
448	18-May-06	22:28:50	37.0	
449	18-May-06	22:29:50	37.7	
450	18-May-06	22:30:50	38.4	
451	18-May-06	22:31:50	38.7	
452	18-May-06	22:32:50	39.0	
453	18-May-06	22:33:50	39.8	
454	18-May-06	22:34:50	40.9	
455	18-May-06	22:35:50	38.8	
456	18-May-06	22:36:50	37.5	
457	18-May-06	22:37:50	37.9	
458	18-May-06	22:38:50	37.9	
459	18-May-06	22:39:50	37.5	
460	18-May-06	22:40:50	37.6	
461	18-May-06	22:41:50	38.7	
462	18-May-06	22:42:50	39.0	
463	18-May-06	22:43:50	39.1	
464	18-May-06	22:44:50	39.9	
465	18-May-06	22:45:50	38.9	
466	18-May-06	22:46:50	38.9	
467	18-May-06	22:47:50	38.4	
468	18-May-06	22:48:50	39.9	
469	18-May-06	22:49:50	38.5	
470	18-May-06	22:50:50	38.7	
471	18-May-06	22:51:50	38.5	
472	18-May-06	22:52:50	38.8	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
473	18-May-06	22:53:50	38.7	
474	18-May-06	22:54:50	38.2	
475	18-May-06	22:55:50	38.3	
476	18-May-06	22:56:50	38.0	
477	18-May-06	22:57:50	38.3	
478	18-May-06	22:58:50	38.1	
479	18-May-06	22:59:50	38.6	
480	18-May-06	23:00:50	39.9	
481	18-May-06	23:01:50	37.7	
482	18-May-06	23:02:50	38.1	
483	18-May-06	23:03:50	37.7	
484	18-May-06	23:04:50	38.1	
485	18-May-06	23:05:50	37.5	
486	18-May-06	23:06:50	37.4	
487	18-May-06	23:07:50	37.3	
488	18-May-06	23:08:50	36.9	
489	18-May-06	23:09:50	36.8	
490	18-May-06	23:10:50	36.9	
491	18-May-06	23:11:50	37.0	
492	18-May-06	23:12:50	37.7	
493	18-May-06	23:13:50	37.7	
494	18-May-06	23:14:50	38.2	
495	18-May-06	23:15:50	38.0	
496	18-May-06	23:16:50	38.2	
497	18-May-06	23:17:50	38.7	
498	18-May-06	23:18:50	38.5	
499	18-May-06	23:19:50	38.9	
500	18-May-06	23:20:50	38.6	
501	18-May-06	23:21:50	43.6	
502	18-May-06	23:22:50	39.2	
503	18-May-06	23:23:50	38.4	
504	18-May-06	23:24:50	38.2	
505	18-May-06	23:25:50	38.6	
506	18-May-06	23:26:50	40.0	
507	18-May-06	23:27:50	40.3	
508	18-May-06	23:28:50	39.7	
509	18-May-06	23:29:50	39.3	
510	18-May-06	23:30:50	39.4	
511	18-May-06	23:31:50	40.1	
512	18-May-06	23:32:50	39.7	
513	18-May-06	23:33:50	39.1	
514	18-May-06	23:34:50	39.6	
515	18-May-06	23:35:50	39.6	
516	18-May-06	23:36:50	39.7	
517	18-May-06	23:37:50	39.8	
518	18-May-06	23:38:50	40.0	
519	18-May-06	23:39:50	39.3	
520	18-May-06	23:40:50	39.6	
521	18-May-06	23:41:50	37.6	
522	18-May-06	23:42:50	37.5	
523	18-May-06	23:43:50	37.7	
524	18-May-06	23:44:50	37.6	
525	18-May-06	23:45:50	37.9	
526	18-May-06	23:46:50	37.4	
527	18-May-06	23:47:50	37.1	
528	18-May-06	23:48:50	37.1	
529	18-May-06	23:49:50	37.4	
530	18-May-06	23:50:50	37.6	
531	18-May-06	23:51:50	38.4	
532	18-May-06	23:52:50	40.2	
533	18-May-06	23:53:50	39.2	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
534	18-May-06	23:54:50	37.7	
535	18-May-06	23:55:50	39.5	
536	18-May-06	23:56:50	41.2	
537	18-May-06	23:57:50	40.3	
538	18-May-06	23:58:50	40.0	
539	18-May-06	23:59:00	Pause:Calib	
540	18-May-06	23:59:17	Cont:Calib	
541	18-May-06	23:59:17	39.8	
542	19-May-06	0:00:17	40.2	
543	19-May-06	0:01:17	39.3	
544	19-May-06	0:02:17	38.9	
545	19-May-06	0:03:17	38.4	
546	19-May-06	0:04:17	37.8	
547	19-May-06	0:05:17	38.7	
548	19-May-06	0:06:17	39.4	
549	19-May-06	0:07:17	38.6	
550	19-May-06	0:08:17	37.5	
551	19-May-06	0:09:17	37.8	
552	19-May-06	0:10:17	39.9	
553	19-May-06	0:11:17	38.5	
554	19-May-06	0:12:17	38.1	
555	19-May-06	0:13:17	37.1	
556	19-May-06	0:14:17	36.6	
557	19-May-06	0:15:17	36.8	
558	19-May-06	0:16:17	37.3	
559	19-May-06	0:17:17	43.0	
560	19-May-06	0:18:17	39.2	
561	19-May-06	0:19:17	38.7	
562	19-May-06	0:20:17	37.5	
563	19-May-06	0:21:17	38.1	
564	19-May-06	0:22:17	37.9	
565	19-May-06	0:23:17	38.1	
566	19-May-06	0:24:17	37.6	
567	19-May-06	0:25:17	38.0	
568	19-May-06	0:26:17	38.3	
569	19-May-06	0:27:17	38.2	
570	19-May-06	0:28:17	38.4	
571	19-May-06	0:29:17	38.2	
572	19-May-06	0:30:17	37.2	
573	19-May-06	0:31:17	36.9	
574	19-May-06	0:32:17	36.6	
575	19-May-06	0:33:17	37.0	
576	19-May-06	0:34:17	38.1	
577	19-May-06	0:35:17	38.3	
578	19-May-06	0:36:17	37.8	
579	19-May-06	0:37:17	37.4	
580	19-May-06	0:38:17	37.8	
581	19-May-06	0:39:17	38.3	
582	19-May-06	0:40:17	38.7	
583	19-May-06	0:41:17	39.2	
584	19-May-06	0:42:17	38.8	
585	19-May-06	0:43:17	38.5	
586	19-May-06	0:44:17	38.7	
587	19-May-06	0:45:17	38.4	
588	19-May-06	0:46:17	37.9	
589	19-May-06	0:47:17	39.0	
590	19-May-06	0:48:17	38.8	
591	19-May-06	0:49:17	39.5	
592	19-May-06	0:50:17	39.9	
593	19-May-06	0:51:17	39.9	
594	19-May-06	0:52:17	39.9	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
595	19-May-06	0:53:17	40.9	
596	19-May-06	0:54:17	41.7	
597	19-May-06	0:55:17	41.0	
598	19-May-06	0:56:17	40.6	
599	19-May-06	0:57:17	40.5	
600	19-May-06	0:58:17	40.4	
601	19-May-06	0:59:17	40.7	
602	19-May-06	1:00:17	40.4	
603	19-May-06	1:01:17	39.8	
604	19-May-06	1:02:17	39.8	
605	19-May-06	1:03:17	39.2	
606	19-May-06	1:04:17	39.6	
607	19-May-06	1:05:17	40.1	
608	19-May-06	1:06:17	44.5	
609	19-May-06	1:07:17	42.4	
610	19-May-06	1:08:17	42.8	
611	19-May-06	1:09:17	42.8	
612	19-May-06	1:10:17	45.9	
613	19-May-06	1:11:17	42.2	
614	19-May-06	1:12:17	41.9	
615	19-May-06	1:13:17	41.6	
616	19-May-06	1:14:17	41.2	
617	19-May-06	1:15:17	41.0	
618	19-May-06	1:16:17	40.2	
619	19-May-06	1:17:17	40.5	
620	19-May-06	1:18:17	40.7	
621	19-May-06	1:19:17	41.6	
622	19-May-06	1:20:17	42.5	
623	19-May-06	1:21:17	42.4	
624	19-May-06	1:22:17	42.0	
625	19-May-06	1:23:17	42.1	
626	19-May-06	1:24:17	42.2	
627	19-May-06	1:25:17	41.7	
628	19-May-06	1:26:17	41.3	
629	19-May-06	1:27:17	40.7	
630	19-May-06	1:28:17	40.7	
631	19-May-06	1:29:17	41.4	
632	19-May-06	1:30:17	41.0	
633	19-May-06	1:31:17	41.4	
634	19-May-06	1:32:17	41.1	
635	19-May-06	1:33:17	41.1	
636	19-May-06	1:34:17	41.6	
637	19-May-06	1:35:17	42.7	
638	19-May-06	1:36:17	42.3	
639	19-May-06	1:37:17	41.2	
640	19-May-06	1:38:17	41.0	
641	19-May-06	1:39:17	42.0	
642	19-May-06	1:40:17	41.8	
643	19-May-06	1:41:17	41.9	
644	19-May-06	1:42:17	41.6	
645	19-May-06	1:43:17	41.7	
646	19-May-06	1:44:17	40.9	
647	19-May-06	1:45:17	41.8	
648	19-May-06	1:46:17	41.1	
649	19-May-06	1:47:17	41.2	
650	19-May-06	1:48:17	40.9	
651	19-May-06	1:49:17	40.5	
652	19-May-06	1:50:17	40.2	
653	19-May-06	1:51:17	39.7	
654	19-May-06	1:52:17	39.1	
655	19-May-06	1:53:17	38.3	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
656	19-May-06	1:54:17	39.1	
657	19-May-06	1:55:17	39.2	
658	19-May-06	1:56:17	39.9	
659	19-May-06	1:57:17	40.9	
660	19-May-06	1:58:17	40.3	
661	19-May-06	1:59:17	40.9	
662	19-May-06	2:00:17	39.6	
663	19-May-06	2:01:17	39.7	
664	19-May-06	2:02:17	39.8	
665	19-May-06	2:03:17	39.3	
666	19-May-06	2:04:17	39.6	
667	19-May-06	2:05:17	40.0	
668	19-May-06	2:06:17	40.0	
669	19-May-06	2:07:17	39.9	
670	19-May-06	2:08:17	40.2	
671	19-May-06	2:09:17	40.5	
672	19-May-06	2:10:17	40.7	
673	19-May-06	2:11:17	41.1	
674	19-May-06	2:12:17	41.2	
675	19-May-06	2:13:17	41.4	
676	19-May-06	2:14:17	41.7	
677	19-May-06	2:15:17	40.9	
678	19-May-06	2:16:17	41.5	
679	19-May-06	2:17:17	40.9	
680	19-May-06	2:18:17	40.4	
681	19-May-06	2:19:17	40.1	
682	19-May-06	2:20:17	39.8	
683	19-May-06	2:21:17	41.2	
684	19-May-06	2:22:17	42.8	
685	19-May-06	2:23:17	42.6	
686	19-May-06	2:24:17	41.8	
687	19-May-06	2:25:17	42.6	
688	19-May-06	2:26:17	42.7	
689	19-May-06	2:27:17	42.3	
690	19-May-06	2:28:17	42.6	
691	19-May-06	2:29:17	42.9	
692	19-May-06	2:30:17	43.4	
693	19-May-06	2:31:17	43.1	
694	19-May-06	2:32:17	42.5	
695	19-May-06	2:33:17	42.4	
696	19-May-06	2:34:17	42.1	
697	19-May-06	2:35:17	42.6	
698	19-May-06	2:36:17	42.5	
699	19-May-06	2:37:17	42.2	
700	19-May-06	2:38:17	43.2	
701	19-May-06	2:39:17	43.3	
702	19-May-06	2:40:17	43.2	
703	19-May-06	2:41:17	43.1	
704	19-May-06	2:42:17	42.0	
705	19-May-06	2:43:17	42.7	
706	19-May-06	2:44:17	42.4	
707	19-May-06	2:45:17	42.3	
708	19-May-06	2:46:17	42.5	
709	19-May-06	2:47:17	42.5	
710	19-May-06	2:48:17	43.1	
711	19-May-06	2:49:17	43.8	
712	19-May-06	2:50:17	42.4	
713	19-May-06	2:51:17	42.6	
714	19-May-06	2:52:17	42.2	
715	19-May-06	2:53:17	42.5	
716	19-May-06	2:54:17	42.4	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
717	19-May-06	2:55:17	40.6	
718	19-May-06	2:56:17	42.7	
719	19-May-06	2:57:17	44.3	
720	19-May-06	2:58:17	43.9	
721	19-May-06	2:59:17	43.6	
722	19-May-06	3:00:17	43.8	
723	19-May-06	3:01:17	43.5	
724	19-May-06	3:02:17	42.3	
725	19-May-06	3:03:17	40.9	
726	19-May-06	3:04:17	41.6	
727	19-May-06	3:05:17	40.7	
728	19-May-06	3:06:17	42.5	
729	19-May-06	3:07:17	42.1	
730	19-May-06	3:08:17	41.7	
731	19-May-06	3:09:17	40.8	
732	19-May-06	3:10:17	39.7	
733	19-May-06	3:11:17	40.3	
734	19-May-06	3:12:17	39.9	
735	19-May-06	3:13:17	41.5	
736	19-May-06	3:14:17	41.7	
737	19-May-06	3:15:17	42.2	
738	19-May-06	3:16:17	42.1	
739	19-May-06	3:17:17	42.9	
740	19-May-06	3:18:17	43.2	
741	19-May-06	3:19:17	43.5	
742	19-May-06	3:20:17	43.1	
743	19-May-06	3:21:17	42.6	
744	19-May-06	3:22:17	42.7	
745	19-May-06	3:23:17	43.0	
746	19-May-06	3:24:17	42.9	
747	19-May-06	3:25:17	43.6	
748	19-May-06	3:26:17	42.1	
749	19-May-06	3:27:17	40.2	
750	19-May-06	3:28:17	41.0	
751	19-May-06	3:29:17	41.3	
752	19-May-06	3:30:17	42.2	
753	19-May-06	3:31:17	41.9	
754	19-May-06	3:32:17	42.7	
755	19-May-06	3:33:17	41.9	
756	19-May-06	3:34:17	42.4	
757	19-May-06	3:35:17	43.3	
758	19-May-06	3:36:17	42.4	
759	19-May-06	3:37:17	42.3	
760	19-May-06	3:38:17	42.9	
761	19-May-06	3:39:17	43.6	
762	19-May-06	3:40:17	44.9	
763	19-May-06	3:41:17	41.5	
764	19-May-06	3:42:17	38.3	
765	19-May-06	3:43:17	38.5	
766	19-May-06	3:44:17	38.9	
767	19-May-06	3:45:17	38.1	
768	19-May-06	3:46:17	38.0	
769	19-May-06	3:47:17	40.1	
770	19-May-06	3:48:17	41.6	
771	19-May-06	3:49:17	41.7	
772	19-May-06	3:50:17	41.1	
773	19-May-06	3:51:17	41.5	
774	19-May-06	3:52:17	41.7	
775	19-May-06	3:53:17	41.0	
776	19-May-06	3:54:17	41.8	
777	19-May-06	3:55:17	40.9	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
778	19-May-06	3:56:17	40.6	
779	19-May-06	3:57:17	42.1	
780	19-May-06	3:58:17	42.3	
781	19-May-06	3:59:17	41.2	
782	19-May-06	4:00:17	41.7	
783	19-May-06	4:01:17	42.0	
784	19-May-06	4:02:17	42.0	
785	19-May-06	4:03:17	41.1	
786	19-May-06	4:04:17	40.5	
787	19-May-06	4:05:17	40.5	
788	19-May-06	4:06:17	41.0	
789	19-May-06	4:07:17	42.0	
790	19-May-06	4:08:17	42.1	
791	19-May-06	4:09:17	41.9	
792	19-May-06	4:10:17	41.9	
793	19-May-06	4:11:17	40.1	
794	19-May-06	4:12:17	40.0	
795	19-May-06	4:13:17	43.6	
796	19-May-06	4:14:17	44.1	
797	19-May-06	4:15:17	45.1	
798	19-May-06	4:16:17	44.7	
799	19-May-06	4:17:17	42.9	
800	19-May-06	4:18:17	41.2	
801	19-May-06	4:19:17	39.7	
802	19-May-06	4:20:17	38.7	
803	19-May-06	4:21:17	39.2	
804	19-May-06	4:22:17	39.2	
805	19-May-06	4:23:17	39.7	
806	19-May-06	4:24:17	40.5	
807	19-May-06	4:25:17	40.2	
808	19-May-06	4:26:17	41.7	
809	19-May-06	4:27:17	41.1	
810	19-May-06	4:28:17	40.8	
811	19-May-06	4:29:17	40.7	
812	19-May-06	4:30:17	41.3	
813	19-May-06	4:31:17	41.0	
814	19-May-06	4:32:17	41.2	
815	19-May-06	4:33:17	42.1	
816	19-May-06	4:34:17	41.5	
817	19-May-06	4:35:17	41.6	
818	19-May-06	4:36:17	42.5	
819	19-May-06	4:37:17	42.2	
820	19-May-06	4:38:17	41.4	
821	19-May-06	4:39:17	42.8	
822	19-May-06	4:40:17	43.4	
823	19-May-06	4:41:17	43.2	
824	19-May-06	4:42:17	43.2	
825	19-May-06	4:43:17	42.9	
826	19-May-06	4:44:17	42.3	
827	19-May-06	4:45:17	42.5	
828	19-May-06	4:46:17	42.6	
829	19-May-06	4:47:17	42.3	
830	19-May-06	4:48:17	42.2	
831	19-May-06	4:49:17	43.1	
832	19-May-06	4:50:17	42.3	
833	19-May-06	4:51:17	42.2	
834	19-May-06	4:52:17	42.4	
835	19-May-06	4:53:17	42.2	
836	19-May-06	4:54:17	42.5	
837	19-May-06	4:55:17	42.7	
838	19-May-06	4:56:17	43.5	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
839	19-May-06	4:57:17	43.7	
840	19-May-06	4:58:17	41.2	
841	19-May-06	4:59:17	39.8	
842	19-May-06	5:00:17	41.6	
843	19-May-06	5:01:17	41.8	
844	19-May-06	5:02:17	42.6	
845	19-May-06	5:03:17	41.5	
846	19-May-06	5:04:17	42.8	
847	19-May-06	5:05:17	41.7	
848	19-May-06	5:06:17	40.0	
849	19-May-06	5:07:17	39.9	
850	19-May-06	5:08:17	41.4	
851	19-May-06	5:09:17	41.8	
852	19-May-06	5:10:17	40.6	
853	19-May-06	5:11:17	40.1	
854	19-May-06	5:12:17	40.7	
855	19-May-06	5:13:17	40.3	
856	19-May-06	5:14:17	41.2	
857	19-May-06	5:15:17	41.3	
858	19-May-06	5:16:17	39.6	
859	19-May-06	5:17:17	41.5	
860	19-May-06	5:18:17	40.7	
861	19-May-06	5:19:17	40.5	
862	19-May-06	5:20:17	38.1	
863	19-May-06	5:21:17	37.6	
864	19-May-06	5:22:17	39.0	
865	19-May-06	5:23:17	37.5	
866	19-May-06	5:24:17	38.1	
867	19-May-06	5:25:17	38.4	
868	19-May-06	5:26:17	38.9	
869	19-May-06	5:27:17	38.8	
870	19-May-06	5:28:17	39.5	
871	19-May-06	5:29:17	40.9	
872	19-May-06	5:30:17	41.7	
873	19-May-06	5:31:17	42.7	
874	19-May-06	5:32:17	42.7	
875	19-May-06	5:33:17	41.0	
876	19-May-06	5:34:17	41.6	
877	19-May-06	5:35:17	41.0	
878	19-May-06	5:36:17	42.9	
879	19-May-06	5:37:17	43.8	
880	19-May-06	5:38:17	43.7	
881	19-May-06	5:39:17	43.7	
882	19-May-06	5:40:17	43.4	
883	19-May-06	5:41:17	43.7	
884	19-May-06	5:42:17	43.9	
885	19-May-06	5:43:17	44.0	
886	19-May-06	5:44:17	44.1	
887	19-May-06	5:45:17	43.1	
888	19-May-06	5:46:17	43.2	
889	19-May-06	5:47:17	41.1	
890	19-May-06	5:48:17	40.8	
891	19-May-06	5:49:17	41.4	
892	19-May-06	5:50:17	40.4	
893	19-May-06	5:51:17	40.5	
894	19-May-06	5:52:17	40.0	
895	19-May-06	5:53:17	40.4	
896	19-May-06	5:54:17	40.2	
897	19-May-06	5:55:17	41.5	
898	19-May-06	5:56:17	39.5	
899	19-May-06	5:57:17	38.5	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
900	19-May-06	5:58:17	39.2	
901	19-May-06	5:59:17	39.5	
902	19-May-06	6:00:17	38.7	
903	19-May-06	6:01:17	38.3	
904	19-May-06	6:02:17	39.9	
905	19-May-06	6:03:17	39.5	
906	19-May-06	6:04:17	39.1	
907	19-May-06	6:05:17	39.3	
908	19-May-06	6:06:17	39.8	
909	19-May-06	6:07:17	41.6	
910	19-May-06	6:08:17	40.3	
911	19-May-06	6:09:17	40.0	
912	19-May-06	6:10:17	40.7	
913	19-May-06	6:11:17	41.5	
914	19-May-06	6:12:17	40.7	
915	19-May-06	6:13:17	42.7	
916	19-May-06	6:14:17	42.4	
917	19-May-06	6:15:17	44.3	
918	19-May-06	6:16:17	41.0	
919	19-May-06	6:17:17	42.4	
920	19-May-06	6:18:17	41.2	
921	19-May-06	6:19:17	43.7	
922	19-May-06	6:20:17	43.8	
923	19-May-06	6:21:17	45.0	
924	19-May-06	6:22:17	43.1	
925	19-May-06	6:23:17	41.0	
926	19-May-06	6:24:17	41.7	
927	19-May-06	6:25:17	41.8	
928	19-May-06	6:26:17	42.9	
929	19-May-06	6:27:17	41.8	
930	19-May-06	6:28:17	42.1	
931	19-May-06	6:29:17	42.5	
932	19-May-06	6:30:17	43.4	
933	19-May-06	6:31:17	43.7	
934	19-May-06	6:32:17	44.4	
935	19-May-06	6:33:17	43.6	
936	19-May-06	6:34:17	43.3	
937	19-May-06	6:35:17	43.2	
938	19-May-06	6:36:17	41.7	
939	19-May-06	6:37:17	42.2	
940	19-May-06	6:38:17	42.6	
941	19-May-06	6:39:17	42.6	
942	19-May-06	6:40:17	41.6	
943	19-May-06	6:41:17	42.5	
944	19-May-06	6:42:17	42.6	
945	19-May-06	6:43:17	42.8	
946	19-May-06	6:44:17	46.1	
947	19-May-06	6:45:17	42.8	
948	19-May-06	6:46:17	42.3	
949	19-May-06	6:47:17	42.5	
950	19-May-06	6:48:17	42.2	
951	19-May-06	6:49:17	42.6	
952	19-May-06	6:50:17	43.1	
953	19-May-06	6:51:17	43.6	
954	19-May-06	6:52:17	43.7	
955	19-May-06	6:53:17	44.5	
956	19-May-06	6:54:17	44.0	
957	19-May-06	6:55:17	43.4	
958	19-May-06	6:56:17	42.9	
959	19-May-06	6:57:17	43.4	
960	19-May-06	6:58:17	42.5	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
961	19-May-06	6:59:17	43.6	
962	19-May-06	7:00:17	43.1	
963	19-May-06	7:01:17	43.6	
964	19-May-06	7:02:17	43.4	
965	19-May-06	7:03:17	44.8	
966	19-May-06	7:04:17	44.5	
967	19-May-06	7:05:17	44.2	
968	19-May-06	7:06:17	44.2	
969	19-May-06	7:07:17	45.0	
970	19-May-06	7:08:17	44.4	
971	19-May-06	7:09:17	44.9	
972	19-May-06	7:10:17	44.0	
973	19-May-06	7:11:17	45.2	
974	19-May-06	7:12:17	44.6	
975	19-May-06	7:13:17	45.6	
976	19-May-06	7:14:17	44.7	
977	19-May-06	7:15:17	44.7	
978	19-May-06	7:16:17	44.8	
979	19-May-06	7:17:17	45.4	
980	19-May-06	7:18:17	44.9	
981	19-May-06	7:19:17	44.8	
982	19-May-06	7:20:17	45.2	
983	19-May-06	7:21:17	45.9	
984	19-May-06	7:22:17	46.4	
985	19-May-06	7:23:17	44.6	
986	19-May-06	7:24:17	44.4	
987	19-May-06	7:25:17	45.9	
988	19-May-06	7:26:17	45.8	
989	19-May-06	7:27:17	44.3	
990	19-May-06	7:28:17	44.4	
991	19-May-06	7:29:17	43.6	
992	19-May-06	7:30:17	43.0	
993	19-May-06	7:31:17	44.3	
994	19-May-06	7:32:17	44.0	
995	19-May-06	7:33:17	44.1	
996	19-May-06	7:34:17	43.8	
997	19-May-06	7:35:17	43.5	
998	19-May-06	7:36:17	44.0	
999	19-May-06	7:37:17	44.8	
1000	19-May-06	7:38:17	43.0	
1001	19-May-06	7:39:17	41.7	
1002	19-May-06	7:40:17	43.7	
1003	19-May-06	7:41:17	43.3	
1004	19-May-06	7:42:17	42.5	
1005	19-May-06	7:43:17	41.9	
1006	19-May-06	7:44:17	41.2	
1007	19-May-06	7:45:17	44.2	
1008	19-May-06	7:46:17	40.9	
1009	19-May-06	7:47:17	38.9	
1010	19-May-06	7:48:17	38.8	
1011	19-May-06	7:49:17	39.2	
1012	19-May-06	7:50:17	39.6	
1013	19-May-06	7:51:17	37.9	
1014	19-May-06	7:52:17	39.0	
1015	19-May-06	7:53:17	38.7	
1016	19-May-06	7:54:17	52.2	
1017	19-May-06	7:55:17	39.2	
1018	19-May-06	7:56:17	37.5	
1019	19-May-06	7:57:17	39.4	
1020	19-May-06	7:58:17	39.9	
1021	19-May-06	7:59:17	38.7	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1022	19-May-06	8:00:17	40.2	
1023	19-May-06	8:01:17	40.8	
1024	19-May-06	8:02:17	40.4	
1025	19-May-06	8:03:17	39.9	
1026	19-May-06	8:04:17	39.5	
1027	19-May-06	8:05:17	38.9	
1028	19-May-06	8:06:17	42.1	
1029	19-May-06	8:07:17	38.6	
1030	19-May-06	8:08:17	40.9	
1031	19-May-06	8:09:17	39.9	
1032	19-May-06	8:10:17	39.8	
1033	19-May-06	8:11:17	39.5	
1034	19-May-06	8:12:17	50.3	
1035	19-May-06	8:13:17	39.6	
1036	19-May-06	8:14:17	38.8	
1037	19-May-06	8:15:17	38.3	
1038	19-May-06	8:16:17	37.7	
1039	19-May-06	8:17:17	39.6	
1040	19-May-06	8:18:17	40.0	
1041	19-May-06	8:19:17	38.5	
1042	19-May-06	8:20:17	38.3	
1043	19-May-06	8:21:17	39.2	
1044	19-May-06	8:22:17	39.3	
1045	19-May-06	8:23:17	40.0	
1046	19-May-06	8:24:17	39.7	
1047	19-May-06	8:25:17	37.8	
1048	19-May-06	8:26:17	38.3	
1049	19-May-06	8:27:17	39.2	
1050	19-May-06	8:28:17	38.9	
1051	19-May-06	8:29:17	39.2	
1052	19-May-06	8:30:17	42.2	
1053	19-May-06	8:31:17	37.8	
1054	19-May-06	8:32:17	45.7	
1055	19-May-06	8:33:17	43.1	
1056	19-May-06	8:34:17	45.0	
1057	19-May-06	8:35:17	39.7	
1058	19-May-06	8:36:17	40.5	
1059	19-May-06	8:37:17	48.1	
1060	19-May-06	8:38:17	38.8	
1061	19-May-06	8:39:17	37.2	
1062	19-May-06	8:40:17	36.8	
1063	19-May-06	8:41:17	36.2	
1064	19-May-06	8:42:17	37.6	
1065	19-May-06	8:43:17	37.3	
1066	19-May-06	8:44:17	37.1	
1067	19-May-06	8:45:17	37.4	
1068	19-May-06	8:46:17	37.9	
1069	19-May-06	8:47:17	37.5	
1070	19-May-06	8:48:17	37.5	
1071	19-May-06	8:49:17	37.9	
1072	19-May-06	8:50:17	37.9	
1073	19-May-06	8:51:17	37.7	
1074	19-May-06	8:52:17	38.7	
1075	19-May-06	8:53:17	38.1	
1076	19-May-06	8:54:17	42.0	
1077	19-May-06	8:55:17	43.4	
1078	19-May-06	8:56:17	36.3	
1079	19-May-06	8:57:17	37.6	
1080	19-May-06	8:58:17	36.7	
1081	19-May-06	8:59:17	37.4	
1082	19-May-06	9:00:17	38.7	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1083	19-May-06	9:01:17	38.2	
1084	19-May-06	9:02:17	36.9	
1085	19-May-06	9:03:17	37.2	
1086	19-May-06	9:04:17	37.2	
1087	19-May-06	9:05:17	38.6	
1088	19-May-06	9:06:17	40.0	
1089	19-May-06	9:07:17	37.0	
1090	19-May-06	9:08:17	37.5	
1091	19-May-06	9:09:17	39.0	
1092	19-May-06	9:10:17	37.5	
1093	19-May-06	9:11:17	36.7	
1094	19-May-06	9:12:17	38.2	
1095	19-May-06	9:13:17	38.3	
1096	19-May-06	9:14:17	39.0	
1097	19-May-06	9:15:17	48.6	
1098	19-May-06	9:16:17	37.1	
1099	19-May-06	9:17:17	36.7	
1100	19-May-06	9:18:17	36.6	
1101	19-May-06	9:19:17	39.6	
1102	19-May-06	9:20:17	38.1	
1103	19-May-06	9:21:17	37.8	
1104	19-May-06	9:22:17	36.9	
1105	19-May-06	9:23:17	37.5	
1106	19-May-06	9:24:17	37.5	
1107	19-May-06	9:25:17	36.5	
1108	19-May-06	9:26:17	38.8	
1109	19-May-06	9:27:17	39.1	
1110	19-May-06	9:28:17	38.2	
1111	19-May-06	9:29:17	37.7	
1112	19-May-06	9:30:17	39.0	
1113	19-May-06	9:31:17	41.2	
1114	19-May-06	9:32:17	37.8	
1115	19-May-06	9:33:17	41.8	
1116	19-May-06	9:34:17	38.2	
1117	19-May-06	9:35:17	37.6	
1118	19-May-06	9:36:17	38.2	
1119	19-May-06	9:37:17	40.1	
1120	19-May-06	9:38:17	37.8	
1121	19-May-06	9:39:17	39.5	
1122	19-May-06	9:40:17	39.6	
1123	19-May-06	9:41:17	37.6	
1124	19-May-06	9:42:17	36.7	
1125	19-May-06	9:43:17	37.2	
1126	19-May-06	9:44:17	39.5	
1127	19-May-06	9:45:17	40.7	
1128	19-May-06	9:46:17	37.9	
1129	19-May-06	9:47:17	38.3	
1130	19-May-06	9:48:17	37.8	
1131	19-May-06	9:49:17	38.6	
1132	19-May-06	9:50:17	37.2	
1133	19-May-06	9:51:17	38.4	
1134	19-May-06	9:52:17	47.6	
1135	19-May-06	9:53:17	39.1	
1136	19-May-06	9:54:17	35.9	
1137	19-May-06	9:55:17	39.1	
1138	19-May-06	9:56:17	38.1	
1139	19-May-06	9:57:17	37.4	
1140	19-May-06	9:58:17	38.3	
1141	19-May-06	9:59:17	37.5	
1142	19-May-06	10:00:17	36.3	
1143	19-May-06	10:01:17	38.5	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1144	19-May-06	10:02:17	37.8	
1145	19-May-06	10:03:17	37.2	
1146	19-May-06	10:04:17	36.9	
1147	19-May-06	10:05:17	37.6	
1148	19-May-06	10:06:17	36.4	
1149	19-May-06	10:07:17	39.7	
1150	19-May-06	10:08:17	38.9	
1151	19-May-06	10:09:17	37.3	
1152	19-May-06	10:10:17	35.2	
1153	19-May-06	10:11:17	34.2	
1154	19-May-06	10:12:17	36.3	
1155	19-May-06	10:13:17	38.5	
1156	19-May-06	10:14:17	38.7	
1157	19-May-06	10:15:17	36.3	
1158	19-May-06	10:16:17	36.1	
1159	19-May-06	10:17:17	36.6	
1160	19-May-06	10:18:17	37.2	
1161	19-May-06	10:19:17	38.2	
1162	19-May-06	10:20:17	37.0	
1163	19-May-06	10:21:17	36.9	
1164	19-May-06	10:22:17	36.9	
1165	19-May-06	10:23:17	36.4	
1166	19-May-06	10:24:17	37.1	
1167	19-May-06	10:25:17	36.9	
1168	19-May-06	10:26:17	43.2	
1169	19-May-06	10:27:17	35.2	
1170	19-May-06	10:28:17	32.9	
1171	19-May-06	10:29:17	34.5	
1172	19-May-06	10:30:17	40.1	
1173	19-May-06	10:31:17	37.2	
1174	19-May-06	10:32:17	36.7	
1175	19-May-06	10:33:17	36.7	
1176	19-May-06	10:34:17	37.3	
1177	19-May-06	10:35:17	37.0	
1178	19-May-06	10:36:17	34.6	
1179	19-May-06	10:37:17	37.7	
1180	19-May-06	10:38:17	36.5	
1181	19-May-06	10:39:17	35.8	
1182	19-May-06	10:40:17	35.5	
1183	19-May-06	10:41:17	34.6	
1184	19-May-06	10:42:17	35.4	
1185	19-May-06	10:43:17	35.0	
1186	19-May-06	10:44:17	35.9	
1187	19-May-06	10:45:17	37.7	
1188	19-May-06	10:46:17	35.8	
1189	19-May-06	10:47:17	35.3	
1190	19-May-06	10:48:17	34.7	
1191	19-May-06	10:49:17	35.1	
1192	19-May-06	10:50:17	34.2	
1193	19-May-06	10:51:17	37.4	
1194	19-May-06	10:52:17	36.0	
1195	19-May-06	10:53:17	34.8	
1196	19-May-06	10:54:17	33.8	
1197	19-May-06	10:55:17	35.2	
1198	19-May-06	10:56:17	35.3	
1199	19-May-06	10:57:17	34.7	
1200	19-May-06	10:58:17	34.4	
1201	19-May-06	10:59:17	37.3	
1202	19-May-06	11:00:17	36.4	
1203	19-May-06	11:01:17	35.8	
1204	19-May-06	11:02:17	37.4	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1205	19-May-06	11:03:17	36.6	
1206	19-May-06	11:04:17	37.3	
1207	19-May-06	11:05:17	37.3	
1208	19-May-06	11:06:17	37.1	
1209	19-May-06	11:07:17	36.8	
1210	19-May-06	11:08:17	36.2	
1211	19-May-06	11:09:17	37.5	
1212	19-May-06	11:10:17	38.3	
1213	19-May-06	11:11:17	39.6	
1214	19-May-06	11:12:17	36.6	
1215	19-May-06	11:13:17	35.4	
1216	19-May-06	11:14:17	36.1	
1217	19-May-06	11:15:17	37.8	
1218	19-May-06	11:16:17	36.5	
1219	19-May-06	11:17:17	41.7	
1220	19-May-06	11:18:17	39.8	
1221	19-May-06	11:19:17	38.6	
1222	19-May-06	11:20:17	42.5	
1223	19-May-06	11:21:17	37.2	
1224	19-May-06	11:22:17	36.7	
1225	19-May-06	11:23:17	38.4	
1226	19-May-06	11:24:17	39.1	
1227	19-May-06	11:25:17	38.7	
1228	19-May-06	11:26:17	41.3	
1229	19-May-06	11:27:17	34.2	
1230	19-May-06	11:28:17	36.2	
1231	19-May-06	11:29:17	37.6	
1232	19-May-06	11:30:17	40.5	
1233	19-May-06	11:31:17	39.6	
1234	19-May-06	11:32:17	38.0	
1235	19-May-06	11:33:17	38.4	
1236	19-May-06	11:34:17	36.2	
1237	19-May-06	11:35:17	38.4	
1238	19-May-06	11:36:17	37.6	
1239	19-May-06	11:37:17	37.9	
1240	19-May-06	11:38:17	38.1	
1241	19-May-06	11:39:17	40.5	
1242	19-May-06	11:40:17	37.9	
1243	19-May-06	11:41:17	42.1	
1244	19-May-06	11:42:17	39.7	
1245	19-May-06	11:43:17	37.3	
1246	19-May-06	11:44:17	41.7	
1247	19-May-06	11:45:17	40.5	
1248	19-May-06	11:46:17	37.5	
1249	19-May-06	11:47:17	37.5	
1250	19-May-06	11:48:17	36.5	
1251	19-May-06	11:49:17	37.3	
1252	19-May-06	11:50:17	36.1	
1253	19-May-06	11:51:17	36.6	
1254	19-May-06	11:52:17	39.4	
1255	19-May-06	11:53:17	40.1	
1256	19-May-06	11:54:17	36.9	
1257	19-May-06	11:55:17	38.2	
1258	19-May-06	11:56:17	40.9	
1259	19-May-06	11:57:17	37.6	
1260	19-May-06	11:58:17	42.9	
1261	19-May-06	11:59:17	39.6	
1262	19-May-06	12:00:17	38.0	
1263	19-May-06	12:01:17	37.8	
1264	19-May-06	12:02:17	38.6	
1265	19-May-06	12:03:17	35.6	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1266	19-May-06	12:04:17	36.4	
1267	19-May-06	12:05:17	38.8	
1268	19-May-06	12:06:17	38.9	
1269	19-May-06	12:07:17	38.9	
1270	19-May-06	12:08:17	40.1	
1271	19-May-06	12:09:17	38.8	
1272	19-May-06	12:10:17	38.2	
1273	19-May-06	12:11:17	38.2	
1274	19-May-06	12:12:17	38.3	
1275	19-May-06	12:13:17	39.9	
1276	19-May-06	12:14:17	47.7	Rejected
1277	19-May-06	12:15:17	39.7	
1278	19-May-06	12:16:17	36.3	
1279	19-May-06	12:17:17	35.0	
1280	19-May-06	12:18:17	36.1	
1281	19-May-06	12:19:17	43.0	
1282	19-May-06	12:20:17	38.9	
1283	19-May-06	12:21:17	38.1	
1284	19-May-06	12:22:17	42.5	
1285	19-May-06	12:23:17	37.3	
1286	19-May-06	12:24:17	40.3	
1287	19-May-06	12:25:17	36.9	
1288	19-May-06	12:26:17	40.3	
1289	19-May-06	12:27:17	35.8	
1290	19-May-06	12:28:17	36.2	
1291	19-May-06	12:29:17	35.1	
1292	19-May-06	12:30:17	36.1	
1293	19-May-06	12:31:17	37.2	
1294	19-May-06	12:32:17	38.2	
1295	19-May-06	12:33:17	36.8	
1296	19-May-06	12:34:17	38.2	
1297	19-May-06	12:35:17	39.4	
1298	19-May-06	12:36:17	37.7	
1299	19-May-06	12:37:17	40.0	
1300	19-May-06	12:38:17	37.5	
1301	19-May-06	12:39:17	36.6	
1302	19-May-06	12:40:17	37.7	
1303	19-May-06	12:41:17	35.7	
1304	19-May-06	12:42:17	38.5	
1305	19-May-06	12:43:17	34.6	
1306	19-May-06	12:44:17	35.4	
1307	19-May-06	12:45:17	35.7	
1308	19-May-06	12:46:17	36.1	
1309	19-May-06	12:47:17	36.6	
1310	19-May-06	12:48:17	35.8	
1311	19-May-06	12:49:17	35.8	
1312	19-May-06	12:50:17	37.6	
1313	19-May-06	12:51:17	36.3	
1314	19-May-06	12:52:17	34.6	
1315	19-May-06	12:53:17	34.9	
1316	19-May-06	12:54:17	36.1	
1317	19-May-06	12:55:17	37.4	
1318	19-May-06	12:56:17	40.5	
1319	19-May-06	12:57:17	38.0	
1320	19-May-06	12:58:17	35.8	
1321	19-May-06	12:59:17	37.2	
1322	19-May-06	13:00:17	37.1	
1323	19-May-06	13:01:17	36.3	
1324	19-May-06	13:02:17	38.6	
1325	19-May-06	13:03:17	45.7	
1326	19-May-06	13:04:17	40.1	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1327	19-May-06	13:05:17	38.5	
1328	19-May-06	13:06:17	37.2	
1329	19-May-06	13:07:17	37.3	
1330	19-May-06	13:08:17	34.9	
1331	19-May-06	13:09:17	38.7	
1332	19-May-06	13:10:17	42.5	
1333	19-May-06	13:11:17	44.5	
1334	19-May-06	13:12:17	42.4	
1335	19-May-06	13:13:17	37.5	
1336	19-May-06	13:14:17	37.4	
1337	19-May-06	13:15:17	36.2	
1338	19-May-06	13:16:17	38.9	
1339	19-May-06	13:17:17	36.1	
1340	19-May-06	13:18:17	37.3	
1341	19-May-06	13:19:17	35.9	
1342	19-May-06	13:20:17	36.8	
1343	19-May-06	13:21:17	40.2	
1344	19-May-06	13:22:17	41.8	
1345	19-May-06	13:23:17	38.7	
1346	19-May-06	13:24:17	34.8	
1347	19-May-06	13:25:17	36.3	
1348	19-May-06	13:26:17	39.9	
1349	19-May-06	13:27:17	37.9	
1350	19-May-06	13:28:17	37.5	
1351	19-May-06	13:29:17	40.7	
1352	19-May-06	13:30:17	40.0	
1353	19-May-06	13:31:17	38.9	
1354	19-May-06	13:32:17	41.0	
1355	19-May-06	13:33:17	42.9	
1356	19-May-06	13:34:17	43.5	
1357	19-May-06	13:35:17	43.0	
1358	19-May-06	13:36:17	42.1	
1359	19-May-06	13:37:17	43.0	
1360	19-May-06	13:38:17	41.5	
1361	19-May-06	13:39:17	39.0	
1362	19-May-06	13:40:17	44.3	
1363	19-May-06	13:41:17	47.4	
1364	19-May-06	13:42:17	40.1	
1365	19-May-06	13:43:17	36.9	
1366	19-May-06	13:44:17	37.4	
1367	19-May-06	13:45:17	38.7	
1368	19-May-06	13:46:17	40.4	
1369	19-May-06	13:47:17	43.1	
1370	19-May-06	13:48:17	38.8	
1371	19-May-06	13:49:17	37.8	
1372	19-May-06	13:50:17	38.1	
1373	19-May-06	13:51:17	37.7	
1374	19-May-06	13:52:17	38.8	
1375	19-May-06	13:53:17	47.7	
1376	19-May-06	13:54:17	38.1	
1377	19-May-06	13:55:17	38.4	
1378	19-May-06	13:56:17	40.4	
1379	19-May-06	13:57:17	39.6	
1380	19-May-06	13:58:17	49.3	Rejected
1381	19-May-06	13:59:17	40.1	
1382	19-May-06	14:00:17	40.7	
1383	19-May-06	14:01:17	43.8	
1384	19-May-06	14:02:17	42.4	
1385	19-May-06	14:03:17	39.7	
1386	19-May-06	14:04:17	43.3	
1387	19-May-06	14:05:17	40.3	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1388	19-May-06	14:06:17	37.9	
1389	19-May-06	14:07:17	40.5	
1390	19-May-06	14:08:17	38.0	
1391	19-May-06	14:09:17	38.6	
1392	19-May-06	14:10:17	43.9	
1393	19-May-06	14:11:17	39.6	
1394	19-May-06	14:12:17	41.2	
1395	19-May-06	14:13:17	34.7	
1396	19-May-06	14:14:17	36.3	
1397	19-May-06	14:15:17	37.5	
1398	19-May-06	14:16:17	37.4	
1399	19-May-06	14:17:17	37.7	
1400	19-May-06	14:18:17	37.4	
1401	19-May-06	14:19:17	38.9	
1402	19-May-06	14:20:17	38.1	
1403	19-May-06	14:21:17	40.3	
1404	19-May-06	14:22:17	37.5	
1405	19-May-06	14:23:17	39.6	
1406	19-May-06	14:24:17	40.9	
1407	19-May-06	14:25:17	48.9	Rejected
1408	19-May-06	14:26:17	39.9	
1409	19-May-06	14:27:17	40.5	
1410	19-May-06	14:28:17	34.5	
1411	19-May-06	14:29:17	39.8	
1412	19-May-06	14:30:17	36.9	
1413	19-May-06	14:31:17	41.9	
1414	19-May-06	14:32:17	38.6	
1415	19-May-06	14:33:17	37.2	
1416	19-May-06	14:34:17	36.1	
1417	19-May-06	14:35:17	36.6	
1418	19-May-06	14:36:17	36.8	
1419	19-May-06	14:37:17	38.8	
1420	19-May-06	14:38:17	37.1	
1421	19-May-06	14:39:17	39.6	
1422	19-May-06	14:40:17	38.4	
1423	19-May-06	14:41:17	44.2	
1424	19-May-06	14:42:17	37.4	
1425	19-May-06	14:43:17	38.5	
1426	19-May-06	14:44:17	36.7	
1427	19-May-06	14:45:17	34.9	
1428	19-May-06	14:46:17	35.7	
1429	19-May-06	14:47:17	39.5	
1430	19-May-06	14:48:17	39.0	
1431	19-May-06	14:49:17	37.7	
1432	19-May-06	14:50:17	38.8	
1433	19-May-06	14:51:17	38.4	
1434	19-May-06	14:52:17	37.8	
1435	19-May-06	14:53:17	35.7	
1436	19-May-06	14:54:17	43.0	
1437	19-May-06	14:55:17	39.0	
1438	19-May-06	14:56:17	39.4	
1439	19-May-06	14:57:17	41.6	
1440	19-May-06	14:58:17	41.3	
1441	19-May-06	14:59:17	40.8	
1442	19-May-06	15:00:17	40.4	
1443	19-May-06	15:01:17	42.4	
1444	19-May-06	15:02:17	38.2	
1445	19-May-06	15:03:17	50.7	Rejected
1446	19-May-06	15:04:17	43.3	
1447	19-May-06	15:05:17	39.1	
1448	19-May-06	15:06:17	46.0	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1449	19-May-06	15:07:17	45.3	
1450	19-May-06	15:08:17	36.1	
1451	19-May-06	15:09:17	38.0	
1452	19-May-06	15:10:17	36.8	
1453	19-May-06	15:11:17	42.3	
1454	19-May-06	15:12:17	41.8	
1455	19-May-06	15:13:17	43.8	
1456	19-May-06	15:14:17	39.6	
1457	19-May-06	15:15:17	40.1	
1458	19-May-06	15:16:17	36.4	
1459	19-May-06	15:17:17	36.4	
1460	19-May-06	15:18:17	36.1	
1461	19-May-06	15:19:17	36.1	
1462	19-May-06	15:20:17	38.2	
1463	19-May-06	15:21:17	39.4	
1464	19-May-06	15:22:17	36.5	
1465	19-May-06	15:23:17	36.7	
1466	19-May-06	15:24:17	36.1	
1467	19-May-06	15:25:17	36.7	
1468	19-May-06	15:26:17	35.7	
1469	19-May-06	15:27:17	36.1	
1470	19-May-06	15:28:17	36.7	
1471	19-May-06	15:29:17	40.7	
1472	19-May-06	15:30:17	38.3	
1473	19-May-06	15:31:17	38.9	
1474	19-May-06	15:32:17	38.0	
1475	19-May-06	15:33:17	38.6	
1476	19-May-06	15:34:17	40.5	
1477	19-May-06	15:35:17	39.6	
1478	19-May-06	15:36:17	35.0	
1479	19-May-06	15:37:17	36.9	
1480	19-May-06	15:38:17	35.1	
1481	19-May-06	15:39:17	35.6	
1482	19-May-06	15:40:17	36.7	
1483	19-May-06	15:41:17	37.6	
1484	19-May-06	15:42:17	37.9	
1485	19-May-06	15:43:17	38.0	
1486	19-May-06	15:44:17	38.5	
1487	19-May-06	15:45:17	37.8	
1488	19-May-06	15:46:17	36.0	
1489	19-May-06	15:47:17	35.8	
1490	19-May-06	15:48:17	35.9	
1491	19-May-06	15:49:17	36.4	
1492	19-May-06	15:50:17	43.3	
1493	19-May-06	15:51:17	42.0	
1494	19-May-06	15:52:17	36.8	
1495	19-May-06	15:53:17	38.7	
1496	19-May-06	15:54:17	42.6	
1497	19-May-06	15:55:17	44.8	
1498	19-May-06	15:56:17	41.6	
1499	19-May-06	15:57:17	40.6	
1500	19-May-06	15:58:17	39.7	
1501	19-May-06	15:59:17	38.0	
1502	19-May-06	16:00:17	38.8	
1503	19-May-06	16:01:17	36.8	
1504	19-May-06	16:02:17	41.8	
1505	19-May-06	16:03:17	41.1	
1506	19-May-06	16:04:17	41.0	
1507	19-May-06	16:05:17	37.4	
1508	19-May-06	16:06:17	39.4	
1509	19-May-06	16:07:17	37.6	

Table B-3 824 Logging Sound Level Meter Time History - Bruderheim, 2006 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comment
1510	19-May-06	16:08:17	37.7	
1511	19-May-06	16:09:17	38.2	
1512	19-May-06	16:10:17	39.7	
1513	19-May-06	16:11:17	45.9	
1514	19-May-06	16:12:17	43.3	
1515	19-May-06	16:13:17	43.6	
1516	19-May-06	16:14:17	41.2	
1517	19-May-06	16:15:17	42.1	
1518	19-May-06	16:16:17	43.3	
1519	19-May-06	16:17:17	42.4	
1520	19-May-06	16:18:17	38.9	
1521	19-May-06	16:19:17	47.4	
1522	19-May-06	16:20:17	38.9	
1523	19-May-06	16:21:17	41.5	
1524	19-May-06	16:22:17	41.4	
1525	19-May-06	16:23:17	49.4	Rejected
1526	19-May-06	16:24:17	58.5	Rejected
1527	19-May-06	16:25:17	44.6	
1528	19-May-06	16:26:17	48.5	Rejected
1529	19-May-06	16:27:17	55.0	Rejected
1530	19-May-06	16:27:35	Stop:Key	

Table B-4 Weather Conditions - Bruderheim, 2006 Survey					
Date & Hour	Temp (°C)	Humidity (%)	Dew Point (°C)	Wind From (10's°)	Wind Speed (km/h)
18 May 2006 15:00 MST	24.4	24	2.8	33	11
18 May 2006 16:00 MST	24.2	24	2.2	35	9
18 May 2006 17:00 MST	24.6	23	2.0	32	7
18 May 2006 18:00 MST	24.1	23	1.8	36	7
18 May 2006 19:00 MST	22.2	29	3.2	3	7
18 May 2006 20:00 MST	19.3	37	4.1	3	6
18 May 2006 21:00 MST	14.8	54	5.6	Calm	0
18 May 2006 22:00 MST	12.3	62	5.3	Calm	0
18 May 2006 23:00 MST	11.4	73	6.7	2	2
19 May 2006 00:00 MST	10.6	76	6.6	4	2
19 May 2006 1:00 MST	11.9	68	6.2	8	4
19 May 2006 2:00 MST	13.0	64	6.3	8	2
19 May 2006 3:00 MST	13.1	66	6.8	10	4
19 May 2006 4:00 MST	12.7	64	6.0	9	4
19 May 2006 5:00 MST	12.4	60	4.9	7	6
19 May 2006 6:00 MST	12.9	55	4.2	8	6
19 May 2006 7:00 MST	15.8	50	5.3	10	9
19 May 2006 8:00 MST	17.7	46	6.0	10	7
19 May 2006 9:00 MST	19.5	42	6.2	9	9
19 May 2006 10:00 MST	19.9	42	6.6	9	9
19 May 2006 11:00 MST	22.6	38	7.5	9	9
19 May 2006 12:00 MST	24.0	33	6.9	8	9
19 May 2006 13:00 MST	24.0	30	5.6	10	15
19 May 2006 14:00 MST	22.3	35	6.3	10	11
19 May 2006 15:00 MST	20.7	39	6.1	8	9
19 May 2006 16:00 MST	21.2	36	5.4	8	13

Appendix C Background Sound Survey Results Bruderheim, AB 2008

Table C-1 824 Logging Sound Level Meter Intervals - Bruderheim, 2008 Survey

File Translated: C:\2008 Gateway\Baseline\Survey\25Jul21l_004.slmdl
Model Number: 824
Serial Number: A3460
Firmware Rev: 4.261
Software Version: 3.12
Name: Jacques Whitford Limited
Descr1: Calgary, Alberta
Descr2:
Setup: amec.log
Setup Descr: NORTHERN GATEWAY PROJECT
Location: Bruderheim, AB
Note 1: All sound values in dBA

Rec #	Date	Time	Duration	Leq	SEL	Min	Max	L10.00	L50.00	L90.00
1	25-Jul-08	21:57:23	0:02:36	50.2	72.2	39.1	68.5	46.6	41.7	39.8
2	25-Jul-08	22:00:00	1:00:00	40.0	75.5	34.0	61.4	39.4	36.8	35.2
3	25-Jul-08	23:00:00	1:00:00	38.0	73.6	34.7	44.6	39.3	38.1	36.1
4	26-Jul-08	0:00:00	1:00:00	51.1	86.7	35.2	78.8	49.4	39.8	36.5
5	26-Jul-08	1:00:00	1:00:00	42.6	78.2	37.2	64.5	43.7	40.1	38.2
6	26-Jul-08	2:00:00	1:00:00	38.1	73.7	35.7	56.5	38.9	37.7	36.7
7	26-Jul-08	3:00:00	1:00:00	41.3	76.8	38.4	45.2	42.6	41.2	39.7
8	26-Jul-08	4:00:00	1:00:00	40.4	76.0	37.5	44.1	41.8	40.3	39.0
9	26-Jul-08	5:00:00	1:00:00	41.8	77.3	37.2	56.0	43.1	40.6	38.9
10	26-Jul-08	6:00:00	1:00:00	44.4	80.0	41.0	57.8	45.7	44.3	42.7
11	26-Jul-08	7:00:00	1:00:00	46.3	81.8	42.1	53.8	48.0	46.1	43.5
12	26-Jul-08	8:00:00	1:00:00	46.7	82.3	43.3	50.2	47.8	46.6	45.3
13	26-Jul-08	9:00:00	1:00:00	43.9	79.5	32.4	48.5	45.9	44.2	35.9
14	26-Jul-08	10:00:00	1:00:00	36.1	71.6	31.5	50.8	37.3	34.2	32.9
15	26-Jul-08	11:00:00	1:00:00	39.8	75.4	32.1	50.1	43.2	37.6	34.1
16	26-Jul-08	12:00:00	1:00:00	41.2	76.8	31.4	55.8	45.2	37.8	34.8
17	26-Jul-08	13:00:00	1:00:00	45.1	80.6	33.3	68.4	46.7	41.1	37.1
18	26-Jul-08	14:00:00	1:00:00	47.4	83.0	36.9	66.7	50.0	45.7	41.8
19	26-Jul-08	15:00:00	1:00:00	43.7	79.3	35.6	53.4	46.6	42.5	38.9
20	26-Jul-08	16:00:00	1:00:00	43.3	78.9	34.2	57.0	45.9	41.8	37.9
21	26-Jul-08	17:00:00	1:00:00	42.7	78.3	35.3	52.3	45.2	42.0	38.4
22	26-Jul-08	18:00:00	1:00:00	43.4	78.9	36.5	54.7	46.0	42.1	39.4
23	26-Jul-08	19:00:00	1:00:00	39.9	75.5	31.9	51.7	43.9	37.3	34.2
24	26-Jul-08	20:00:00	1:00:00	37.9	73.5	30.3	53.9	41.1	34.9	31.7
25	26-Jul-08	21:00:00	0:55:24	35.4	70.6	30.2	59.8	35.6	33.1	31.4

Table C-2 SLM and RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\25Jul21s_001.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	ASLM&RTA.ssa		
Setup Descr:	AMEC GATEWAY - SLM & Real-Time		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Start Time:	25-Jul-08	21:31:44	
Elapsed Time:	04:09.8		
	A Weight	C Weight	Flat
Leq:	47.2 dBA	59.4 dBC	60.9 dBF
SEL:	71.1 dBA	83.3 dBC	84.9 dBF
Peak:	65.2 dBA	72.7 dBC	74.1 dBF
	7/25/2008 21:32	7/25/2008 21:35	7/25/2008 21:35
Lmax (slow):	47.7 dBA	62.4 dBC	63.8 dBF
	7/25/2008 21:34	7/25/2008 21:35	7/25/2008 21:35
Lmin (slow):	46.9 dBA	57.2 dBC	58.0 dBF
	7/25/2008 21:32	7/25/2008 21:32	7/25/2008 21:31
Lmax (fast):	49.1 dBA	64.6 dBC	65.9 dBF
	7/25/2008 21:34	7/25/2008 21:35	7/25/2008 21:35
Lmin (fast):	46.4 dBA	55.4 dBC	56.8 dBF
	7/25/2008 21:31	7/25/2008 21:32	7/25/2008 21:31
Lmax (impulse):	50.2 dBA	65.3 dBC	67.1 dBF
	7/25/2008 21:32	7/25/2008 21:35	7/25/2008 21:35
Lmin (impulse):	46.7 dBA	57.8 dBC	57.8 dBF
	7/25/2008 21:31	7/25/2008 21:31	7/25/2008 21:31

Table C-2 SLM and RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	25-Jul-08	21:31:44	Run Time:	04:09.8		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	48.8		51.2		34.9	
16	48.6	55.4	52.0	58.3	37.7	41.8
20	53.0		55.8		38.0	
25	52.9		55.8		40.8	
31.5	51.8	56.3	54.8	59.3	41.6	45.3
40	48.9		52.3		38.5	
50	49.3		51.3		41.1	
63	56.4	57.6	59.7	60.7	44.8	47.4
80	47.4		50.4		40.8	
100	44.4		46.4		38.2	
125	41.6	46.4	43.4	48.4	34.3	40.0
160	33.2		34.6		28.0	
200	29.8		32.5		24.9	
250	31.9	36.9	33.5	38.3	27.2	32.3
315	33.8		34.3		29.4	
400	33.6		35.9		29.8	
500	32.6	37.2	34.0	39.3	28.7	33.3
630	30.4		33.4		26.6	
800	28.1		33.9		24.1	
1000	28.5	32.5	34.2	38.8	25.1	29.1
1250	26.1		33.9		23.5	
1600	25.4		32.9		22.9	
2000	25.5	30.5	32.3	37.3	22.8	28.2
2500	26.2		32.3		24.4	
3150	26.6		31.1		24.2	
4000	27.5	32.3	32.7	37.0	25.4	30.3
5000	28.4		32.6		26.6	
6300	28.9		31.6		26.7	
8000	29.9	34.8	31.9	36.7	28.3	33.2
10000	31.0		32.2		29.7	
12500	31.9		31.4		30.3	
16000	34.1	40.6	33.9	40.6	32.9	39.7
20000	38.6		38.9		38.0	

Tabe C-3 SLM & RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\25Jul21s_002.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	ASLM&RTA.ssa		
Setup Descr:	AMEC GATEWAY - SLM & Real-Time		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Overall Any Data			
Start Time:	25-Jul-08	21:36:17	
Elapsed Time:	04:01.1		
	A Weight	C Weight	Flat
Leq:	47.2 dBA	59.9 dBC	61.4 dBF
SEL:	71.0 dBA	83.7 dBC	85.3 dBF
Peak:	64.0 dBA	72.7 dBC	74.7 dBF
	7/25/2008 21:39	7/25/2008 21:40	7/25/2008 21:40
Lmax (slow):	47.5 dBA	64.0 dBC	66.1 dBF
	7/25/2008 21:36	7/25/2008 21:36	7/25/2008 21:36
Lmin (slow):	46.9 dBA	57.8 dBC	59.9 dBF
	7/25/2008 21:39	7/25/2008 21:38	7/25/2008 21:38
Lmax (fast):	47.8 dBA	63.8 dBC	64.8 dBF
	7/25/2008 21:39	7/25/2008 21:37	7/25/2008 21:37
Lmin (fast):	46.8 dBA	55.2 dBC	57.8 dBF
	7/25/2008 21:39	7/25/2008 21:38	7/25/2008 21:38
Lmax (impulse):	48.6 dBA	65.6 dBC	66.7 dBF
	7/25/2008 21:39	7/25/2008 21:40	7/25/2008 21:40
Lmin (impulse):	46.8 dBA	58.9 dBC	60.7 dBF
	7/25/2008 21:39	7/25/2008 21:39	7/25/2008 21:37

Tabe C-3 SLM RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	25-Jul-08	21:36:17	Run Time:	04:01.1		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	49.1		53.3		31.1	
16	49.5	55.7	50.8	59.5	35.3	41.3
20	53.0		57.5		39.5	
25	52.9		56.3		41.4	
31.5	50.7	55.9	54.6	59.4	39.2	45.1
40	48.8		52.0		40.1	
50	47.5		51.1		38.3	
63	57.9	58.7	61.7	62.4	46.5	47.8
80	48.5		50.8		39.5	
100	44.2		46.2		37.3	
125	40.9	46.1	44.3	48.5	33.4	39.0
160	32.4		34.5		26.7	
200	29.5		30.6		23.9	
250	31.0	36.5	34.0	38.8	25.2	31.9
315	33.6		36.0		29.9	
400	34.0		36.0		29.9	
500	33.2	37.8	35.9	40.0	29.2	33.9
630	31.6		33.4		28.1	
800	29.1		30.4		26.1	
1000	27.9	32.7	29.4	33.9	24.7	29.7
1250	26.4		27.1		23.5	
1600	25.8		27.0		23.3	
2000	25.5	30.6	26.2	31.3	23.1	28.3
2500	26.1		26.2		24.1	
3150	26.5		26.4		24.4	
4000	27.4	32.2	27.3	32.2	25.4	30.2
5000	28.3		28.4		26.4	
6300	28.8		28.7		26.8	
8000	29.9	34.8	30.3	35.0	28.0	33.1
10000	31.0		31.2		29.6	
12500	31.8		31.9		30.2	
16000	34.1	40.5	33.9	40.8	32.9	39.7
20000	38.6		39.0		38.0	

Table C-4 SLM and RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\25Jul21s_003.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	ASLM&RTA.ssa		
Setup Descr:	AMEC GATEWAY - SLM & Real-Time		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Overall Any Data			
Start Time:	25-Jul-08	21:48:25	
Elapsed Time:	04:26.1		
	A Weight	C Weight	Flat
Leq:	47.3 dBA	60.3 dBC	61.7 dBF
SEL:	71.6 dBA	84.5 dBC	86.0 dBF
Peak:	80.1 dBA	77.6 dBC	78.0 dBF
	7/25/2008 21:52	7/25/2008 21:52	7/25/2008 21:52
Lmax (slow):	49.0 dBA	62.8 dBC	63.9 dBF
	7/25/2008 21:52	7/25/2008 21:50	7/25/2008 21:50
Lmin (slow):	47.0 dBA	56.4 dBC	58.2 dBF
	7/25/2008 21:51	7/25/2008 21:52	7/25/2008 21:52
Lmax (fast):	54.1 dBA	64.3 dBC	65.8 dBF
	7/25/2008 21:52	7/25/2008 21:50	7/25/2008 21:51
Lmin (fast):	46.7 dBA	54.4 dBC	56.2 dBF
	7/25/2008 21:48	7/25/2008 21:52	7/25/2008 21:52
Lmax (impulse):	58.6 dBA	65.5 dBC	68.1 dBF
	7/25/2008 21:52	7/25/2008 21:50	7/25/2008 21:51
Lmin (impulse):	46.9 dBA	57.4 dBC	59.8 dBF
	7/25/2008 21:52	7/25/2008 21:52	7/25/2008 21:52

Table C-4 SLM and RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	25-Jul-08	21:48:25	Run Time:	04:26.1		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	48.8		52.7		32.4	
16	49.3	56.3	54.6	58.8	34.8	42.8
20	54.3		54.4		41.6	
25	52.2		57.0		39.9	
31.5	49.4	55.3	54.4	60.0	39.1	44.2
40	49.2		53.4		39.2	
50	47.7		52.4		38.5	
63	58.6	59.3	61.5	62.3	44.5	46.8
80	48.6		50.8		41.1	
100	45.5		46.5		39.4	
125	42.4	47.4	43.8	48.7	35.3	41.1
160	34.1		37.6		29.0	
200	31.1		34.7		25.1	
250	31.9	37.2	37.9	41.1	27.4	32.6
315	33.9		35.6		29.8	
400	34.3		37.3		30.0	
500	33.5	38.0	38.3	42.1	28.4	33.6
630	31.6		36.0		27.7	
800	29.8		37.1		26.2	
1000	29.3	33.7	35.9	41.8	25.5	30.0
1250	27.1		37.9		23.7	
1600	26.3		42.2		23.3	
2000	26.4	31.4	46.7	49.8	23.5	28.5
2500	27.1		45.2		24.4	
3150	27.8		36.9		24.3	
4000	27.6	32.7	32.8	39.1	25.6	30.5
5000	28.4		31.2		26.8	
6300	28.8		28.8		26.9	
8000	29.9	34.8	29.7	34.7	28.1	33.1
10000	31.0		31.0		29.5	
12500	31.8		31.4		30.2	
16000	34.0	40.5	33.8	40.5	32.7	39.6
20000	38.6		38.7		37.9	

Table C-5 SLM and RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\26Jul21s_005.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	ASLM&RTA.ssa		
Setup Descr:	AMEC GATEWAY - SLM & Real-Time		
Location:	Bruderheim, AB		
Note 1:	Spectra sound levels in dB		
Overall Any Data			
Start Time:	26-Jul-08	21:57:57	
Elapsed Time:	04:38.3		
	A Weight	C Weight	Flat
Leq:	46.8 dBA	56.6 dBC	58.4 dBF
SEL:	71.3 dBA	81.1 dBC	82.9 dBF
Peak:	66.0 dBA	75.7 dBC	78.4 dBF
	7/26/2008 22:01	7/26/2008 22:02	7/26/2008 22:02
Lmax (slow):	47.1 dBA	61.5 dBC	64.2 dBF
	7/26/2008 21:59	7/26/2008 22:02	7/26/2008 22:02
Lmin (slow):	46.6 dBA	54.5 dBC	55.8 dBF
	7/26/2008 21:57	7/26/2008 21:59	7/26/2008 21:58
Lmax (fast):	48.1 dBA	66.4 dBC	68.9 dBF
	7/26/2008 21:59	7/26/2008 22:02	7/26/2008 22:02
Lmin (fast):	46.1 dBA	52.7 dBC	53.6 dBF
	7/26/2008 21:57	7/26/2008 21:59	7/26/2008 21:58
Lmax (impulse):	49.3 dBA	68.5 dBC	71.1 dBF
	7/26/2008 21:59	7/26/2008 22:02	7/26/2008 22:02
Lmin (impulse):	46.3 dBA	55.7 dBC	56.9 dBF
	7/26/2008 21:57	7/26/2008 21:59	7/26/2008 21:58

Table C-5 SLM and RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	26-Jul-08	21:57:57	Run Time:	04:38.3		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	51.8		51.5		34.9	
16	50.6	55.9	51.0	56.9	38.3	42.2
20	51.0		53.5		38.3	
25	50.0		51.7		35.8	
31.5	49.5	54.1	51.9	56.2	37.0	41.5
40	48.5		50.4		37.2	
50	47.9		49.8		39.0	
63	49.3	52.6	49.4	53.9	38.2	43.1
80	45.5		48.0		37.8	
100	39.4		41.0		32.0	
125	35.2	41.2	37.3	43.3	29.2	34.2
160	31.1		35.5		23.3	
200	26.5		28.8		20.5	
250	25.5	30.7	30.2	34.8	20.3	25.6
315	25.7		30.8		21.5	
400	25.8		31.1		22.2	
500	27.3	31.6	33.6	40.0	23.6	27.9
630	27.3		38.0		23.4	
800	26.2		34.0		21.9	
1000	25.2	30.4	30.3	36.7	21.8	26.6
1250	25.5		30.3		21.9	
1600	25.1		28.9		22.1	
2000	25.3	30.3	29.3	34.0	22.8	27.9
2500	26.0		29.6		24.2	
3150	26.5		27.7		24.1	
4000	27.4	32.2	28.2	33.1	25.5	30.3
5000	28.3		29.0		26.7	
6300	28.9		29.5		26.8	
8000	30.0	34.9	30.4	35.3	28.3	33.2
10000	31.1		31.5		29.6	
12500	31.9		31.6		30.4	
16000	34.1	40.6	34.0	40.5	33.1	39.8
20000	38.7		38.6		38.0	

Table C-6 SLM and RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\26Jul22s_006.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	NSNB-OB.ssa		
Setup Descr:	SLM & Real-Time Analyzer		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Overall Any Data			
Start Time:	26-Jul-08	22:03:00	
Elapsed Time:	03:51.6		
	A Weight	C Weight	Flat
Leq:	46.8 dBA	56.9 dBC	59.0 dBF
SEL:	70.5 dBA	80.6 dBC	82.7 dBF
Peak:	61.6 dBA	73.7 dBC	76.7 dBF
	7/26/2008 22:03	7/26/2008 22:03	7/26/2008 22:03
Lmax (slow):	47.2 dBA	60.4 dBC	62.6 dBF
	7/26/2008 22:03	7/26/2008 22:03	7/26/2008 22:03
Lmin (slow):	46.6 dBA	54.5 dBC	56.2 dBF
	7/26/2008 22:05	7/26/2008 22:05	7/26/2008 22:05
Lmax (fast):	47.3 dBA	63.7 dBC	66.8 dBF
	7/26/2008 22:06	7/26/2008 22:03	7/26/2008 22:03
Lmin (fast):	46.2 dBA	53.2 dBC	53.8 dBF
	7/26/2008 22:03	7/26/2008 22:04	7/26/2008 22:04
Lmax (impulse):	47.7 dBA	66.3 dBC	69.6 dBF
	7/26/2008 22:03	7/26/2008 22:03	7/26/2008 22:03
Lmin (impulse):	46.5 dBA	55.7 dBC	57.1 dBF
	7/26/2008 22:03	7/26/2008 22:04	7/26/2008 22:05

Table C-6 SLM and RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	26-Jul-08	22:03:00	Run Time:	03:51.6		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	53.0		56.5		36.1	
16	53.0	57.6	55.8	60.2	38.2	42.0
20	52.3		53.2		37.2	
25	50.5		54.3		37.1	
31.5	48.2	53.8	55.4	58.8	37.1	41.7
40	47.9		51.6		36.5	
50	47.4		49.7		38.4	
63	51.0	53.3	52.3	55.2	37.9	42.8
80	45.4		48.3		37.6	
100	39.1		43.1		29.4	
125	35.2	41.2	36.8	44.3	28.5	32.6
160	32.1		31.7		24.0	
200	27.6		29.0		21.3	
250	26.4	32.0	27.0	32.5	20.7	26.0
315	27.6		26.9		21.6	
400	26.9		27.2		22.9	
500	27.6	32.0	29.2	34.2	23.4	28.0
630	27.3		31.1		23.4	
800	25.9		26.7		21.3	
1000	24.9	30.2	25.6	30.8	22.1	26.8
1250	25.3		25.8		22.5	
1600	25.1		25.7		22.2	
2000	25.3	30.3	26.4	30.9	23.0	27.7
2500	26.0		26.2		23.6	
3150	26.5		26.8		24.2	
4000	27.4	32.2	27.3	32.4	24.9	30.2
5000	28.3		28.6		26.8	
6300	28.9		28.5		26.1	
8000	30.1	34.9	30.1	34.8	28.3	33.1
10000	31.2		31.2		29.8	
12500	31.9		32.1		29.6	
16000	34.1	40.6	34.0	40.7	32.8	39.6
20000	38.7		38.8		38.0	

Table C-7 SLM and RTA Summary - Bruderheim, 2008 Survey

File Translated:	C:\2008 Gateway\Baseline\Survey\26Jul22s_007.slmdl		
Model Number:	824		
Serial Number:	A3460		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	Jacques Whitford Limited		
Descr1:	Calgary, Alberta		
Descr2:			
Setup:	ASLM&RTA.ssa		
Setup Descr:	AMEC GATEWAY - SLM & Real-Time		
Location:	Bruderheim, AB		
Note 1:	Spectra sound values in dB		
Overall Any Data			
Start Time:	26-Jul-08	22:07:51	
Elapsed Time:	05:51.1		
	A Weight	C Weight	Flat
Leq:	47.0 dBA	62.2 dBC	64.8 dBF
SEL:	72.5 dBA	87.7 dBC	90.3 dBF
Peak:	67.8 dBA	78.8 dBC	82.3 dBF
	7/26/2008 22:13	7/26/2008 22:12	7/26/2008 22:12
Lmax (slow):	47.5 dBA	65.7 dBC	68.6 dBF
	7/26/2008 22:13	7/26/2008 22:11	7/26/2008 22:09
Lmin (slow):	46.6 dBA	56.2 dBC	58.8 dBF
	7/26/2008 22:07	7/26/2008 22:08	7/26/2008 22:08
Lmax (fast):	48.9 dBA	69.3 dBC	72.9 dBF
	7/26/2008 22:13	7/26/2008 22:12	7/26/2008 22:12
Lmin (fast):	46.4 dBA	54.5 dBC	56.4 dBF
	7/26/2008 22:07	7/26/2008 22:08	7/26/2008 22:08
Lmax (impulse):	51.3 dBA	72.8 dBC	76.4 dBF
	7/26/2008 22:13	7/26/2008 22:12	7/26/2008 22:12
Lmin (impulse):	46.6 dBA	58.1 dBC	61.2 dBF
	7/26/2008 22:08	7/26/2008 22:07	7/26/2008 22:07

Table C-7 SLM and RTA Summary - Bruderheim, 2008 Survey (cont'd)

Spectra

Start Time:	26-Jul-08	22:07:51	Run Time:	05:51.1		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	56.2		56.5		40.3	
16	57.1	62.4	64.9	66.8	40.9	46.7
20	59.1		60.9		43.8	
25	59.3		64.1		46.0	
31.5	56.3	61.6	61.2	66.5	42.6	48.3
40	52.2		57.3		40.0	
50	51.7		59.3		39.3	
63	58.0	59.1	59.4	62.7	41.4	44.0
80	45.2		51.7		34.8	
100	41.8		48.3		30.8	
125	38.3	43.9	44.2	50.0	28.5	33.4
160	34.5		37.9		24.1	
200	31.2		33.0		22.7	
250	29.2	35.6	37.7	41.1	23.0	28.0
315	31.6		37.1		24.0	
400	30.6		35.4		23.7	
500	29.7	34.3	37.0	41.1	24.7	28.7
630	27.9		36.5		23.1	
800	26.2		32.2		22.0	
1000	26.5	30.9	35.7	38.5	22.3	27.0
1250	25.5		32.3		22.4	
1600	24.9		29.9		21.8	
2000	25.3	30.2	27.3	33.5	23.0	27.8
2500	26.0		28.5		23.9	
3150	26.4		28.4		24.3	
4000	27.4	32.2	27.5	33.0	25.4	30.3
5000	28.3		28.6		26.6	
6300	28.9		28.5		26.9	
8000	30.1	34.9	29.7	34.6	28.3	33.2
10000	31.1		31.0		29.7	
12500	31.9		31.3		30.3	
16000	34.1	40.6	34.2	40.5	32.8	39.6
20000	38.6		38.6		37.9	

Table C-8 SLM and RTA Average Summary - Bruderheim, 2008 Survey
Bruderheim, AB

Date	Start	Duration	Leq	SPL (dB) at Frequency (Hz)										
		min:sec	dBA	16	31.5	63	125	250	500	1000	2000	4000	8000	16000
25/07/2008	21:31	04:09.8	47.2	55.4	56.3	57.6	46.4	36.9	37.2	32.5	30.5	32.3	34.8	40.6
25/07/2008	21:36	04:01.1	47.2	55.7	55.9	58.7	46.1	36.5	37.8	32.7	30.6	32.2	34.8	40.5
25/07/2008	21:48	04:26.1	47.3	56.3	55.3	59.3	47.4	37.2	38.0	29.3	31.4	27.6	34.8	40.5
26/07/2008	21:57	04:38.3	46.8	55.9	54.1	52.6	41.2	30.7	31.6	30.4	30.3	32.2	34.9	40.6
26/07/2008	22:03	03:51.6	46.8	57.6	53.8	53.3	41.2	32.0	32.0	30.2	30.3	32.2	34.9	40.6
26/07/2008	22:07	05:51.1	47.0	62.4	61.6	59.1	43.9	35.6	34.3	30.9	30.2	32.2	34.9	40.6
Average (log)			47.1	58.1	57.1	57.5	45.0	35.4	35.9	31.2	30.6	31.7	34.9	40.6

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey

File Translated: C:\2008 Gateway\Baseline\Survey\25Jul21l_004.slmdl
Model Number: 824
Serial Number: A3460
Firmware Rev: 4.261
Software Version: 3.12
Name: Jacques Whitford Limited
Descr1: Calgary, Alberta
Descr2:
Setup: amec.log
Setup Descr: NORTHERN GATEWAY PROJECT
Location: Bruderheim, AB
Note 1:
Note 2:

Rec #	Date	Time	Leq (dBA)	Comments
1	25-Jul-08	21:57:23	Run:Key	
2	25-Jul-08	21:57:23	52.7	Rejected
3	25-Jul-08	21:58:43	43.1	
4	25-Jul-08	22:00:03	46.6	
5	25-Jul-08	22:01:23	39.8	
6	25-Jul-08	22:02:43	38.5	
7	25-Jul-08	22:04:03	38.7	
8	25-Jul-08	22:05:23	38.6	
9	25-Jul-08	22:06:43	38.7	
10	25-Jul-08	22:08:03	38.0	
11	25-Jul-08	22:09:23	36.3	
12	25-Jul-08	22:10:43	36.0	
13	25-Jul-08	22:12:03	35.0	
14	25-Jul-08	22:13:23	35.3	
15	25-Jul-08	22:14:43	36.7	
16	25-Jul-08	22:16:03	40.2	
17	25-Jul-08	22:17:23	36.2	
18	25-Jul-08	22:18:43	35.4	
19	25-Jul-08	22:20:03	34.9	
20	25-Jul-08	22:21:23	35.1	
21	25-Jul-08	22:22:43	35.4	
22	25-Jul-08	22:24:03	35.9	
23	25-Jul-08	22:25:23	36.8	
24	25-Jul-08	22:26:43	37.0	
25	25-Jul-08	22:28:03	37.4	
26	25-Jul-08	22:29:23	40.1	
27	25-Jul-08	22:30:43	52.3	Rejected
28	25-Jul-08	22:32:03	38.9	
29	25-Jul-08	22:33:23	38.1	
30	25-Jul-08	22:34:43	36.7	
31	25-Jul-08	22:36:03	36.3	
32	25-Jul-08	22:37:23	36.0	
33	25-Jul-08	22:38:43	36.0	
34	25-Jul-08	22:40:03	35.4	
35	25-Jul-08	22:41:23	35.6	
36	25-Jul-08	22:42:43	35.6	
37	25-Jul-08	22:44:03	35.4	
38	25-Jul-08	22:45:23	36.4	
39	25-Jul-08	22:46:43	36.5	
40	25-Jul-08	22:48:03	36.8	
41	25-Jul-08	22:49:23	36.0	
42	25-Jul-08	22:50:43	37.2	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
43	25-Jul-08	22:52:03	36.7	
44	25-Jul-08	22:53:23	37.8	
45	25-Jul-08	22:54:43	38.4	
46	25-Jul-08	22:56:03	38.3	
47	25-Jul-08	22:57:23	38.6	
48	25-Jul-08	22:58:43	38.8	
49	25-Jul-08	23:00:03	39.1	
50	25-Jul-08	23:01:23	38.3	
51	25-Jul-08	23:02:43	37.8	
52	25-Jul-08	23:04:03	38.7	
53	25-Jul-08	23:05:23	39.5	
54	25-Jul-08	23:06:43	38.9	
55	25-Jul-08	23:08:03	37.8	
56	25-Jul-08	23:09:23	36.7	
57	25-Jul-08	23:10:43	36.1	
58	25-Jul-08	23:12:03	36.1	
59	25-Jul-08	23:13:23	35.6	
60	25-Jul-08	23:14:43	36.1	
61	25-Jul-08	23:16:03	36.7	
62	25-Jul-08	23:17:23	37.2	
63	25-Jul-08	23:18:43	37.3	
64	25-Jul-08	23:20:03	37.5	
65	25-Jul-08	23:21:23	37.7	
66	25-Jul-08	23:22:43	38.3	
67	25-Jul-08	23:24:03	38.2	
68	25-Jul-08	23:25:23	38.5	
69	25-Jul-08	23:26:43	38.5	
70	25-Jul-08	23:28:03	38.7	
71	25-Jul-08	23:29:23	38.4	
72	25-Jul-08	23:30:43	38.5	
73	25-Jul-08	23:32:03	38.1	
74	25-Jul-08	23:33:23	38.1	
75	25-Jul-08	23:34:43	38.4	
76	25-Jul-08	23:36:03	38.3	
77	25-Jul-08	23:37:23	38.5	
78	25-Jul-08	23:38:43	38.1	
79	25-Jul-08	23:40:03	38.1	
80	25-Jul-08	23:41:23	37.5	
81	25-Jul-08	23:42:43	37.8	
82	25-Jul-08	23:44:03	38.2	
83	25-Jul-08	23:45:23	38.5	
84	25-Jul-08	23:46:43	39.4	
85	25-Jul-08	23:48:03	39.1	
86	25-Jul-08	23:49:23	38.5	
87	25-Jul-08	23:50:43	36.9	
88	25-Jul-08	23:52:03	35.5	
89	25-Jul-08	23:53:23	36.2	
90	25-Jul-08	23:54:43	37.5	
91	25-Jul-08	23:56:03	36.9	
92	25-Jul-08	23:57:23	38.0	
93	25-Jul-08	23:58:43	40.0	
94	26-Jul-08	0:00:03	39.0	
95	26-Jul-08	0:01:23	39.7	
96	26-Jul-08	0:02:43	38.7	
97	26-Jul-08	0:04:03	38.6	
98	26-Jul-08	0:05:23	40.1	
99	26-Jul-08	0:06:43	39.9	
100	26-Jul-08	0:08:03	39.3	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
101	26-Jul-08	0:09:23	38.9	
102	26-Jul-08	0:10:43	41.0	
103	26-Jul-08	0:12:03	39.1	
104	26-Jul-08	0:13:23	36.7	
105	26-Jul-08	0:14:43	36.3	
106	26-Jul-08	0:16:03	36.6	
107	26-Jul-08	0:17:23	36.3	
108	26-Jul-08	0:18:43	36.5	
109	26-Jul-08	0:20:03	36.6	
110	26-Jul-08	0:21:23	37.4	
111	26-Jul-08	0:22:43	36.8	
112	26-Jul-08	0:24:03	36.4	
113	26-Jul-08	0:25:23	36.9	
114	26-Jul-08	0:26:43	37.8	
115	26-Jul-08	0:28:03	38.3	
116	26-Jul-08	0:29:23	46.9	
117	26-Jul-08	0:30:43	40.9	
118	26-Jul-08	0:32:03	46.0	
119	26-Jul-08	0:33:23	66.4	Rejected
120	26-Jul-08	0:34:43	54.0	Rejected
121	26-Jul-08	0:36:03	52.7	Rejected
122	26-Jul-08	0:37:23	49.9	Rejected
123	26-Jul-08	0:38:43	55.2	Rejected
124	26-Jul-08	0:40:03	45.5	
125	26-Jul-08	0:41:23	40.0	
126	26-Jul-08	0:42:43	40.0	
127	26-Jul-08	0:44:03	45.5	
128	26-Jul-08	0:45:23	42.5	
129	26-Jul-08	0:46:43	42.4	
130	26-Jul-08	0:48:03	44.0	
131	26-Jul-08	0:49:23	42.8	
132	26-Jul-08	0:50:43	42.6	
133	26-Jul-08	0:52:03	42.5	
134	26-Jul-08	0:53:23	42.5	
135	26-Jul-08	0:54:43	42.2	
136	26-Jul-08	0:56:03	43.1	
137	26-Jul-08	0:57:23	46.0	
138	26-Jul-08	0:58:43	41.2	
139	26-Jul-08	1:00:03	40.2	
140	26-Jul-08	1:01:23	42.0	
141	26-Jul-08	1:02:43	41.1	
142	26-Jul-08	1:04:03	41.3	
143	26-Jul-08	1:05:23	40.5	
144	26-Jul-08	1:06:43	44.5	
145	26-Jul-08	1:08:03	40.4	
146	26-Jul-08	1:09:23	41.2	
147	26-Jul-08	1:10:43	47.2	
148	26-Jul-08	1:12:03	38.3	
149	26-Jul-08	1:13:23	38.5	
150	26-Jul-08	1:14:43	39.0	
151	26-Jul-08	1:16:03	39.4	
152	26-Jul-08	1:17:23	42.9	
153	26-Jul-08	1:18:43	39.7	
154	26-Jul-08	1:20:03	38.2	
155	26-Jul-08	1:21:23	38.7	
156	26-Jul-08	1:22:43	38.4	
157	26-Jul-08	1:24:03	38.2	
158	26-Jul-08	1:25:23	42.4	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
159	26-Jul-08	1:26:43	46.4	
160	26-Jul-08	1:28:03	42.7	
161	26-Jul-08	1:29:23	41.3	
162	26-Jul-08	1:30:43	38.8	
163	26-Jul-08	1:32:03	42.8	
164	26-Jul-08	1:33:23	43.3	
165	26-Jul-08	1:34:43	41.9	
166	26-Jul-08	1:36:03	41.9	
167	26-Jul-08	1:37:23	42.1	
168	26-Jul-08	1:38:43	41.3	
169	26-Jul-08	1:40:03	43.6	
170	26-Jul-08	1:41:23	43.1	
171	26-Jul-08	1:42:43	44.9	
172	26-Jul-08	1:44:03	44.2	
173	26-Jul-08	1:45:23	39.0	
174	26-Jul-08	1:46:43	38.4	
175	26-Jul-08	1:48:03	51.7	Rejected
176	26-Jul-08	1:49:23	41.5	
177	26-Jul-08	1:50:43	42.4	
178	26-Jul-08	1:52:03	41.3	
179	26-Jul-08	1:53:23	41.9	
180	26-Jul-08	1:54:43	41.1	
181	26-Jul-08	1:56:03	38.7	
182	26-Jul-08	1:57:23	39.5	
183	26-Jul-08	1:58:43	38.9	
184	26-Jul-08	2:00:03	38.3	
185	26-Jul-08	2:01:23	37.8	
186	26-Jul-08	2:02:43	37.8	
187	26-Jul-08	2:04:03	37.6	
188	26-Jul-08	2:05:23	37.5	
189	26-Jul-08	2:06:43	38.8	
190	26-Jul-08	2:08:03	38.6	
191	26-Jul-08	2:09:23	42.7	
192	26-Jul-08	2:10:43	37.5	
193	26-Jul-08	2:12:03	38.4	
194	26-Jul-08	2:13:23	37.8	
195	26-Jul-08	2:14:43	37.9	
196	26-Jul-08	2:16:03	37.9	
197	26-Jul-08	2:17:23	37.9	
198	26-Jul-08	2:18:43	37.9	
199	26-Jul-08	2:20:03	38.1	
200	26-Jul-08	2:21:23	38.2	
201	26-Jul-08	2:22:43	37.9	
202	26-Jul-08	2:24:03	37.5	
203	26-Jul-08	2:25:23	37.4	
204	26-Jul-08	2:26:43	37.5	
205	26-Jul-08	2:28:03	37.5	
206	26-Jul-08	2:29:23	37.4	
207	26-Jul-08	2:30:43	37.0	
208	26-Jul-08	2:32:03	36.7	
209	26-Jul-08	2:33:23	37.3	
210	26-Jul-08	2:34:43	37.0	
211	26-Jul-08	2:36:03	37.4	
212	26-Jul-08	2:37:23	37.0	
213	26-Jul-08	2:38:43	37.3	
214	26-Jul-08	2:40:03	37.7	
215	26-Jul-08	2:41:23	38.4	
216	26-Jul-08	2:42:43	38.4	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
217	26-Jul-08	2:44:03	38.2	
218	26-Jul-08	2:45:23	37.6	
219	26-Jul-08	2:46:43	37.4	
220	26-Jul-08	2:48:03	37.7	
221	26-Jul-08	2:49:23	37.8	
222	26-Jul-08	2:50:43	37.3	
223	26-Jul-08	2:52:03	37.6	
224	26-Jul-08	2:53:23	38.4	
225	26-Jul-08	2:54:43	38.5	
226	26-Jul-08	2:56:03	38.6	
227	26-Jul-08	2:57:23	39.6	
228	26-Jul-08	2:58:43	40.9	
229	26-Jul-08	3:00:03	41.0	
230	26-Jul-08	3:01:23	40.7	
231	26-Jul-08	3:02:43	40.2	
232	26-Jul-08	3:04:03	40.4	
233	26-Jul-08	3:05:23	41.2	
234	26-Jul-08	3:06:43	41.7	
235	26-Jul-08	3:08:03	41.4	
236	26-Jul-08	3:09:23	41.5	
237	26-Jul-08	3:10:43	41.1	
238	26-Jul-08	3:12:03	41.0	
239	26-Jul-08	3:13:23	41.3	
240	26-Jul-08	3:14:43	41.7	
241	26-Jul-08	3:16:03	41.6	
242	26-Jul-08	3:17:23	42.0	
243	26-Jul-08	3:18:43	42.2	
244	26-Jul-08	3:20:03	41.6	
245	26-Jul-08	3:21:23	41.4	
246	26-Jul-08	3:22:43	41.4	
247	26-Jul-08	3:24:03	41.6	
248	26-Jul-08	3:25:23	41.5	
249	26-Jul-08	3:26:43	42.0	
250	26-Jul-08	3:28:03	41.3	
251	26-Jul-08	3:29:23	41.3	
252	26-Jul-08	3:30:43	41.8	
253	26-Jul-08	3:32:03	41.8	
254	26-Jul-08	3:33:23	41.5	
255	26-Jul-08	3:34:43	41.7	
256	26-Jul-08	3:36:03	42.1	
257	26-Jul-08	3:37:23	42.4	
258	26-Jul-08	3:38:43	41.8	
259	26-Jul-08	3:40:03	41.6	
260	26-Jul-08	3:41:23	41.3	
261	26-Jul-08	3:42:43	40.7	
262	26-Jul-08	3:44:03	40.6	
263	26-Jul-08	3:45:23	40.7	
264	26-Jul-08	3:46:43	40.5	
265	26-Jul-08	3:48:03	40.7	
266	26-Jul-08	3:49:23	41.1	
267	26-Jul-08	3:50:43	42.8	
268	26-Jul-08	3:52:03	40.2	
269	26-Jul-08	3:53:23	40.0	
270	26-Jul-08	3:54:43	40.3	
271	26-Jul-08	3:56:03	39.7	
272	26-Jul-08	3:57:23	39.6	
273	26-Jul-08	3:58:43	39.4	
274	26-Jul-08	4:00:03	39.9	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
275	26-Jul-08	4:01:23	39.5	
276	26-Jul-08	4:02:43	39.6	
277	26-Jul-08	4:04:03	39.1	
278	26-Jul-08	4:05:23	39.7	
279	26-Jul-08	4:06:43	39.2	
280	26-Jul-08	4:08:03	39.0	
281	26-Jul-08	4:09:23	39.1	
282	26-Jul-08	4:10:43	39.6	
283	26-Jul-08	4:12:03	39.2	
284	26-Jul-08	4:13:23	38.9	
285	26-Jul-08	4:14:43	39.2	
286	26-Jul-08	4:16:03	39.3	
287	26-Jul-08	4:17:23	39.8	
288	26-Jul-08	4:18:43	39.6	
289	26-Jul-08	4:20:03	39.4	
290	26-Jul-08	4:21:23	39.1	
291	26-Jul-08	4:22:43	39.6	
292	26-Jul-08	4:24:03	40.2	
293	26-Jul-08	4:25:23	39.9	
294	26-Jul-08	4:26:43	39.8	
295	26-Jul-08	4:28:03	40.1	
296	26-Jul-08	4:29:23	40.4	
297	26-Jul-08	4:30:43	41.0	
298	26-Jul-08	4:32:03	40.9	
299	26-Jul-08	4:33:23	40.7	
300	26-Jul-08	4:34:43	40.6	
301	26-Jul-08	4:36:03	41.5	
302	26-Jul-08	4:37:23	40.9	
303	26-Jul-08	4:38:43	41.4	
304	26-Jul-08	4:40:03	41.5	
305	26-Jul-08	4:41:23	41.7	
306	26-Jul-08	4:42:43	41.5	
307	26-Jul-08	4:44:03	40.9	
308	26-Jul-08	4:45:23	41.6	
309	26-Jul-08	4:46:43	41.3	
310	26-Jul-08	4:48:03	41.5	
311	26-Jul-08	4:49:23	41.6	
312	26-Jul-08	4:50:43	42.0	
313	26-Jul-08	4:52:03	41.0	
314	26-Jul-08	4:53:23	40.8	
315	26-Jul-08	4:54:43	41.1	
316	26-Jul-08	4:56:03	40.6	
317	26-Jul-08	4:57:23	40.2	
318	26-Jul-08	4:58:43	40.7	
319	26-Jul-08	5:00:03	41.0	
320	26-Jul-08	5:01:23	41.4	
321	26-Jul-08	5:02:43	41.8	
322	26-Jul-08	5:04:03	41.9	
323	26-Jul-08	5:05:23	40.4	
324	26-Jul-08	5:06:43	40.2	
325	26-Jul-08	5:08:03	40.5	
326	26-Jul-08	5:09:23	40.9	
327	26-Jul-08	5:10:43	40.2	
328	26-Jul-08	5:12:03	39.9	
329	26-Jul-08	5:13:23	39.8	
330	26-Jul-08	5:14:43	39.5	
331	26-Jul-08	5:16:03	39.7	
332	26-Jul-08	5:17:23	40.0	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
333	26-Jul-08	5:18:43	38.6	
334	26-Jul-08	5:20:03	46.5	
335	26-Jul-08	5:21:23	43.1	
336	26-Jul-08	5:22:43	39.0	
337	26-Jul-08	5:24:03	39.0	
338	26-Jul-08	5:25:23	40.0	
339	26-Jul-08	5:26:43	42.3	
340	26-Jul-08	5:28:03	48.7	
341	26-Jul-08	5:29:23	39.5	
342	26-Jul-08	5:30:43	39.5	
343	26-Jul-08	5:32:03	39.0	
344	26-Jul-08	5:33:23	38.3	
345	26-Jul-08	5:34:43	39.4	
346	26-Jul-08	5:36:03	40.3	
347	26-Jul-08	5:37:23	41.1	
348	26-Jul-08	5:38:43	41.4	
349	26-Jul-08	5:40:03	43.3	
350	26-Jul-08	5:41:23	40.2	
351	26-Jul-08	5:42:43	40.5	
352	26-Jul-08	5:44:03	41.0	
353	26-Jul-08	5:45:23	41.1	
354	26-Jul-08	5:46:43	41.0	
355	26-Jul-08	5:48:03	41.3	
356	26-Jul-08	5:49:23	42.8	
357	26-Jul-08	5:50:43	43.6	
358	26-Jul-08	5:52:03	42.4	
359	26-Jul-08	5:53:23	42.9	
360	26-Jul-08	5:54:43	41.4	
361	26-Jul-08	5:56:03	42.2	
362	26-Jul-08	5:57:23	42.9	
363	26-Jul-08	5:58:43	43.9	
364	26-Jul-08	6:00:03	43.2	
365	26-Jul-08	6:01:23	43.0	
366	26-Jul-08	6:02:43	44.6	
367	26-Jul-08	6:04:03	47.0	
368	26-Jul-08	6:05:23	43.8	
369	26-Jul-08	6:06:43	44.2	
370	26-Jul-08	6:08:03	44.5	
371	26-Jul-08	6:09:23	44.3	
372	26-Jul-08	6:10:43	43.8	
373	26-Jul-08	6:12:03	43.9	
374	26-Jul-08	6:13:23	44.0	
375	26-Jul-08	6:14:43	45.2	
376	26-Jul-08	6:16:03	45.7	
377	26-Jul-08	6:17:23	45.5	
378	26-Jul-08	6:18:43	44.9	
379	26-Jul-08	6:20:03	45.3	
380	26-Jul-08	6:21:23	45.1	
381	26-Jul-08	6:22:43	44.9	
382	26-Jul-08	6:24:03	44.5	
383	26-Jul-08	6:25:23	44.8	
384	26-Jul-08	6:26:43	44.8	
385	26-Jul-08	6:28:03	43.9	
386	26-Jul-08	6:29:23	44.4	
387	26-Jul-08	6:30:43	43.1	
388	26-Jul-08	6:32:03	43.4	
389	26-Jul-08	6:33:23	43.5	
390	26-Jul-08	6:34:43	44.0	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
391	26-Jul-08	6:36:03	44.0	
392	26-Jul-08	6:37:23	42.4	
393	26-Jul-08	6:38:43	41.9	
394	26-Jul-08	6:40:03	42.0	
395	26-Jul-08	6:41:23	44.2	
396	26-Jul-08	6:42:43	44.4	
397	26-Jul-08	6:44:03	45.3	
398	26-Jul-08	6:45:23	45.5	
399	26-Jul-08	6:46:43	43.4	
400	26-Jul-08	6:48:03	43.4	
401	26-Jul-08	6:49:23	43.6	
402	26-Jul-08	6:50:43	45.4	
403	26-Jul-08	6:52:03	44.9	
404	26-Jul-08	6:53:23	45.3	
405	26-Jul-08	6:54:43	44.7	
406	26-Jul-08	6:56:03	45.0	
407	26-Jul-08	6:57:23	44.6	
408	26-Jul-08	6:58:43	44.6	
409	26-Jul-08	7:00:03	44.3	
410	26-Jul-08	7:01:23	44.3	
411	26-Jul-08	7:02:43	44.0	
412	26-Jul-08	7:04:03	43.9	
413	26-Jul-08	7:05:23	44.0	
414	26-Jul-08	7:06:43	43.6	
415	26-Jul-08	7:08:03	44.0	
416	26-Jul-08	7:09:23	43.5	
417	26-Jul-08	7:10:43	44.1	
418	26-Jul-08	7:12:03	48.9	
419	26-Jul-08	7:13:23	46.5	
420	26-Jul-08	7:14:43	47.6	
421	26-Jul-08	7:16:03	44.0	
422	26-Jul-08	7:17:23	44.3	
423	26-Jul-08	7:18:43	44.2	
424	26-Jul-08	7:20:03	44.9	
425	26-Jul-08	7:21:23	45.6	
426	26-Jul-08	7:22:43	43.7	
427	26-Jul-08	7:24:03	44.5	
428	26-Jul-08	7:25:23	45.0	
429	26-Jul-08	7:26:43	47.2	
430	26-Jul-08	7:28:03	46.1	
431	26-Jul-08	7:29:23	45.8	
432	26-Jul-08	7:30:43	46.0	
433	26-Jul-08	7:32:03	45.9	
434	26-Jul-08	7:33:23	46.3	
435	26-Jul-08	7:34:43	46.4	
436	26-Jul-08	7:36:03	47.1	
437	26-Jul-08	7:37:23	47.2	
438	26-Jul-08	7:38:43	46.9	
439	26-Jul-08	7:40:03	46.3	
440	26-Jul-08	7:41:23	46.9	
441	26-Jul-08	7:42:43	46.7	
442	26-Jul-08	7:44:03	47.2	
443	26-Jul-08	7:45:23	46.9	
444	26-Jul-08	7:46:43	46.9	
445	26-Jul-08	7:48:03	47.2	
446	26-Jul-08	7:49:23	47.8	
447	26-Jul-08	7:50:43	48.1	
448	26-Jul-08	7:52:03	48.1	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
449	26-Jul-08	7:53:23	48.2	
450	26-Jul-08	7:54:43	47.9	
451	26-Jul-08	7:56:03	47.3	
452	26-Jul-08	7:57:23	47.5	
453	26-Jul-08	7:58:43	46.9	
454	26-Jul-08	8:00:03	46.4	
455	26-Jul-08	8:01:23	46.9	
456	26-Jul-08	8:02:43	47.6	
457	26-Jul-08	8:04:03	47.1	
458	26-Jul-08	8:05:23	46.8	
459	26-Jul-08	8:06:43	46.7	
460	26-Jul-08	8:08:03	47.1	
461	26-Jul-08	8:09:23	47.2	
462	26-Jul-08	8:10:43	47.5	
463	26-Jul-08	8:12:03	47.2	
464	26-Jul-08	8:13:23	47.3	
465	26-Jul-08	8:14:43	46.5	
466	26-Jul-08	8:16:03	46.0	
467	26-Jul-08	8:17:23	46.3	
468	26-Jul-08	8:18:43	47.3	
469	26-Jul-08	8:20:03	47.5	
470	26-Jul-08	8:21:23	47.3	
471	26-Jul-08	8:22:43	47.8	
472	26-Jul-08	8:24:03	47.1	
473	26-Jul-08	8:25:23	47.4	
474	26-Jul-08	8:26:43	47.5	
475	26-Jul-08	8:28:03	46.6	
476	26-Jul-08	8:29:23	46.4	
477	26-Jul-08	8:30:43	46.4	
478	26-Jul-08	8:32:03	46.0	
479	26-Jul-08	8:33:23	46.4	
480	26-Jul-08	8:34:43	46.8	
481	26-Jul-08	8:36:03	46.3	
482	26-Jul-08	8:37:23	47.0	
483	26-Jul-08	8:38:43	46.2	
484	26-Jul-08	8:40:03	46.1	
485	26-Jul-08	8:41:23	46.3	
486	26-Jul-08	8:42:43	46.1	
487	26-Jul-08	8:44:03	46.4	
488	26-Jul-08	8:45:23	46.4	
489	26-Jul-08	8:46:43	45.6	
490	26-Jul-08	8:48:03	45.9	
491	26-Jul-08	8:49:23	45.7	
492	26-Jul-08	8:50:43	46.7	
493	26-Jul-08	8:52:03	46.8	
494	26-Jul-08	8:53:23	45.4	
495	26-Jul-08	8:54:43	46.3	
496	26-Jul-08	8:56:03	46.4	
497	26-Jul-08	8:57:23	46.5	
498	26-Jul-08	8:58:43	45.9	
499	26-Jul-08	9:00:03	44.9	
500	26-Jul-08	9:01:23	45.7	
501	26-Jul-08	9:02:43	45.9	
502	26-Jul-08	9:04:03	45.7	
503	26-Jul-08	9:05:23	45.1	
504	26-Jul-08	9:06:43	45.9	
505	26-Jul-08	9:08:03	45.4	
506	26-Jul-08	9:09:23	45.1	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
507	26-Jul-08	9:10:43	45.2	
508	26-Jul-08	9:12:03	44.9	
509	26-Jul-08	9:13:23	44.8	
510	26-Jul-08	9:14:43	44.2	
511	26-Jul-08	9:16:03	44.7	
512	26-Jul-08	9:17:23	44.9	
513	26-Jul-08	9:18:43	45.4	
514	26-Jul-08	9:20:03	45.1	
515	26-Jul-08	9:21:23	44.1	
516	26-Jul-08	9:22:43	44.9	
517	26-Jul-08	9:24:03	44.0	
518	26-Jul-08	9:25:23	44.3	
519	26-Jul-08	9:26:43	44.6	
520	26-Jul-08	9:28:03	44.2	
521	26-Jul-08	9:29:23	45.4	
522	26-Jul-08	9:30:43	45.2	
523	26-Jul-08	9:32:03	45.4	
524	26-Jul-08	9:33:23	44.6	
525	26-Jul-08	9:34:43	44.6	
526	26-Jul-08	9:36:03	44.6	
527	26-Jul-08	9:37:23	44.0	
528	26-Jul-08	9:38:43	43.6	
529	26-Jul-08	9:40:03	44.3	
530	26-Jul-08	9:41:23	43.7	
531	26-Jul-08	9:42:43	44.3	
532	26-Jul-08	9:44:03	43.1	
533	26-Jul-08	9:45:23	41.8	
534	26-Jul-08	9:46:43	41.9	
535	26-Jul-08	9:48:03	42.1	
536	26-Jul-08	9:49:23	40.6	
537	26-Jul-08	9:50:43	39.5	
538	26-Jul-08	9:52:03	36.0	
539	26-Jul-08	9:53:23	35.5	
540	26-Jul-08	9:54:43	35.8	
541	26-Jul-08	9:56:03	35.7	
542	26-Jul-08	9:57:23	34.2	
543	26-Jul-08	9:58:43	33.6	
544	26-Jul-08	10:00:03	34.5	
545	26-Jul-08	10:01:23	34.2	
546	26-Jul-08	10:02:43	33.9	
547	26-Jul-08	10:04:03	33.9	
548	26-Jul-08	10:05:23	34.5	
549	26-Jul-08	10:06:43	34.4	
550	26-Jul-08	10:08:03	33.1	
551	26-Jul-08	10:09:23	32.9	
552	26-Jul-08	10:10:43	34.4	
553	26-Jul-08	10:12:03	33.9	
554	26-Jul-08	10:13:23	33.7	
555	26-Jul-08	10:14:43	33.6	
556	26-Jul-08	10:16:03	33.3	
557	26-Jul-08	10:17:23	35.3	
558	26-Jul-08	10:18:43	35.2	
559	26-Jul-08	10:20:03	35.1	
560	26-Jul-08	10:21:23	34.3	
561	26-Jul-08	10:22:43	33.3	
562	26-Jul-08	10:24:03	33.9	
563	26-Jul-08	10:25:23	34.9	
564	26-Jul-08	10:26:43	35.4	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
565	26-Jul-08	10:28:03	35.5	
566	26-Jul-08	10:29:23	33.9	
567	26-Jul-08	10:30:43	41.5	
568	26-Jul-08	10:32:03	35.5	
569	26-Jul-08	10:33:23	34.7	
570	26-Jul-08	10:34:43	36.2	
571	26-Jul-08	10:36:03	34.2	
572	26-Jul-08	10:37:23	33.1	
573	26-Jul-08	10:38:43	33.6	
574	26-Jul-08	10:40:03	33.7	
575	26-Jul-08	10:41:23	33.2	
576	26-Jul-08	10:42:43	38.5	
577	26-Jul-08	10:44:03	45.1	
578	26-Jul-08	10:45:23	40.2	
579	26-Jul-08	10:46:43	34.1	
580	26-Jul-08	10:48:03	35.2	
581	26-Jul-08	10:49:23	34.6	
582	26-Jul-08	10:50:43	34.6	
583	26-Jul-08	10:52:03	34.0	
584	26-Jul-08	10:53:23	35.5	
585	26-Jul-08	10:54:43	34.4	
586	26-Jul-08	10:56:03	38.8	
587	26-Jul-08	10:57:23	34.4	
588	26-Jul-08	10:58:43	36.1	
589	26-Jul-08	11:00:03	38.4	
590	26-Jul-08	11:01:23	37.5	
591	26-Jul-08	11:02:43	34.9	
592	26-Jul-08	11:04:03	36.7	
593	26-Jul-08	11:05:23	35.8	
594	26-Jul-08	11:06:43	35.5	
595	26-Jul-08	11:08:03	34.5	
596	26-Jul-08	11:09:23	37.3	
597	26-Jul-08	11:10:43	34.1	
598	26-Jul-08	11:12:03	33.9	
599	26-Jul-08	11:13:23	36.4	
600	26-Jul-08	11:14:43	37.2	
601	26-Jul-08	11:16:03	36.6	
602	26-Jul-08	11:17:23	35.8	
603	26-Jul-08	11:18:43	36.6	
604	26-Jul-08	11:20:03	41.1	
605	26-Jul-08	11:21:23	41.0	
606	26-Jul-08	11:22:43	40.0	
607	26-Jul-08	11:24:03	37.6	
608	26-Jul-08	11:25:23	38.5	
609	26-Jul-08	11:26:43	38.1	
610	26-Jul-08	11:28:03	35.3	
611	26-Jul-08	11:29:23	37.2	
612	26-Jul-08	11:30:43	36.7	
613	26-Jul-08	11:32:03	36.3	
614	26-Jul-08	11:33:23	35.0	
615	26-Jul-08	11:34:43	36.9	
616	26-Jul-08	11:36:03	33.3	
617	26-Jul-08	11:37:23	35.9	
618	26-Jul-08	11:38:43	36.4	
619	26-Jul-08	11:40:03	37.5	
620	26-Jul-08	11:41:23	40.4	
621	26-Jul-08	11:42:43	44.5	
622	26-Jul-08	11:44:03	47.4	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
623	26-Jul-08	11:45:23	43.8	
624	26-Jul-08	11:46:43	44.5	
625	26-Jul-08	11:48:03	45.3	
626	26-Jul-08	11:49:23	42.3	
627	26-Jul-08	11:50:43	41.8	
628	26-Jul-08	11:52:03	40.3	
629	26-Jul-08	11:53:23	41.7	
630	26-Jul-08	11:54:43	40.1	
631	26-Jul-08	11:56:03	40.3	
632	26-Jul-08	11:57:23	38.9	
633	26-Jul-08	11:58:43	36.7	
634	26-Jul-08	12:00:03	36.5	
635	26-Jul-08	12:01:23	37.0	
636	26-Jul-08	12:02:43	37.7	
637	26-Jul-08	12:04:03	37.0	
638	26-Jul-08	12:05:23	35.1	
639	26-Jul-08	12:06:43	43.0	
640	26-Jul-08	12:08:03	34.1	
641	26-Jul-08	12:09:23	38.0	
642	26-Jul-08	12:10:43	38.4	
643	26-Jul-08	12:12:03	36.4	
644	26-Jul-08	12:13:23	37.8	
645	26-Jul-08	12:14:43	39.4	
646	26-Jul-08	12:16:03	37.8	
647	26-Jul-08	12:17:23	37.9	
648	26-Jul-08	12:18:43	37.4	
649	26-Jul-08	12:20:03	38.1	
650	26-Jul-08	12:21:23	38.5	
651	26-Jul-08	12:22:43	38.9	
652	26-Jul-08	12:24:03	41.5	
653	26-Jul-08	12:25:23	37.2	
654	26-Jul-08	12:26:43	39.8	
655	26-Jul-08	12:28:03	38.4	
656	26-Jul-08	12:29:23	36.3	
657	26-Jul-08	12:30:43	35.0	
658	26-Jul-08	12:32:03	38.1	
659	26-Jul-08	12:33:23	39.4	
660	26-Jul-08	12:34:43	37.5	
661	26-Jul-08	12:36:03	38.5	
662	26-Jul-08	12:37:23	37.6	
663	26-Jul-08	12:38:43	37.3	
664	26-Jul-08	12:40:03	37.0	
665	26-Jul-08	12:41:23	38.9	
666	26-Jul-08	12:42:43	37.0	
667	26-Jul-08	12:44:03	34.8	
668	26-Jul-08	12:45:23	35.5	
669	26-Jul-08	12:46:43	33.3	
670	26-Jul-08	12:48:03	39.8	
671	26-Jul-08	12:49:23	39.5	
672	26-Jul-08	12:50:43	45.8	
673	26-Jul-08	12:52:03	47.0	
674	26-Jul-08	12:53:23	47.0	
675	26-Jul-08	12:54:43	48.1	
676	26-Jul-08	12:56:03	45.4	
677	26-Jul-08	12:57:23	46.0	
678	26-Jul-08	12:58:43	49.5	
679	26-Jul-08	13:00:03	48.4	
680	26-Jul-08	13:01:23	47.8	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
681	26-Jul-08	13:02:43	44.5	
682	26-Jul-08	13:04:03	44.6	
683	26-Jul-08	13:05:23	41.4	
684	26-Jul-08	13:06:43	42.0	
685	26-Jul-08	13:08:03	42.8	
686	26-Jul-08	13:09:23	43.3	
687	26-Jul-08	13:10:43	42.0	
688	26-Jul-08	13:12:03	39.4	
689	26-Jul-08	13:13:23	37.3	
690	26-Jul-08	13:14:43	38.0	
691	26-Jul-08	13:16:03	40.1	
692	26-Jul-08	13:17:23	42.5	
693	26-Jul-08	13:18:43	40.6	
694	26-Jul-08	13:20:03	39.9	
695	26-Jul-08	13:21:23	41.4	
696	26-Jul-08	13:22:43	42.2	
697	26-Jul-08	13:24:03	41.0	
698	26-Jul-08	13:25:23	38.1	
699	26-Jul-08	13:26:43	40.6	
700	26-Jul-08	13:28:03	37.8	
701	26-Jul-08	13:29:23	38.2	
702	26-Jul-08	13:30:43	52.3	Rejected
703	26-Jul-08	13:32:03	42.9	
704	26-Jul-08	13:33:23	43.7	
705	26-Jul-08	13:34:43	42.3	
706	26-Jul-08	13:36:03	56.8	
707	26-Jul-08	13:37:23	43.7	
708	26-Jul-08	13:38:43	35.5	
709	26-Jul-08	13:40:03	35.9	
710	26-Jul-08	13:41:23	38.9	
711	26-Jul-08	13:42:43	38.9	
712	26-Jul-08	13:44:03	39.4	
713	26-Jul-08	13:45:23	39.0	
714	26-Jul-08	13:46:43	36.9	
715	26-Jul-08	13:48:03	39.7	
716	26-Jul-08	13:49:23	44.8	
717	26-Jul-08	13:50:43	39.6	
718	26-Jul-08	13:52:03	41.9	
719	26-Jul-08	13:53:23	42.1	
720	26-Jul-08	13:54:43	43.8	
721	26-Jul-08	13:56:03	43.0	
722	26-Jul-08	13:57:23	49.7	
723	26-Jul-08	13:58:43	43.3	
724	26-Jul-08	14:00:03	42.0	
725	26-Jul-08	14:01:23	39.6	
726	26-Jul-08	14:02:43	43.1	
727	26-Jul-08	14:04:03	45.4	
728	26-Jul-08	14:05:23	43.9	
729	26-Jul-08	14:06:43	46.2	
730	26-Jul-08	14:08:03	45.5	
731	26-Jul-08	14:09:23	45.4	
732	26-Jul-08	14:10:43	45.1	
733	26-Jul-08	14:12:03	44.1	
734	26-Jul-08	14:13:23	46.8	
735	26-Jul-08	14:14:43	55.6	Rejected
736	26-Jul-08	14:16:03	50.5	Rejected
737	26-Jul-08	14:17:23	48.3	
738	26-Jul-08	14:18:43	47.6	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
739	26-Jul-08	14:20:03	51.1	Rejected
740	26-Jul-08	14:21:23	48.6	
741	26-Jul-08	14:22:43	50.4	Rejected
742	26-Jul-08	14:24:03	51.1	Rejected
743	26-Jul-08	14:25:23	45.6	
744	26-Jul-08	14:26:43	47.8	
745	26-Jul-08	14:28:03	47.1	
746	26-Jul-08	14:29:23	42.3	
747	26-Jul-08	14:30:43	42.4	
748	26-Jul-08	14:32:03	46.7	
749	26-Jul-08	14:33:23	46.1	
750	26-Jul-08	14:34:43	47.7	
751	26-Jul-08	14:36:03	49.3	
752	26-Jul-08	14:37:23	47.3	
753	26-Jul-08	14:38:43	45.7	
754	26-Jul-08	14:40:03	44.9	
755	26-Jul-08	14:41:23	46.5	
756	26-Jul-08	14:42:43	49.0	Rejected
757	26-Jul-08	14:44:03	48.3	
758	26-Jul-08	14:45:23	45.9	
759	26-Jul-08	14:46:43	45.2	
760	26-Jul-08	14:48:03	46.3	
761	26-Jul-08	14:49:23	45.2	
762	26-Jul-08	14:50:43	45.7	
763	26-Jul-08	14:52:03	46.8	
764	26-Jul-08	14:53:23	47.4	
765	26-Jul-08	14:54:43	45.5	
766	26-Jul-08	14:56:03	41.9	
767	26-Jul-08	14:57:23	43.2	
768	26-Jul-08	14:58:43	46.0	
769	26-Jul-08	15:00:03	45.9	
770	26-Jul-08	15:01:23	44.7	
771	26-Jul-08	15:02:43	46.2	
772	26-Jul-08	15:04:03	41.8	
773	26-Jul-08	15:05:23	40.9	
774	26-Jul-08	15:06:43	40.4	
775	26-Jul-08	15:08:03	43.9	
776	26-Jul-08	15:09:23	44.5	
777	26-Jul-08	15:10:43	41.3	
778	26-Jul-08	15:12:03	44.0	
779	26-Jul-08	15:13:23	46.4	
780	26-Jul-08	15:14:43	45.1	
781	26-Jul-08	15:16:03	44.9	
782	26-Jul-08	15:17:23	44.1	
783	26-Jul-08	15:18:43	40.4	
784	26-Jul-08	15:20:03	45.0	
785	26-Jul-08	15:21:23	43.5	
786	26-Jul-08	15:22:43	42.2	
787	26-Jul-08	15:24:03	41.2	
788	26-Jul-08	15:25:23	41.0	
789	26-Jul-08	15:26:43	42.5	
790	26-Jul-08	15:28:03	47.2	
791	26-Jul-08	15:29:23	42.6	
792	26-Jul-08	15:30:43	41.5	
793	26-Jul-08	15:32:03	41.3	
794	26-Jul-08	15:33:23	42.1	
795	26-Jul-08	15:34:43	40.6	
796	26-Jul-08	15:36:03	43.4	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
797	26-Jul-08	15:37:23	42.1	
798	26-Jul-08	15:38:43	38.8	
799	26-Jul-08	15:40:03	39.4	
800	26-Jul-08	15:41:23	45.1	
801	26-Jul-08	15:42:43	49.3	
802	26-Jul-08	15:44:03	43.7	
803	26-Jul-08	15:45:23	38.5	
804	26-Jul-08	15:46:43	40.4	
805	26-Jul-08	15:48:03	44.0	
806	26-Jul-08	15:49:23	41.2	
807	26-Jul-08	15:50:43	41.6	
808	26-Jul-08	15:52:03	43.6	
809	26-Jul-08	15:53:23	47.9	
810	26-Jul-08	15:54:43	45.3	
811	26-Jul-08	15:56:03	43.0	
812	26-Jul-08	15:57:23	39.2	
813	26-Jul-08	15:58:43	41.4	
814	26-Jul-08	16:00:03	38.1	
815	26-Jul-08	16:01:23	42.0	
816	26-Jul-08	16:02:43	43.4	
817	26-Jul-08	16:04:03	41.8	
818	26-Jul-08	16:05:23	39.5	
819	26-Jul-08	16:06:43	37.8	
820	26-Jul-08	16:08:03	37.4	
821	26-Jul-08	16:09:23	38.4	
822	26-Jul-08	16:10:43	38.2	
823	26-Jul-08	16:12:03	45.0	
824	26-Jul-08	16:13:23	43.6	
825	26-Jul-08	16:14:43	46.1	
826	26-Jul-08	16:16:03	46.1	
827	26-Jul-08	16:17:23	45.2	
828	26-Jul-08	16:18:43	42.1	
829	26-Jul-08	16:20:03	40.3	
830	26-Jul-08	16:21:23	46.1	
831	26-Jul-08	16:22:43	41.8	
832	26-Jul-08	16:24:03	37.8	
833	26-Jul-08	16:25:23	41.4	
834	26-Jul-08	16:26:43	43.0	
835	26-Jul-08	16:28:03	43.9	
836	26-Jul-08	16:29:23	45.2	
837	26-Jul-08	16:30:43	46.8	
838	26-Jul-08	16:32:03	45.0	
839	26-Jul-08	16:33:23	39.7	
840	26-Jul-08	16:34:43	41.7	
841	26-Jul-08	16:36:03	38.9	
842	26-Jul-08	16:37:23	37.2	
843	26-Jul-08	16:38:43	40.2	
844	26-Jul-08	16:40:03	40.9	
845	26-Jul-08	16:41:23	42.6	
846	26-Jul-08	16:42:43	45.2	
847	26-Jul-08	16:44:03	40.4	
848	26-Jul-08	16:45:23	42.8	
849	26-Jul-08	16:46:43	42.0	
850	26-Jul-08	16:48:03	41.7	
851	26-Jul-08	16:49:23	40.9	
852	26-Jul-08	16:50:43	45.1	
853	26-Jul-08	16:52:03	42.3	
854	26-Jul-08	16:53:23	40.9	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
855	26-Jul-08	16:54:43	43.2	
856	26-Jul-08	16:56:03	45.2	
857	26-Jul-08	16:57:23	50.8	Rejected
858	26-Jul-08	16:58:43	43.7	
859	26-Jul-08	17:00:03	41.9	
860	26-Jul-08	17:01:23	46.3	
861	26-Jul-08	17:02:43	47.4	
862	26-Jul-08	17:04:03	45.9	
863	26-Jul-08	17:05:23	43.9	
864	26-Jul-08	17:06:43	43.8	
865	26-Jul-08	17:08:03	44.7	
866	26-Jul-08	17:09:23	42.5	
867	26-Jul-08	17:10:43	42.5	
868	26-Jul-08	17:12:03	41.0	
869	26-Jul-08	17:13:23	39.6	
870	26-Jul-08	17:14:43	39.9	
871	26-Jul-08	17:16:03	42.2	
872	26-Jul-08	17:17:23	41.2	
873	26-Jul-08	17:18:43	41.2	
874	26-Jul-08	17:20:03	41.9	
875	26-Jul-08	17:21:23	44.2	
876	26-Jul-08	17:22:43	41.0	
877	26-Jul-08	17:24:03	41.6	
878	26-Jul-08	17:25:23	43.0	
879	26-Jul-08	17:26:43	41.4	
880	26-Jul-08	17:28:03	42.4	
881	26-Jul-08	17:29:23	44.0	
882	26-Jul-08	17:30:43	43.0	
883	26-Jul-08	17:32:03	42.9	
884	26-Jul-08	17:33:23	42.4	
885	26-Jul-08	17:34:43	44.4	
886	26-Jul-08	17:36:03	43.4	
887	26-Jul-08	17:37:23	43.4	
888	26-Jul-08	17:38:43	38.9	
889	26-Jul-08	17:40:03	37.9	
890	26-Jul-08	17:41:23	37.3	
891	26-Jul-08	17:42:43	40.8	
892	26-Jul-08	17:44:03	41.7	
893	26-Jul-08	17:45:23	43.2	
894	26-Jul-08	17:46:43	42.5	
895	26-Jul-08	17:48:03	42.6	
896	26-Jul-08	17:49:23	39.5	
897	26-Jul-08	17:50:43	39.7	
898	26-Jul-08	17:52:03	38.8	
899	26-Jul-08	17:53:23	40.9	
900	26-Jul-08	17:54:43	42.0	
901	26-Jul-08	17:56:03	41.7	
902	26-Jul-08	17:57:23	41.9	
903	26-Jul-08	17:58:43	45.4	
904	26-Jul-08	18:00:03	41.6	
905	26-Jul-08	18:01:23	38.5	
906	26-Jul-08	18:02:43	46.2	
907	26-Jul-08	18:04:03	42.6	
908	26-Jul-08	18:05:23	41.8	
909	26-Jul-08	18:06:43	42.8	
910	26-Jul-08	18:08:03	40.6	
911	26-Jul-08	18:09:23	48.2	
912	26-Jul-08	18:10:43	46.8	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
913	26-Jul-08	18:12:03	43.5	
914	26-Jul-08	18:13:23	42.7	
915	26-Jul-08	18:14:43	41.3	
916	26-Jul-08	18:16:03	42.3	
917	26-Jul-08	18:17:23	43.3	
918	26-Jul-08	18:18:43	42.3	
919	26-Jul-08	18:20:03	43.3	
920	26-Jul-08	18:21:23	41.7	
921	26-Jul-08	18:22:43	41.9	
922	26-Jul-08	18:24:03	42.3	
923	26-Jul-08	18:25:23	42.8	
924	26-Jul-08	18:26:43	42.1	
925	26-Jul-08	18:28:03	45.3	
926	26-Jul-08	18:29:23	45.5	
927	26-Jul-08	18:30:43	46.4	
928	26-Jul-08	18:32:03	46.3	
929	26-Jul-08	18:33:23	44.6	
930	26-Jul-08	18:34:43	44.9	
931	26-Jul-08	18:36:03	40.8	
932	26-Jul-08	18:37:23	42.6	
933	26-Jul-08	18:38:43	43.1	
934	26-Jul-08	18:40:03	42.3	
935	26-Jul-08	18:41:23	43.5	
936	26-Jul-08	18:42:43	41.1	
937	26-Jul-08	18:44:03	42.9	
938	26-Jul-08	18:45:23	42.2	
939	26-Jul-08	18:46:43	41.6	
940	26-Jul-08	18:48:03	41.9	
941	26-Jul-08	18:49:23	43.4	
942	26-Jul-08	18:50:43	41.7	
943	26-Jul-08	18:52:03	41.2	
944	26-Jul-08	18:53:23	39.0	
945	26-Jul-08	18:54:43	40.1	
946	26-Jul-08	18:56:03	43.3	
947	26-Jul-08	18:57:23	41.9	
948	26-Jul-08	18:58:43	44.8	
949	26-Jul-08	19:00:03	45.6	
950	26-Jul-08	19:01:23	44.3	
951	26-Jul-08	19:02:43	43.4	
952	26-Jul-08	19:04:03	44.5	
953	26-Jul-08	19:05:23	43.6	
954	26-Jul-08	19:06:43	39.1	
955	26-Jul-08	19:08:03	38.6	
956	26-Jul-08	19:09:23	39.8	
957	26-Jul-08	19:10:43	40.3	
958	26-Jul-08	19:12:03	43.4	
959	26-Jul-08	19:13:23	42.6	
960	26-Jul-08	19:14:43	38.3	
961	26-Jul-08	19:16:03	36.6	
962	26-Jul-08	19:17:23	36.3	
963	26-Jul-08	19:18:43	35.1	
964	26-Jul-08	19:20:03	33.3	
965	26-Jul-08	19:21:23	34.1	
966	26-Jul-08	19:22:43	35.0	
967	26-Jul-08	19:24:03	36.0	
968	26-Jul-08	19:25:23	36.3	
969	26-Jul-08	19:26:43	36.5	
970	26-Jul-08	19:28:03	35.3	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
971	26-Jul-08	19:29:23	34.8	
972	26-Jul-08	19:30:43	35.6	
973	26-Jul-08	19:32:03	34.8	
974	26-Jul-08	19:33:23	42.8	
975	26-Jul-08	19:34:43	38.3	
976	26-Jul-08	19:36:03	42.7	
977	26-Jul-08	19:37:23	38.4	
978	26-Jul-08	19:38:43	36.1	
979	26-Jul-08	19:40:03	34.2	
980	26-Jul-08	19:41:23	33.7	
981	26-Jul-08	19:42:43	34.4	
982	26-Jul-08	19:44:03	34.6	
983	26-Jul-08	19:45:23	45.2	
984	26-Jul-08	19:46:43	37.8	
985	26-Jul-08	19:48:03	40.4	
986	26-Jul-08	19:49:23	38.1	
987	26-Jul-08	19:50:43	39.5	
988	26-Jul-08	19:52:03	40.0	
989	26-Jul-08	19:53:23	39.7	
990	26-Jul-08	19:54:43	37.0	
991	26-Jul-08	19:56:03	37.9	
992	26-Jul-08	19:57:23	37.6	
993	26-Jul-08	19:58:43	39.2	
994	26-Jul-08	20:00:03	39.5	
995	26-Jul-08	20:01:23	40.3	
996	26-Jul-08	20:02:43	40.3	
997	26-Jul-08	20:04:03	39.4	
998	26-Jul-08	20:05:23	41.4	
999	26-Jul-08	20:06:43	42.8	
1000	26-Jul-08	20:08:03	43.1	
1001	26-Jul-08	20:09:23	41.4	
1002	26-Jul-08	20:10:43	37.4	
1003	26-Jul-08	20:12:03	38.4	
1004	26-Jul-08	20:13:23	36.4	
1005	26-Jul-08	20:14:43	35.4	
1006	26-Jul-08	20:16:03	36.5	
1007	26-Jul-08	20:17:23	35.4	
1008	26-Jul-08	20:18:43	35.5	
1009	26-Jul-08	20:20:03	39.0	
1010	26-Jul-08	20:21:23	35.3	
1011	26-Jul-08	20:22:43	33.7	
1012	26-Jul-08	20:24:03	36.7	
1013	26-Jul-08	20:25:23	34.8	
1014	26-Jul-08	20:26:43	34.6	
1015	26-Jul-08	20:28:03	35.7	
1016	26-Jul-08	20:29:23	44.4	
1017	26-Jul-08	20:30:43	33.8	
1018	26-Jul-08	20:32:03	31.6	
1019	26-Jul-08	20:33:23	31.2	
1020	26-Jul-08	20:34:43	31.9	
1021	26-Jul-08	20:36:03	33.6	
1022	26-Jul-08	20:37:23	35.0	
1023	26-Jul-08	20:38:43	45.8	
1024	26-Jul-08	20:40:03	34.2	
1025	26-Jul-08	20:41:23	32.6	
1026	26-Jul-08	20:42:43	34.8	
1027	26-Jul-08	20:44:03	32.0	
1028	26-Jul-08	20:45:23	33.0	

Table C-9 824 Logging Sound Level Meter Time History - Bruderheim, 2008 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	Comments
1029	26-Jul-08	20:46:43	35.1	
1030	26-Jul-08	20:48:03	33.3	
1031	26-Jul-08	20:49:23	33.6	
1032	26-Jul-08	20:50:43	34.2	
1033	26-Jul-08	20:52:03	34.8	
1034	26-Jul-08	20:53:23	33.0	
1035	26-Jul-08	20:54:43	31.6	
1036	26-Jul-08	20:56:03	31.7	
1037	26-Jul-08	20:57:23	33.7	
1038	26-Jul-08	20:58:43	33.0	
1039	26-Jul-08	21:00:03	32.8	
1040	26-Jul-08	21:01:23	33.4	
1041	26-Jul-08	21:02:43	32.9	
1042	26-Jul-08	21:04:03	30.7	
1043	26-Jul-08	21:05:23	30.9	
1044	26-Jul-08	21:06:43	35.2	
1045	26-Jul-08	21:08:03	42.0	
1046	26-Jul-08	21:09:23	33.7	
1047	26-Jul-08	21:10:43	33.6	
1048	26-Jul-08	21:12:03	33.5	
1049	26-Jul-08	21:13:23	33.4	
1050	26-Jul-08	21:14:43	32.7	
1051	26-Jul-08	21:16:03	34.6	
1052	26-Jul-08	21:17:23	32.3	
1053	26-Jul-08	21:18:43	33.4	
1054	26-Jul-08	21:20:03	34.3	
1055	26-Jul-08	21:21:23	33.6	
1056	26-Jul-08	21:22:43	33.8	
1057	26-Jul-08	21:24:03	33.5	
1058	26-Jul-08	21:25:23	32.8	
1059	26-Jul-08	21:26:43	32.2	
1060	26-Jul-08	21:28:03	32.3	
1061	26-Jul-08	21:29:23	32.3	
1062	26-Jul-08	21:30:43	33.6	
1063	26-Jul-08	21:32:03	34.3	
1064	26-Jul-08	21:33:23	34.4	
1065	26-Jul-08	21:34:43	39.7	
1066	26-Jul-08	21:36:03	35.6	
1067	26-Jul-08	21:37:23	33.8	
1068	26-Jul-08	21:38:43	32.0	
1069	26-Jul-08	21:40:03	32.9	
1070	26-Jul-08	21:41:23	31.9	
1071	26-Jul-08	21:42:43	32.0	
1072	26-Jul-08	21:44:03	31.5	
1073	26-Jul-08	21:45:23	32.9	
1074	26-Jul-08	21:46:43	32.2	
1075	26-Jul-08	21:48:03	31.8	
1076	26-Jul-08	21:49:23	32.4	
1077	26-Jul-08	21:50:43	33.4	
1078	26-Jul-08	21:52:03	33.7	
1079	26-Jul-08	21:53:23	42.2	
1080	26-Jul-08	21:54:43	46.7	
1081	26-Jul-08	21:55:24	Stop:Key	

Appendix D Background Sound Survey Results Kitimat, BC 2005

Table D-1 Hourly Sound Data - Kitimat, 2005 Survey

824 Logging Sound Level Meter Intervals
File Translated: C:\Projects\Calgary\CE03210 GEM\Field Work\Kitimat\13Dec13l.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.261
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: GEM_2.log
Setup Descr: Kitimat
Location: Kitimat, BC
Note 1: All sound values in dBA

Rec #	Date	Time	Duration	Leq	SEL	Min	Max	L10	L50	L90
1	13-Dec-05	13:25:22	0:03:44	Rejected						
2	13-Dec-05	13:29:37	0:30:22	Rejected						
3	13-Dec-05	14:00:00	1:00:00	22.8	58.4	17.9	43.5	24.8	19.3	18.2
4	13-Dec-05	15:00:00	1:00:00	23.3	58.8	17.5	49.0	22.0	18.4	17.5
5	13-Dec-05	16:00:00	1:00:00	27.5	63.1	17.4	57.4	21.3	18.2	17.4
6	13-Dec-05	17:00:00	1:00:00	21.0	56.5	17.3	41.7	21.4	18.4	17.3
7	13-Dec-05	18:00:00	1:00:00	18.1	53.7	17.7	30.8	18.9	18.3	17.7
8	13-Dec-05	19:00:00	1:00:00	18.2	53.8	17.5	22.9	18.9	18.4	17.5
9	13-Dec-05	20:00:00	1:00:00	18.5	54.1	17.8	27.6	19.4	18.6	18.0
10	13-Dec-05	21:00:00	1:00:00	22.1	57.7	17.8	44.4	19.5	18.6	18.1
11	13-Dec-05	22:00:00	1:00:00	19.6	55.2	17.8	33.1	19.5	18.6	18.1
12	13-Dec-05	23:00:00	1:00:00	18.1	53.7	17.3	25.3	18.9	18.2	17.3
13	14-Dec-05	0:00:00	1:00:00	18.1	53.7	17.4	27.1	18.9	18.2	17.4
14	14-Dec-05	1:00:00	1:00:00	18.4	54.0	17.8	23.4	19.0	18.5	18.1
15	14-Dec-05	2:00:00	1:00:00	18.1	53.6	17.4	23.0	18.9	18.2	17.4
16	14-Dec-05	3:00:00	1:00:00	18.7	54.3	17.2	35.8	19.8	18.6	17.5
17	14-Dec-05	4:00:00	1:00:00	18.6	54.2	17.2	23.4	20.2	18.2	17.2
18	14-Dec-05	5:00:00	1:00:00	19.2	54.8	17.3	35.5	19.7	18.0	17.3
19	14-Dec-05	6:00:00	1:00:00	18.1	53.7	17.2	23.0	18.9	18.0	17.2
20	14-Dec-05	7:00:00	1:00:00	19.1	54.6	17.2	32.0	20.8	18.7	17.3
21	14-Dec-05	8:00:00	1:00:00	19.1	54.7	17.5	26.3	20.9	18.4	17.5
22	14-Dec-05	9:00:00	1:00:00	25.2	60.8	17.3	53.2	22.1	18.9	18.0
23	14-Dec-05	10:00:00	1:00:00	51.3	86.9	17.0	79.2	25.0	18.4	17.3
24	14-Dec-05	11:00:00	1:00:00	20.4	56.0	17.0	32.1	23.1	18.5	17.3
25	14-Dec-05	12:00:00	1:00:00	24.9	60.5	17.3	41.5	28.2	18.7	17.4
26	14-Dec-05	13:00:00	1:00:00	18.8	54.3	17.3	33.6	19.0	17.8	17.3
27	14-Dec-05	14:00:00	0:25:29	Rejected						

Table D-2 SLM and RTA Summary - Kitimat, 2005 Survey

File Translated:	C:\Projects\Calgary\CE03210 GEM\Field Work\Kitimat\14Dec15s.slmdl		
Model Number:	824		
Serial Number:	A2824		
Firmware Rev:	4.261		
Software Version:	3.12		
Name:	AMEC Earth & Environmental		
Descr1:	4810 - 93 Street		
Descr2:	Edmonton AB T6E 5M4		
Setup:	SLM&RTA.ssa		
Setup Descr:	SLM & Real-Time Analyzer		
Location:	Kitimat, BC		
Note 1:	Spectra sound values in dB		
Start Time:	14-Dec-05	15:25:36	
Elapsed Time:	00:34.7		
	A Weight	C Weight	Flat
Leq:	32.5 dBA	38.0 dBC	41.5 dBF
SEL:	47.9 dBA	53.4 dBC	57.0 dBF
Peak:	43.6 dBA	52.9 dBC	59.9 dBF
	12/14/2005 15:29	12/14/2005 15:25	12/14/2005 15:25
Lmax (slow):	33.5 dBA	41.2 dBC	48.4 dBF
	12/14/2005 15:25	12/14/2005 15:25	12/14/2005 15:25
Lmin (slow):	32.0 dBA	35.9 dBC	38.1 dBF
	12/14/2005 15:25	12/14/2005 15:25	12/14/2005 15:25
Lmax (fast):	34.2 dBA	43.5 dBC	50.9 dBF
	12/14/2005 15:29	12/14/2005 15:29	12/14/2005 15:29
Lmin (fast):	31.5 dBA	34.6 dBC	36.8 dBF
	12/14/2005 15:25	12/14/2005 15:25	12/14/2005 15:25
Lmax (impulse):	34.3 dBA	45.8 dBC	53.0 dBF
	12/14/2005 15:29	12/14/2005 15:29	12/14/2005 15:29
Lmin (impulse):	31.7 dBA	35.8 dBC	38.3 dBF
	12/14/2005 15:25	12/14/2005 15:25	12/14/2005 15:25

Table D-2 SLM and RTA Summary - Kitimat, 2005 Survey (cont'd)

Spectra

Start Time:	14-Dec-05	15:29:45	Run Time:	00:12.1		
Freq Hz	Leq 1/3 Oct	Leq 1/1 Oct	Max 1/3 Oct	Max 1/1 Oct	Min 1/3 Oct	Min 1/1 Oct
12.5	37.3		38.2		20.2	
16	31.1	38.9	34.8	40.1	18.7	23.5
20	30.3		27.6		16.4	
25	26.3		30.0		13.5	
31.5	27.6	32.7	32.8	37.4	20.4	23.7
40	29.4		34.2		20.1	
50	27.1		29.3		17.0	
63	28.4	32.0	27.2	32.8	15.8	22.0
80	25.6		27.3		18.4	
100	27.9		25.3		17.7	
125	26.8	31.4	24.7	29.5	17.0	22.0
160	24.5		24.0		17.1	
200	25.9		27.3		16.7	
250	25.9	33.0	21.8	31.2	14.4	20.5
315	30.9		28.0		15.8	
400	20.7		18.3		13.5	
500	18.6	24.2	22.9	25.6	11.6	17.3
630	18.7		19.9		12.3	
800	16.7		19.1		11.8	
1000	14.0	19.7	18.1	22.9	10.4	16.0
1250	13.3		16.8		11.5	
1600	13.9		16.3		12.1	
2000	16.2	21.1	18.4	23.4	13.3	18.5
2500	18.0		20.3		15.2	
3150	17.5		19.4		14.8	
4000	17.1	22.1	19.0	23.7	15.6	20.4
5000	17.3		18.4		16.3	
6300	17.7		18.4		16.5	
8000	18.3	23.1	18.7	23.6	17.4	22.1
10000	18.8		19.2		18.0	
12500	19.6		20.0		18.5	
16000	20.6	25.7	20.7	25.9	19.9	24.9
20000	22.1		22.4		21.5	

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey

File Translated: C:\Projects\Calgary\CE03210 GEM\Field Work\Kitimat\13Dec13l.slmdl
Model Number: 824
Serial Number: A2824
Firmware Rev: 4.261
Software Version: 3.12
Name: AMEC Earth & Environmental
Descr1: 4810 - 93 Street
Descr2: Edmonton AB T6E 5M4
Setup: GEM_2.log
Setup Descr: Kitimat
Location: Kitimat, BC
Note 1:
Note 2:

Rec #	Date	Time	Leq (dBA)	
1	13-Dec-05	13:25:22	Run:Key	
2	13-Dec-05	13:25:22	19.7	
3	13-Dec-05	13:25:38	Pause:Key	
4	13-Dec-05	13:30:22	19.7	
5	13-Dec-05	13:29:07	Stop:Key	
6	13-Dec-05	13:29:37	Run:Key	
7	13-Dec-05	13:29:37	50.7	Rejected
8	13-Dec-05	13:34:37	20.5	
9	13-Dec-05	13:39:37	18.8	
10	13-Dec-05	13:44:37	19.3	
11	13-Dec-05	13:49:37	28.5	
12	13-Dec-05	13:54:37	19.5	
13	13-Dec-05	13:59:37	19.7	
14	13-Dec-05	14:04:37	19.5	
15	13-Dec-05	14:09:37	20.4	
16	13-Dec-05	14:14:37	23.6	
17	13-Dec-05	14:19:37	22.1	
18	13-Dec-05	14:24:37	21.6	
19	13-Dec-05	14:29:37	22.5	
20	13-Dec-05	14:34:37	26.9	
21	13-Dec-05	14:39:37	18.8	
22	13-Dec-05	14:44:37	18.5	
23	13-Dec-05	14:49:37	18.5	
24	13-Dec-05	14:54:37	27.0	
25	13-Dec-05	14:59:37	23.8	
26	13-Dec-05	15:04:37	19.0	
27	13-Dec-05	15:09:37	19.9	
28	13-Dec-05	15:14:37	22.9	
29	13-Dec-05	15:19:37	27.3	
30	13-Dec-05	15:24:37	19.0	
31	13-Dec-05	15:29:37	18.1	
32	13-Dec-05	15:34:37	17.8	
33	13-Dec-05	15:39:37	18.0	
34	13-Dec-05	15:44:37	19.1	
35	13-Dec-05	15:49:37	30.3	
36	13-Dec-05	15:54:37	17.8	
37	13-Dec-05	15:59:37	20.0	
38	13-Dec-05	16:04:37	17.8	
39	13-Dec-05	16:09:37	24.4	
40	13-Dec-05	16:14:37	19.1	
41	13-Dec-05	16:19:37	36.0	Rejected
42	13-Dec-05	16:24:37	18.3	
43	13-Dec-05	16:29:37	18.3	
44	13-Dec-05	16:34:37	31.3	Rejected

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)
45	13-Dec-05	16:39:37	19.3
46	13-Dec-05	16:44:37	27.4
47	13-Dec-05	16:49:37	17.8
48	13-Dec-05	16:54:37	17.7
49	13-Dec-05	16:59:37	19.8
50	13-Dec-05	17:04:37	24.0
51	13-Dec-05	17:09:37	18.9
52	13-Dec-05	17:14:37	18.1
53	13-Dec-05	17:19:37	20.3
54	13-Dec-05	17:24:37	25.3
55	13-Dec-05	17:29:37	23.9
56	13-Dec-05	17:34:37	18.2
57	13-Dec-05	17:39:37	17.7
58	13-Dec-05	17:44:37	17.9
59	13-Dec-05	17:49:37	18.1
60	13-Dec-05	17:54:37	18.0
61	13-Dec-05	17:59:37	18.1
62	13-Dec-05	18:04:37	18.2
63	13-Dec-05	18:09:37	18.0
64	13-Dec-05	18:14:37	18.2
65	13-Dec-05	18:19:37	18.3
66	13-Dec-05	18:24:37	18.3
67	13-Dec-05	18:29:37	18.0
68	13-Dec-05	18:34:37	17.8
69	13-Dec-05	18:39:37	18.0
70	13-Dec-05	18:44:37	18.3
71	13-Dec-05	18:49:37	18.1
72	13-Dec-05	18:54:37	18.2
73	13-Dec-05	18:59:37	18.3
74	13-Dec-05	19:04:37	18.0
75	13-Dec-05	19:09:37	17.7
76	13-Dec-05	19:14:37	18.0
77	13-Dec-05	19:19:37	18.1
78	13-Dec-05	19:24:37	18.0
79	13-Dec-05	19:29:37	18.2
80	13-Dec-05	19:34:37	18.1
81	13-Dec-05	19:39:37	18.3
82	13-Dec-05	19:44:37	18.5
83	13-Dec-05	19:49:37	18.6
84	13-Dec-05	19:54:37	18.8
85	13-Dec-05	19:59:37	18.7
86	13-Dec-05	20:04:37	18.5
87	13-Dec-05	20:09:37	18.5
88	13-Dec-05	20:14:37	18.3
89	13-Dec-05	20:19:37	18.4
90	13-Dec-05	20:24:37	19.3
91	13-Dec-05	20:29:37	18.8
92	13-Dec-05	20:34:37	18.3
93	13-Dec-05	20:39:37	18.6
94	13-Dec-05	20:44:37	18.2
95	13-Dec-05	20:49:37	18.1
96	13-Dec-05	20:54:37	18.0
97	13-Dec-05	20:59:37	18.8
98	13-Dec-05	21:04:37	30.8
99	13-Dec-05	21:09:37	18.5
100	13-Dec-05	21:14:37	18.4
101	13-Dec-05	21:19:37	18.3
102	13-Dec-05	21:24:37	18.1
103	13-Dec-05	21:29:37	18.3
104	13-Dec-05	21:34:37	18.3

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)
105	13-Dec-05	21:39:37	18.3
106	13-Dec-05	21:44:37	18.3
107	13-Dec-05	21:49:37	18.5
108	13-Dec-05	21:54:37	19.1
109	13-Dec-05	21:59:37	18.8
110	13-Dec-05	22:04:37	18.5
111	13-Dec-05	22:09:37	18.6
112	13-Dec-05	22:14:37	18.6
113	13-Dec-05	22:19:37	18.9
114	13-Dec-05	22:24:37	18.5
115	13-Dec-05	22:29:37	18.4
116	13-Dec-05	22:34:37	18.6
117	13-Dec-05	22:39:37	18.5
118	13-Dec-05	22:44:37	20.2
119	13-Dec-05	22:49:37	24.2
120	13-Dec-05	22:54:37	18.2
121	13-Dec-05	22:59:37	17.7
122	13-Dec-05	23:04:37	17.8
123	13-Dec-05	23:09:37	17.6
124	13-Dec-05	23:14:37	17.6
125	13-Dec-05	23:19:37	18.3
126	13-Dec-05	23:24:37	18.5
127	13-Dec-05	23:29:37	18.5
128	13-Dec-05	23:34:37	18.8
129	13-Dec-05	23:39:37	18.0
130	13-Dec-05	23:44:37	18.1
131	13-Dec-05	23:49:37	18.3
132	13-Dec-05	23:54:37	18.3
133	13-Dec-05	23:59:37	18.3
134	14-Dec-05	0:04:37	18.1
135	14-Dec-05	0:09:37	18.0
136	14-Dec-05	0:14:37	17.9
137	14-Dec-05	0:19:37	17.8
138	14-Dec-05	0:24:37	18.0
139	14-Dec-05	0:29:37	18.4
140	14-Dec-05	0:34:37	18.3
141	14-Dec-05	0:39:37	18.0
142	14-Dec-05	0:44:37	18.0
143	14-Dec-05	0:49:37	18.1
144	14-Dec-05	0:54:37	18.1
145	14-Dec-05	0:59:37	18.4
146	14-Dec-05	1:04:37	18.2
147	14-Dec-05	1:09:37	18.1
148	14-Dec-05	1:14:37	18.3
149	14-Dec-05	1:19:37	18.4
150	14-Dec-05	1:24:37	18.3
151	14-Dec-05	1:29:37	18.2
152	14-Dec-05	1:34:37	18.2
153	14-Dec-05	1:39:37	18.5
154	14-Dec-05	1:44:37	18.8
155	14-Dec-05	1:49:37	18.7
156	14-Dec-05	1:54:37	18.8
157	14-Dec-05	1:59:37	18.3
158	14-Dec-05	2:04:37	18.2
159	14-Dec-05	2:09:37	18.0
160	14-Dec-05	2:14:37	18.0
161	14-Dec-05	2:19:37	18.2
162	14-Dec-05	2:24:37	17.8
163	14-Dec-05	2:29:37	17.6
164	14-Dec-05	2:34:37	17.7

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)
165	14-Dec-05	2:39:37	18.0
166	14-Dec-05	2:44:37	18.2
167	14-Dec-05	2:49:37	18.3
168	14-Dec-05	2:54:37	18.4
169	14-Dec-05	2:59:37	18.6
170	14-Dec-05	3:04:37	18.6
171	14-Dec-05	3:09:37	18.8
172	14-Dec-05	3:14:37	18.8
173	14-Dec-05	3:19:37	19.0
174	14-Dec-05	3:24:37	19.4
175	14-Dec-05	3:29:37	20.0
176	14-Dec-05	3:34:37	19.2
177	14-Dec-05	3:39:37	18.3
178	14-Dec-05	3:44:37	17.9
179	14-Dec-05	3:49:37	17.4
180	14-Dec-05	3:54:37	17.5
181	14-Dec-05	3:59:37	17.4
182	14-Dec-05	4:04:37	17.5
183	14-Dec-05	4:09:37	17.4
184	14-Dec-05	4:14:37	17.5
185	14-Dec-05	4:19:37	17.7
186	14-Dec-05	4:24:37	17.9
187	14-Dec-05	4:29:37	18.3
188	14-Dec-05	4:34:37	18.5
189	14-Dec-05	4:39:37	18.7
190	14-Dec-05	4:44:37	19.7
191	14-Dec-05	4:49:37	20.2
192	14-Dec-05	4:54:37	20.5
193	14-Dec-05	4:59:37	19.3
194	14-Dec-05	5:04:37	18.8
195	14-Dec-05	5:09:37	19.3
196	14-Dec-05	5:14:37	19.0
197	14-Dec-05	5:19:37	18.6
198	14-Dec-05	5:24:37	17.8
199	14-Dec-05	5:29:37	17.7
200	14-Dec-05	5:34:37	17.6
201	14-Dec-05	5:39:37	24.1
202	14-Dec-05	5:44:37	18.0
203	14-Dec-05	5:49:37	17.5
204	14-Dec-05	5:54:37	17.6
205	14-Dec-05	5:59:37	17.6
206	14-Dec-05	6:04:37	17.7
207	14-Dec-05	6:09:37	17.8
208	14-Dec-05	6:14:37	18.0
209	14-Dec-05	6:19:37	17.6
210	14-Dec-05	6:24:37	17.8
211	14-Dec-05	6:29:37	17.7
212	14-Dec-05	6:34:37	17.9
213	14-Dec-05	6:39:37	18.9
214	14-Dec-05	6:44:37	18.4
215	14-Dec-05	6:49:37	18.5
216	14-Dec-05	6:54:37	18.5
217	14-Dec-05	6:59:37	18.3
218	14-Dec-05	7:04:37	19.4
219	14-Dec-05	7:09:37	20.5
220	14-Dec-05	7:14:37	20.3
221	14-Dec-05	7:19:37	20.6
222	14-Dec-05	7:24:37	20.4
223	14-Dec-05	7:29:37	18.6
224	14-Dec-05	7:34:37	18.0

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	
225	14-Dec-05	7:39:37	17.5	
226	14-Dec-05	7:44:37	17.4	
227	14-Dec-05	7:49:37	17.7	
228	14-Dec-05	7:54:37	18.0	
229	14-Dec-05	7:59:37	18.1	
230	14-Dec-05	8:04:37	17.9	
231	14-Dec-05	8:09:37	17.7	
232	14-Dec-05	8:14:37	17.8	
233	14-Dec-05	8:19:37	17.8	
234	14-Dec-05	8:24:37	17.8	
235	14-Dec-05	8:29:37	18.7	
236	14-Dec-05	8:34:37	19.9	
237	14-Dec-05	8:39:37	21.3	
238	14-Dec-05	8:44:37	21.8	
239	14-Dec-05	8:49:37	18.9	
240	14-Dec-05	8:54:37	18.7	
241	14-Dec-05	8:59:37	19.4	
242	14-Dec-05	9:04:37	19.2	
243	14-Dec-05	9:09:37	19.0	
244	14-Dec-05	9:14:37	18.8	
245	14-Dec-05	9:19:37	18.5	
246	14-Dec-05	9:24:37	26.2	
247	14-Dec-05	9:29:37	20.4	
248	14-Dec-05	9:34:37	21.5	
249	14-Dec-05	9:39:37	34.1	Rejected
250	14-Dec-05	9:44:37	19.9	
251	14-Dec-05	9:49:37	20.0	
252	14-Dec-05	9:54:37	21.3	
253	14-Dec-05	9:59:37	27.7	
254	14-Dec-05	10:04:37	32.0	
255	14-Dec-05	10:09:37	20.1	
256	14-Dec-05	10:14:37	17.5	
257	14-Dec-05	10:19:37	18.0	
258	14-Dec-05	10:24:37	19.4	
259	14-Dec-05	10:29:37	27.1	
260	14-Dec-05	10:34:37	19.3	
261	14-Dec-05	10:39:37	62.1	Rejected
262	14-Dec-05	10:44:37	18.9	
263	14-Dec-05	10:49:37	17.6	
264	14-Dec-05	10:54:37	17.4	
265	14-Dec-05	10:59:37	17.4	
266	14-Dec-05	11:04:37	17.4	
267	14-Dec-05	11:09:37	17.7	
268	14-Dec-05	11:14:37	18.3	
269	14-Dec-05	11:19:37	18.2	
270	14-Dec-05	11:24:37	19.4	
271	14-Dec-05	11:29:37	19.6	
272	14-Dec-05	11:34:37	19.7	
273	14-Dec-05	11:39:37	23.4	
274	14-Dec-05	11:44:37	21.9	
275	14-Dec-05	11:49:37	19.8	
276	14-Dec-05	11:54:37	24.3	
277	14-Dec-05	11:59:37	19.6	
278	14-Dec-05	12:04:37	18.1	
279	14-Dec-05	12:09:37	18.8	
280	14-Dec-05	12:14:37	27.9	
281	14-Dec-05	12:19:37	30.5	
282	14-Dec-05	12:24:37	24.1	
283	14-Dec-05	12:29:37	30.4	
284	14-Dec-05	12:34:37	21.3	

Table D-3 824 Logging Sound Level Meter Time History - Kitimat, 2005 Survey (cont'd)

Rec #	Date	Time	Leq (dBA)	
285	14-Dec-05	12:39:37	18.1	
286	14-Dec-05	12:44:37	17.9	
287	14-Dec-05	12:49:37	18.0	
288	14-Dec-05	12:54:37	18.1	
289	14-Dec-05	12:59:37	19.4	
290	14-Dec-05	13:04:37	23.3	
291	14-Dec-05	13:09:37	18.6	
292	14-Dec-05	13:14:37	17.8	
293	14-Dec-05	13:19:37	17.5	
294	14-Dec-05	13:24:37	17.7	
295	14-Dec-05	13:29:37	17.5	
296	14-Dec-05	13:34:37	17.5	
297	14-Dec-05	13:39:37	17.5	
298	14-Dec-05	13:44:37	17.7	
299	14-Dec-05	13:49:37	18.1	
300	14-Dec-05	13:54:37	18.3	
301	14-Dec-05	13:59:37	22.8	
302	14-Dec-05	14:04:37	19.6	
303	14-Dec-05	14:09:37	18.4	
304	14-Dec-05	14:14:37	21.9	
305	14-Dec-05	14:19:37	35.4	Rejected
306	14-Dec-05	14:24:37	44.7	Rejected
307	14-Dec-05	14:25:29	Stop:Key	

Table D-4 Weather Conditions - Kitimat, 2005 Survey									
Day	Time	Temp °C	Dew Point °C	Rel Hum %	Wind Dir 10's deg	Wind Spd km/h	Visibility km	Pressure kPa	Weather
13 Dec 2005 13:00 PST	13:00	1.7	0.4	91	calm	0	8	100.25	Fog
13 Dec 2005 13:00 PST	14:00	1.8	-0.4	85	calm	0	11.3	100.26	Cloudy
13 Dec 2005 13:00 PST	15:00	1.5	0	90	calm	0	12.9	100.28	Cloudy
13 Dec 2005 13:00 PST	16:00	1.5	0	90	calm	0	12.9	100.3	Cloudy
13 Dec 2005 13:00 PST	17:00	1.2	-0.6	88	15	4	12.9	100.3	Cloudy
13 Dec 2005 13:00 PST	18:00	0.4	-0.6	93	calm	0	12.9	100.29	Cloudy
13 Dec 2005 13:00 PST	19:00	0.3	-0.6	94	calm	0	12.9	100.27	Mostly Cloudy
13 Dec 2005 13:00 PST	20:00	0.5	-0.5	93	calm	0	12.9	100.3	Cloudy
13 Dec 2005 13:00 PST	21:00	0.5	-0.7	92	calm	0	12.9	100.3	Snow Showers
13 Dec 2005 13:00 PST	22:00	0	-0.9	94	calm	0	12.9	100.32	Snow Showers
13 Dec 2005 13:00 PST	23:00	0.3	-1	91	35	4	9.7	100.33	Snow Showers
14 Dec 2005 00:00 PST	0:00	0.1	-1	92	calm	0	9.7	100.33	Snow Showers
14 Dec 2005 :00 PST	1:00	0	-0.8	94	33	4	9.7	100.31	Fog
14 Dec 2005 :00 PST	2:00	0	-0.8	94	calm	0	6.4	100.33	Fog
14 Dec 2005 :00 PST	3:00	-0.3	-0.9	96	calm	0	4.8	100.31	Fog
14 Dec 2005 :00 PST	4:00	-0.2	-0.7	96	calm	0	1.6	100.28	Fog
14 Dec 2005 :00 PST	5:00	-0.3	-0.9	96	calm	0	1.2	100.26	Fog
14 Dec 2005 :00 PST	6:00	-0.3	-0.9	96	calm	0	1.2	100.24	Fog
14 Dec 2005 :00 PST	7:00	-0.4	-1	96	calm	0	1.6	100.22	Fog
14 Dec 2005 :00 PST	8:00	-0.4	-1.1	95	calm	0	4.8	100.21	Fog
14 Dec 2005 :00 PST	9:00	-0.6	-1.1	96	calm	0	3.2	100.25	Fog
14 Dec 2005 :00 PST	10:00	-0.5	-1.2	95	calm	0	9.7	100.26	Fog
14 Dec 2005 :00 PST	11:00	-0.3	-1	95	calm	0	11.3	100.25	Cloudy
14 Dec 2005 :00 PST	12:00	-0.3	-1.2	94	calm	0	12.9	100.2	Cloudy
14 Dec 2005 :00 PST	13:00	-0.6	-2.2	89	calm	0	12.9	100.2	Cloudy
14 Dec 2005 :00 PST	14:00	-0.5	-1.7	92	calm	0	16.1	100.15	Cloudy