# Sound Levels at Greater Sage-grouse Leks in the Pinedale Anticline Project Area, WY, April 2013-2014

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**Executive Summary**

Greater sage-grouse (*Centrocercus urophasianus*) use elaborate audio and visual display behaviors to attract and select mates, and depend on audio communication between females and chicks during brood rearing. A potential threat to greater sage-grouse is anthropogenic noise associated with human activity, including noise from oil and gas development and production. Several greater sage-grouse leks occur in and around the Pinedale Anticline Project Area (PAPA), a large natural gas development area south of Pinedale, WY.

The Bureau of Land Management's Record of Decision specified sound level thresholds above baseline levels that should not be exceeded by industry. Specific changes requiring mitigation are described as follows: "Decibel levels at the lek more than 10 dBA above baseline measured from the edge of the lek." The ROD used 39 dBA as a baseline ambient based on an EPA study that measured sound levels in a rural farming area in California in 1971.

The objective of this project was to monitor sound levels at 19 greater sage-grouse leks in the PAPA area south of Pinedale, WY.

*Results*

Acoustic data were collected at 19 greater sage-grouse leks in the PAPA in April 2013 and again in 2014. A total of 2087 hours of acoustic data were collected (999 hours 2013 and 1088 in 2014), for an average of 52.5 hours at each lek in 2013 and 57.3 hours at each lek in 2014.

$L_{50}$ dBA at leks in the PAPA ranged from 24.0 dBA to 36.9 dBA for all hours (0000-2400) and from 16.0 dBA to 38.5 dBA for hours important to lek behavior (1800-0800). There was little difference in sound levels at specific leks in 2013 and 2014 except in situations when the type of gas field activity at the closest pad changed significantly. Sound levels at leks were highly correlated with the distance to the nearest pad with gas field activity.

Of the 2087 hours measured at the PAPA leks in 2013 and 2014, no hours exceeded 49 dBA (39 + 10 = 49 dBA). However, results of recent acoustic studies in Wyoming demonstrate that 39 dBA is not an accurate baseline ambient sound level in undeveloped sage habitats of Wyoming.

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## Introduction

Greater sage-grouse (*Centrocercus urophasianus*) use elaborate audio and visual display behaviors to attract and select mates, and depend on audio communication between females and chicks during brood rearing. A potential threat to greater sage-grouse is anthropogenic noise associated with human activity, including noise from oil and gas development and production (Holloran 2005, BLM 2008, Patricelli et al. 2013).

The Record of Decision (ROD) (BLM 2008) specified noise thresholds above baseline levels that should not be exceeded by industry. Specific changes requiring mitigation are described as follows: "Decibel levels at the lek more than 10 dBA above baseline measured from the edge of the lek" (BLM 2008)." The ROD also specifies concurrent declines in grouse numbers, but that aspect was not part of this project. The ROD used 39 dBA as a baseline ambient based on an EPA 1971 study that measured sound levels in a rural farming area in California.

## Objective

The objective of this project was to measure and document sound levels at 19 leks in the Pinedale Anticline Project Area (PAPA).

## Study Area

The study area was south of Pinedale, WY, in the Pinedale Anticline Project Area (Figure 1). The 19 leks studied were in the Mesa, Duke's Triangle, and Yellowpoint complexes.

## Methods

*Definitions*

The following are definitions of the primary acoustic terms used in this report. Additional definitions are provided in Appendix D.

> *A-Weighting (dBA)*: A-weighting is used to account for differences in human hearing sensitivity as a function of frequency. A-weighting de-emphasizes the high (6.3 kHz and above) and low (below 1 kHz) frequencies, and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of human hearing.
>
> *Decibel (dB)*: A logarithmic measure commonly used in the measurement of sound. The decibel provides the possibility of representing a large span of signal levels in a simple manner as opposed to using the basic pressure unit Pascal. The difference between the sound pressure of silence versus a loud sound is a factor of 1,000,000:1 or more, therefore it is less cumbersome to use a small range of equivalent values: 0 to 130 decibels.

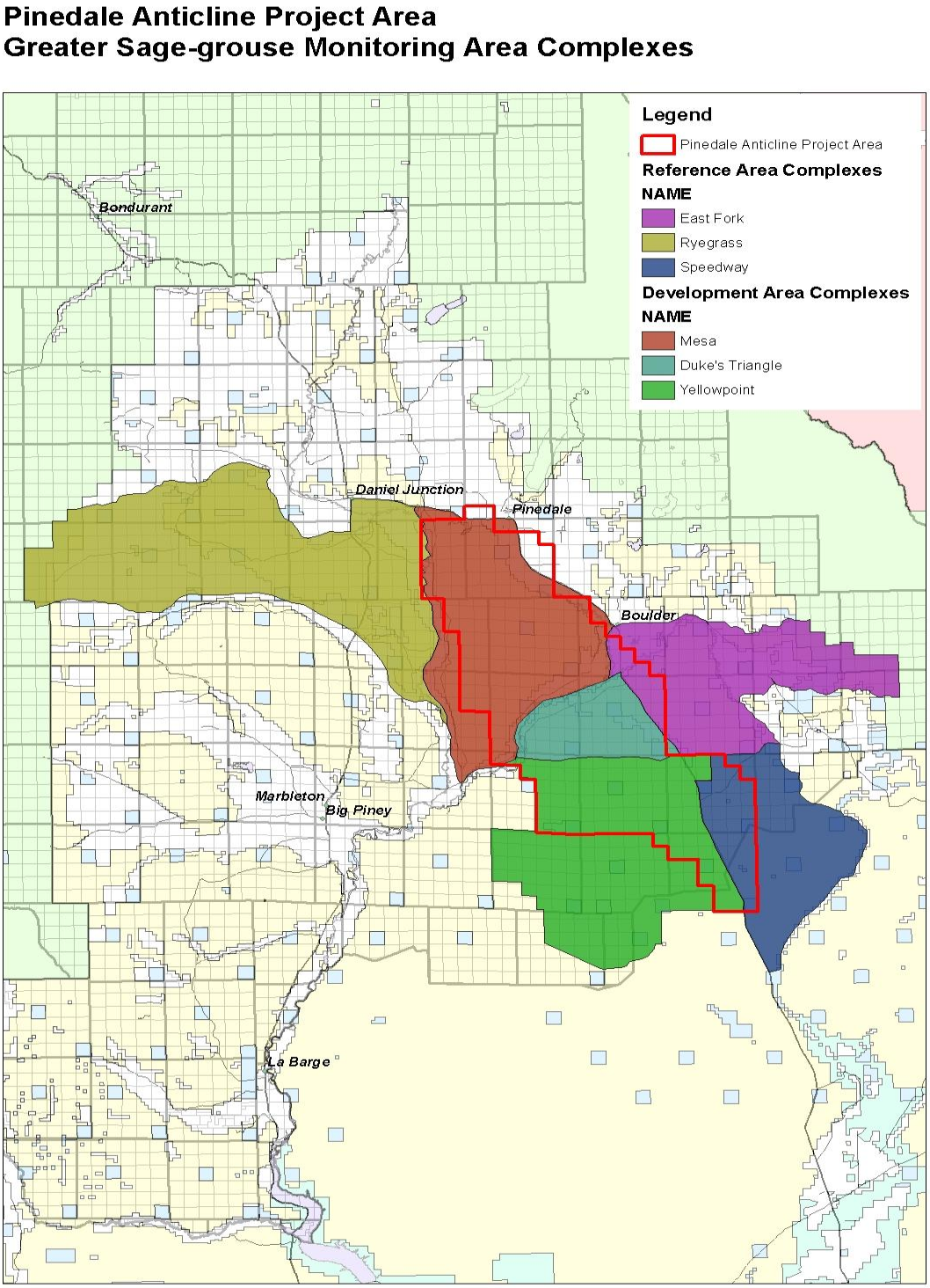


Figure 1. PAPA greater sage-grouse noise monitoring project area and lek complexes.

*$L_{eq}$ (*Equivalent Sound Level): The logarithmic average (i.e., on an energy basis) of sound pressure levels over a specific time period. "Energy averaged" sound levels are logarithmic values, and as such are generally much higher than arithmetic averages. $L_{eq}$ values are typically calculated for a specific time period (1-hour is commonly used). $L_{eq}$ values are computed from all of the 1-second $L_{eq}$ values for the specific time period. $L_{eq}$ must be used carefully in quantifying natural ambient sound levels because occasional loud sound levels may heavily influence (increase) the $L_{eq}$ value, even though sound levels for that period of time are typically lower.

*$L_x$ (Exceedance Percentile)*: This metric is the sound pressure level (L), in decibels, exceeded *x* percent of the time for the specified measurement period. $L_{50}$ is the sound pressure level exceeded 50 percent of the time ($L_{50}$ is the same as the median).

*Noise Floor*: The lower measurement limit of a sound level meter, also referred to as self-noise or electrical noise of all components of a sound level meter (meter, microphone, and preamplifier).

*Sound Level, Baseline Ambient*: The sound level in a given location including all sounds of nature but absent most human-caused sounds. $L_{90}$ is the sound pressure level exceeded 90 percent of the time, and is commonly used to establish the baseline ambient sound level.

*Sound Level, Existing Ambient*: The sound level of all sounds in a given area, including all natural sounds as well as all mechanical, electrical and other human-caused sounds. The existing ambient sound level is generally characterized by the $L_{50}$ exceedance level (i.e., the median).

*Measurement Protocol*

We followed "Procedures for Outdoor Measurement of Sound Pressure Level" (ANSI 1994) and acoustic measurement protocols developed for the Pinedale Anticline Project Office by Blickley and Patricelli (2012), "Noise monitoring recommendations for Greater Sage Grouse habitat in Wyoming." ANSI procedures recommend microphone heights of 1.2 m to 1.8 m but these were developed to assess noise impacts to humans. ANSI standards also state: "Other heights may be used if they prove to be more practicable or if they are specified in other pertinent standards" (ANSI 1994, Section 7.3.2.4). Several authors recommend that in wildlife acoustic studies, microphones be placed such that sound level measurements accurately reflect sound stimulus to which the target animal is exposed (Pater et al. 2009; Grubb et al. 1998, Delaney et al. 2009, Delaney et al. 2011; Blickley and Patricelli 2013). The approximate ear height of greater sage-grouse is 0.3 m (12"); therefore, microphones were placed 0.3 m above the ground. Standardizing microphone height at 0.3 m for acoustic studies relative to greater sage-grouse is consistent with flexibility and guidance provided by ANSI (1994, Section 7.3.2.4).

Wind can significantly influence sound level measurements in several ways. The sounds of wind through vegetation and rustling leaves are true sounds of nature and should be included in all analysis. The sound of wind against the foam windscreen is not a legitimate environmental sound, nor is the pressure change of wind across the diaphragm of the microphone. These wind-induced equipment sounds can significantly, and falsely, elevate sound levels. ANSI (S12.18-1994) standards suggest two methods to address wind influence on sound level data. Method 1 "General Method for Routine Measurements" requires omitting from analysis 1-second dB data when wind speed exceeds 5 m/s (11 mph). Method 2 "Precision Method for Accurate Measurements" requires omitting from analysis 1-second dB data when wind speed exceeds 3 m/s (6.7 mph). In separate Wyoming studies in 2013 and 2014, we collected wind speed data and sound level data at both 0.3 m and 1.5 m above ground. We found that wind speed very rarely exceeded 5 m/s or 3 m/s at our microphone height of 0.3 m. Wind commonly exceeded 5 m/s at 1.5 m at several locations (Ambrose, unpublished data). We calculated metrics with all seconds as well as with seconds that only included acoustic data during wind speed conditions less than 5 m/s. There was no difference in any metric due to the extreme rarity of elevated wind speed at 0.3 m; therefore we included all data in the analysis regardless of wind speed. Sound levels were often elevated due to wind sounds through vegetation, but these were actual environmental sounds and part of the acoustic environment of greater sage-grouse. We did not place anemometers at 1.5 m in the vicinity of the lek due to concern for potential negative impact on grouse presence and behavior at leks.

*Instrumentation*

We used two different sound level meters, a Larson-Davis 831 (4 each) and a Cesva SC310 (2 each). The Larson-Davis 831 meters used PCB 377B20 microphones, Larson-Davis PRM831 preamplifiers, and Larson-Davis EPS2106 Environmental Shrouds (foam windscreen and bird spike). The Cesva SC310 meters used Cesva PA13 preamplifiers and microphones. All acoustic equipment used for data collection (sound level meters, microphones, and preamplifiers) met or exceeded ANSI S1.4-1983 Type 1 standards. One-third octave band analyzers and dBA analyzers met ANSI S1.11-2004 and ANSI S1.42-2001, respectively. All acoustic equipment and field calibrators were calibrated to meet ANSI S1.40-2006 prior to deployment. All systems and calibrators were factory calibrated as recommended by the manufacturer, and all systems were field calibrated at the beginning and end of each measurement period at each location using a field calibrator that met ANSI S1.40-1984 standards. All system components (SLM, digital recorder, and anemometer) were synchronized with GPS time, and differences at the end of the measurement period noted. We used a Bruel and Kjaer (B&K) Acoustic Calibrator Type 4231 for field calibration.

We also collected continuous digital recordings at all measurement locations. We used Roland R05 digital recorders, and used the microphone output from the sound level meters for input to the R05 recorder. These recordings were used to review unusual sound events and to determine sound sources and the percent time that various sound sources were audible.

Sound level meters were set to collect 1-second dBA, dBF, and dBC, as well as unweighted one-third octave band data, 12.5-20,000 Hz. We expected sound levels at some locations to be very low (<15 dBA), so sound level meters were set to "low-range" with a gain of +20 dB. These settings ensured meters would collect data at the lowest measurement limit for these systems.

Figures 2 and 3 show typical deployment, with equipment case (sound level meter, recorder, and battery) and microphone with foam wind screen and bird spike.

Figure 2. Typical equipment deployment near lek, showing case (sound level meter, recorder, and battery) and microphone with foam windscreen and bird spike at 0.3 m above ground.

Figure 3. Typical equipment deployment near lek.

*Data Analysis*

In acoustic studies, it is common to report hourly $L_{min}$, $L_{max}$, $L_{eq}$, $L_{10}$, $L_{50}$, and $L_{90}$ metrics. Two different methods have generally been used to compute hourly metrics. The first is referred to as the "unpooled" approach, and the second as the "pooled" approach. Both approaches report hourly statistics, but the computational methods differ. The "unpooled" approach computes metrics for each individual hour, and summary metrics for a given hour are the medians of all the hourly metrics for that hour. The "pooled" approach combines all 1-second data for a given hour (such as all 0800 hours) into a single data set, and averages, medians, variances, etc., are computed from the pooled data. Prior studies have shown that results for pooled analyses are generally more conservative (i.e., lower) than results for unpooled analysis (Plotkin 2002). However, many management decisions are based on specific periods of the day, and analyzing data by hour helps to ensure hour-to-hour and day-to-day variation is addressed. In the case of greater sage-grouse, for example, "lekking" hours often receive special consideration.

We used the unpooled approach and analyzed sound level data as follows. For every hour (3600 seconds of data), $L_{min}$, $L_{max}$, $L_{eq}$, $L_{10}$, $L_{50}$, and $L_{90}$ were calculated. $L_{min}$ and $L_{max}$ were the minimum and maximum levels for that hour. $L_{eq}$ was the energy average (a logarithmic average) of that hour. $L_{10}$, $L_{50}$, and $L_{90}$ were levels exceeded 10%, 50%, and 90% of the time during that hour. All of our data sets were for multi-day periods, and summary hourly metrics for each site were calculated as follows. $L_{min}$ and $L_{max}$ were the minimum and maximum levels of all 0800 hours, all 0900 hours, all 1000 hours, etc., during the measurement period. Summary hourly and summary site metrics ($L_{eq}$, $L_{10}$, $L_{50}$, and $L_{90}$) for each hour of day (0800, 0900, 1000, etc.), were calculated using the median $L_{eq}$, $L_{10}$, $L_{50}$, and $L_{90}$ of all 0800 hours, all 0900 hours, all 1000 hours, etc. The

computation of dBA metrics included all data points regardless of wind speed due to the extreme rarity of wind speeds >5 m/s at 0.3 m (<0.02% of all seconds).

For each site, summary metrics for three time periods were calculated, all hours (0000-2400), daytime hours (0800-1800), and nighttime hours (1800-0800). The time period 1800-0800 is specified in the Wyoming Governor's Executive Order 2011-5 relative to greater sage-grouse and noise levels.

We compared sound levels at leks relative to distance to the closest pad in the PAPA. We considered only those pads with some type of current gas field activity. Such activities included drilling, assembly/disassembly of drill rig, compressor station, central gathering facility, well head and pump facilities, and injection wells (both alone and in association with well pump facilities. Some pads had off-site electricity, while others relied on on-site generators for power. Sound levels for each gas field activity varied. In addition to different types of activities at pads (and resulting different sound levels), attenuation factors varied at each lek (such factors include terrain, land cover, wind speed and direction, and meteorological conditions). Although activity type, distance, and attenuation factors varied at each lek and pad, our objective was to measure sound levels experienced by greater sage-grouse at that lek.

*Measurement Locations*

We collected acoustic data at 19 greater sage-grouse leks in the PAPA in April 2013 and April 2014 (Table 1). These leks were in the Mesa (9), Duke's Triangle (3), and Yellowpoint (7) complexes. For those leks where grouse had not been observed in recent years, we placed the sound level meters at the perimeter of the lek as defined by WGFD. For those leks where greater sage-grouse had been observed in recent years, we placed the sound level meters >250 m from the edge of the lek to ensure that grouse display sounds did not have a significant influence on dB data. In situations where the equipment was away from the lek, we placed the equipment such that the equipment and the lek were the same distance from the primary gas field sound source. This ensured that sound level measurements near the lek represented sound levels at the lek but without grouse display sounds. Exact measurement locations are not provided in this report due to security concerns regarding lek locations.

Terrain and vegetation characteristics varied at leks in the PAPA; some leks were along ridge lines, some were in valley bottoms, and some were in generally flat areas. Each measurement location was in sage habitat, with the sage generally between 0.4-0.7 m high. Of 19 leks in the PAPA, 7 were in valleys, 5 were along ridges, 5 were in flat areas, and 2 were in some valley/ridge situation.

*Measurement Schedule*

All measurements were made in April 2013 and April 2014, the primary lekking period for greater sage-grouse in the PAPA area. Our goal was to collect a minimum of 48 hours at each lek in each year in order to account for variability in sound levels due to natural causes (meteorological conditions, birds singing near the equipment, etc.). Very short

measurement periods of only a few hours could significantly over- or under-estimate actual long-term sound levels.

## Results

*Data Collection*

Acoustic data were collected at 19 greater sage-grouse leks in the PAPA in April 2013 and 2014. A total of 2087 hours of acoustic data were collected (999 hours 2013 and 1088 in 2014) (Table 1). Mean number of hours at each lek was 53 hours in 2013 and 57 hours in 2014.

*Sound Levels*

$L_{50}$ dBA values at leks in the PAPA ranged from 24.0 dBA to 36.9 dBA for all hours (0000-2400), and from 16.0 dBA to 38.5 dBA for nighttime hours (1800-0800) in 2013 and 2014. In general, sound levels at leks varied according to the distance and type of gas field activity. We provide examples of acoustic metrics ($L_{min}$, $L_{max}$, and $L_{50}$) at two leks that were different distances from pads in Figures 4 and 5. On lek (Big Fred, PAPA001) was 720 m (2360 ft) from a pad (with drill rig), and the other lek (Cat, PAPA015) was 3080 m (10,110 ft) from a pad (with well heads and pumps).

$L_{50}$ dBA site summary metrics for three time periods (0000-2400, 0800-1800, and 1800-0800) for PAPA leks, April 2013 and 2014, are shown in Table 2. Hourly and summary dBA metrics and one-third octave band metrics for each lek for 2013 and 2014 year are presented in Appendices A, B, C, and D. At three locations, PAPA001, PAPA002, and PAPA017, activities at the nearest pads changed significantly from 2013 to 2014. As a result, sound levels at these locations changed significantly from 2013 to 2014.

Table 1. Measurement site number, lek name, date-time start, date-time end, and number of hours, PAPA, April 2013 and 2014.

| Site Num. | Lek Name | Date_Time Start | Date_Time End | Hrs | | Date_Time Start | Date_Time End | Hrs |
|---|---|---|---|---|---|---|---|---|
| PAPA001 | Big Fred | 20130405_1450 | 20130407_1520 | 47 | | 20140412_1200 | 20140414_0820 | 43 |
| PAPA002 | Little Fred | 20130405_1150 | 20130407_1235 | 47 | | 20140412_1040 | 20140414_0935 | 45 |
| PAPA003 | Lower Sand Springs | 20130405_1305 | 20130407_1645 | 50 | | 20140416_1200 | 20140418_1355 | 48 |
| PAPA004 | Two Buttes | 20130418_0910 | 20120421_1345 | 75 | | 20140415_1010 | 20140417_0905 | 46 |
| PAPA005 | Mesa Spring | 20130418_0950 | 20130421_1410 | 75 | | 20140417_0955 | 20140420_0715 | 68 |
| PAPA006 | Lovatt Draw Res. | 20130418_1025 | 20130421_1433 | 59 | | 20140414_1150 | 20140416_0755 | 43 |
| PAPA007 | Shelter Cabin Res. | 20130410_0855 | 20130412_1145 | 49 | | 20140414_1530 | 20140416_1110 | 43 |
| PAPA008 | The Rocks | 20130410_1015 | 20130412_1330 | 50 | | 20140424_1625 | 20140430_1520 | 98 |
| PAPA009 | South Rocks | 20130410_1115 | 20130412_1404 | 50 | | 20140420_1040 | 20140424_1525 | 61 |
| PAPA010 | Stud Horse Butte | 20130410_1200 | 20130412_1434 | 49 | | 20140420_1108 | 20140424_1540 | 99 |
| PAPA011 | Little Saddle | 20130412_0910 | 20130414_0910 | 47 | | 20140410_1305 | 20140412_0920 | 18 |
| PAPA012 | Alkali Draw | 20130412_1100 | 20130414_1020 | 46 | | 20140411_1605 | 20140414_1350 | 68 |
| PAPA013 | Sand Draw | 20130412_1245 | 20130414_1135 | 46 | | 20140411_1715 | 20140414_1445 | 68 |
| PAPA014 | Lovatt West | 20130418_1105 | 20130421_1456 | 75 | | 20140414_1230 | 20140416_0820 | 43 |
| PAPA015 | Cat | 20130421_1100 | 20130423_1300 | 49 | | 20140410_1145 | 20140412_0820 | 44 |
| PAPA016 | Tyler Draw North | 20130415_1000 | 20130417_0920 | 46 | | 20140424_1815 | 20140501_0914 | 108 |
| PAPA017 | Oil Fork Road | 20130415_1100 | 20130417_1005 | 46 | | 20140416_0905 | 20140418_1605 | 54 |
| PAPA018 | Mesa Road 3 | 20130415_1145 | 20130417_1115 | 47 | | 20140408_1010 | 20140410_0945 | 46 |
| PAPA019 | Bloom Res. Sat. | 20130415_1230 | 20130417_1134 | 46 | | 20140408_1055 | 20140410_1010 | 46 |

Table 2. $L_{50}$ dBA at 19 PAPA leks, April 2013 and 2014, for three time periods (0000-2400, 0800-1800, and 1800-0800).

| L50 | | 0000-2400 | | 0800-1800 | | 1800-0800 | |
|---|---|---|---|---|---|---|---|
| Site Num. | Lek Name | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 |
| PAPA001* | Big Fred | 36.9 | 27.1 | 32.9 | 28.0 | 39.1 | 26.6 |
| PAPA002* | Little Fred | 29.2 | 23.8 | 30.4 | 23.6 | 28.6 | 24.4 |
| PAPA003 | Lower Sand Springs | 29.0 | 28.8 | 27.9 | 27.5 | 29.3 | 29.9 |
| PAPA004 | Two Buttes | 26.4 | 25.4 | 28.1 | 26.3 | 26.1 | 25.2 |
| PAPA005 | Mesa Spring | 29.9 | 27.0 | 30.6 | 23.9 | 29.9 | 28.3 |
| PAPA006 | Lovatt Draw Res. | 32.1 | 31.3 | 31.1 | 31.9 | 32.8 | 31.4 |
| PAPA007 | Shelter Cabin Res. | 26.6 | 26.9 | 29.2 | 27.9 | 24.1 | 26.4 |
| PAPA008 | The Rocks | 26.3 | 26.5 | 29.5 | 29.6 | 24.3 | 23.6 |
| PAPA009 | South Rocks | 26.2 | 24.7 | 29.0 | 24.1 | 25.2 | 25.1 |
| PAPA010 | Stud Horse Butte | 27.3 | 29.7 | 29.7 | 29.7 | 26.7 | 29.4 |
| PAPA011 | Little Saddle | 22.4 | 18.4 | 26.6 | 21.8 | 21.5 | 17.7 |
| PAPA012 | Alkali Draw | 22.6 | 19.0 | 28.3 | 18.4 | 21.5 | 18.4 |
| PAPA013 | Sand Draw | 27.3 | 25.1 | 33.3 | 21.6 | 25.4 | 25.8 |
| PAPA014 | Lovatt West | 29.6 | 30.7 | 28.7 | 32.4 | 29.9 | 31.0 |
| PAPA015 | Cat | 19.0 | 19.3 | 24.3 | 22.1 | 16.5 | 17.4 |
| PAPA016 | Tyler Draw North | 21.5 | 24.5 | 23.7 | 29.8 | 20.6 | 20.3 |
| PAPA017* | Oil Fork Road | 24.8 | 28.8 | 24.4 | 26.2 | 25.1 | 31.5 |
| PAPA018 | Mesa Road 3 | 24.1 | 20.1 | 23.3 | 20.5 | 24.9 | 17.5 |
| PAPA019 | Bloom Res. Sat. | 22.0 | 19.1 | 21.4 | 20.8 | 24.3 | 16.4 |

*Gas field activities at pads nearest these leks changed significantly from 2013 to 2014, thus sound levels changed also.

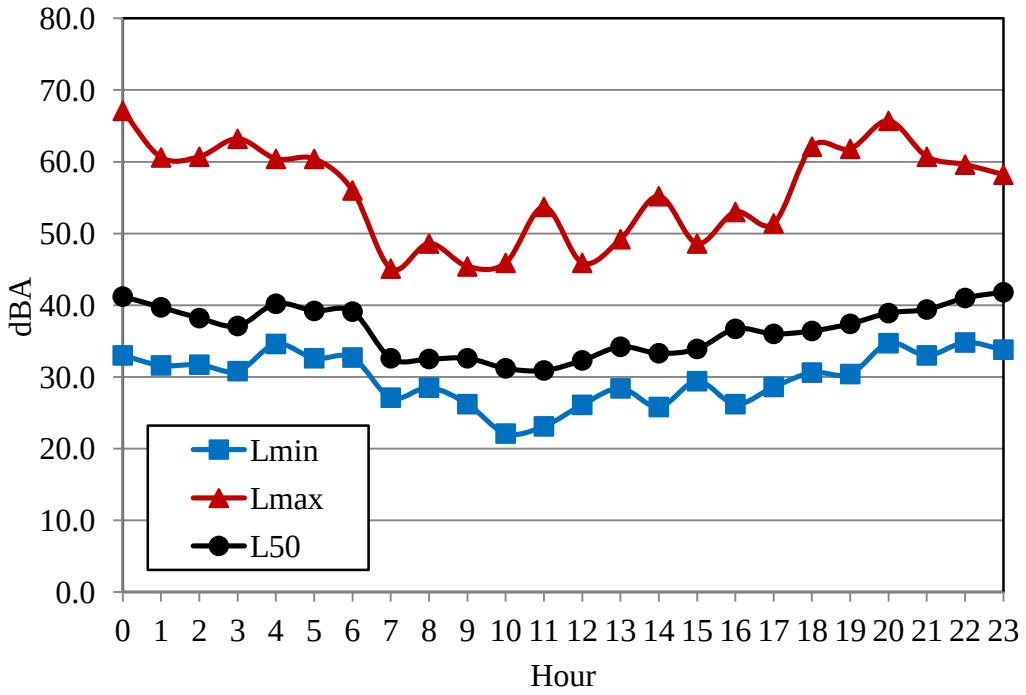


Figure 4. $L_{min}$, $L_{max}$, and $L_{50}$, PAPA001 (Big Fred Lek, close to pad), April 2013.

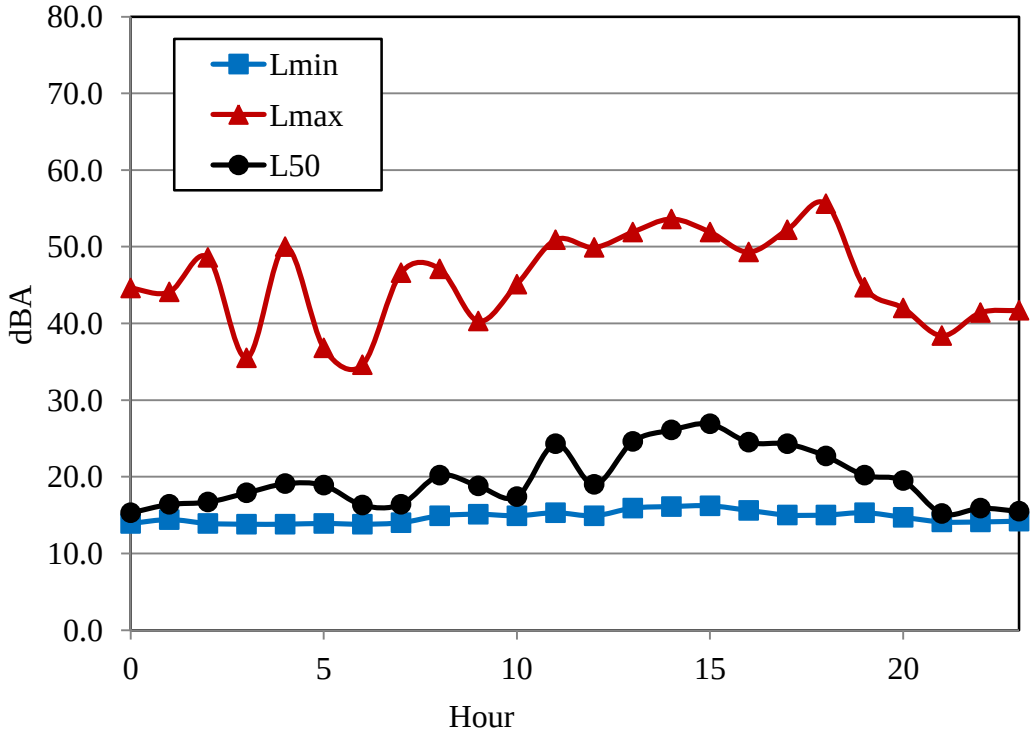


Figure 5. $L_{min}$, $L_{max}$, and $L_{50}$, PAPA015 (Cat Lek, far from pad), April 2013.

## Discussion

*Sound Levels at PAPA Leks, 2013 and 2014*

Sound levels at each lek in the PAPA in 2013 were generally similar to sound levels at that same lek in 2014, with the exception of three locations where nearby gas field operations changed significantly. Excluding these three locations, the mean difference in $L_{50}$ dBA from 2013 to 2014 for all hours (0000-2400) was 1.0 dBA (higher in 2013; SD=2.17 dBA). The mean difference in $L_{50}$ dBA for nighttime hours (1800-0800) was 1.2 dBA (higher in 2013, SD 3.05 dBA).

At some leks, sound levels differed in 2013 and 2014 but gas field activity and distance had not changed. In these cases, we suspect the differences in sound levels were due to different meteorological conditions during the measurement period, primarily wind. Wind can elevate sound levels at leks in three ways: (1) wind on the foam wind screen and wind pressure on the microphone diaphragm; (2) wind through vegetation; and (3) wind direction (sound levels at leks downwind from gas field activities will be greater than those upwind). Wind speed at 0.3 m (microphone height) rarely exceeds 1-2 m, thus wind on the foam windscreen or microphone diaphragm is generally not a concern. The prevailing wind direction in the PAPA area in April is from the northwest (NOAA 2014), thus we would expect similar directional influences in most years. The primary influence of wind on dB data (when microphone is 0.3 m) is the sound of wind through the vegetation. In order to better assess changes in sound levels at leks (and to account for different meteorological conditions) and to minimize negative influence on grouse presence and behavior (no equipment >0.3 m), longer measurement periods should be considered.

*Sound Levels and Distance to Pad*

$L_{50}$ dBA and distance to pad were highly correlated (2013: $R^2$ = -0.71, $P$ = 0.001; 2014: $R^2$ = -0.82, $P$ <0.000) (Figures 6 and 7). Although sound levels at each pad varied due to the type of activity at that pad, and attenuation rates at each lek varied due to terrain and other variables, the closer the lek was to a pad with some type of activity, the higher the $L_{50}$ dBA.

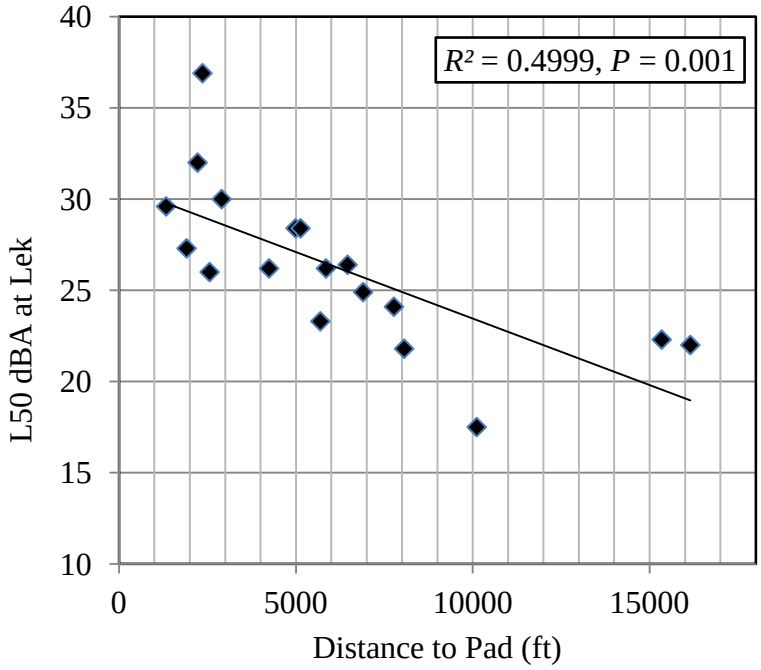


Figure 6. $L_{50}$ dBA at leks relative to distance to pad with some type of gas field activity, PAPA, 2013.

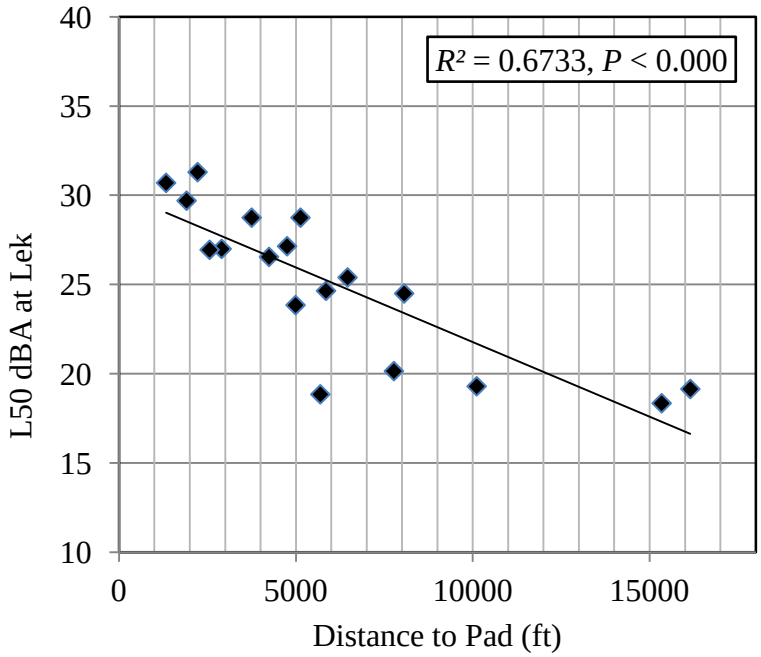


Figure 7. $L_{50}$ dBA at leks relative to distance to pad with some type of gas field activity, PAPA, 2014.

*Hours Exceeding Baseline Ambient + 10 dBA*

The Record of Decision (ROD) (BLM 2008) specified noise thresholds above baseline levels that should not be exceeded by industry. Specific changes requiring mitigation are described as follows: "Decibel levels at the lek more than 10 dBA above baseline measured from the edge of the lek" (BLM 2008)." The ROD also specifies concurrent declines in grouse numbers, but that aspect was not part of this project. The ROD used 39 dBA as a baseline ambient based on an EPA 1971 study that measured sound levels in a farming area in California (EPA 1971). Of the 2087 hours measured at the PAPA leks in 2013 and 2014, no hours exceeded 49 dBA (39 + 10 = 49 dBA). However, results of recent acoustic studies in Wyoming demonstrate that 39 dBA is not an accurate baseline ambient sound level in undeveloped sage habitats of Wyoming (KC Harvey 2005; Patricelli et al. 2013; Ambrose et al. 2014).

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## Appendix A. Definitions of Common Acoustic Terms.

*Audibility*: Audibility is the ability of animals with normal hearing, including humans, to hear a given sound. Audibility is affected by the hearing ability of the animal, other simultaneous interfering sounds or stimuli, and by the frequency content and amplitude of the sound.

*A-Weighting (dBA)*: A-weighting is used to account for differences in human hearing sensitivity as a function of frequency. A-weighting de-emphasizes the high (6.3 kHz and above) and low (below 1 kHz) frequencies, and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of human hearing.

*Decibel (dB)*: A logarithmic measure commonly used in the measurement of sound. The decibel provides the possibility of representing a large span of signal levels in a simple manner as opposed to using the basic pressure unit Pascal. The difference between the sound pressure of silence versus a loud sound is a factor of 1,000,000:1 or more, therefore it is less cumbersome to use a small range of equivalent values: 0 to 130 decibels.

*Frequency*: The number of times per second that the sine wave of sound repeats itself. It can be expressed in cycles per second, or Hertz (Hz). Frequency equals Speed of Sound / Wavelength.

$L_{eq}$ (Equivalent Sound Level): The logarithmic average (i.e., on an energy basis) of sound pressure levels over a specific time period. "Energy averaged" sound levels are logarithmic values, and as such are generally much higher than arithmetic averages. $L_{eq}$ values are typically calculated for a specific time period (1-hour and 12-hour time periods are often used). $L_{eq}$ values are computed from all of the 1-second $L_{eq}$ values for the specific time period. $L_{eq}$ must be used carefully in quantifying natural ambient sound levels because occasional loud sound levels may heavily influence (increase) the $L_{eq}$ value, even though sound levels for that period of time are typically lower.

$L_{max}$: The maximum sound pressure level for a given period.

$L_{min}$: The minimum sound pressure level for a given period.

$L_x$ *(Exceedance Percentile)*: This metric is the sound pressure level (L), in decibels, exceeded *x* percent of the time for the specified measurement period. $L_{50}$ is the sound pressure level exceeded 50 percent of the time ($L_{50}$ is the same as the median).

*Noise Floor*: The lower measurement limit of a sound level meter, also referred to as self-noise or electrical noise of all components of a sound level meter (meter, microphone, and preamplifier).

*Sound Level*: Generally, *sound level* refers to the *weighted* sound pressure level obtained by frequency weighting, usually A- or C-weighted.

*Sound Level, Baseline Ambient*: The sound level in a given location including all sounds of nature but absent most human-caused sounds. $L_{90}$ is the sound pressure level exceeded 90 percent of the time, and is commonly used to establish the baseline ambient sound level.

*Sound Level, Existing Ambient*: The sound level of all sounds in a given area, including all natural sounds as well as all mechanical, electrical and other human-caused sounds. The existing ambient sound level is generally characterized by the $L_{50}$ exceedance level (i.e., the median).

*Sound Pressure*: Sound pressure is the instantaneous difference between the actual pressure produced by a sound wave and the average barometric pressure at a given point in space. Not all pressure fluctuations detected by a microphone are sound (e.g., wind over the microphone). Sound pressure is measured in Pascals (Pa), Newtons per square meter, which is the metric equivalent of pounds per square inch.

*Sound Pressure Level (SPL)*: The logarithmic form of sound pressure. Generally, sound pressure level refers to unweighted sound pressure levels of one-third octave bands.

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*Time Weighting*: The response speed of a sound level meter. Fast and slow time response were developed primarily to slow needle movement in analog meters so investigators could read and record sound levels. This is not needed with modern digital sound level meters. Both fast and slow time response add a decay factor. Decay factors can induce some error, although over time there is little difference in fast, slow, or actual sound levels.

## Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA001 | 2013 | 0 | 33.0 | 67.1 | 42.6 | 44.0 | 41.2 | 36.6 |
| PAPA001 | 2013 | 1 | 31.6 | 60.6 | 42.2 | 44.0 | 39.7 | 37.2 |
| PAPA001 | 2013 | 2 | 31.7 | 60.7 | 41.0 | 43.6 | 38.2 | 35.8 |
| PAPA001 | 2013 | 3 | 30.8 | 63.2 | 38.9 | 39.3 | 37.1 | 34.8 |
| PAPA001 | 2013 | 4 | 34.6 | 60.4 | 41.8 | 44.4 | 40.2 | 37.1 |
| PAPA001 | 2013 | 5 | 32.6 | 60.4 | 41.1 | 44.3 | 39.2 | 37.3 |
| PAPA001 | 2013 | 6 | 32.7 | 56.0 | 40.2 | 42.0 | 39.1 | 36.2 |
| PAPA001 | 2013 | 7 | 27.1 | 45.1 | 33.8 | 36.5 | 32.6 | 29.4 |
| PAPA001 | 2013 | 8 | 28.5 | 48.6 | 33.4 | 34.9 | 32.5 | 31.0 |
| PAPA001 | 2013 | 9 | 26.2 | 45.4 | 33.2 | 34.6 | 32.6 | 30.8 |
| PAPA001 | 2013 | 10 | 22.1 | 45.9 | 32.3 | 34.2 | 31.2 | 28.6 |
| PAPA001 | 2013 | 11 | 23.1 | 53.7 | 34.1 | 35.4 | 30.9 | 27.9 |
| PAPA001 | 2013 | 12 | 26.1 | 45.9 | 33.4 | 35.5 | 32.3 | 29.3 |
| PAPA001 | 2013 | 13 | 28.4 | 49.2 | 35.4 | 37.6 | 34.2 | 31.7 |
| PAPA001 | 2013 | 14 | 25.8 | 55.2 | 36.0 | 37.8 | 33.3 | 29.3 |
| PAPA001 | 2013 | 15 | 29.4 | 48.6 | 34.8 | 36.1 | 33.9 | 32.0 |
| PAPA001 | 2013 | 16 | 26.2 | 53.0 | 38.1 | 40.9 | 36.7 | 33.8 |
| PAPA001 | 2013 | 17 | 28.6 | 51.4 | 36.8 | 38.8 | 36.0 | 33.7 |
| PAPA001 | 2013 | 18 | 30.6 | 62.1 | 37.5 | 39.2 | 36.4 | 34.4 |
| PAPA001 | 2013 | 19 | 30.4 | 61.8 | 39.5 | 40.9 | 37.4 | 34.7 |
| PAPA001 | 2013 | 20 | 34.7 | 65.7 | 41.0 | 41.9 | 38.9 | 37.1 |
| PAPA001 | 2013 | 21 | 33.0 | 60.7 | 40.6 | 41.8 | 39.4 | 37.3 |
| PAPA001 | 2013 | 22 | 34.8 | 59.6 | 42.0 | 43.6 | 41.0 | 39.3 |
| PAPA001 | 2013 | 23 | 33.8 | 58.2 | 43.1 | 45.3 | 41.8 | 38.7 |
| PAPA002 | 2013 | 0 | 20.6 | 47.7 | 29.2 | 31.4 | 27.6 | 25.1 |
| PAPA002 | 2013 | 1 | 22.4 | 49.3 | 29.4 | 31.0 | 26.9 | 24.9 |
| PAPA002 | 2013 | 2 | 23.9 | 52.1 | 32.0 | 34.5 | 30.5 | 26.0 |
| PAPA002 | 2013 | 3 | 24.3 | 55.9 | 31.0 | 31.0 | 28.8 | 27.2 |
| PAPA002 | 2013 | 4 | 25.6 | 48.4 | 31.4 | 33.2 | 29.8 | 27.4 |
| PAPA002 | 2013 | 5 | 25.9 | 50.3 | 33.9 | 35.6 | 32.6 | 29.6 |
| PAPA002 | 2013 | 6 | 26.0 | 46.3 | 32.4 | 34.1 | 31.1 | 29.1 |
| PAPA002 | 2013 | 7 | 24.8 | 49.4 | 33.8 | 36.0 | 32.3 | 28.9 |
| PAPA002 | 2013 | 8 | 24.6 | 55.7 | 34.7 | 36.8 | 32.4 | 29.2 |
| PAPA002 | 2013 | 9 | 24.3 | 57.0 | 32.9 | 35.1 | 31.5 | 28.7 |
| PAPA002 | 2013 | 10 | 21.2 | 46.6 | 30.2 | 32.9 | 27.8 | 25.0 |
| PAPA002 | 2013 | 11 | 19.5 | 52.9 | 28.4 | 28.4 | 25.1 | 23.4 |
| PAPA002 | 2013 | 12 | 20.1 | 39.6 | 25.7 | 27.4 | 23.5 | 21.7 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA002 | 2013 | 13 | 20.1 | 48.6 | 32.7 | 35.9 | 27.0 | 23.2 |
| PAPA002 | 2013 | 14 | 21.9 | 49.2 | 32.0 | 34.6 | 29.7 | 25.8 |
| PAPA002 | 2013 | 15 | 20.6 | 56.8 | 35.9 | 39.5 | 31.1 | 23.9 |
| PAPA002 | 2013 | 16 | 19.5 | 60.2 | 37.5 | 39.1 | 33.8 | 29.1 |
| PAPA002 | 2013 | 17 | 19.6 | 56.9 | 35.4 | 38.1 | 31.5 | 26.9 |
| PAPA002 | 2013 | 18 | 19.1 | 55.6 | 34.9 | 37.8 | 32.5 | 26.4 |
| PAPA002 | 2013 | 19 | 18.8 | 51.3 | 33.6 | 36.8 | 28.5 | 22.2 |
| PAPA002 | 2013 | 20 | 20.9 | 51.4 | 28.6 | 29.7 | 25.8 | 23.6 |
| PAPA002 | 2013 | 21 | 19.0 | 46.4 | 25.6 | 26.9 | 24.0 | 21.4 |
| PAPA002 | 2013 | 22 | 19.2 | 41.7 | 26.0 | 28.1 | 24.1 | 21.9 |
| PAPA002 | 2013 | 23 | 20.5 | 47.4 | 29.4 | 32.2 | 26.8 | 23.8 |
| PAPA003 | 2013 | 0 | 21.5 | 49.0 | 32.3 | 35.0 | 29.6 | 26.5 |
| PAPA003 | 2013 | 1 | 21.9 | 51.3 | 30.4 | 31.5 | 29.0 | 25.7 |
| PAPA003 | 2013 | 2 | 22.5 | 47.8 | 32.5 | 35.1 | 30.8 | 26.8 |
| PAPA003 | 2013 | 3 | 23.8 | 52.2 | 30.4 | 31.0 | 28.1 | 26.1 |
| PAPA003 | 2013 | 4 | 25.0 | 49.6 | 32.9 | 34.4 | 31.6 | 27.5 |
| PAPA003 | 2013 | 5 | 24.9 | 51.7 | 34.5 | 36.3 | 33.3 | 30.8 |
| PAPA003 | 2013 | 6 | 26.9 | 50.5 | 33.5 | 34.7 | 32.3 | 30.9 |
| PAPA003 | 2013 | 7 | 26.5 | 54.3 | 35.7 | 37.8 | 34.1 | 30.3 |
| PAPA003 | 2013 | 8 | 28.1 | 59.1 | 36.6 | 38.3 | 34.5 | 31.9 |
| PAPA003 | 2013 | 9 | 22.2 | 53.0 | 34.7 | 37.8 | 33.6 | 27.4 |
| PAPA003 | 2013 | 10 | 18.6 | 50.5 | 27.6 | 29.3 | 26.2 | 22.7 |
| PAPA003 | 2013 | 11 | 19.4 | 47.8 | 28.6 | 29.7 | 25.6 | 23.4 |
| PAPA003 | 2013 | 12 | 19.9 | 48.7 | 28.7 | 31.5 | 24.8 | 22.1 |
| PAPA003 | 2013 | 13 | 19.2 | 49.4 | 28.6 | 30.5 | 25.1 | 22.1 |
| PAPA003 | 2013 | 14 | 19.2 | 48.6 | 30.9 | 32.9 | 28.9 | 24.9 |
| PAPA003 | 2013 | 15 | 20.3 | 52.2 | 35.0 | 36.6 | 26.8 | 23.9 |
| PAPA003 | 2013 | 16 | 19.4 | 52.7 | 32.9 | 35.6 | 30.5 | 26.2 |
| PAPA003 | 2013 | 17 | 18.8 | 51.9 | 32.5 | 35.5 | 29.6 | 25.7 |
| PAPA003 | 2013 | 18 | 19.4 | 53.5 | 33.4 | 35.9 | 30.5 | 25.6 |
| PAPA003 | 2013 | 19 | 18.5 | 54.5 | 32.0 | 34.6 | 28.3 | 22.8 |
| PAPA003 | 2013 | 20 | 22.7 | 51.4 | 30.5 | 31.6 | 28.1 | 25.7 |
| PAPA003 | 2013 | 21 | 20.0 | 46.9 | 27.1 | 28.0 | 25.1 | 23.1 |
| PAPA003 | 2013 | 22 | 17.4 | 43.3 | 27.0 | 28.7 | 25.5 | 22.1 |
| PAPA003 | 2013 | 23 | 20.3 | 52.3 | 31.1 | 32.7 | 28.3 | 25.1 |
| PAPA004 | 2013 | 0 | 18.0 | 41.1 | 26.6 | 30.6 | 24.9 | 23.7 |
| PAPA004 | 2013 | 1 | 16.5 | 48.5 | 24.2 | 26.2 | 23.8 | 21.2 |
| PAPA004 | 2013 | 2 | 16.1 | 39.8 | 28.0 | 30.3 | 26.8 | 24.5 |
| PAPA004 | 2013 | 3 | 14.8 | 49.6 | 27.0 | 29.3 | 26.7 | 23.1 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA004 | 2013 | 4 | 15.0 | 43.6 | 26.6 | 29.4 | 25.5 | 22.2 |
| PAPA004 | 2013 | 5 | 18.3 | 57.1 | 27.1 | 30.0 | 26.0 | 23.0 |
| PAPA004 | 2013 | 6 | 17.0 | 43.1 | 27.8 | 29.7 | 27.2 | 23.5 |
| PAPA004 | 2013 | 7 | 20.0 | 44.0 | 27.6 | 29.9 | 26.1 | 23.0 |
| PAPA004 | 2013 | 8 | 16.8 | 52.4 | 29.9 | 28.5 | 22.6 | 19.8 |
| PAPA004 | 2013 | 9 | 17.3 | 43.6 | 24.5 | 26.8 | 22.7 | 19.6 |
| PAPA004 | 2013 | 10 | 17.2 | 52.1 | 23.9 | 24.5 | 21.2 | 19.6 |
| PAPA004 | 2013 | 11 | 16.3 | 51.2 | 26.6 | 29.7 | 23.5 | 20.4 |
| PAPA004 | 2013 | 12 | 19.8 | 49.2 | 30.4 | 33.8 | 27.2 | 23.0 |
| PAPA004 | 2013 | 13 | 19.2 | 51.3 | 32.3 | 35.9 | 29.0 | 23.1 |
| PAPA004 | 2013 | 14 | 19.7 | 54.9 | 35.0 | 38.0 | 31.4 | 25.4 |
| PAPA004 | 2013 | 15 | 19.0 | 52.7 | 36.8 | 40.6 | 33.5 | 27.7 |
| PAPA004 | 2013 | 16 | 19.1 | 52.8 | 36.0 | 39.5 | 32.7 | 26.3 |
| PAPA004 | 2013 | 17 | 18.5 | 58.7 | 37.9 | 41.2 | 34.5 | 28.4 |
| PAPA004 | 2013 | 18 | 16.6 | 52.8 | 37.4 | 41.0 | 33.5 | 27.7 |
| PAPA004 | 2013 | 19 | 16.4 | 55.4 | 31.7 | 35.1 | 28.8 | 25.2 |
| PAPA004 | 2013 | 20 | 16.4 | 61.5 | 28.9 | 30.5 | 28.1 | 26.1 |
| PAPA004 | 2013 | 21 | 15.3 | 43.7 | 28.3 | 31.3 | 24.7 | 22.3 |
| PAPA004 | 2013 | 22 | 14.6 | 50.7 | 27.3 | 29.6 | 24.2 | 21.1 |
| PAPA004 | 2013 | 23 | 15.1 | 44.4 | 26.4 | 28.7 | 24.7 | 21.9 |
| PAPA005 | 2013 | 0 | 22.2 | 53.6 | 32.4 | 34.4 | 31.8 | 30.0 |
| PAPA005 | 2013 | 1 | 21.7 | 50.5 | 28.3 | 30.9 | 27.6 | 24.1 |
| PAPA005 | 2013 | 2 | 21.4 | 45.3 | 30.9 | 34.4 | 29.3 | 26.7 |
| PAPA005 | 2013 | 3 | 19.7 | 47.1 | 30.1 | 32.5 | 29.2 | 26.8 |
| PAPA005 | 2013 | 4 | 18.3 | 46.4 | 30.7 | 33.2 | 29.8 | 27.5 |
| PAPA005 | 2013 | 5 | 22.9 | 45.7 | 30.5 | 32.4 | 29.3 | 27.2 |
| PAPA005 | 2013 | 6 | 21.8 | 45.5 | 31.9 | 32.8 | 29.3 | 25.0 |
| PAPA005 | 2013 | 7 | 21.1 | 44.0 | 29.9 | 32.8 | 28.3 | 24.3 |
| PAPA005 | 2013 | 8 | 20.4 | 50.9 | 31.7 | 33.9 | 29.2 | 26.5 |
| PAPA005 | 2013 | 9 | 20.1 | 45.7 | 30.2 | 33.6 | 27.7 | 23.7 |
| PAPA005 | 2013 | 10 | 20.5 | 51.9 | 28.6 | 30.8 | 27.5 | 24.7 |
| PAPA005 | 2013 | 11 | 17.2 | 51.6 | 28.3 | 30.1 | 26.2 | 23.8 |
| PAPA005 | 2013 | 12 | 20.1 | 62.2 | 34.9 | 35.7 | 29.9 | 26.7 |
| PAPA005 | 2013 | 13 | 21.4 | 56.8 | 35.4 | 38.6 | 31.4 | 27.0 |
| PAPA005 | 2013 | 14 | 22.8 | 63.6 | 37.4 | 41.0 | 34.5 | 28.4 |
| PAPA005 | 2013 | 15 | 22.3 | 66.6 | 40.0 | 42.5 | 35.6 | 28.9 |
| PAPA005 | 2013 | 16 | 23.6 | 57.1 | 39.5 | 42.8 | 36.9 | 31.6 |
| PAPA005 | 2013 | 17 | 21.6 | 60.2 | 41.9 | 45.4 | 39.4 | 33.7 |
| PAPA005 | 2013 | 18 | 21.2 | 54.5 | 41.0 | 44.5 | 37.9 | 32.9 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA005 | 2013 | 19 | 22.5 | 52.5 | 35.5 | 38.9 | 32.8 | 29.4 |
| PAPA005 | 2013 | 20 | 22.9 | 51.0 | 36.7 | 39.7 | 34.7 | 28.6 |
| PAPA005 | 2013 | 21 | 18.3 | 43.8 | 31.2 | 33.0 | 30.3 | 28.6 |
| PAPA005 | 2013 | 22 | 18.1 | 50.3 | 31.0 | 32.1 | 29.9 | 28.4 |
| PAPA005 | 2013 | 23 | 17.4 | 53.7 | 30.9 | 32.4 | 30.6 | 28.8 |
| PAPA006 | 2013 | 0 | 22.0 | 49.8 | 31.8 | 33.2 | 30.3 | 27.6 |
| PAPA006 | 2013 | 1 | 25.7 | 45.1 | 32.0 | 33.8 | 31.2 | 29.0 |
| PAPA006 | 2013 | 2 | 27.9 | 47.1 | 33.8 | 35.7 | 32.9 | 31.2 |
| PAPA006 | 2013 | 3 | 27.0 | 41.4 | 33.5 | 35.6 | 32.9 | 30.6 |
| PAPA006 | 2013 | 4 | 29.5 | 42.0 | 34.0 | 35.8 | 33.4 | 31.7 |
| PAPA006 | 2013 | 5 | 28.7 | 52.6 | 33.5 | 34.8 | 32.7 | 30.9 |
| PAPA006 | 2013 | 6 | 31.4 | 60.4 | 47.5 | 52.9 | 37.3 | 33.4 |
| PAPA006 | 2013 | 7 | 28.4 | 54.4 | 35.7 | 37.0 | 34.4 | 32.5 |
| PAPA006 | 2013 | 8 | 26.8 | 53.0 | 33.7 | 35.2 | 31.1 | 28.8 |
| PAPA006 | 2013 | 9 | 25.4 | 47.7 | 30.6 | 32.6 | 29.4 | 27.7 |
| PAPA006 | 2013 | 10 | 24.8 | 46.6 | 31.1 | 32.6 | 29.8 | 28.0 |
| PAPA006 | 2013 | 11 | 23.2 | 50.9 | 32.2 | 34.0 | 30.2 | 28.2 |
| PAPA006 | 2013 | 12 | 23.8 | 60.6 | 34.8 | 35.2 | 31.0 | 28.1 |
| PAPA006 | 2013 | 13 | 25.1 | 58.0 | 33.3 | 36.1 | 31.2 | 28.6 |
| PAPA006 | 2013 | 14 | 25.1 | 50.7 | 34.6 | 37.3 | 33.0 | 29.8 |
| PAPA006 | 2013 | 15 | 24.8 | 55.5 | 37.3 | 41.1 | 33.9 | 29.9 |
| PAPA006 | 2013 | 16 | 23.7 | 55.4 | 35.8 | 38.7 | 34.1 | 31.4 |
| PAPA006 | 2013 | 17 | 23.2 | 54.9 | 36.6 | 39.5 | 34.8 | 30.7 |
| PAPA006 | 2013 | 18 | 22.6 | 52.9 | 36.4 | 39.4 | 35.0 | 31.5 |
| PAPA006 | 2013 | 19 | 22.4 | 54.2 | 31.2 | 33.7 | 29.8 | 27.1 |
| PAPA006 | 2013 | 20 | 25.0 | 51.3 | 31.5 | 33.8 | 31.5 | 26.9 |
| PAPA006 | 2013 | 21 | 24.6 | 47.0 | 33.8 | 35.6 | 33.2 | 31.4 |
| PAPA006 | 2013 | 22 | 23.7 | 45.9 | 32.1 | 33.6 | 30.1 | 28.1 |
| PAPA006 | 2013 | 23 | 21.4 | 51.6 | 31.2 | 32.9 | 28.7 | 26.1 |
| PAPA007 | 2013 | 0 | 18.1 | 38.6 | 23.1 | 24.4 | 21.8 | 20.1 |
| PAPA007 | 2013 | 1 | 18.0 | 32.8 | 23.0 | 24.9 | 22.6 | 20.3 |
| PAPA007 | 2013 | 2 | 17.1 | 40.5 | 24.1 | 25.2 | 22.0 | 20.6 |
| PAPA007 | 2013 | 3 | 18.3 | 39.2 | 23.2 | 24.9 | 22.7 | 20.7 |
| PAPA007 | 2013 | 4 | 17.9 | 39.1 | 23.5 | 25.4 | 22.6 | 20.9 |
| PAPA007 | 2013 | 5 | 19.4 | 44.0 | 25.8 | 27.6 | 24.3 | 22.1 |
| PAPA007 | 2013 | 6 | 21.8 | 38.5 | 27.6 | 29.6 | 26.9 | 24.7 |
| PAPA007 | 2013 | 7 | 22.3 | 46.2 | 27.3 | 28.8 | 26.1 | 24.3 |
| PAPA007 | 2013 | 8 | 19.5 | 49.3 | 28.1 | 30.2 | 26.3 | 23.4 |
| PAPA007 | 2013 | 9 | 18.6 | 48.9 | 30.4 | 33.1 | 25.5 | 22.4 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA007 | 2013 | 10 | 19.7 | 52.0 | 32.4 | 35.8 | 29.7 | 24.5 |
| PAPA007 | 2013 | 11 | 22.1 | 52.8 | 33.1 | 34.8 | 29.9 | 26.0 |
| PAPA007 | 2013 | 12 | 21.7 | 73.2 | 39.4 | 34.0 | 29.4 | 25.8 |
| PAPA007 | 2013 | 13 | 21.4 | 50.8 | 30.6 | 33.6 | 28.5 | 24.6 |
| PAPA007 | 2013 | 14 | 20.9 | 47.7 | 30.9 | 33.8 | 28.5 | 24.7 |
| PAPA007 | 2013 | 15 | 21.4 | 50.8 | 31.6 | 34.6 | 29.0 | 25.5 |
| PAPA007 | 2013 | 16 | 19.6 | 50.0 | 34.6 | 38.4 | 30.7 | 25.3 |
| PAPA007 | 2013 | 17 | 20.4 | 49.1 | 34.8 | 38.3 | 31.6 | 26.3 |
| PAPA007 | 2013 | 18 | 23.1 | 54.3 | 37.5 | 41.1 | 34.8 | 29.8 |
| PAPA007 | 2013 | 19 | 19.5 | 50.0 | 34.2 | 37.6 | 31.5 | 26.7 |
| PAPA007 | 2013 | 20 | 20.8 | 49.6 | 31.1 | 34.0 | 28.8 | 25.6 |
| PAPA007 | 2013 | 21 | 20.0 | 44.1 | 27.2 | 29.6 | 25.8 | 23.6 |
| PAPA007 | 2013 | 22 | 20.2 | 45.0 | 26.3 | 28.7 | 24.0 | 22.1 |
| PAPA007 | 2013 | 23 | 20.4 | 36.7 | 24.0 | 25.9 | 23.2 | 21.9 |
| PAPA008 | 2013 | 0 | 19.7 | 36.5 | 23.7 | 25.0 | 22.5 | 21.1 |
| PAPA008 | 2013 | 1 | 20.4 | 34.5 | 24.3 | 25.9 | 23.6 | 21.9 |
| PAPA008 | 2013 | 2 | 19.5 | 46.0 | 25.2 | 26.6 | 23.9 | 22.4 |
| PAPA008 | 2013 | 3 | 19.5 | 36.2 | 24.5 | 25.8 | 24.0 | 22.4 |
| PAPA008 | 2013 | 4 | 18.8 | 34.7 | 23.7 | 25.7 | 22.8 | 21.1 |
| PAPA008 | 2013 | 5 | 20.2 | 36.7 | 24.5 | 26.2 | 23.8 | 22.0 |
| PAPA008 | 2013 | 6 | 21.3 | 51.5 | 26.9 | 28.4 | 25.2 | 23.3 |
| PAPA008 | 2013 | 7 | 21.2 | 43.8 | 27.3 | 29.3 | 26.1 | 24.1 |
| PAPA008 | 2013 | 8 | 19.2 | 53.6 | 29.2 | 30.2 | 25.6 | 23.5 |
| PAPA008 | 2013 | 9 | 18.9 | 50.9 | 29.9 | 31.7 | 26.5 | 23.5 |
| PAPA008 | 2013 | 10 | 20.9 | 47.1 | 32.9 | 36.0 | 30.8 | 26.2 |
| PAPA008 | 2013 | 11 | 19.2 | 49.5 | 28.9 | 32.3 | 26.5 | 25.1 |
| PAPA008 | 2013 | 12 | 18.0 | 64.5 | 35.9 | 31.3 | 26.5 | 25.0 |
| PAPA008 | 2013 | 13 | 22.4 | 49.8 | 31.6 | 34.4 | 29.9 | 25.8 |
| PAPA008 | 2013 | 14 | 20.5 | 52.6 | 31.7 | 34.2 | 30.0 | 26.4 |
| PAPA008 | 2013 | 15 | 21.5 | 47.6 | 31.3 | 34.2 | 29.1 | 25.5 |
| PAPA008 | 2013 | 16 | 22.3 | 49.0 | 33.4 | 36.9 | 30.7 | 26.4 |
| PAPA008 | 2013 | 17 | 22.9 | 47.6 | 35.0 | 38.2 | 32.7 | 27.8 |
| PAPA008 | 2013 | 18 | 21.2 | 49.6 | 36.0 | 39.5 | 33.8 | 27.9 |
| PAPA008 | 2013 | 19 | 22.4 | 51.7 | 35.2 | 38.5 | 33.1 | 28.1 |
| PAPA008 | 2013 | 20 | 21.5 | 49.9 | 32.6 | 35.8 | 30.3 | 26.3 |
| PAPA008 | 2013 | 21 | 20.9 | 42.9 | 25.9 | 28.2 | 24.8 | 22.8 |
| PAPA008 | 2013 | 22 | 21.2 | 38.6 | 26.2 | 28.6 | 24.7 | 23.1 |
| PAPA008 | 2013 | 23 | 20.3 | 35.2 | 24.2 | 25.8 | 23.5 | 22.3 |
| PAPA009 | 2013 | 0 | 18.6 | 34.8 | 24.2 | 26.6 | 23.1 | 21.0 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA009 | 2013 | 1 | 17.2 | 40.1 | 25.2 | 27.6 | 23.8 | 22.1 |
| PAPA009 | 2013 | 2 | 17.6 | 49.2 | 26.1 | 27.8 | 25.2 | 23.4 |
| PAPA009 | 2013 | 3 | 18.1 | 38.8 | 26.2 | 29.0 | 24.9 | 22.2 |
| PAPA009 | 2013 | 4 | 19.4 | 33.6 | 25.0 | 27.1 | 24.3 | 22.1 |
| PAPA009 | 2013 | 5 | 21.6 | 32.9 | 25.9 | 28.0 | 25.3 | 23.3 |
| PAPA009 | 2013 | 6 | 21.5 | 39.8 | 25.4 | 26.9 | 25.1 | 23.5 |
| PAPA009 | 2013 | 7 | 21.8 | 44.6 | 27.1 | 28.6 | 26.3 | 24.4 |
| PAPA009 | 2013 | 8 | 18.7 | 46.2 | 28.7 | 30.5 | 26.2 | 23.0 |
| PAPA009 | 2013 | 9 | 18.8 | 47.6 | 30.0 | 32.3 | 26.6 | 23.9 |
| PAPA009 | 2013 | 10 | 19.9 | 47.6 | 31.9 | 35.1 | 29.8 | 25.6 |
| PAPA009 | 2013 | 11 | 19.6 | 50.4 | 31.2 | 34.6 | 28.7 | 24.6 |
| PAPA009 | 2013 | 12 | 18.2 | 59.0 | 34.1 | 30.0 | 23.5 | 22.1 |
| PAPA009 | 2013 | 13 | 18.4 | 54.2 | 30.4 | 32.9 | 26.2 | 23.3 |
| PAPA009 | 2013 | 14 | 22.1 | 47.3 | 31.0 | 33.6 | 29.5 | 26.1 |
| PAPA009 | 2013 | 15 | 21.5 | 47.7 | 31.3 | 33.9 | 29.4 | 25.9 |
| PAPA009 | 2013 | 16 | 23.5 | 49.6 | 32.5 | 35.6 | 30.0 | 26.1 |
| PAPA009 | 2013 | 17 | 22.9 | 48.3 | 33.8 | 37.1 | 31.5 | 27.3 |
| PAPA009 | 2013 | 18 | 22.3 | 48.7 | 35.0 | 38.2 | 33.1 | 28.2 |
| PAPA009 | 2013 | 19 | 22.1 | 52.1 | 33.2 | 36.2 | 31.1 | 27.1 |
| PAPA009 | 2013 | 20 | 21.6 | 45.0 | 31.4 | 34.3 | 29.8 | 27.0 |
| PAPA009 | 2013 | 21 | 20.8 | 38.7 | 26.1 | 28.3 | 25.0 | 23.1 |
| PAPA009 | 2013 | 22 | 21.6 | 37.0 | 26.3 | 28.3 | 25.5 | 23.6 |
| PAPA009 | 2013 | 23 | 20.0 | 39.8 | 26.7 | 28.6 | 25.7 | 23.7 |
| PAPA010 | 2013 | 0 | 19.5 | 36.7 | 24.6 | 26.6 | 23.4 | 21.9 |
| PAPA010 | 2013 | 1 | 18.9 | 40.1 | 27.1 | 29.8 | 25.8 | 23.2 |
| PAPA010 | 2013 | 2 | 19.7 | 50.0 | 28.8 | 31.5 | 26.5 | 24.1 |
| PAPA010 | 2013 | 3 | 18.1 | 42.0 | 27.1 | 29.8 | 25.8 | 22.6 |
| PAPA010 | 2013 | 4 | 20.4 | 36.2 | 25.9 | 27.9 | 25.0 | 23.0 |
| PAPA010 | 2013 | 5 | 21.5 | 37.4 | 27.6 | 29.4 | 27.1 | 25.4 |
| PAPA010 | 2013 | 6 | 22.6 | 40.1 | 29.3 | 31.2 | 28.1 | 26.2 |
| PAPA010 | 2013 | 7 | 22.9 | 43.4 | 27.5 | 29.3 | 26.7 | 25.1 |
| PAPA010 | 2013 | 8 | 19.0 | 46.0 | 29.7 | 31.5 | 26.6 | 23.1 |
| PAPA010 | 2013 | 9 | 19.4 | 48.5 | 31.1 | 33.7 | 27.6 | 24.3 |
| PAPA010 | 2013 | 10 | 20.1 | 60.3 | 34.1 | 36.3 | 30.3 | 25.7 |
| PAPA010 | 2013 | 11 | 19.8 | 51.6 | 31.9 | 35.3 | 29.2 | 24.8 |
| PAPA010 | 2013 | 12 | 19.1 | 49.9 | 32.5 | 35.9 | 29.4 | 25.2 |
| PAPA010 | 2013 | 13 | 19.9 | 52.0 | 30.0 | 33.0 | 26.6 | 23.5 |
| PAPA010 | 2013 | 14 | 23.1 | 50.8 | 32.1 | 34.6 | 30.3 | 26.9 |
| PAPA010 | 2013 | 15 | 22.6 | 50.4 | 31.9 | 34.4 | 30.1 | 26.8 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA010 | 2013 | 16 | 22.4 | 50.6 | 33.5 | 36.8 | 31.0 | 27.2 |
| PAPA010 | 2013 | 17 | 22.8 | 51.7 | 34.5 | 37.8 | 31.9 | 27.7 |
| PAPA010 | 2013 | 18 | 24.5 | 50.0 | 36.2 | 39.4 | 34.1 | 29.5 |
| PAPA010 | 2013 | 19 | 22.5 | 53.8 | 33.0 | 35.9 | 29.9 | 26.3 |
| PAPA010 | 2013 | 20 | 22.7 | 48.9 | 31.2 | 34.0 | 29.2 | 26.5 |
| PAPA010 | 2013 | 21 | 22.1 | 42.4 | 28.3 | 31.0 | 26.7 | 24.6 |
| PAPA010 | 2013 | 22 | 22.7 | 36.6 | 27.6 | 29.5 | 26.9 | 25.1 |
| PAPA010 | 2013 | 23 | 20.8 | 39.4 | 26.9 | 28.6 | 25.8 | 24.2 |
| PAPA011 | 2013 | 0 | 15.3 | 39.0 | 20.2 | 21.8 | 19.4 | 17.8 |
| PAPA011 | 2013 | 1 | 16.0 | 38.6 | 21.5 | 23.5 | 20.4 | 18.0 |
| PAPA011 | 2013 | 2 | 16.0 | 36.9 | 21.1 | 23.2 | 19.8 | 18.1 |
| PAPA011 | 2013 | 3 | 16.0 | 41.8 | 22.4 | 24.4 | 21.2 | 19.3 |
| PAPA011 | 2013 | 4 | 15.8 | 42.7 | 23.6 | 25.7 | 22.1 | 20.1 |
| PAPA011 | 2013 | 5 | 16.0 | 40.0 | 26.5 | 30.5 | 23.4 | 19.5 |
| PAPA011 | 2013 | 6 | 17.2 | 44.1 | 28.4 | 32.3 | 25.0 | 19.9 |
| PAPA011 | 2013 | 7 | 16.8 | 39.5 | 24.6 | 27.6 | 21.7 | 19.2 |
| PAPA011 | 2013 | 8 | 17.7 | 48.9 | 27.2 | 29.3 | 22.3 | 20.0 |
| PAPA011 | 2013 | 9 | 17.1 | 49.5 | 28.1 | 28.1 | 21.0 | 18.7 |
| PAPA011 | 2013 | 10 | 17.8 | 57.4 | 30.2 | 32.2 | 26.8 | 22.7 |
| PAPA011 | 2013 | 11 | 16.6 | 51.6 | 29.0 | 31.9 | 25.9 | 21.9 |
| PAPA011 | 2013 | 12 | 16.5 | 50.6 | 32.1 | 34.2 | 27.2 | 22.6 |
| PAPA011 | 2013 | 13 | 16.8 | 54.7 | 35.3 | 38.8 | 32.7 | 26.9 |
| PAPA011 | 2013 | 14 | 16.5 | 49.2 | 30.0 | 33.5 | 27.3 | 23.2 |
| PAPA011 | 2013 | 15 | 16.6 | 51.0 | 32.0 | 35.3 | 29.1 | 23.9 |
| PAPA011 | 2013 | 16 | 16.1 | 48.8 | 30.3 | 33.5 | 26.5 | 20.7 |
| PAPA011 | 2013 | 17 | 16.0 | 51.3 | 26.2 | 28.0 | 21.6 | 18.1 |
| PAPA011 | 2013 | 18 | 15.5 | 54.2 | 27.1 | 28.3 | 22.5 | 19.1 |
| PAPA011 | 2013 | 19 | 15.1 | 47.2 | 23.9 | 25.2 | 19.8 | 17.4 |
| PAPA011 | 2013 | 20 | 14.9 | 50.5 | 26.2 | 27.3 | 21.4 | 17.9 |
| PAPA011 | 2013 | 21 | 15.3 | 50.9 | 25.4 | 28.0 | 23.2 | 20.1 |
| PAPA011 | 2013 | 22 | 15.2 | 46.2 | 23.4 | 25.6 | 21.3 | 18.7 |
| PAPA011 | 2013 | 23 | 15.1 | 44.0 | 24.3 | 26.9 | 22.7 | 18.1 |
| PAPA012 | 2013 | 0 | 16.0 | 36.0 | 21.6 | 23.5 | 20.7 | 19.0 |
| PAPA012 | 2013 | 1 | 18.4 | 44.2 | 23.4 | 24.9 | 21.6 | 19.9 |
| PAPA012 | 2013 | 2 | 16.7 | 39.7 | 22.4 | 24.4 | 21.2 | 19.7 |
| PAPA012 | 2013 | 3 | 16.7 | 40.5 | 22.6 | 24.3 | 21.2 | 19.7 |
| PAPA012 | 2013 | 4 | 16.1 | 42.0 | 23.2 | 25.1 | 21.3 | 19.4 |
| PAPA012 | 2013 | 5 | 17.3 | 44.0 | 24.1 | 27.2 | 21.8 | 20.0 |
| PAPA012 | 2013 | 6 | 19.2 | 41.0 | 27.5 | 30.0 | 26.1 | 22.7 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA012 | 2013 | 7 | 18.0 | 59.5 | 27.9 | 28.7 | 24.3 | 21.7 |
| PAPA012 | 2013 | 8 | 19.0 | 48.9 | 28.6 | 31.2 | 24.5 | 21.6 |
| PAPA012 | 2013 | 9 | 17.4 | 50.6 | 29.1 | 31.5 | 26.0 | 21.6 |
| PAPA012 | 2013 | 10 | 17.6 | 65.5 | 37.3 | 33.9 | 27.1 | 21.4 |
| PAPA012 | 2013 | 11 | 19.8 | 47.0 | 33.1 | 36.7 | 29.8 | 23.7 |
| PAPA012 | 2013 | 12 | 17.1 | 49.0 | 32.2 | 35.8 | 28.6 | 22.6 |
| PAPA012 | 2013 | 13 | 17.0 | 53.2 | 35.5 | 39.2 | 31.7 | 25.2 |
| PAPA012 | 2013 | 14 | 16.9 | 54.5 | 33.0 | 36.7 | 29.8 | 24.9 |
| PAPA012 | 2013 | 15 | 16.7 | 57.0 | 34.1 | 37.8 | 30.1 | 24.0 |
| PAPA012 | 2013 | 16 | 16.6 | 51.2 | 32.2 | 35.5 | 28.1 | 22.4 |
| PAPA012 | 2013 | 17 | 15.6 | 47.0 | 26.2 | 29.3 | 22.1 | 18.1 |
| PAPA012 | 2013 | 18 | 14.7 | 49.8 | 27.0 | 28.3 | 21.9 | 18.6 |
| PAPA012 | 2013 | 19 | 14.6 | 41.7 | 23.5 | 25.9 | 19.6 | 17.7 |
| PAPA012 | 2013 | 20 | 15.4 | 38.2 | 22.6 | 25.0 | 19.7 | 17.9 |
| PAPA012 | 2013 | 21 | 15.2 | 46.7 | 25.4 | 28.0 | 23.0 | 19.7 |
| PAPA012 | 2013 | 22 | 15.2 | 43.1 | 23.7 | 25.9 | 21.9 | 19.2 |
| PAPA012 | 2013 | 23 | 15.1 | 38.9 | 22.0 | 24.1 | 20.6 | 18.4 |
| PAPA013 | 2013 | 0 | 18.5 | 36.7 | 25.5 | 27.6 | 24.7 | 22.2 |
| PAPA013 | 2013 | 1 | 16.7 | 36.9 | 25.8 | 27.6 | 24.9 | 21.6 |
| PAPA013 | 2013 | 2 | 17.2 | 39.1 | 27.2 | 29.5 | 25.8 | 23.8 |
| PAPA013 | 2013 | 3 | 19.2 | 41.6 | 30.0 | 32.7 | 28.4 | 25.6 |
| PAPA013 | 2013 | 4 | 18.7 | 42.2 | 29.3 | 31.7 | 27.5 | 25.2 |
| PAPA013 | 2013 | 5 | 17.8 | 38.7 | 24.9 | 27.4 | 23.9 | 21.0 |
| PAPA013 | 2013 | 6 | 17.7 | 53.6 | 24.8 | 25.3 | 22.5 | 20.3 |
| PAPA013 | 2013 | 7 | 19.1 | 63.1 | 31.0 | 25.8 | 23.6 | 21.2 |
| PAPA013 | 2013 | 8 | 19.8 | 75.0 | 39.4 | 32.3 | 26.5 | 23.2 |
| PAPA013 | 2013 | 9 | 20.3 | 50.5 | 32.3 | 35.5 | 29.9 | 25.1 |
| PAPA013 | 2013 | 10 | 21.4 | 51.6 | 37.7 | 41.2 | 35.0 | 29.3 |
| PAPA013 | 2013 | 11 | 24.8 | 49.0 | 37.8 | 41.6 | 35.1 | 29.5 |
| PAPA013 | 2013 | 12 | 24.5 | 51.7 | 38.8 | 42.5 | 36.3 | 30.3 |
| PAPA013 | 2013 | 13 | 19.6 | 53.7 | 36.6 | 40.2 | 33.0 | 27.4 |
| PAPA013 | 2013 | 14 | 21.3 | 56.3 | 37.1 | 40.6 | 34.3 | 29.4 |
| PAPA013 | 2013 | 15 | 18.6 | 56.2 | 36.8 | 40.2 | 33.6 | 28.8 |
| PAPA013 | 2013 | 16 | 18.6 | 57.1 | 36.2 | 38.9 | 30.9 | 24.4 |
| PAPA013 | 2013 | 17 | 18.2 | 48.6 | 29.1 | 32.4 | 24.7 | 20.4 |
| PAPA013 | 2013 | 18 | 17.4 | 44.4 | 28.6 | 31.6 | 24.9 | 20.5 |
| PAPA013 | 2013 | 19 | 17.5 | 39.8 | 25.8 | 28.5 | 23.6 | 21.2 |
| PAPA013 | 2013 | 20 | 20.6 | 47.1 | 28.1 | 30.4 | 26.6 | 23.7 |
| PAPA013 | 2013 | 21 | 23.2 | 53.8 | 31.7 | 34.2 | 29.9 | 26.6 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA013 | 2013 | 22 | 22.6 | 47.4 | 30.9 | 33.4 | 29.3 | 26.3 |
| PAPA013 | 2013 | 23 | 19.4 | 45.5 | 28.8 | 31.9 | 27.1 | 23.1 |
| PAPA014 | 2013 | 0 | 19.8 | 36.4 | 29.7 | 30.7 | 29.5 | 28.5 |
| PAPA014 | 2013 | 1 | 24.9 | 38.9 | 31.4 | 33.0 | 30.2 | 27.3 |
| PAPA014 | 2013 | 2 | 23.7 | 41.6 | 30.7 | 32.0 | 30.5 | 28.9 |
| PAPA014 | 2013 | 3 | 25.9 | 42.4 | 29.0 | 30.0 | 28.9 | 27.7 |
| PAPA014 | 2013 | 4 | 25.6 | 43.1 | 30.8 | 33.3 | 29.7 | 27.3 |
| PAPA014 | 2013 | 5 | 27.0 | 46.7 | 33.0 | 35.3 | 32.6 | 29.7 |
| PAPA014 | 2013 | 6 | 27.6 | 43.6 | 31.1 | 32.5 | 30.9 | 29.6 |
| PAPA014 | 2013 | 7 | 23.1 | 43.7 | 31.3 | 33.9 | 30.2 | 28.4 |
| PAPA014 | 2013 | 8 | 21.0 | 52.4 | 31.1 | 32.4 | 28.0 | 24.1 |
| PAPA014 | 2013 | 9 | 19.8 | 48.7 | 26.4 | 28.7 | 24.8 | 22.6 |
| PAPA014 | 2013 | 10 | 19.0 | 58.0 | 28.6 | 28.4 | 25.4 | 23.1 |
| PAPA014 | 2013 | 11 | 19.6 | 47.0 | 30.4 | 33.3 | 26.9 | 23.3 |
| PAPA014 | 2013 | 12 | 19.8 | 56.8 | 32.0 | 34.6 | 28.2 | 23.9 |
| PAPA014 | 2013 | 13 | 19.9 | 58.3 | 33.2 | 36.2 | 29.3 | 24.9 |
| PAPA014 | 2013 | 14 | 19.8 | 49.3 | 33.3 | 36.8 | 30.6 | 25.4 |
| PAPA014 | 2013 | 15 | 20.9 | 55.0 | 37.2 | 40.8 | 31.9 | 25.0 |
| PAPA014 | 2013 | 16 | 21.1 | 59.5 | 36.8 | 40.2 | 34.7 | 28.9 |
| PAPA014 | 2013 | 17 | 20.5 | 55.0 | 37.0 | 40.1 | 34.8 | 29.8 |
| PAPA014 | 2013 | 18 | 19.9 | 50.9 | 35.4 | 38.9 | 33.2 | 27.8 |
| PAPA014 | 2013 | 19 | 20.0 | 52.6 | 30.2 | 33.6 | 28.4 | 24.5 |
| PAPA014 | 2013 | 20 | 21.6 | 51.5 | 29.9 | 30.6 | 28.9 | 24.5 |
| PAPA014 | 2013 | 21 | 22.6 | 44.2 | 29.1 | 30.8 | 29.2 | 27.1 |
| PAPA014 | 2013 | 22 | 23.7 | 44.7 | 32.4 | 36.5 | 30.0 | 27.0 |
| PAPA014 | 2013 | 23 | 21.2 | 38.7 | 29.8 | 31.8 | 29.1 | 27.2 |
| PAPA015 | 2013 | 0 | 13.9 | 44.6 | 19.3 | 17.2 | 15.3 | 14.6 |
| PAPA015 | 2013 | 1 | 14.4 | 44.1 | 21.8 | 22.3 | 16.4 | 15.3 |
| PAPA015 | 2013 | 2 | 13.9 | 48.6 | 21.5 | 23.8 | 16.7 | 14.9 |
| PAPA015 | 2013 | 3 | 13.8 | 35.5 | 19.1 | 21.3 | 17.9 | 15.1 |
| PAPA015 | 2013 | 4 | 13.8 | 50.0 | 26.3 | 22.6 | 19.1 | 17.8 |
| PAPA015 | 2013 | 5 | 13.9 | 36.8 | 20.2 | 22.2 | 18.9 | 17.2 |
| PAPA015 | 2013 | 6 | 13.8 | 34.6 | 17.5 | 19.1 | 16.3 | 15.2 |
| PAPA015 | 2013 | 7 | 14.0 | 46.6 | 20.5 | 20.7 | 16.4 | 14.7 |
| PAPA015 | 2013 | 8 | 14.9 | 47.1 | 23.4 | 25.7 | 20.2 | 17.0 |
| PAPA015 | 2013 | 9 | 15.1 | 40.3 | 22.0 | 24.8 | 18.8 | 16.3 |
| PAPA015 | 2013 | 10 | 14.9 | 45.1 | 23.5 | 26.9 | 17.4 | 15.7 |
| PAPA015 | 2013 | 11 | 15.3 | 50.9 | 29.0 | 32.7 | 24.3 | 19.5 |
| PAPA015 | 2013 | 12 | 14.9 | 49.9 | 29.4 | 24.8 | 19.0 | 17.2 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA015 | 2013 | 13 | 15.9 | 51.9 | 30.0 | 32.5 | 24.6 | 20.2 |
| PAPA015 | 2013 | 14 | 16.1 | 53.6 | 30.8 | 33.9 | 26.1 | 20.1 |
| PAPA015 | 2013 | 15 | 16.2 | 51.9 | 31.3 | 34.6 | 26.9 | 20.7 |
| PAPA015 | 2013 | 16 | 15.6 | 49.3 | 28.3 | 32.1 | 24.5 | 19.1 |
| PAPA015 | 2013 | 17 | 15.0 | 52.2 | 32.4 | 33.8 | 24.3 | 18.6 |
| PAPA015 | 2013 | 18 | 15.0 | 55.6 | 27.4 | 30.4 | 22.7 | 17.1 |
| PAPA015 | 2013 | 19 | 15.3 | 44.7 | 23.6 | 26.2 | 20.2 | 16.8 |
| PAPA015 | 2013 | 20 | 14.7 | 42.0 | 25.1 | 26.7 | 19.5 | 16.3 |
| PAPA015 | 2013 | 21 | 14.1 | 38.4 | 19.2 | 20.3 | 15.2 | 14.4 |
| PAPA015 | 2013 | 22 | 14.1 | 41.4 | 20.5 | 19.5 | 15.9 | 14.9 |
| PAPA015 | 2013 | 23 | 14.2 | 41.7 | 19.4 | 17.0 | 15.5 | 14.8 |
| PAPA016 | 2013 | 0 | 15.7 | 32.7 | 20.1 | 22.2 | 19.0 | 17.6 |
| PAPA016 | 2013 | 1 | 16.6 | 57.3 | 27.2 | 23.5 | 20.5 | 18.5 |
| PAPA016 | 2013 | 2 | 14.9 | 31.6 | 20.6 | 22.3 | 20.2 | 17.9 |
| PAPA016 | 2013 | 3 | 14.4 | 45.3 | 25.6 | 22.6 | 20.5 | 19.3 |
| PAPA016 | 2013 | 4 | 14.3 | 38.1 | 23.6 | 23.4 | 21.6 | 20.6 |
| PAPA016 | 2013 | 5 | 14.3 | 41.4 | 22.6 | 24.8 | 21.3 | 19.8 |
| PAPA016 | 2013 | 6 | 15.7 | 45.3 | 24.9 | 25.9 | 22.7 | 20.8 |
| PAPA016 | 2013 | 7 | 18.6 | 41.1 | 25.5 | 27.6 | 24.5 | 21.9 |
| PAPA016 | 2013 | 8 | 20.3 | 43.3 | 29.8 | 32.1 | 28.0 | 24.4 |
| PAPA016 | 2013 | 9 | 22.1 | 41.8 | 27.8 | 29.5 | 26.1 | 24.3 |
| PAPA016 | 2013 | 10 | 22.0 | 39.4 | 27.5 | 29.7 | 26.5 | 24.4 |
| PAPA016 | 2013 | 11 | 15.2 | 43.5 | 24.0 | 24.5 | 19.4 | 17.6 |
| PAPA016 | 2013 | 12 | 15.4 | 45.1 | 25.9 | 28.0 | 19.6 | 16.3 |
| PAPA016 | 2013 | 13 | 15.3 | 54.7 | 27.6 | 29.9 | 19.1 | 16.2 |
| PAPA016 | 2013 | 14 | 16.0 | 43.4 | 25.8 | 28.0 | 22.3 | 18.7 |
| PAPA016 | 2013 | 15 | 16.0 | 42.2 | 27.6 | 31.4 | 23.9 | 18.9 |
| PAPA016 | 2013 | 16 | 16.5 | 46.1 | 29.0 | 32.7 | 25.5 | 19.7 |
| PAPA016 | 2013 | 17 | 15.7 | 53.6 | 28.5 | 30.9 | 23.6 | 18.6 |
| PAPA016 | 2013 | 18 | 14.9 | 48.9 | 27.0 | 29.1 | 22.7 | 17.1 |
| PAPA016 | 2013 | 19 | 14.8 | 48.9 | 27.6 | 30.2 | 22.9 | 19.2 |
| PAPA016 | 2013 | 20 | 14.5 | 40.6 | 22.1 | 24.4 | 19.7 | 17.7 |
| PAPA016 | 2013 | 21 | 14.3 | 42.3 | 23.5 | 26.0 | 20.6 | 19.1 |
| PAPA016 | 2013 | 22 | 14.7 | 38.5 | 21.8 | 24.7 | 19.5 | 17.1 |
| PAPA016 | 2013 | 23 | 14.7 | 40.4 | 23.3 | 26.2 | 20.3 | 17.4 |
| PAPA017 | 2013 | 0 | 20.3 | 37.0 | 25.4 | 27.4 | 24.7 | 22.6 |
| PAPA017 | 2013 | 1 | 19.3 | 53.6 | 27.1 | 27.7 | 25.3 | 22.9 |
| PAPA017 | 2013 | 2 | 18.1 | 37.5 | 24.1 | 26.0 | 23.6 | 21.3 |
| PAPA017 | 2013 | 3 | 17.4 | 42.6 | 26.9 | 28.9 | 23.6 | 22.0 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA017 | 2013 | 4 | 15.2 | 46.5 | 27.1 | 28.5 | 24.6 | 22.9 |
| PAPA017 | 2013 | 5 | 15.2 | 54.3 | 28.8 | 31.1 | 27.3 | 23.8 |
| PAPA017 | 2013 | 6 | 17.5 | 50.1 | 32.3 | 33.1 | 29.7 | 26.9 |
| PAPA017 | 2013 | 7 | 18.5 | 40.8 | 25.3 | 27.5 | 24.5 | 21.9 |
| PAPA017 | 2013 | 8 | 18.6 | 47.0 | 27.7 | 29.6 | 25.4 | 22.3 |
| PAPA017 | 2013 | 9 | 17.8 | 40.8 | 27.9 | 30.7 | 26.5 | 22.8 |
| PAPA017 | 2013 | 10 | 19.7 | 52.4 | 28.1 | 31.3 | 24.4 | 21.9 |
| PAPA017 | 2013 | 11 | 19.2 | 27.5 | 21.7 | 23.1 | 21.3 | 20.3 |
| PAPA017 | 2013 | 12 | 18.0 | 43.7 | 26.8 | 29.3 | 23.7 | 20.5 |
| PAPA017 | 2013 | 13 | 19.0 | 58.2 | 28.7 | 29.5 | 23.7 | 21.3 |
| PAPA017 | 2013 | 14 | 19.4 | 44.1 | 26.6 | 28.2 | 24.4 | 22.3 |
| PAPA017 | 2013 | 15 | 19.4 | 42.1 | 27.1 | 30.0 | 24.3 | 21.9 |
| PAPA017 | 2013 | 16 | 19.5 | 45.4 | 27.6 | 30.5 | 25.4 | 22.6 |
| PAPA017 | 2013 | 17 | 19.3 | 56.7 | 29.0 | 30.3 | 25.4 | 22.9 |
| PAPA017 | 2013 | 18 | 18.1 | 47.7 | 28.0 | 30.6 | 26.3 | 23.5 |
| PAPA017 | 2013 | 19 | 18.7 | 49.4 | 29.4 | 31.9 | 27.3 | 24.5 |
| PAPA017 | 2013 | 20 | 18.9 | 50.4 | 27.3 | 28.9 | 26.6 | 24.4 |
| PAPA017 | 2013 | 21 | 17.6 | 47.7 | 27.7 | 29.4 | 27.0 | 23.9 |
| PAPA017 | 2013 | 22 | 16.4 | 36.2 | 25.2 | 27.2 | 24.7 | 22.6 |
| PAPA017 | 2013 | 23 | 18.3 | 36.0 | 25.7 | 27.9 | 24.9 | 22.1 |
| PAPA018 | 2013 | 0 | 16.2 | 35.7 | 26.4 | 30.1 | 24.2 | 20.2 |
| PAPA018 | 2013 | 1 | 21.6 | 47.6 | 28.2 | 30.2 | 27.0 | 25.0 |
| PAPA018 | 2013 | 2 | 22.4 | 36.7 | 28.8 | 31.0 | 28.2 | 25.5 |
| PAPA018 | 2013 | 3 | 19.0 | 40.6 | 28.1 | 29.4 | 27.2 | 25.3 |
| PAPA018 | 2013 | 4 | 14.9 | 48.5 | 28.8 | 30.5 | 25.4 | 23.3 |
| PAPA018 | 2013 | 5 | 14.4 | 50.7 | 26.9 | 30.5 | 24.5 | 23.0 |
| PAPA018 | 2013 | 6 | 19.6 | 49.2 | 31.7 | 34.7 | 29.9 | 26.3 |
| PAPA018 | 2013 | 7 | 19.2 | 45.3 | 30.2 | 33.3 | 28.2 | 23.2 |
| PAPA018 | 2013 | 8 | 16.7 | 46.5 | 25.7 | 27.6 | 22.5 | 20.1 |
| PAPA018 | 2013 | 9 | 17.4 | 50.1 | 26.8 | 29.7 | 24.3 | 19.7 |
| PAPA018 | 2013 | 10 | 17.4 | 42.2 | 26.4 | 29.7 | 23.3 | 19.8 |
| PAPA018 | 2013 | 11 | 18.0 | 34.6 | 21.7 | 23.4 | 20.8 | 19.6 |
| PAPA018 | 2013 | 12 | 16.4 | 44.4 | 27.8 | 31.2 | 23.6 | 19.3 |
| PAPA018 | 2013 | 13 | 16.5 | 59.1 | 29.2 | 29.3 | 23.1 | 19.3 |
| PAPA018 | 2013 | 14 | 17.1 | 45.2 | 26.6 | 29.7 | 23.4 | 19.7 |
| PAPA018 | 2013 | 15 | 17.3 | 56.7 | 30.6 | 31.4 | 23.5 | 19.8 |
| PAPA018 | 2013 | 16 | 16.9 | 42.6 | 26.2 | 29.5 | 23.1 | 19.5 |
| PAPA018 | 2013 | 17 | 16.8 | 49.8 | 28.2 | 31.9 | 24.1 | 19.6 |
| PAPA018 | 2013 | 18 | 15.3 | 49.3 | 29.9 | 33.4 | 25.8 | 22.2 |

Appendix B. Hourly dBA Metrics, PAPA Leks, April 2013.

| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|
| PAPA018 | 2013 | 19 | 15.1 | 47.7 | 27.2 | 30.1 | 24.1 | 20.1 |
| PAPA018 | 2013 | 20 | 15.6 | 37.0 | 23.3 | 25.9 | 21.1 | 18.4 |
| PAPA018 | 2013 | 21 | 14.5 | 61.4 | 27.9 | 25.2 | 21.8 | 18.0 |
| PAPA018 | 2013 | 22 | 15.2 | 35.9 | 22.5 | 24.7 | 21.5 | 20.0 |
| PAPA018 | 2013 | 23 | 14.8 | 40.0 | 25.0 | 27.7 | 24.4 | 19.2 |
| PAPA019 | 2013 | 0 | 15.1 | 37.4 | 23.0 | 25.6 | 21.5 | 17.9 |
| PAPA019 | 2013 | 1 | 18.7 | 42.5 | 27.5 | 29.9 | 25.9 | 23.1 |
| PAPA019 | 2013 | 2 | 20.6 | 38.2 | 24.7 | 26.1 | 24.2 | 23.0 |
| PAPA019 | 2013 | 3 | 23.0 | 43.1 | 29.5 | 32.3 | 27.8 | 25.5 |
| PAPA019 | 2013 | 4 | 19.2 | 44.4 | 28.8 | 30.1 | 27.9 | 25.6 |
| PAPA019 | 2013 | 5 | 16.2 | 60.1 | 26.9 | 26.0 | 23.4 | 21.8 |
| PAPA019 | 2013 | 6 | 20.6 | 37.7 | 25.8 | 27.4 | 25.3 | 23.8 |
| PAPA019 | 2013 | 7 | 18.5 | 39.3 | 25.2 | 27.5 | 24.4 | 21.3 |
| PAPA019 | 2013 | 8 | 15.6 | 43.7 | 23.7 | 24.5 | 20.3 | 18.4 |
| PAPA019 | 2013 | 9 | 16.5 | 38.5 | 23.4 | 26.4 | 21.5 | 18.0 |
| PAPA019 | 2013 | 10 | 16.1 | 41.0 | 24.7 | 27.6 | 21.4 | 18.2 |
| PAPA019 | 2013 | 11 | 15.9 | 36.1 | 18.9 | 20.5 | 17.9 | 16.8 |
| PAPA019 | 2013 | 12 | 15.5 | 42.0 | 22.2 | 24.7 | 19.2 | 16.6 |
| PAPA019 | 2013 | 13 | 15.7 | 55.9 | 28.1 | 27.6 | 21.2 | 17.5 |
| PAPA019 | 2013 | 14 | 16.2 | 43.1 | 24.9 | 27.7 | 21.4 | 17.6 |
| PAPA019 | 2013 | 15 | 15.5 | 52.2 | 29.8 | 32.3 | 22.5 | 17.9 |
| PAPA019 | 2013 | 16 | 15.6 | 47.1 | 26.6 | 30.2 | 23.1 | 18.6 |
| PAPA019 | 2013 | 17 | 16.6 | 51.8 | 30.6 | 34.3 | 26.2 | 20.5 |
| PAPA019 | 2013 | 18 | 15.7 | 53.1 | 28.5 | 32.0 | 26.1 | 22.2 |
| PAPA019 | 2013 | 19 | 15.9 | 48.4 | 26.9 | 30.1 | 24.3 | 19.3 |
| PAPA019 | 2013 | 20 | 14.9 | 53.8 | 24.0 | 26.2 | 19.7 | 17.5 |
| PAPA019 | 2013 | 21 | 16.0 | 61.2 | 29.7 | 26.2 | 21.0 | 17.9 |
| PAPA019 | 2013 | 22 | 14.7 | 35.4 | 19.0 | 21.0 | 17.4 | 15.5 |
| PAPA019 | 2013 | 23 | 14.9 | 29.3 | 20.0 | 22.2 | 19.4 | 16.7 |

## Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014.

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA001 | 2014 | 0 | 22.0 | 51.8 | 29.4 | 28.2 | 25.6 | 24.2 |
| PAPA001 | 2014 | 1 | 22.9 | 37.9 | 26.7 | 28.0 | 26.2 | 24.9 |
| PAPA001 | 2014 | 2 | 23.0 | 47.3 | 27.9 | 28.8 | 26.5 | 25.0 |
| PAPA001 | 2014 | 3 | 23.0 | 44.6 | 27.7 | 29.1 | 26.6 | 24.8 |
| PAPA001 | 2014 | 4 | 21.1 | 49.4 | 28.0 | 30.1 | 26.8 | 24.8 |
| PAPA001 | 2014 | 5 | 21.0 | 38.0 | 26.8 | 28.6 | 26.3 | 24.6 |
| PAPA001 | 2014 | 6 | 20.9 | 41.0 | 26.2 | 28.0 | 25.6 | 23.7 |
| PAPA001 | 2014 | 7 | 20.6 | 42.7 | 26.4 | 28.2 | 25.6 | 23.6 |
| PAPA001 | 2014 | 8 | 25.4 | 43.2 | 33.0 | 35.5 | 32.1 | 28.7 |
| PAPA001 | 2014 | 9 | 24.0 | 40.8 | 31.7 | 34.3 | 31.0 | 27.7 |
| PAPA001 | 2014 | 10 | 22.7 | 44.1 | 33.1 | 36.2 | 31.0 | 27.0 |
| PAPA001 | 2014 | 11 | 21.9 | 40.4 | 29.6 | 32.1 | 28.7 | 25.2 |
| PAPA001 | 2014 | 12 | 21.6 | 55.6 | 30.7 | 31.9 | 27.7 | 24.8 |
| PAPA001 | 2014 | 13 | 22.3 | 53.2 | 28.5 | 31.0 | 26.7 | 24.5 |
| PAPA001 | 2014 | 14 | 22.0 | 54.7 | 30.7 | 31.7 | 28.0 | 24.8 |
| PAPA001 | 2014 | 15 | 20.6 | 52.3 | 32.7 | 35.0 | 30.6 | 26.9 |
| PAPA001 | 2014 | 16 | 20.7 | 46.7 | 30.9 | 33.3 | 30.1 | 27.2 |
| PAPA001 | 2014 | 17 | 20.7 | 42.6 | 29.1 | 31.5 | 28.3 | 25.8 |
| PAPA001 | 2014 | 18 | 20.7 | 45.2 | 28.1 | 30.0 | 27.0 | 24.7 |
| PAPA001 | 2014 | 19 | 21.4 | 54.2 | 30.6 | 30.2 | 27.1 | 25.1 |
| PAPA001 | 2014 | 20 | 20.7 | 47.8 | 29.3 | 30.1 | 27.2 | 25.2 |
| PAPA001 | 2014 | 21 | 20.5 | 46.7 | 30.5 | 31.2 | 28.0 | 26.2 |
| PAPA001 | 2014 | 22 | 21.2 | 52.4 | 31.1 | 30.7 | 28.0 | 25.5 |
| PAPA001 | 2014 | 23 | 22.2 | 47.8 | 27.6 | 28.6 | 26.3 | 24.7 |
| PAPA002 | 2014 | 0 | 22.3 | 58.8 | 31.5 | 29.1 | 26.9 | 25.2 |
| PAPA002 | 2014 | 1 | 21.9 | 45.0 | 28.0 | 29.6 | 27.0 | 24.9 |
| PAPA002 | 2014 | 2 | 21.7 | 44.8 | 26.8 | 27.0 | 24.9 | 23.6 |
| PAPA002 | 2014 | 3 | 21.8 | 50.7 | 28.9 | 30.4 | 25.6 | 24.0 |
| PAPA002 | 2014 | 4 | 21.0 | 51.1 | 28.4 | 30.5 | 26.8 | 24.8 |
| PAPA002 | 2014 | 5 | 20.7 | 45.8 | 26.1 | 27.6 | 25.3 | 24.1 |
| PAPA002 | 2014 | 6 | 20.7 | 40.8 | 24.5 | 26.0 | 23.8 | 22.1 |
| PAPA002 | 2014 | 7 | 20.8 | 45.0 | 23.0 | 23.6 | 22.4 | 21.7 |
| PAPA002 | 2014 | 8 | 21.0 | 40.8 | 24.0 | 25.2 | 22.7 | 21.8 |
| PAPA002 | 2014 | 9 | 20.3 | 40.1 | 25.8 | 27.5 | 23.9 | 21.7 |
| PAPA002 | 2014 | 10 | 20.1 | 45.6 | 29.4 | 31.4 | 23.4 | 21.0 |
| PAPA002 | 2014 | 11 | 20.5 | 62.6 | 32.8 | 29.9 | 23.6 | 21.2 |
| PAPA002 | 2014 | 12 | 20.7 | 53.2 | 31.4 | 32.4 | 23.4 | 22.1 |
| PAPA002 | 2014 | 13 | 20.6 | 46.2 | 29.0 | 31.1 | 24.2 | 22.5 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA002 | 2014 | 14 | 20.4 | 56.7 | 30.0 | 28.7 | 23.5 | 22.1 |
| PAPA002 | 2014 | 15 | 20.3 | 53.8 | 32.6 | 34.6 | 28.5 | 23.9 |
| PAPA002 | 2014 | 16 | 20.6 | 52.2 | 30.3 | 33.2 | 27.8 | 24.0 |
| PAPA002 | 2014 | 17 | 20.5 | 46.6 | 25.4 | 27.4 | 23.1 | 21.7 |
| PAPA002 | 2014 | 18 | 20.4 | 41.8 | 25.5 | 28.1 | 22.7 | 21.2 |
| PAPA002 | 2014 | 19 | 20.6 | 51.0 | 28.2 | 28.6 | 23.6 | 22.1 |
| PAPA002 | 2014 | 20 | 19.9 | 46.1 | 26.4 | 26.3 | 23.2 | 22.0 |
| PAPA002 | 2014 | 21 | 19.9 | 48.4 | 27.0 | 29.1 | 23.6 | 21.6 |
| PAPA002 | 2014 | 22 | 20.8 | 47.5 | 26.0 | 26.9 | 23.9 | 22.5 |
| PAPA002 | 2014 | 23 | 21.6 | 47.8 | 28.1 | 29.4 | 26.6 | 24.5 |
| PAPA003 | 2014 | 0 | 25.9 | 49.5 | 31.7 | 33.2 | 30.8 | 29.0 |
| PAPA003 | 2014 | 1 | 22.2 | 48.7 | 31.0 | 34.2 | 28.7 | 26.0 |
| PAPA003 | 2014 | 2 | 20.4 | 51.3 | 30.0 | 32.3 | 28.8 | 26.5 |
| PAPA003 | 2014 | 3 | 22.2 | 43.1 | 29.9 | 31.8 | 28.3 | 26.6 |
| PAPA003 | 2014 | 4 | 21.8 | 44.5 | 31.7 | 33.3 | 30.9 | 29.0 |
| PAPA003 | 2014 | 5 | 22.8 | 47.0 | 32.2 | 34.5 | 31.4 | 29.0 |
| PAPA003 | 2014 | 6 | 26.5 | 42.6 | 33.7 | 35.8 | 33.1 | 30.6 |
| PAPA003 | 2014 | 7 | 29.1 | 43.9 | 33.2 | 34.7 | 32.9 | 31.2 |
| PAPA003 | 2014 | 8 | 25.5 | 45.9 | 31.3 | 33.3 | 30.6 | 28.2 |
| PAPA003 | 2014 | 9 | 20.2 | 43.3 | 29.2 | 31.2 | 27.9 | 25.1 |
| PAPA003 | 2014 | 10 | 20.1 | 47.2 | 28.1 | 30.1 | 25.8 | 23.9 |
| PAPA003 | 2014 | 11 | 21.8 | 58.1 | 33.9 | 36.8 | 30.7 | 26.2 |
| PAPA003 | 2014 | 12 | 20.4 | 62.1 | 35.8 | 37.3 | 31.9 | 28.0 |
| PAPA003 | 2014 | 13 | 21.6 | 59.8 | 32.0 | 33.3 | 27.5 | 24.6 |
| PAPA003 | 2014 | 14 | 20.7 | 53.6 | 31.7 | 32.4 | 26.9 | 23.7 |
| PAPA003 | 2014 | 15 | 20.0 | 53.0 | 30.8 | 31.3 | 25.8 | 23.5 |
| PAPA003 | 2014 | 16 | 20.6 | 49.7 | 29.8 | 31.3 | 26.1 | 23.2 |
| PAPA003 | 2014 | 17 | 20.9 | 46.9 | 28.9 | 31.1 | 26.4 | 23.8 |
| PAPA003 | 2014 | 18 | 19.0 | 56.3 | 28.3 | 28.9 | 24.7 | 22.1 |
| PAPA003 | 2014 | 19 | 19.2 | 47.3 | 27.4 | 29.0 | 25.2 | 22.1 |
| PAPA003 | 2014 | 20 | 22.9 | 48.3 | 29.4 | 30.7 | 28.4 | 26.5 |
| PAPA003 | 2014 | 21 | 20.6 | 46.1 | 30.2 | 31.7 | 29.2 | 25.7 |
| PAPA003 | 2014 | 22 | 19.7 | 50.8 | 31.9 | 34.5 | 30.6 | 26.3 |
| PAPA003 | 2014 | 23 | 26.5 | 48.2 | 32.5 | 34.3 | 32.0 | 29.9 |
| PAPA004 | 2014 | 0 | 16.5 | 37.6 | 23.4 | 26.1 | 22.2 | 18.6 |
| PAPA004 | 2014 | 1 | 17.1 | 39.8 | 22.9 | 25.4 | 21.1 | 18.8 |
| PAPA004 | 2014 | 2 | 18.8 | 35.8 | 24.5 | 26.7 | 23.9 | 20.6 |
| PAPA004 | 2014 | 3 | 18.9 | 39.2 | 25.4 | 28.1 | 23.8 | 21.4 |
| PAPA004 | 2014 | 4 | 17.3 | 43.6 | 27.4 | 29.6 | 25.6 | 22.3 |
| PAPA004 | 2014 | 5 | 15.6 | 37.0 | 26.1 | 28.3 | 25.3 | 22.9 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA004 | 2014 | 6 | 16.9 | 55.9 | 27.7 | 28.5 | 25.5 | 23.4 |
| PAPA004 | 2014 | 7 | 17.1 | 43.9 | 27.7 | 29.0 | 25.2 | 23.4 |
| PAPA004 | 2014 | 8 | 19.6 | 70.5 | 37.5 | 32.4 | 27.4 | 25.0 |
| PAPA004 | 2014 | 9 | 17.7 | 64.9 | 40.0 | 29.6 | 21.2 | 18.9 |
| PAPA004 | 2014 | 10 | 16.6 | 51.4 | 28.9 | 31.0 | 22.4 | 18.4 |
| PAPA004 | 2014 | 11 | 17.1 | 62.1 | 33.9 | 28.4 | 23.6 | 20.4 |
| PAPA004 | 2014 | 12 | 17.8 | 45.4 | 27.7 | 30.5 | 23.9 | 20.2 |
| PAPA004 | 2014 | 13 | 19.7 | 56.0 | 34.4 | 32.0 | 27.1 | 23.4 |
| PAPA004 | 2014 | 14 | 19.7 | 53.8 | 35.0 | 38.7 | 31.4 | 24.2 |
| PAPA004 | 2014 | 15 | 19.1 | 56.9 | 36.1 | 39.7 | 32.9 | 27.3 |
| PAPA004 | 2014 | 16 | 18.7 | 57.4 | 36.4 | 40.2 | 32.0 | 25.1 |
| PAPA004 | 2014 | 17 | 18.7 | 55.9 | 34.9 | 38.5 | 31.6 | 26.0 |
| PAPA004 | 2014 | 18 | 17.4 | 47.5 | 31.1 | 34.5 | 27.6 | 22.8 |
| PAPA004 | 2014 | 19 | 16.6 | 54.5 | 31.9 | 34.3 | 26.3 | 22.7 |
| PAPA004 | 2014 | 20 | 16.4 | 59.3 | 32.8 | 35.1 | 28.3 | 24.7 |
| PAPA004 | 2014 | 21 | 17.5 | 52.8 | 30.2 | 32.1 | 26.2 | 20.6 |
| PAPA004 | 2014 | 22 | 15.1 | 37.9 | 24.0 | 25.6 | 21.4 | 18.9 |
| PAPA004 | 2014 | 23 | 15.6 | 40.9 | 21.7 | 23.3 | 20.2 | 18.6 |
| PAPA005 | 2014 | 0 | 21.3 | 36.2 | 28.3 | 30.6 | 27.8 | 25.2 |
| PAPA005 | 2014 | 1 | 20.1 | 39.1 | 29.1 | 30.9 | 28.6 | 27.2 |
| PAPA005 | 2014 | 2 | 18.9 | 40.6 | 31.3 | 33.4 | 30.7 | 28.9 |
| PAPA005 | 2014 | 3 | 19.9 | 40.3 | 32.6 | 34.1 | 32.4 | 29.2 |
| PAPA005 | 2014 | 4 | 18.9 | 43.9 | 32.3 | 34.7 | 31.1 | 29.4 |
| PAPA005 | 2014 | 5 | 19.9 | 49.2 | 34.8 | 35.8 | 32.2 | 30.1 |
| PAPA005 | 2014 | 6 | 21.3 | 48.2 | 32.5 | 34.1 | 31.6 | 30.0 |
| PAPA005 | 2014 | 7 | 23.7 | 43.8 | 33.5 | 35.0 | 33.0 | 30.9 |
| PAPA005 | 2014 | 8 | 21.3 | 55.4 | 35.4 | 37.1 | 33.3 | 28.4 |
| PAPA005 | 2014 | 9 | 19.1 | 53.6 | 31.2 | 32.4 | 29.7 | 27.5 |
| PAPA005 | 2014 | 10 | 18.4 | 66.5 | 36.2 | 30.7 | 26.1 | 23.5 |
| PAPA005 | 2014 | 11 | 19.5 | 57.6 | 24.1 | 25.8 | 22.6 | 21.4 |
| PAPA005 | 2014 | 12 | 19.8 | 57.0 | 34.8 | 30.9 | 23.5 | 22.2 |
| PAPA005 | 2014 | 13 | 20.1 | 56.4 | 31.3 | 29.2 | 23.9 | 22.1 |
| PAPA005 | 2014 | 14 | 19.7 | 62.8 | 33.1 | 30.1 | 23.6 | 22.0 |
| PAPA005 | 2014 | 15 | 19.7 | 57.0 | 30.7 | 33.4 | 27.2 | 22.8 |
| PAPA005 | 2014 | 16 | 18.4 | 61.7 | 35.5 | 33.8 | 26.8 | 23.1 |
| PAPA005 | 2014 | 17 | 18.3 | 47.4 | 29.0 | 29.4 | 24.5 | 21.4 |
| PAPA005 | 2014 | 18 | 18.1 | 53.1 | 30.3 | 27.2 | 22.8 | 20.9 |
| PAPA005 | 2014 | 19 | 17.7 | 55.2 | 31.4 | 24.3 | 21.3 | 19.7 |
| PAPA005 | 2014 | 20 | 18.0 | 56.3 | 34.1 | 36.6 | 22.1 | 20.3 |
| PAPA005 | 2014 | 21 | 17.7 | 42.4 | 25.1 | 25.8 | 21.7 | 20.2 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA005 | 2014 | 22 | 18.9 | 38.3 | 25.7 | 28.0 | 24.8 | 22.3 |
| PAPA005 | 2014 | 23 | 20.6 | 38.2 | 29.7 | 33.0 | 27.9 | 25.4 |
| PAPA006 | 2014 | 0 | 27.2 | 48.5 | 31.9 | 33.6 | 31.3 | 29.7 |
| PAPA006 | 2014 | 1 | 26.1 | 48.1 | 32.3 | 34.2 | 31.5 | 29.8 |
| PAPA006 | 2014 | 2 | 27.0 | 47.0 | 31.7 | 33.1 | 31.0 | 29.6 |
| PAPA006 | 2014 | 3 | 26.6 | 43.7 | 30.9 | 32.0 | 30.7 | 29.5 |
| PAPA006 | 2014 | 4 | 27.8 | 40.9 | 31.4 | 32.7 | 31.1 | 29.9 |
| PAPA006 | 2014 | 5 | 28.9 | 48.0 | 33.2 | 34.9 | 32.3 | 30.5 |
| PAPA006 | 2014 | 6 | 28.4 | 41.8 | 33.3 | 34.7 | 32.9 | 31.5 |
| PAPA006 | 2014 | 7 | 27.3 | 41.5 | 31.7 | 33.5 | 31.3 | 29.2 |
| PAPA006 | 2014 | 8 | 25.3 | 50.7 | 32.3 | 33.4 | 30.1 | 27.0 |
| PAPA006 | 2014 | 9 | 23.5 | 47.1 | 30.8 | 32.3 | 29.0 | 25.5 |
| PAPA006 | 2014 | 10 | 23.5 | 67.3 | 46.6 | 29.4 | 25.7 | 24.6 |
| PAPA006 | 2014 | 11 | 23.2 | 37.8 | 26.5 | 28.0 | 25.5 | 24.4 |
| PAPA006 | 2014 | 12 | 23.7 | 68.2 | 37.2 | 28.2 | 25.4 | 24.5 |
| PAPA006 | 2014 | 13 | 23.1 | 68.3 | 35.0 | 30.5 | 25.5 | 24.3 |
| PAPA006 | 2014 | 14 | 24.1 | 60.3 | 36.1 | 38.1 | 33.3 | 29.9 |
| PAPA006 | 2014 | 15 | 23.6 | 64.3 | 36.7 | 39.0 | 34.2 | 30.2 |
| PAPA006 | 2014 | 16 | 23.2 | 63.7 | 37.7 | 39.9 | 33.8 | 29.7 |
| PAPA006 | 2014 | 17 | 23.3 | 57.4 | 34.9 | 37.7 | 32.7 | 28.8 |
| PAPA006 | 2014 | 18 | 24.8 | 56.6 | 34.6 | 37.0 | 31.1 | 28.3 |
| PAPA006 | 2014 | 19 | 25.4 | 59.8 | 36.6 | 39.3 | 33.5 | 29.5 |
| PAPA006 | 2014 | 20 | 27.8 | 59.6 | 37.7 | 40.3 | 35.0 | 30.9 |
| PAPA006 | 2014 | 21 | 26.9 | 55.0 | 35.3 | 37.8 | 33.4 | 30.3 |
| PAPA006 | 2014 | 22 | 28.0 | 47.6 | 32.9 | 34.2 | 31.9 | 30.2 |
| PAPA006 | 2014 | 23 | 28.1 | 42.8 | 31.5 | 32.8 | 31.0 | 29.9 |
| PAPA007 | 2014 | 0 | 18.2 | 39.5 | 25.0 | 27.1 | 24.1 | 22.1 |
| PAPA007 | 2014 | 1 | 18.8 | 43.3 | 25.0 | 26.7 | 24.5 | 22.7 |
| PAPA007 | 2014 | 2 | 20.4 | 47.0 | 27.0 | 28.7 | 25.3 | 23.1 |
| PAPA007 | 2014 | 3 | 20.3 | 42.4 | 26.0 | 27.8 | 25.3 | 23.2 |
| PAPA007 | 2014 | 4 | 20.9 | 39.6 | 27.4 | 29.6 | 26.7 | 23.6 |
| PAPA007 | 2014 | 5 | 20.4 | 41.3 | 26.8 | 28.9 | 25.5 | 23.8 |
| PAPA007 | 2014 | 6 | 23.7 | 59.7 | 32.1 | 32.5 | 28.3 | 26.1 |
| PAPA007 | 2014 | 7 | 22.1 | 57.8 | 33.7 | 32.0 | 27.2 | 25.3 |
| PAPA007 | 2014 | 8 | 20.7 | 66.7 | 38.2 | 33.4 | 28.3 | 25.2 |
| PAPA007 | 2014 | 9 | 20.2 | 61.5 | 32.0 | 31.3 | 26.2 | 23.2 |
| PAPA007 | 2014 | 10 | 20.1 | 68.3 | 34.0 | 31.2 | 25.3 | 22.4 |
| PAPA007 | 2014 | 11 | 19.8 | 57.1 | 28.8 | 29.1 | 23.6 | 21.3 |
| PAPA007 | 2014 | 12 | 18.6 | 65.9 | 40.0 | 31.9 | 25.0 | 21.3 |
| PAPA007 | 2014 | 13 | 20.7 | 55.5 | 40.6 | 44.6 | 37.5 | 24.0 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA007 | 2014 | 14 | 28.8 | 58.9 | 43.7 | 47.3 | 41.0 | 35.4 |
| PAPA007 | 2014 | 15 | 29.6 | 59.6 | 43.6 | 47.1 | 41.2 | 35.5 |
| PAPA007 | 2014 | 16 | 21.8 | 58.6 | 39.0 | 37.1 | 32.7 | 29.0 |
| PAPA007 | 2014 | 17 | 20.4 | 60.6 | 35.3 | 37.4 | 32.6 | 28.4 |
| PAPA007 | 2014 | 18 | 19.0 | 59.2 | 34.3 | 36.8 | 32.5 | 29.0 |
| PAPA007 | 2014 | 19 | 20.6 | 53.6 | 32.8 | 35.3 | 27.9 | 24.4 |
| PAPA007 | 2014 | 20 | 22.7 | 53.3 | 33.5 | 36.6 | 31.0 | 26.6 |
| PAPA007 | 2014 | 21 | 21.0 | 48.6 | 29.5 | 31.5 | 27.8 | 25.3 |
| PAPA007 | 2014 | 22 | 20.1 | 47.5 | 28.4 | 31.0 | 26.1 | 23.5 |
| PAPA007 | 2014 | 23 | 17.3 | 41.7 | 24.9 | 27.0 | 23.9 | 21.6 |
| PAPA008 | 2014 | 0 | 18.6 | 42.0 | 23.0 | 24.2 | 21.5 | 20.5 |
| PAPA008 | 2014 | 1 | 18.0 | 48.9 | 23.8 | 25.3 | 22.7 | 21.2 |
| PAPA008 | 2014 | 2 | 17.9 | 45.5 | 25.7 | 27.9 | 24.3 | 22.3 |
| PAPA008 | 2014 | 3 | 18.3 | 42.8 | 26.0 | 28.2 | 24.7 | 22.5 |
| PAPA008 | 2014 | 4 | 19.1 | 43.6 | 26.7 | 28.7 | 25.1 | 22.7 |
| PAPA008 | 2014 | 5 | 19.7 | 50.7 | 33.7 | 37.4 | 28.7 | 23.5 |
| PAPA008 | 2014 | 6 | 18.9 | 49.2 | 27.6 | 29.4 | 25.7 | 23.6 |
| PAPA008 | 2014 | 7 | 20.5 | 49.0 | 28.7 | 31.1 | 27.4 | 24.3 |
| PAPA008 | 2014 | 8 | 19.2 | 52.0 | 31.5 | 34.2 | 29.5 | 26.0 |
| PAPA008 | 2014 | 9 | 20.1 | 54.5 | 33.5 | 37.0 | 29.9 | 25.3 |
| PAPA008 | 2014 | 10 | 17.9 | 58.0 | 32.8 | 35.9 | 30.2 | 25.9 |
| PAPA008 | 2014 | 11 | 17.1 | 58.3 | 32.9 | 35.8 | 30.9 | 26.1 |
| PAPA008 | 2014 | 12 | 17.0 | 59.0 | 35.1 | 36.8 | 29.6 | 25.3 |
| PAPA008 | 2014 | 13 | 17.1 | 58.6 | 37.1 | 40.8 | 34.2 | 27.6 |
| PAPA008 | 2014 | 14 | 16.4 | 58.3 | 38.1 | 40.6 | 33.6 | 27.2 |
| PAPA008 | 2014 | 15 | 17.1 | 60.0 | 35.2 | 38.7 | 32.0 | 26.6 |
| PAPA008 | 2014 | 16 | 15.7 | 60.3 | 41.6 | 45.2 | 38.8 | 32.5 |
| PAPA008 | 2014 | 17 | 15.4 | 58.5 | 32.8 | 36.7 | 29.5 | 22.6 |
| PAPA008 | 2014 | 18 | 15.5 | 59.3 | 23.1 | 25.2 | 20.4 | 18.2 |
| PAPA008 | 2014 | 19 | 16.2 | 53.0 | 28.0 | 28.7 | 23.1 | 20.2 |
| PAPA008 | 2014 | 20 | 17.0 | 51.1 | 31.9 | 36.2 | 22.1 | 19.3 |
| PAPA008 | 2014 | 21 | 16.7 | 45.1 | 25.9 | 28.1 | 23.7 | 20.7 |
| PAPA008 | 2014 | 22 | 16.2 | 41.8 | 25.1 | 27.0 | 23.5 | 20.6 |
| PAPA008 | 2014 | 23 | 19.4 | 39.5 | 24.0 | 25.4 | 23.1 | 21.7 |
| PAPA009 | 2014 | 0 | 19.1 | 32.6 | 24.6 | 26.2 | 24.4 | 22.6 |
| PAPA009 | 2014 | 1 | 18.3 | 35.7 | 24.5 | 26.6 | 23.7 | 21.7 |
| PAPA009 | 2014 | 2 | 18.4 | 36.6 | 25.3 | 27.2 | 24.8 | 23.0 |
| PAPA009 | 2014 | 3 | 17.6 | 38.0 | 26.7 | 29.3 | 25.6 | 23.0 |
| PAPA009 | 2014 | 4 | 19.5 | 40.4 | 29.0 | 31.9 | 27.3 | 24.4 |
| PAPA009 | 2014 | 5 | 24.8 | 46.7 | 31.4 | 33.5 | 29.7 | 27.8 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA009 | 2014 | 6 | 23.5 | 42.8 | 30.6 | 33.7 | 28.5 | 26.3 |
| PAPA009 | 2014 | 7 | 20.5 | 34.8 | 27.3 | 28.8 | 26.8 | 25.2 |
| PAPA009 | 2014 | 8 | 17.0 | 40.7 | 27.0 | 29.5 | 25.7 | 23.0 |
| PAPA009 | 2014 | 9 | 15.7 | 53.1 | 25.9 | 26.9 | 24.1 | 22.7 |
| PAPA009 | 2014 | 10 | 16.8 | 45.4 | 24.3 | 25.3 | 22.5 | 20.8 |
| PAPA009 | 2014 | 11 | 16.3 | 46.2 | 24.0 | 27.0 | 21.2 | 18.2 |
| PAPA009 | 2014 | 12 | 16.9 | 55.3 | 30.7 | 31.4 | 22.9 | 19.6 |
| PAPA009 | 2014 | 13 | 17.7 | 56.5 | 30.6 | 30.9 | 22.9 | 19.8 |
| PAPA009 | 2014 | 14 | 17.6 | 62.5 | 29.7 | 33.8 | 25.9 | 20.6 |
| PAPA009 | 2014 | 15 | 16.7 | 48.6 | 26.9 | 29.9 | 24.3 | 19.6 |
| PAPA009 | 2014 | 16 | 17.0 | 65.4 | 32.3 | 35.9 | 29.1 | 22.7 |
| PAPA009 | 2014 | 17 | 15.6 | 53.9 | 32.1 | 35.6 | 28.5 | 22.6 |
| PAPA009 | 2014 | 18 | 15.9 | 54.8 | 28.5 | 31.9 | 26.0 | 21.1 |
| PAPA009 | 2014 | 19 | 15.2 | 51.1 | 25.6 | 29.0 | 21.4 | 18.6 |
| PAPA009 | 2014 | 20 | 15.9 | 60.7 | 27.5 | 30.2 | 25.4 | 21.3 |
| PAPA009 | 2014 | 21 | 17.3 | 58.5 | 24.9 | 26.4 | 24.1 | 22.8 |
| PAPA009 | 2014 | 22 | 17.9 | 55.2 | 23.6 | 25.5 | 23.0 | 21.1 |
| PAPA009 | 2014 | 23 | 17.8 | 46.0 | 24.6 | 26.5 | 24.5 | 21.6 |
| PAPA010 | 2014 | 0 | 20.6 | 47.0 | 30.1 | 32.0 | 29.5 | 25.3 |
| PAPA010 | 2014 | 1 | 18.8 | 39.0 | 28.7 | 31.1 | 27.4 | 25.1 |
| PAPA010 | 2014 | 2 | 18.4 | 39.6 | 28.2 | 30.3 | 27.1 | 23.2 |
| PAPA010 | 2014 | 3 | 20.6 | 42.8 | 29.3 | 32.4 | 27.9 | 24.7 |
| PAPA010 | 2014 | 4 | 20.7 | 44.0 | 30.8 | 33.4 | 29.5 | 26.7 |
| PAPA010 | 2014 | 5 | 23.7 | 49.0 | 33.1 | 36.3 | 31.3 | 27.9 |
| PAPA010 | 2014 | 6 | 20.3 | 42.8 | 31.2 | 33.4 | 30.3 | 28.6 |
| PAPA010 | 2014 | 7 | 22.6 | 39.9 | 31.3 | 33.6 | 30.6 | 28.2 |
| PAPA010 | 2014 | 8 | 19.9 | 42.7 | 32.2 | 35.9 | 30.2 | 26.4 |
| PAPA010 | 2014 | 9 | 19.3 | 51.1 | 32.5 | 35.0 | 30.8 | 27.3 |
| PAPA010 | 2014 | 10 | 19.7 | 58.1 | 33.1 | 35.9 | 30.0 | 25.1 |
| PAPA010 | 2014 | 11 | 19.3 | 94.0 | 35.4 | 37.1 | 31.2 | 25.4 |
| PAPA010 | 2014 | 12 | 20.5 | 62.2 | 37.2 | 37.7 | 31.7 | 25.5 |
| PAPA010 | 2014 | 13 | 20.7 | 70.4 | 37.9 | 37.5 | 32.6 | 27.5 |
| PAPA010 | 2014 | 14 | 20.0 | 55.9 | 33.4 | 36.7 | 30.3 | 25.0 |
| PAPA010 | 2014 | 15 | 18.9 | 56.4 | 32.8 | 35.7 | 27.6 | 23.1 |
| PAPA010 | 2014 | 16 | 19.0 | 61.5 | 36.4 | 39.6 | 29.8 | 24.0 |
| PAPA010 | 2014 | 17 | 17.8 | 53.7 | 32.5 | 36.0 | 29.4 | 24.7 |
| PAPA010 | 2014 | 18 | 17.4 | 58.2 | 30.2 | 33.7 | 27.5 | 22.4 |
| PAPA010 | 2014 | 19 | 16.8 | 53.4 | 29.5 | 32.3 | 26.8 | 23.5 |
| PAPA010 | 2014 | 20 | 17.6 | 45.5 | 29.9 | 32.9 | 29.0 | 21.8 |
| PAPA010 | 2014 | 21 | 18.6 | 51.8 | 30.4 | 32.7 | 29.7 | 27.0 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA010 | 2014 | 22 | 18.7 | 56.5 | 30.6 | 33.7 | 29.4 | 25.8 |
| PAPA010 | 2014 | 23 | 19.5 | 50.2 | 30.8 | 32.8 | 29.7 | 26.4 |
| PAPA011 | 2014 | 0 | 16.2 | 45.7 | 25.9 | 21.2 | 17.7 | 17.0 |
| PAPA011 | 2014 | 1 | 15.7 | 35.0 | 17.4 | 18.1 | 17.2 | 16.2 |
| PAPA011 | 2014 | 2 | 16.1 | 40.6 | 20.1 | 17.8 | 17.0 | 16.5 |
| PAPA011 | 2014 | 3 | 16.1 | 45.4 | 31.2 | 36.4 | 17.6 | 16.8 |
| PAPA011 | 2014 | 4 | 15.3 | 40.7 | 19.6 | 17.7 | 16.7 | 15.9 |
| PAPA011 | 2014 | 5 | 15.8 | 44.1 | 26.3 | 29.7 | 18.3 | 16.5 |
| PAPA011 | 2014 | 6 | 18.1 | 50.5 | 34.7 | 38.6 | 29.1 | 21.5 |
| PAPA011 | 2014 | 7 | 18.1 | 53.1 | 36.3 | 39.4 | 24.0 | 20.0 |
| PAPA011 | 2014 | 8 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 9 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 10 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 11 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 12 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 13 | NA | NA | NA | NA | NA | NA |
| PAPA011 | 2014 | 14 | 16.9 | 59.2 | 35.4 | 36.7 | 28.6 | 21.1 |
| PAPA011 | 2014 | 15 | 16.8 | 75.9 | 55.5 | 37.9 | 26.4 | 19.3 |
| PAPA011 | 2014 | 16 | 16.7 | 60.4 | 31.6 | 33.3 | 25.9 | 19.8 |
| PAPA011 | 2014 | 17 | 16.5 | 59.6 | 32.7 | 32.1 | 25.5 | 20.4 |
| PAPA011 | 2014 | 18 | 16.9 | 66.4 | 45.0 | 31.4 | 23.9 | 19.4 |
| PAPA011 | 2014 | 19 | 15.1 | 53.4 | 32.3 | 29.1 | 19.6 | 15.9 |
| PAPA011 | 2014 | 20 | 15.0 | 48.7 | 21.5 | 21.2 | 16.3 | 15.4 |
| PAPA011 | 2014 | 21 | 15.1 | 33.5 | 17.7 | 18.5 | 16.5 | 15.7 |
| PAPA011 | 2014 | 22 | 15.1 | 47.1 | 24.3 | 19.7 | 17.5 | 15.6 |
| PAPA011 | 2014 | 23 | 16.8 | 37.1 | 19.3 | 20.3 | 18.4 | 17.5 |
| PAPA012 | 2014 | 0 | 14.9 | 50.6 | 22.4 | 19.4 | 17.9 | 16.9 |
| PAPA012 | 2014 | 1 | 14.4 | 55.2 | 21.9 | 23.7 | 17.7 | 16.1 |
| PAPA012 | 2014 | 2 | 14.6 | 39.5 | 20.5 | 23.3 | 17.8 | 15.5 |
| PAPA012 | 2014 | 3 | 14.2 | 47.6 | 20.9 | 22.9 | 19.3 | 17.5 |
| PAPA012 | 2014 | 4 | 14.5 | 44.5 | 21.9 | 23.8 | 21.1 | 18.5 |
| PAPA012 | 2014 | 5 | 15.3 | 42.3 | 24.4 | 27.2 | 23.2 | 19.3 |
| PAPA012 | 2014 | 6 | 15.2 | 71.6 | 25.9 | 28.5 | 24.0 | 21.5 |
| PAPA012 | 2014 | 7 | 15.1 | 63.3 | 25.4 | 27.3 | 22.5 | 18.9 |
| PAPA012 | 2014 | 8 | 15.0 | 51.0 | 29.3 | 29.9 | 21.4 | 17.2 |
| PAPA012 | 2014 | 9 | 15.3 | 64.2 | 27.5 | 29.0 | 17.3 | 16.2 |
| PAPA012 | 2014 | 10 | 14.9 | 54.3 | 27.3 | 26.7 | 17.3 | 16.4 |
| PAPA012 | 2014 | 11 | 15.2 | 45.9 | 22.2 | 21.4 | 18.3 | 16.5 |
| PAPA012 | 2014 | 12 | 15.2 | 56.8 | 27.3 | 25.0 | 18.4 | 16.6 |
| PAPA012 | 2014 | 13 | 15.9 | 59.8 | 31.4 | 29.1 | 22.1 | 18.6 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA012 | 2014 | 14 | 15.4 | 51.7 | 32.2 | 32.0 | 24.8 | 19.0 |
| PAPA012 | 2014 | 15 | 15.6 | 49.5 | 27.8 | 31.8 | 23.3 | 18.5 |
| PAPA012 | 2014 | 16 | 14.5 | 53.7 | 28.0 | 29.4 | 23.1 | 19.2 |
| PAPA012 | 2014 | 17 | 14.2 | 66.3 | 26.2 | 29.5 | 23.0 | 18.4 |
| PAPA012 | 2014 | 18 | 14.4 | 68.8 | 24.5 | 23.6 | 18.1 | 16.1 |
| PAPA012 | 2014 | 19 | 14.7 | 47.7 | 24.3 | 23.8 | 19.7 | 17.8 |
| PAPA012 | 2014 | 20 | 14.3 | 46.5 | 22.9 | 18.5 | 16.3 | 15.1 |
| PAPA012 | 2014 | 21 | 14.5 | 41.2 | 21.2 | 22.8 | 18.0 | 16.6 |
| PAPA012 | 2014 | 22 | 14.2 | 61.3 | 22.2 | 23.2 | 17.1 | 15.8 |
| PAPA012 | 2014 | 23 | 14.7 | 44.0 | 23.8 | 21.0 | 18.7 | 16.3 |
| PAPA013 | 2014 | 0 | 22.0 | 44.8 | 29.1 | 31.4 | 27.6 | 24.5 |
| PAPA013 | 2014 | 1 | 20.4 | 38.5 | 27.1 | 29.0 | 26.7 | 24.7 |
| PAPA013 | 2014 | 2 | 20.8 | 43.3 | 29.7 | 32.5 | 28.8 | 25.8 |
| PAPA013 | 2014 | 3 | 16.7 | 50.5 | 27.2 | 30.1 | 25.9 | 23.7 |
| PAPA013 | 2014 | 4 | 16.7 | 40.7 | 29.1 | 31.3 | 27.8 | 25.5 |
| PAPA013 | 2014 | 5 | 17.3 | 41.2 | 28.1 | 30.4 | 27.0 | 23.8 |
| PAPA013 | 2014 | 6 | 17.3 | 48.0 | 29.3 | 30.8 | 27.4 | 24.7 |
| PAPA013 | 2014 | 7 | 15.7 | 70.9 | 42.1 | 30.1 | 25.7 | 24.2 |
| PAPA013 | 2014 | 8 | 15.2 | 60.5 | 33.0 | 31.0 | 24.8 | 19.3 |
| PAPA013 | 2014 | 9 | 15.2 | 53.6 | 27.6 | 27.3 | 20.1 | 17.4 |
| PAPA013 | 2014 | 10 | 15.7 | 54.7 | 26.6 | 24.8 | 17.7 | 16.8 |
| PAPA013 | 2014 | 11 | 16.7 | 65.8 | 21.4 | 22.3 | 19.5 | 18.0 |
| PAPA013 | 2014 | 12 | 16.8 | 66.4 | 26.8 | 26.1 | 21.8 | 20.0 |
| PAPA013 | 2014 | 13 | 16.6 | 51.1 | 25.8 | 27.1 | 23.5 | 21.6 |
| PAPA013 | 2014 | 14 | 16.3 | 52.7 | 31.8 | 32.9 | 25.9 | 21.4 |
| PAPA013 | 2014 | 15 | 16.2 | 52.6 | 29.2 | 32.2 | 26.6 | 22.1 |
| PAPA013 | 2014 | 16 | 15.9 | 56.5 | 29.1 | 31.3 | 25.7 | 21.5 |
| PAPA013 | 2014 | 17 | 15.1 | 50.3 | 27.4 | 28.6 | 22.3 | 17.7 |
| PAPA013 | 2014 | 18 | 14.5 | 59.9 | 23.1 | 25.1 | 18.9 | 16.5 |
| PAPA013 | 2014 | 19 | 14.3 | 46.8 | 22.4 | 24.8 | 20.4 | 18.2 |
| PAPA013 | 2014 | 20 | 14.9 | 52.9 | 29.4 | 28.8 | 21.6 | 17.3 |
| PAPA013 | 2014 | 21 | 15.8 | 45.4 | 23.0 | 24.6 | 19.9 | 17.7 |
| PAPA013 | 2014 | 22 | 16.8 | 65.1 | 27.6 | 26.2 | 21.4 | 19.2 |
| PAPA013 | 2014 | 23 | 18.0 | 45.8 | 28.7 | 31.0 | 25.4 | 21.8 |
| PAPA014 | 2014 | 0 | 25.1 | 39.7 | 29.7 | 31.5 | 29.1 | 26.8 |
| PAPA014 | 2014 | 1 | 24.7 | 37.4 | 28.6 | 30.2 | 28.3 | 26.6 |
| PAPA014 | 2014 | 2 | 24.5 | 39.4 | 28.3 | 29.7 | 28.0 | 26.5 |
| PAPA014 | 2014 | 3 | 24.9 | 41.3 | 30.1 | 31.8 | 29.6 | 27.1 |
| PAPA014 | 2014 | 4 | 26.3 | 40.4 | 32.0 | 33.4 | 31.7 | 30.3 |
| PAPA014 | 2014 | 5 | 25.8 | 43.4 | 32.7 | 34.8 | 31.9 | 29.7 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA014 | 2014 | 6 | 27.2 | 44.0 | 30.9 | 32.5 | 30.4 | 28.9 |
| PAPA014 | 2014 | 7 | 26.6 | 43.6 | 34.0 | 36.7 | 33.1 | 30.0 |
| PAPA014 | 2014 | 8 | 27.3 | 43.4 | 32.1 | 34.7 | 31.0 | 28.6 |
| PAPA014 | 2014 | 9 | 23.3 | 41.5 | 28.4 | 30.1 | 27.7 | 25.0 |
| PAPA014 | 2014 | 10 | 21.0 | 30.4 | 25.0 | 26.9 | 25.2 | 21.5 |
| PAPA014 | 2014 | 11 | 21.0 | 34.0 | 22.6 | 23.7 | 22.0 | 21.4 |
| PAPA014 | 2014 | 12 | 21.3 | 38.7 | 24.2 | 26.1 | 22.9 | 21.9 |
| PAPA014 | 2014 | 13 | 21.3 | 59.2 | 32.0 | 34.6 | 23.0 | 22.1 |
| PAPA014 | 2014 | 14 | 22.4 | 60.0 | 36.7 | 38.5 | 35.4 | 31.7 |
| PAPA014 | 2014 | 15 | 21.6 | 63.7 | 36.5 | 38.7 | 35.2 | 30.1 |
| PAPA014 | 2014 | 16 | 21.9 | 65.2 | 39.8 | 40.0 | 35.6 | 30.9 |
| PAPA014 | 2014 | 17 | 21.9 | 61.6 | 35.6 | 37.9 | 34.5 | 30.5 |
| PAPA014 | 2014 | 18 | 21.8 | 62.1 | 37.9 | 39.1 | 32.4 | 28.1 |
| PAPA014 | 2014 | 19 | 23.3 | 63.3 | 39.1 | 42.6 | 37.1 | 28.6 |
| PAPA014 | 2014 | 20 | 25.5 | 59.7 | 38.3 | 41.4 | 35.4 | 29.8 |
| PAPA014 | 2014 | 21 | 26.0 | 56.6 | 36.6 | 39.7 | 33.9 | 29.4 |
| PAPA014 | 2014 | 22 | 23.8 | 48.4 | 30.3 | 32.1 | 29.1 | 27.1 |
| PAPA014 | 2014 | 23 | 24.2 | 42.7 | 30.3 | 31.7 | 29.6 | 28.1 |
| PAPA015 | 2014 | 0 | 13.5 | 38.0 | 18.1 | 19.2 | 17.2 | 16.2 |
| PAPA015 | 2014 | 1 | 13.6 | 42.4 | 21.3 | 20.3 | 17.5 | 16.1 |
| PAPA015 | 2014 | 2 | 13.5 | 40.8 | 18.4 | 17.6 | 16.0 | 14.5 |
| PAPA015 | 2014 | 3 | 13.7 | 37.5 | 17.5 | 18.6 | 17.0 | 15.2 |
| PAPA015 | 2014 | 4 | 15.7 | 24.8 | 18.4 | 19.5 | 18.2 | 17.0 |
| PAPA015 | 2014 | 5 | 15.8 | 41.8 | 21.2 | 22.7 | 19.4 | 17.7 |
| PAPA015 | 2014 | 6 | 16.2 | 59.8 | 30.7 | 26.8 | 21.2 | 18.7 |
| PAPA015 | 2014 | 7 | 15.3 | 38.3 | 24.3 | 27.8 | 20.1 | 18.2 |
| PAPA015 | 2014 | 8 | 16.7 | 37.7 | 24.0 | 27.0 | 20.2 | 18.2 |
| PAPA015 | 2014 | 9 | 17.1 | 56.2 | 32.8 | 32.2 | 22.1 | 18.7 |
| PAPA015 | 2014 | 10 | 15.5 | 39.8 | 20.2 | 21.4 | 17.7 | 16.2 |
| PAPA015 | 2014 | 11 | 15.1 | 62.0 | 33.3 | 23.4 | 17.2 | 15.9 |
| PAPA015 | 2014 | 12 | 15.2 | 59.0 | 33.5 | 33.4 | 23.7 | 17.7 |
| PAPA015 | 2014 | 13 | 15.2 | 51.1 | 31.7 | 35.4 | 26.0 | 18.9 |
| PAPA015 | 2014 | 14 | 15.9 | 51.9 | 32.6 | 36.4 | 27.4 | 19.9 |
| PAPA015 | 2014 | 15 | 15.6 | 56.4 | 35.6 | 39.0 | 31.3 | 22.5 |
| PAPA015 | 2014 | 16 | 19.8 | 54.2 | 36.9 | 40.5 | 33.2 | 26.8 |
| PAPA015 | 2014 | 17 | 16.4 | 49.9 | 34.5 | 38.2 | 30.9 | 24.6 |
| PAPA015 | 2014 | 18 | 16.5 | 47.0 | 32.7 | 36.2 | 29.8 | 24.1 |
| PAPA015 | 2014 | 19 | 13.8 | 57.5 | 27.4 | 29.6 | 19.2 | 14.4 |
| PAPA015 | 2014 | 20 | 13.7 | 40.8 | 15.6 | 16.0 | 14.5 | 14.0 |
| PAPA015 | 2014 | 21 | 13.6 | 42.7 | 19.5 | 15.8 | 14.4 | 13.9 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA015 | 2014 | 22 | 13.5 | 52.3 | 22.5 | 19.5 | 14.9 | 13.9 |
| PAPA015 | 2014 | 23 | 13.6 | 33.8 | 17.9 | 18.9 | 17.3 | 16.3 |
| PAPA016 | 2014 | 0 | 14.7 | 49.7 | 20.5 | 22.8 | 18.5 | 16.3 |
| PAPA016 | 2014 | 1 | 15.2 | 50.2 | 23.3 | 27.0 | 19.9 | 16.5 |
| PAPA016 | 2014 | 2 | 15.2 | 44.4 | 21.7 | 24.2 | 20.6 | 17.9 |
| PAPA016 | 2014 | 3 | 15.1 | 42.5 | 20.3 | 22.8 | 18.4 | 17.5 |
| PAPA016 | 2014 | 4 | 15.1 | 41.4 | 20.9 | 23.3 | 18.8 | 16.5 |
| PAPA016 | 2014 | 5 | 15.2 | 43.4 | 27.7 | 29.5 | 23.9 | 19.7 |
| PAPA016 | 2014 | 6 | 15.3 | 49.8 | 23.7 | 25.3 | 22.3 | 19.7 |
| PAPA016 | 2014 | 7 | 15.6 | 70.5 | 30.1 | 27.3 | 25.1 | 23.0 |
| PAPA016 | 2014 | 8 | 16.0 | 47.5 | 29.1 | 31.7 | 26.1 | 23.1 |
| PAPA016 | 2014 | 9 | 16.2 | 55.7 | 28.8 | 31.3 | 27.2 | 23.7 |
| PAPA016 | 2014 | 10 | 17.5 | 55.4 | 33.5 | 36.9 | 30.6 | 21.3 |
| PAPA016 | 2014 | 11 | 17.5 | 55.5 | 36.6 | 40.1 | 33.3 | 27.0 |
| PAPA016 | 2014 | 12 | 17.0 | 57.5 | 33.3 | 35.9 | 29.9 | 26.0 |
| PAPA016 | 2014 | 13 | 16.4 | 91.5 | 43.7 | 47.3 | 34.2 | 26.6 |
| PAPA016 | 2014 | 14 | 16.4 | 81.5 | 42.3 | 42.4 | 33.4 | 27.7 |
| PAPA016 | 2014 | 15 | 16.7 | 55.7 | 36.1 | 38.2 | 34.0 | 29.6 |
| PAPA016 | 2014 | 16 | 15.6 | 73.2 | 41.0 | 39.9 | 33.0 | 28.0 |
| PAPA016 | 2014 | 17 | 15.4 | 92.8 | 41.7 | 42.1 | 29.8 | 24.3 |
| PAPA016 | 2014 | 18 | 16.2 | 56.6 | 29.5 | 32.2 | 25.7 | 21.0 |
| PAPA016 | 2014 | 19 | 15.3 | 52.5 | 25.3 | 28.1 | 23.1 | 19.4 |
| PAPA016 | 2014 | 20 | 15.1 | 57.2 | 25.8 | 27.4 | 20.6 | 17.1 |
| PAPA016 | 2014 | 21 | 14.9 | 49.2 | 25.4 | 24.5 | 19.3 | 16.4 |
| PAPA016 | 2014 | 22 | 14.8 | 46.1 | 24.9 | 23.9 | 18.2 | 16.1 |
| PAPA016 | 2014 | 23 | 14.8 | 46.0 | 21.3 | 20.6 | 17.3 | 15.8 |
| PAPA017 | 2014 | 0 | 23.5 | 40.7 | 31.5 | 33.2 | 31.1 | 29.3 |
| PAPA017 | 2014 | 1 | 24.4 | 40.9 | 31.8 | 33.7 | 31.4 | 29.3 |
| PAPA017 | 2014 | 2 | 27.7 | 45.8 | 33.6 | 35.3 | 33.3 | 31.4 |
| PAPA017 | 2014 | 3 | 28.1 | 43.4 | 34.5 | 37.0 | 33.5 | 31.7 |
| PAPA017 | 2014 | 4 | 26.3 | 45.3 | 34.1 | 36.5 | 32.9 | 30.6 |
| PAPA017 | 2014 | 5 | 29.5 | 42.6 | 34.8 | 36.3 | 34.4 | 32.8 |
| PAPA017 | 2014 | 6 | 28.9 | 55.9 | 36.4 | 37.9 | 35.1 | 32.8 |
| PAPA017 | 2014 | 7 | 29.9 | 59.0 | 36.2 | 37.2 | 35.0 | 33.3 |
| PAPA017 | 2014 | 8 | 28.5 | 56.9 | 36.2 | 37.9 | 35.1 | 32.2 |
| PAPA017 | 2014 | 9 | 22.9 | 52.9 | 31.9 | 32.9 | 28.7 | 26.3 |
| PAPA017 | 2014 | 10 | 17.4 | 51.3 | 29.1 | 30.7 | 26.2 | 24.5 |
| PAPA017 | 2014 | 11 | 16.7 | 68.0 | 31.3 | 28.3 | 22.8 | 21.2 |
| PAPA017 | 2014 | 12 | 17.9 | 61.8 | 36.1 | 31.3 | 24.7 | 20.7 |
| PAPA017 | 2014 | 13 | 19.4 | 62.5 | 36.2 | 36.2 | 28.8 | 23.8 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA017 | 2014 | 14 | 18.9 | 48.0 | 29.9 | 33.2 | 26.4 | 22.1 |
| PAPA017 | 2014 | 15 | 17.6 | 47.0 | 24.3 | 26.1 | 22.8 | 20.1 |
| PAPA017 | 2014 | 16 | 18.3 | 54.9 | 29.8 | 31.5 | 26.4 | 22.8 |
| PAPA017 | 2014 | 17 | 17.9 | 64.0 | 32.0 | 30.0 | 24.1 | 21.0 |
| PAPA017 | 2014 | 18 | 16.9 | 51.5 | 28.4 | 29.5 | 22.9 | 20.3 |
| PAPA017 | 2014 | 19 | 15.2 | 53.8 | 29.8 | 29.7 | 23.1 | 20.4 |
| PAPA017 | 2014 | 20 | 18.2 | 49.0 | 29.3 | 29.8 | 25.9 | 24.3 |
| PAPA017 | 2014 | 21 | 19.9 | 45.2 | 28.7 | 30.1 | 26.6 | 25.0 |
| PAPA017 | 2014 | 22 | 21.8 | 38.2 | 29.4 | 31.2 | 28.9 | 26.7 |
| PAPA017 | 2014 | 23 | 24.4 | 38.5 | 32.0 | 34.0 | 31.7 | 29.3 |
| PAPA018 | 2014 | 0 | 13.8 | 44.6 | 20.8 | 22.7 | 18.1 | 15.1 |
| PAPA018 | 2014 | 1 | 13.5 | 37.9 | 18.0 | 19.4 | 16.6 | 15.0 |
| PAPA018 | 2014 | 2 | 13.6 | 20.2 | 15.2 | 16.0 | 15.1 | 14.6 |
| PAPA018 | 2014 | 3 | 13.6 | 26.9 | 15.8 | 16.7 | 15.2 | 14.7 |
| PAPA018 | 2014 | 4 | 13.8 | 32.9 | 16.4 | 17.4 | 15.6 | 14.5 |
| PAPA018 | 2014 | 5 | 14.0 | 34.2 | 17.3 | 18.9 | 16.1 | 15.0 |
| PAPA018 | 2014 | 6 | 15.8 | 45.1 | 28.9 | 32.7 | 25.6 | 19.8 |
| PAPA018 | 2014 | 7 | 15.6 | 66.6 | 38.4 | 36.6 | 26.3 | 20.7 |
| PAPA018 | 2014 | 8 | 16.9 | 64.5 | 36.9 | 32.6 | 22.8 | 19.4 |
| PAPA018 | 2014 | 9 | 15.9 | 73.1 | 53.9 | 38.8 | 20.5 | 18.1 |
| PAPA018 | 2014 | 10 | 15.3 | 51.0 | 26.7 | 27.6 | 19.2 | 16.5 |
| PAPA018 | 2014 | 11 | 15.4 | 46.8 | 24.8 | 26.7 | 20.1 | 17.5 |
| PAPA018 | 2014 | 12 | 16.7 | 51.3 | 30.0 | 32.2 | 24.9 | 19.9 |
| PAPA018 | 2014 | 13 | 16.0 | 48.0 | 27.9 | 31.4 | 23.9 | 19.2 |
| PAPA018 | 2014 | 14 | 16.6 | 49.5 | 32.0 | 35.9 | 28.1 | 22.1 |
| PAPA018 | 2014 | 15 | 15.9 | 49.9 | 31.2 | 34.9 | 27.5 | 21.3 |
| PAPA018 | 2014 | 16 | 15.9 | 48.8 | 31.6 | 34.3 | 26.7 | 21.2 |
| PAPA018 | 2014 | 17 | 15.6 | 46.1 | 30.0 | 33.4 | 25.4 | 20.0 |
| PAPA018 | 2014 | 18 | 14.7 | 56.2 | 31.2 | 31.6 | 23.9 | 20.1 |
| PAPA018 | 2014 | 19 | 14.0 | 50.2 | 27.3 | 27.7 | 20.2 | 16.5 |
| PAPA018 | 2014 | 20 | 14.8 | 62.8 | 30.0 | 30.0 | 18.9 | 16.7 |
| PAPA018 | 2014 | 21 | 14.4 | 45.0 | 22.3 | 22.2 | 18.7 | 15.5 |
| PAPA018 | 2014 | 22 | 14.1 | 46.3 | 21.6 | 23.8 | 16.5 | 15.1 |
| PAPA018 | 2014 | 23 | 13.9 | 22.4 | 17.3 | 19.0 | 16.9 | 15.4 |
| PAPA019 | 2014 | 0 | 14.5 | 48.3 | 25.2 | 26.6 | 21.3 | 16.1 |
| PAPA019 | 2014 | 1 | 14.5 | 44.9 | 21.4 | 23.3 | 18.0 | 16.4 |
| PAPA019 | 2014 | 2 | 14.5 | 28.7 | 16.3 | 17.3 | 15.9 | 15.2 |
| PAPA019 | 2014 | 3 | 14.5 | 33.6 | 16.3 | 16.3 | 15.2 | 14.8 |
| PAPA019 | 2014 | 4 | 14.6 | 28.5 | 15.7 | 16.0 | 15.3 | 14.9 |
| PAPA019 | 2014 | 5 | 14.7 | 54.5 | 22.3 | 17.6 | 15.5 | 15.0 |

| Appendix C. Hourly dBA Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Hour | Lmin | Lmax | Leq | L10 | L50 | L90 |
| PAPA019 | 2014 | 6 | 15.9 | 50.4 | 31.0 | 32.6 | 20.7 | 17.7 |
| PAPA019 | 2014 | 7 | 15.7 | 67.3 | 38.8 | 30.9 | 21.8 | 17.9 |
| PAPA019 | 2014 | 8 | 16.1 | 53.6 | 32.4 | 29.7 | 18.5 | 17.1 |
| PAPA019 | 2014 | 9 | 16.2 | 55.3 | 32.0 | 27.8 | 18.6 | 17.1 |
| PAPA019 | 2014 | 10 | 16.5 | 60.1 | 36.7 | 25.6 | 19.7 | 17.6 |
| PAPA019 | 2014 | 11 | 16.4 | 45.4 | 28.9 | 32.5 | 20.8 | 17.8 |
| PAPA019 | 2014 | 12 | 16.1 | 52.2 | 31.7 | 34.1 | 25.8 | 20.3 |
| PAPA019 | 2014 | 13 | 15.8 | 59.3 | 33.5 | 31.4 | 23.5 | 19.2 |
| PAPA019 | 2014 | 14 | 16.2 | 52.4 | 33.2 | 35.4 | 27.8 | 21.7 |
| PAPA019 | 2014 | 15 | 15.8 | 51.0 | 31.0 | 34.8 | 26.6 | 20.4 |
| PAPA019 | 2014 | 16 | 15.9 | 47.9 | 30.5 | 33.9 | 26.6 | 20.7 |
| PAPA019 | 2014 | 17 | 15.4 | 55.0 | 33.1 | 33.7 | 26.3 | 21.0 |
| PAPA019 | 2014 | 18 | 15.3 | 54.9 | 31.9 | 29.6 | 23.0 | 19.1 |
| PAPA019 | 2014 | 19 | 15.1 | 47.3 | 24.3 | 24.1 | 17.3 | 15.7 |
| PAPA019 | 2014 | 20 | 14.8 | 37.6 | 19.2 | 20.7 | 16.8 | 15.5 |
| PAPA019 | 2014 | 21 | 14.7 | 40.9 | 21.2 | 18.7 | 15.8 | 15.2 |
| PAPA019 | 2014 | 22 | 14.6 | 51.9 | 21.2 | 21.4 | 15.2 | 14.8 |
| PAPA019 | 2014 | 23 | 14.6 | 26.7 | 16.2 | 17.0 | 16.0 | 15.1 |

## Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013.

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA001 | 2013 | 12.5 | 44.9 | 48.2 | 43.3 | 38.7 | 22.0 | 73.0 |
| PAPA001 | 2013 | 15.8 | 47.0 | 49.6 | 46.0 | 42.2 | 27.0 | 70.5 |
| PAPA001 | 2013 | 20 | 53.2 | 56.0 | 52.2 | 48.1 | 34.6 | 74.0 |
| PAPA001 | 2013 | 25 | 50.6 | 53.2 | 49.0 | 45.7 | 34.9 | 67.2 |
| PAPA001 | 2013 | 31.5 | 63.0 | 66.4 | 61.5 | 56.1 | 40.2 | 75.0 |
| PAPA001 | 2013 | 40 | 50.2 | 52.5 | 49.8 | 47.3 | 32.8 | 66.1 |
| PAPA001 | 2013 | 50 | 53.3 | 55.5 | 52.9 | 50.1 | 35.5 | 68.7 |
| PAPA001 | 2013 | 63 | 52.5 | 54.8 | 52.0 | 49.6 | 34.9 | 69.5 |
| PAPA001 | 2013 | 80 | 49.5 | 51.4 | 48.3 | 45.9 | 29.0 | 71.7 |
| PAPA001 | 2013 | 100 | 47.2 | 49.4 | 45.9 | 43.0 | 28.8 | 66.5 |
| PAPA001 | 2013 | 125 | 42.8 | 44.6 | 40.4 | 37.6 | 23.7 | 67.1 |
| PAPA001 | 2013 | 160 | 39.7 | 41.3 | 36.7 | 32.2 | 19.5 | 67.1 |
| PAPA001 | 2013 | 200 | 38.8 | 39.8 | 35.4 | 30.1 | 17.7 | 66.6 |
| PAPA001 | 2013 | 250 | 37.1 | 38.3 | 33.2 | 28.5 | 13.7 | 61.5 |
| PAPA001 | 2013 | 315 | 34.2 | 36.3 | 31.6 | 26.1 | 10.8 | 57.2 |
| PAPA001 | 2013 | 400 | 32.7 | 35.0 | 30.4 | 24.8 | 8.0 | 55.6 |
| PAPA001 | 2013 | 500 | 24.9 | 27.6 | 22.7 | 16.5 | 3.5 | 53.2 |
| PAPA001 | 2013 | 630 | 22.1 | 23.0 | 18.5 | 13.5 | 1.8 | 50.8 |
| PAPA001 | 2013 | 800 | 22.7 | 24.5 | 19.8 | 14.7 | 2.1 | 49.8 |
| PAPA001 | 2013 | 1000 | 24.4 | 26.0 | 21.0 | 15.8 | 2.4 | 48.3 |
| PAPA001 | 2013 | 1250 | 23.2 | 26.3 | 20.7 | 14.9 | 2.2 | 46.8 |
| PAPA001 | 2013 | 1600 | 21.7 | 24.5 | 19.4 | 13.1 | 1.6 | 44.8 |
| PAPA001 | 2013 | 2000 | 20.5 | 21.8 | 17.3 | 12.6 | 1.8 | 58.6 |
| PAPA001 | 2013 | 2500 | 12.8 | 15.2 | 10.2 | 6.3 | 2.3 | 63.1 |
| PAPA001 | 2013 | 3150 | 8.6 | 9.7 | 5.2 | 4.1 | 3.0 | 57.3 |
| PAPA001 | 2013 | 4000 | 5.3 | 5.2 | 4.5 | 4.2 | 3.7 | 47.8 |
| PAPA001 | 2013 | 5000 | 5.4 | 5.3 | 5.0 | 4.8 | 4.3 | 47.3 |
| PAPA001 | 2013 | 6300 | 5.4 | 5.5 | 5.3 | 5.2 | 4.2 | 44.6 |
| PAPA001 | 2013 | 8000 | 5.4 | 5.5 | 5.3 | 5.2 | 3.4 | 43.8 |
| PAPA001 | 2013 | 10000 | 5.0 | 5.1 | 5.0 | 4.8 | 2.3 | 41.6 |
| PAPA001 | 2013 | 12500 | 4.2 | 4.3 | 4.2 | 4.1 | 1.6 | 39.8 |
| PAPA001 | 2013 | 16000 | 3.2 | 3.3 | 3.2 | 3.1 | 0.6 | 37.4 |
| PAPA001 | 2013 | 20000 | 1.8 | 1.9 | 1.8 | 1.7 | 1.3 | 33.4 |
| PAPA002 | 2013 | 12.5 | 50.8 | 54.5 | 47.3 | 41.0 | 23.9 | 78.7 |
| PAPA002 | 2013 | 15.8 | 49.3 | 51.9 | 48.1 | 44.3 | 29.8 | 75.3 |
| PAPA002 | 2013 | 20 | 55.9 | 58.2 | 54.8 | 50.6 | 36.9 | 77.4 |
| PAPA002 | 2013 | 25 | 51.7 | 55.7 | 46.5 | 42.7 | 30.4 | 74.0 |
| PAPA002 | 2013 | 31.5 | 48.9 | 52.2 | 47.1 | 43.0 | 31.2 | 72.5 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA002 | 2013 | 40 | 44.3 | 46.5 | 43.5 | 40.8 | 29.4 | 70.4 |
| PAPA002 | 2013 | 50 | 44.2 | 46.2 | 43.3 | 40.8 | 30.6 | 67.4 |
| PAPA002 | 2013 | 63 | 41.9 | 44.2 | 40.2 | 37.0 | 27.7 | 65.6 |
| PAPA002 | 2013 | 80 | 39.6 | 42.5 | 37.2 | 34.0 | 23.3 | 71.6 |
| PAPA002 | 2013 | 100 | 37.6 | 39.9 | 35.6 | 32.2 | 21.6 | 70.5 |
| PAPA002 | 2013 | 125 | 35.6 | 37.2 | 32.9 | 30.0 | 18.9 | 62.4 |
| PAPA002 | 2013 | 160 | 35.3 | 36.5 | 31.5 | 27.4 | 16.7 | 62.1 |
| PAPA002 | 2013 | 200 | 31.5 | 32.5 | 28.8 | 25.4 | 13.6 | 59.3 |
| PAPA002 | 2013 | 250 | 28.7 | 31.4 | 25.9 | 22.2 | 12.2 | 55.4 |
| PAPA002 | 2013 | 315 | 26.3 | 29.0 | 24.5 | 20.8 | 10.3 | 55.0 |
| PAPA002 | 2013 | 400 | 23.6 | 25.8 | 20.9 | 16.4 | 5.0 | 54.0 |
| PAPA002 | 2013 | 500 | 19.7 | 21.5 | 16.7 | 12.2 | 1.0 | 51.5 |
| PAPA002 | 2013 | 630 | 17.1 | 19.9 | 13.4 | 9.0 | -0.7 | 46.9 |
| PAPA002 | 2013 | 800 | 14.6 | 18.0 | 9.9 | 5.5 | -1.5 | 42.0 |
| PAPA002 | 2013 | 1000 | 12.7 | 15.2 | 7.1 | 2.8 | -1.3 | 42.5 |
| PAPA002 | 2013 | 1250 | 9.7 | 10.6 | 4.0 | 1.5 | -0.9 | 40.5 |
| PAPA002 | 2013 | 1600 | 6.1 | 8.1 | 2.5 | 1.5 | -0.2 | 41.8 |
| PAPA002 | 2013 | 2000 | 3.9 | 4.5 | 2.5 | 1.8 | 0.6 | 42.4 |
| PAPA002 | 2013 | 2500 | 4.3 | 4.4 | 2.9 | 2.5 | 1.5 | 44.2 |
| PAPA002 | 2013 | 3150 | 4.0 | 4.1 | 3.4 | 3.1 | 2.3 | 41.9 |
| PAPA002 | 2013 | 4000 | 5.7 | 4.8 | 4.0 | 3.7 | 3.1 | 43.5 |
| PAPA002 | 2013 | 5000 | 6.7 | 5.1 | 4.4 | 4.2 | 3.7 | 53.6 |
| PAPA002 | 2013 | 6300 | 5.4 | 4.9 | 4.6 | 4.4 | 2.7 | 53.7 |
| PAPA002 | 2013 | 8000 | 4.6 | 4.7 | 4.5 | 4.4 | 2.1 | 38.2 |
| PAPA002 | 2013 | 10000 | 4.3 | 4.4 | 4.3 | 4.1 | 1.8 | 36.1 |
| PAPA002 | 2013 | 12500 | 3.8 | 3.9 | 3.8 | 3.6 | 0.4 | 35.8 |
| PAPA002 | 2013 | 16000 | 3.0 | 3.1 | 3.0 | 2.9 | 0.3 | 34.9 |
| PAPA002 | 2013 | 20000 | 1.8 | 1.8 | 1.8 | 1.7 | 1.1 | 34.8 |
| PAPA003 | 2013 | 12.5 | 49.1 | 51.4 | 44.9 | 39.1 | 21.8 | 81.6 |
| PAPA003 | 2013 | 15.8 | 48.8 | 51.3 | 46.5 | 42.0 | 29.0 | 77.8 |
| PAPA003 | 2013 | 20 | 53.1 | 56.2 | 51.3 | 47.0 | 34.9 | 74.4 |
| PAPA003 | 2013 | 25 | 48.5 | 51.9 | 46.2 | 42.3 | 31.3 | 73.2 |
| PAPA003 | 2013 | 31.5 | 52.7 | 56.1 | 51.5 | 46.3 | 33.3 | 68.2 |
| PAPA003 | 2013 | 40 | 45.1 | 47.8 | 44.1 | 40.0 | 27.5 | 66.4 |
| PAPA003 | 2013 | 50 | 43.4 | 45.8 | 42.1 | 37.7 | 26.9 | 64.8 |
| PAPA003 | 2013 | 63 | 42.9 | 45.4 | 41.1 | 37.2 | 24.8 | 67.1 |
| PAPA003 | 2013 | 80 | 40.9 | 43.4 | 39.0 | 34.1 | 14.5 | 69.1 |
| PAPA003 | 2013 | 100 | 38.6 | 40.8 | 36.4 | 32.3 | 16.9 | 70.5 |
| PAPA003 | 2013 | 125 | 36.5 | 38.0 | 33.9 | 30.5 | 16.4 | 63.0 |
| PAPA003 | 2013 | 160 | 35.0 | 36.0 | 31.5 | 27.8 | 16.0 | 65.3 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA003 | 2013 | 200 | 32.4 | 33.1 | 29.1 | 25.3 | 13.7 | 60.1 |
| PAPA003 | 2013 | 250 | 29.2 | 31.2 | 25.9 | 22.7 | 8.7 | 56.4 |
| PAPA003 | 2013 | 315 | 27.2 | 29.1 | 24.5 | 20.3 | 7.3 | 53.8 |
| PAPA003 | 2013 | 400 | 23.9 | 26.4 | 21.0 | 17.0 | 2.9 | 50.7 |
| PAPA003 | 2013 | 500 | 21.0 | 22.8 | 16.8 | 12.4 | -0.1 | 50.8 |
| PAPA003 | 2013 | 630 | 18.3 | 20.2 | 13.9 | 8.6 | -1.4 | 47.6 |
| PAPA003 | 2013 | 800 | 15.0 | 17.7 | 10.7 | 5.3 | -2.0 | 41.6 |
| PAPA003 | 2013 | 1000 | 12.7 | 15.2 | 8.5 | 3.5 | -1.5 | 39.4 |
| PAPA003 | 2013 | 1250 | 9.7 | 12.2 | 5.1 | 1.8 | -1.0 | 39.4 |
| PAPA003 | 2013 | 1600 | 6.8 | 9.3 | 2.8 | 1.5 | -0.2 | 36.4 |
| PAPA003 | 2013 | 2000 | 5.0 | 7.1 | 2.4 | 1.8 | 0.5 | 39.4 |
| PAPA003 | 2013 | 2500 | 3.8 | 4.8 | 3.0 | 2.5 | 1.5 | 39.6 |
| PAPA003 | 2013 | 3150 | 5.0 | 4.4 | 3.5 | 3.2 | 2.3 | 38.6 |
| PAPA003 | 2013 | 4000 | 5.7 | 5.0 | 4.2 | 4.0 | 3.3 | 50.8 |
| PAPA003 | 2013 | 5000 | 6.1 | 5.4 | 4.8 | 4.6 | 3.6 | 57.9 |
| PAPA003 | 2013 | 6300 | 5.5 | 5.4 | 5.1 | 4.9 | 3.5 | 48.8 |
| PAPA003 | 2013 | 8000 | 5.3 | 5.3 | 5.1 | 5.0 | 1.7 | 41.3 |
| PAPA003 | 2013 | 10000 | 4.9 | 5.0 | 4.8 | 4.7 | 1.4 | 38.4 |
| PAPA003 | 2013 | 12500 | 4.2 | 4.3 | 4.2 | 4.1 | 1.1 | 37.8 |
| PAPA003 | 2013 | 16000 | 3.3 | 3.4 | 3.3 | 3.2 | 0.4 | 35.7 |
| PAPA003 | 2013 | 20000 | 2.0 | 2.1 | 1.9 | 1.8 | 0.9 | 31.8 |
| PAPA004 | 2013 | 12.5 | 45.3 | 47.7 | 41.6 | 37.4 | 15.8 | 81.6 |
| PAPA004 | 2013 | 15.8 | 44.6 | 47.0 | 42.3 | 38.9 | 24.7 | 78.0 |
| PAPA004 | 2013 | 20 | 55.1 | 58.6 | 52.9 | 46.8 | 31.2 | 75.9 |
| PAPA004 | 2013 | 25 | 42.3 | 44.9 | 40.4 | 36.4 | 24.2 | 72.8 |
| PAPA004 | 2013 | 31.5 | 47.1 | 50.5 | 42.5 | 36.4 | 22.3 | 70.6 |
| PAPA004 | 2013 | 40 | 41.0 | 43.8 | 38.6 | 34.2 | 21.9 | 69.3 |
| PAPA004 | 2013 | 50 | 39.9 | 42.4 | 36.8 | 32.8 | 18.8 | 67.9 |
| PAPA004 | 2013 | 63 | 38.3 | 40.8 | 35.4 | 31.7 | 15.4 | 66.3 |
| PAPA004 | 2013 | 80 | 36.1 | 38.5 | 33.6 | 30.2 | 11.8 | 69.1 |
| PAPA004 | 2013 | 100 | 36.4 | 38.7 | 33.2 | 29.0 | 10.8 | 69.4 |
| PAPA004 | 2013 | 125 | 35.0 | 37.0 | 31.4 | 27.6 | 9.0 | 65.8 |
| PAPA004 | 2013 | 160 | 31.0 | 33.3 | 28.5 | 24.7 | 5.0 | 61.9 |
| PAPA004 | 2013 | 200 | 29.6 | 32.5 | 27.1 | 23.2 | 4.5 | 62.8 |
| PAPA004 | 2013 | 250 | 26.5 | 29.1 | 24.4 | 20.6 | 2.0 | 58.9 |
| PAPA004 | 2013 | 315 | 24.2 | 27.1 | 22.3 | 18.0 | 0.7 | 53.3 |
| PAPA004 | 2013 | 400 | 22.2 | 24.7 | 19.8 | 15.5 | -1.0 | 50.3 |
| PAPA004 | 2013 | 500 | 18.8 | 21.5 | 15.9 | 12.2 | -3.0 | 47.4 |
| PAPA004 | 2013 | 630 | 15.5 | 18.3 | 11.2 | 7.6 | -3.5 | 44.3 |
| PAPA004 | 2013 | 800 | 12.2 | 14.8 | 8.5 | 5.1 | -3.2 | 47.1 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA004 | 2013 | 1000 | 12.8 | 12.8 | 5.7 | 2.4 | -2.6 | 51.1 |
| PAPA004 | 2013 | 1250 | 9.9 | 10.5 | 4.7 | 1.2 | -1.5 | 50.7 |
| PAPA004 | 2013 | 1600 | 6.5 | 7.2 | 2.2 | 1.1 | -0.6 | 52.2 |
| PAPA004 | 2013 | 2000 | 6.4 | 5.8 | 2.2 | 1.7 | 0.3 | 53.5 |
| PAPA004 | 2013 | 2500 | 5.8 | 5.8 | 2.9 | 2.5 | 1.2 | 43.2 |
| PAPA004 | 2013 | 3150 | 4.3 | 5.1 | 3.5 | 3.2 | 2.1 | 39.7 |
| PAPA004 | 2013 | 4000 | 4.4 | 4.8 | 4.1 | 3.8 | 1.2 | 37.2 |
| PAPA004 | 2013 | 5000 | 4.7 | 4.8 | 4.5 | 4.3 | 0.3 | 35.5 |
| PAPA004 | 2013 | 6300 | 4.7 | 4.9 | 4.7 | 4.5 | -0.1 | 33.7 |
| PAPA004 | 2013 | 8000 | 4.6 | 4.7 | 4.6 | 4.4 | -0.6 | 36.3 |
| PAPA004 | 2013 | 10000 | 4.2 | 4.3 | 4.2 | 4.0 | -0.4 | 29.5 |
| PAPA004 | 2013 | 12500 | 3.5 | 3.7 | 3.5 | 3.4 | -0.5 | 27.8 |
| PAPA004 | 2013 | 16000 | 2.6 | 2.7 | 2.5 | 2.4 | -1.1 | 25.9 |
| PAPA004 | 2013 | 20000 | 0.9 | 1.1 | 0.8 | 0.7 | -0.8 | 20.2 |
| PAPA005 | 2013 | 12.5 | 43.2 | 45.8 | 41.8 | 37.8 | 23.5 | 78.5 |
| PAPA005 | 2013 | 15.8 | 48.0 | 50.2 | 46.3 | 42.5 | 29.2 | 78.0 |
| PAPA005 | 2013 | 20 | 59.0 | 62.9 | 57.0 | 51.6 | 36.4 | 73.6 |
| PAPA005 | 2013 | 25 | 45.7 | 48.0 | 44.0 | 40.5 | 29.7 | 71.2 |
| PAPA005 | 2013 | 31.5 | 48.3 | 51.2 | 45.3 | 41.1 | 29.3 | 67.9 |
| PAPA005 | 2013 | 40 | 44.9 | 47.1 | 43.1 | 40.3 | 29.1 | 66.7 |
| PAPA005 | 2013 | 50 | 46.0 | 48.4 | 45.2 | 41.3 | 24.8 | 63.8 |
| PAPA005 | 2013 | 63 | 42.8 | 45.2 | 41.0 | 37.2 | 22.5 | 68.5 |
| PAPA005 | 2013 | 80 | 40.6 | 42.8 | 37.9 | 33.3 | 18.6 | 77.5 |
| PAPA005 | 2013 | 100 | 39.6 | 42.0 | 36.7 | 33.1 | 16.2 | 73.8 |
| PAPA005 | 2013 | 125 | 36.7 | 38.4 | 34.6 | 31.0 | 15.7 | 72.4 |
| PAPA005 | 2013 | 160 | 33.6 | 36.2 | 31.3 | 27.6 | 9.6 | 64.1 |
| PAPA005 | 2013 | 200 | 32.6 | 35.2 | 30.7 | 26.8 | 7.1 | 60.0 |
| PAPA005 | 2013 | 250 | 29.4 | 31.8 | 27.7 | 24.3 | 4.3 | 62.9 |
| PAPA005 | 2013 | 315 | 27.0 | 30.1 | 25.6 | 21.6 | 1.4 | 56.3 |
| PAPA005 | 2013 | 400 | 24.7 | 28.0 | 22.5 | 18.3 | -0.4 | 53.0 |
| PAPA005 | 2013 | 500 | 23.0 | 25.5 | 19.5 | 13.2 | -1.9 | 56.4 |
| PAPA005 | 2013 | 630 | 20.5 | 23.5 | 16.5 | 10.2 | -2.4 | 53.7 |
| PAPA005 | 2013 | 800 | 20.1 | 23.5 | 15.6 | 8.5 | -2.4 | 45.3 |
| PAPA005 | 2013 | 1000 | 19.5 | 22.9 | 14.1 | 7.5 | -1.4 | 44.7 |
| PAPA005 | 2013 | 1250 | 16.9 | 20.4 | 12.0 | 5.6 | -0.9 | 43.0 |
| PAPA005 | 2013 | 1600 | 13.9 | 16.8 | 8.6 | 3.2 | -0.2 | 44.7 |
| PAPA005 | 2013 | 2000 | 8.7 | 9.3 | 4.1 | 2.7 | 0.9 | 44.1 |
| PAPA005 | 2013 | 2500 | 6.6 | 6.3 | 3.4 | 3.0 | 1.9 | 43.0 |
| PAPA005 | 2013 | 3150 | 5.7 | 5.7 | 4.1 | 3.7 | 2.8 | 42.2 |
| PAPA005 | 2013 | 4000 | 6.0 | 5.5 | 4.7 | 4.4 | 3.7 | 40.7 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA005 | 2013 | 5000 | 7.6 | 5.8 | 5.2 | 5.0 | 4.4 | 62.1 |
| PAPA005 | 2013 | 6300 | 6.0 | 5.8 | 5.5 | 5.4 | 3.3 | 66.6 |
| PAPA005 | 2013 | 8000 | 5.6 | 5.8 | 5.6 | 5.4 | 3.1 | 45.7 |
| PAPA005 | 2013 | 10000 | 5.4 | 5.5 | 5.3 | 5.2 | 2.5 | 41.9 |
| PAPA005 | 2013 | 12500 | 4.8 | 4.9 | 4.8 | 4.7 | 2.0 | 50.9 |
| PAPA005 | 2013 | 16000 | 4.0 | 4.1 | 4.0 | 3.9 | 1.6 | 31.7 |
| PAPA005 | 2013 | 20000 | 2.9 | 3.0 | 2.8 | 2.7 | 1.9 | 31.8 |
| PAPA006 | 2013 | 12.5 | 46.7 | 48.5 | 44.5 | 40.3 | 27.7 | 74.8 |
| PAPA006 | 2013 | 15.8 | 50.5 | 52.3 | 48.4 | 45.1 | 33.9 | 74.2 |
| PAPA006 | 2013 | 20 | 60.0 | 63.4 | 58.5 | 54.6 | 42.2 | 75.8 |
| PAPA006 | 2013 | 25 | 50.2 | 52.5 | 49.0 | 46.1 | 35.8 | 70.1 |
| PAPA006 | 2013 | 31.5 | 56.0 | 59.0 | 55.1 | 48.4 | 36.2 | 71.1 |
| PAPA006 | 2013 | 40 | 50.2 | 52.7 | 49.0 | 46.0 | 33.2 | 75.1 |
| PAPA006 | 2013 | 50 | 48.2 | 50.4 | 46.1 | 43.0 | 29.5 | 73.6 |
| PAPA006 | 2013 | 63 | 47.2 | 49.4 | 45.7 | 42.3 | 28.5 | 69.4 |
| PAPA006 | 2013 | 80 | 42.2 | 43.7 | 39.7 | 36.7 | 22.9 | 75.3 |
| PAPA006 | 2013 | 100 | 39.8 | 41.9 | 38.1 | 35.3 | 23.6 | 72.5 |
| PAPA006 | 2013 | 125 | 37.9 | 39.4 | 35.9 | 32.0 | 22.4 | 72.2 |
| PAPA006 | 2013 | 160 | 35.3 | 36.7 | 33.7 | 30.8 | 14.2 | 66.4 |
| PAPA006 | 2013 | 200 | 34.2 | 35.8 | 32.2 | 28.7 | 11.1 | 66.5 |
| PAPA006 | 2013 | 250 | 30.9 | 32.5 | 29.2 | 26.4 | 8.0 | 60.7 |
| PAPA006 | 2013 | 315 | 27.4 | 29.3 | 26.1 | 23.4 | 6.3 | 56.6 |
| PAPA006 | 2013 | 400 | 24.8 | 27.3 | 23.5 | 20.4 | 3.8 | 52.1 |
| PAPA006 | 2013 | 500 | 21.5 | 23.6 | 19.5 | 16.1 | 0.4 | 52.9 |
| PAPA006 | 2013 | 630 | 18.3 | 21.4 | 16.4 | 12.6 | -0.9 | 50.3 |
| PAPA006 | 2013 | 800 | 18.3 | 21.1 | 15.8 | 11.8 | -0.6 | 53.4 |
| PAPA006 | 2013 | 1000 | 19.0 | 22.3 | 15.3 | 11.1 | -0.4 | 52.0 |
| PAPA006 | 2013 | 1250 | 18.5 | 20.4 | 12.9 | 8.3 | 0.1 | 54.8 |
| PAPA006 | 2013 | 1600 | 15.8 | 17.5 | 10.7 | 6.0 | 0.5 | 53.9 |
| PAPA006 | 2013 | 2000 | 12.9 | 14.9 | 7.5 | 4.3 | 0.9 | 54.6 |
| PAPA006 | 2013 | 2500 | 10.1 | 11.1 | 5.5 | 3.7 | 1.6 | 51.3 |
| PAPA006 | 2013 | 3150 | 8.2 | 7.3 | 4.4 | 3.8 | 2.4 | 51.2 |
| PAPA006 | 2013 | 4000 | 5.9 | 6.0 | 4.6 | 4.3 | 3.4 | 47.0 |
| PAPA006 | 2013 | 5000 | 5.5 | 5.3 | 5.0 | 4.9 | 3.5 | 41.7 |
| PAPA006 | 2013 | 6300 | 5.5 | 5.6 | 5.4 | 5.2 | 3.5 | 38.3 |
| PAPA006 | 2013 | 8000 | 5.6 | 5.6 | 5.4 | 5.3 | 2.9 | 40.8 |
| PAPA006 | 2013 | 10000 | 5.2 | 5.3 | 5.2 | 5.0 | 1.5 | 39.6 |
| PAPA006 | 2013 | 12500 | 4.6 | 4.7 | 4.6 | 4.4 | 1.2 | 40.0 |
| PAPA006 | 2013 | 16000 | 3.7 | 3.9 | 3.7 | 3.5 | 0.5 | 37.1 |
| PAPA006 | 2013 | 20000 | 2.4 | 2.6 | 2.4 | 2.2 | 1.0 | 34.8 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA007 | 2013 | 12.5 | 51.1 | 53.8 | 47.2 | 41.8 | 24.4 | 78.3 |
| PAPA007 | 2013 | 15.8 | 48.3 | 50.9 | 45.4 | 41.2 | 29.0 | 76.0 |
| PAPA007 | 2013 | 20 | 55.7 | 58.3 | 54.8 | 50.5 | 36.8 | 73.9 |
| PAPA007 | 2013 | 25 | 48.1 | 50.6 | 46.6 | 43.1 | 33.9 | 70.6 |
| PAPA007 | 2013 | 31.5 | 46.3 | 49.3 | 43.2 | 39.2 | 30.4 | 69.3 |
| PAPA007 | 2013 | 40 | 42.7 | 44.5 | 40.6 | 37.3 | 27.8 | 68.6 |
| PAPA007 | 2013 | 50 | 40.2 | 42.5 | 38.1 | 35.2 | 26.5 | 75.7 |
| PAPA007 | 2013 | 63 | 39.5 | 41.8 | 36.9 | 34.2 | 23.9 | 80.7 |
| PAPA007 | 2013 | 80 | 37.5 | 39.6 | 34.6 | 31.5 | 22.1 | 85.3 |
| PAPA007 | 2013 | 100 | 35.5 | 37.5 | 33.3 | 30.2 | 20.7 | 83.3 |
| PAPA007 | 2013 | 125 | 34.4 | 36.7 | 32.6 | 29.4 | 20.8 | 73.3 |
| PAPA007 | 2013 | 160 | 30.8 | 33.0 | 29.3 | 26.3 | 14.5 | 73.6 |
| PAPA007 | 2013 | 200 | 28.6 | 30.4 | 26.6 | 24.1 | 11.9 | 78.8 |
| PAPA007 | 2013 | 250 | 25.2 | 27.3 | 23.5 | 21.0 | 10.3 | 63.6 |
| PAPA007 | 2013 | 315 | 22.2 | 25.1 | 20.5 | 17.6 | 7.1 | 65.9 |
| PAPA007 | 2013 | 400 | 19.1 | 20.6 | 15.8 | 12.7 | 1.2 | 68.6 |
| PAPA007 | 2013 | 500 | 16.8 | 19.2 | 12.7 | 8.8 | -1.5 | 65.3 |
| PAPA007 | 2013 | 630 | 14.8 | 17.7 | 10.0 | 5.4 | -2.4 | 56.9 |
| PAPA007 | 2013 | 800 | 14.2 | 17.3 | 9.0 | 3.9 | -2.4 | 53.8 |
| PAPA007 | 2013 | 1000 | 12.4 | 14.9 | 7.0 | 2.2 | -1.9 | 49.6 |
| PAPA007 | 2013 | 1250 | 10.7 | 11.6 | 4.6 | 1.1 | -1.2 | 48.6 |
| PAPA007 | 2013 | 1600 | 9.0 | 10.4 | 4.3 | 1.8 | -0.2 | 43.8 |
| PAPA007 | 2013 | 2000 | 8.4 | 9.7 | 3.5 | 2.1 | 0.5 | 41.5 |
| PAPA007 | 2013 | 2500 | 7.4 | 8.2 | 3.7 | 2.8 | 1.3 | 38.4 |
| PAPA007 | 2013 | 3150 | 7.1 | 7.7 | 3.8 | 3.4 | 2.3 | 46.6 |
| PAPA007 | 2013 | 4000 | 6.4 | 6.3 | 4.3 | 4.0 | 2.0 | 46.8 |
| PAPA007 | 2013 | 5000 | 6.6 | 5.2 | 4.6 | 4.4 | 1.3 | 41.7 |
| PAPA007 | 2013 | 6300 | 5.1 | 5.0 | 4.7 | 4.5 | 0.2 | 34.4 |
| PAPA007 | 2013 | 8000 | 4.7 | 4.9 | 4.6 | 4.4 | 0.1 | 25.5 |
| PAPA007 | 2013 | 10000 | 4.4 | 4.5 | 4.3 | 4.0 | -0.6 | 23.5 |
| PAPA007 | 2013 | 12500 | 3.8 | 4.0 | 3.7 | 3.4 | -1.3 | 21.9 |
| PAPA007 | 2013 | 16000 | 3.0 | 3.2 | 2.8 | 2.5 | -1.3 | 21.1 |
| PAPA007 | 2013 | 20000 | 1.6 | 2.0 | 1.2 | 0.9 | -1.2 | 25.8 |
| PAPA008 | 2013 | 12.5 | 50.6 | 53.5 | 47.5 | 41.7 | 26.7 | 78.6 |
| PAPA008 | 2013 | 15.8 | 49.5 | 52.2 | 46.2 | 41.0 | 24.1 | 75.8 |
| PAPA008 | 2013 | 20 | 53.0 | 55.5 | 51.2 | 47.3 | 32.2 | 73.6 |
| PAPA008 | 2013 | 25 | 47.7 | 50.7 | 45.0 | 41.4 | 28.7 | 71.0 |
| PAPA008 | 2013 | 31.5 | 45.6 | 48.1 | 44.1 | 41.0 | 28.9 | 69.1 |
| PAPA008 | 2013 | 40 | 43.3 | 45.7 | 42.0 | 38.8 | 29.7 | 66.8 |
| PAPA008 | 2013 | 50 | 39.2 | 41.2 | 37.5 | 34.9 | 26.1 | 66.7 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA008 | 2013 | 63 | 39.1 | 41.9 | 37.6 | 34.6 | 24.3 | 85.0 |
| PAPA008 | 2013 | 80 | 36.2 | 38.4 | 34.1 | 31.0 | 22.7 | 84.1 |
| PAPA008 | 2013 | 100 | 34.5 | 37.1 | 33.2 | 30.2 | 21.1 | 79.3 |
| PAPA008 | 2013 | 125 | 33.1 | 35.5 | 31.7 | 29.0 | 20.0 | 66.9 |
| PAPA008 | 2013 | 160 | 30.2 | 32.4 | 28.4 | 25.6 | 16.9 | 70.4 |
| PAPA008 | 2013 | 200 | 28.7 | 31.2 | 27.1 | 24.0 | 14.9 | 65.3 |
| PAPA008 | 2013 | 250 | 26.0 | 28.3 | 24.0 | 21.3 | 13.0 | 53.3 |
| PAPA008 | 2013 | 315 | 22.7 | 25.0 | 21.2 | 18.2 | 9.8 | 46.0 |
| PAPA008 | 2013 | 400 | 19.1 | 21.3 | 16.5 | 12.9 | 4.9 | 47.5 |
| PAPA008 | 2013 | 500 | 17.6 | 19.1 | 14.3 | 10.4 | 1.6 | 52.4 |
| PAPA008 | 2013 | 630 | 15.4 | 17.4 | 11.2 | 6.5 | -1.9 | 48.6 |
| PAPA008 | 2013 | 800 | 14.8 | 16.7 | 9.5 | 4.4 | -1.7 | 43.5 |
| PAPA008 | 2013 | 1000 | 12.9 | 16.0 | 7.9 | 3.3 | -1.0 | 46.5 |
| PAPA008 | 2013 | 1250 | 11.9 | 14.8 | 5.5 | 1.5 | -0.9 | 48.7 |
| PAPA008 | 2013 | 1600 | 10.0 | 12.6 | 4.1 | 1.6 | -0.2 | 36.1 |
| PAPA008 | 2013 | 2000 | 7.3 | 9.7 | 3.3 | 2.2 | 0.5 | 36.7 |
| PAPA008 | 2013 | 2500 | 6.2 | 8.1 | 3.4 | 3.0 | 1.5 | 35.9 |
| PAPA008 | 2013 | 3150 | 6.4 | 7.2 | 4.1 | 3.7 | 2.4 | 34.8 |
| PAPA008 | 2013 | 4000 | 5.4 | 5.9 | 4.7 | 4.4 | 2.2 | 49.3 |
| PAPA008 | 2013 | 5000 | 6.4 | 6.4 | 5.2 | 4.8 | 2.3 | 52.5 |
| PAPA008 | 2013 | 6300 | 5.9 | 5.9 | 5.4 | 5.1 | 2.6 | 38.1 |
| PAPA008 | 2013 | 8000 | 5.6 | 5.9 | 5.4 | 5.2 | 2.2 | 26.1 |
| PAPA008 | 2013 | 10000 | 5.4 | 5.6 | 5.2 | 4.9 | 0.7 | 28.8 |
| PAPA008 | 2013 | 12500 | 4.9 | 5.1 | 4.7 | 4.4 | 0.4 | 23.9 |
| PAPA008 | 2013 | 16000 | 4.1 | 4.4 | 3.9 | 3.5 | -0.3 | 22.7 |
| PAPA008 | 2013 | 20000 | 2.9 | 3.4 | 2.7 | 2.3 | 0.5 | 22.3 |
| PAPA009 | 2013 | 12.5 | 53.8 | 56.9 | 50.5 | 45.6 | 26.6 | 77.2 |
| PAPA009 | 2013 | 15.8 | 52.5 | 55.3 | 50.6 | 45.7 | 30.2 | 73.1 |
| PAPA009 | 2013 | 20 | 52.9 | 55.4 | 50.8 | 46.6 | 33.0 | 71.5 |
| PAPA009 | 2013 | 25 | 48.8 | 51.5 | 47.2 | 43.4 | 30.5 | 68.1 |
| PAPA009 | 2013 | 31.5 | 47.7 | 50.7 | 45.8 | 41.4 | 30.7 | 66.9 |
| PAPA009 | 2013 | 40 | 43.4 | 45.5 | 41.8 | 38.2 | 28.8 | 64.0 |
| PAPA009 | 2013 | 50 | 40.7 | 42.7 | 38.0 | 33.6 | 24.0 | 73.6 |
| PAPA009 | 2013 | 63 | 40.2 | 42.5 | 37.9 | 34.1 | 24.6 | 75.9 |
| PAPA009 | 2013 | 80 | 38.2 | 40.1 | 35.5 | 31.7 | 21.6 | 75.3 |
| PAPA009 | 2013 | 100 | 35.8 | 38.0 | 34.2 | 31.2 | 20.5 | 73.8 |
| PAPA009 | 2013 | 125 | 35.1 | 37.7 | 32.6 | 29.7 | 19.6 | 66.0 |
| PAPA009 | 2013 | 160 | 31.5 | 33.7 | 30.1 | 27.8 | 16.0 | 68.3 |
| PAPA009 | 2013 | 200 | 29.5 | 31.7 | 27.5 | 24.9 | 13.8 | 66.1 |
| PAPA009 | 2013 | 250 | 26.0 | 28.3 | 24.6 | 21.6 | 11.6 | 56.4 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA009 | 2013 | 315 | 22.3 | 25.0 | 20.8 | 16.8 | 5.9 | 45.9 |
| PAPA009 | 2013 | 400 | 19.7 | 22.6 | 17.5 | 13.4 | 2.2 | 43.4 |
| PAPA009 | 2013 | 500 | 17.3 | 19.8 | 14.0 | 9.7 | -0.2 | 49.1 |
| PAPA009 | 2013 | 630 | 13.5 | 15.5 | 9.7 | 5.5 | -1.9 | 45.4 |
| PAPA009 | 2013 | 800 | 12.1 | 14.0 | 7.0 | 3.3 | -2.3 | 40.7 |
| PAPA009 | 2013 | 1000 | 10.5 | 13.1 | 5.7 | 1.9 | -1.6 | 37.3 |
| PAPA009 | 2013 | 1250 | 10.4 | 12.4 | 3.4 | 1.5 | -1.1 | 40.3 |
| PAPA009 | 2013 | 1600 | 8.8 | 11.1 | 2.4 | 1.7 | -0.2 | 40.0 |
| PAPA009 | 2013 | 2000 | 6.6 | 9.0 | 2.8 | 2.4 | 0.7 | 35.6 |
| PAPA009 | 2013 | 2500 | 6.0 | 7.7 | 3.5 | 3.1 | 1.7 | 34.6 |
| PAPA009 | 2013 | 3150 | 5.5 | 6.9 | 4.1 | 3.8 | 2.5 | 41.4 |
| PAPA009 | 2013 | 4000 | 6.1 | 5.8 | 4.6 | 4.4 | 1.7 | 35.4 |
| PAPA009 | 2013 | 5000 | 6.1 | 5.6 | 4.9 | 4.6 | 0.2 | 46.6 |
| PAPA009 | 2013 | 6300 | 5.3 | 5.3 | 5.0 | 4.6 | -0.1 | 42.6 |
| PAPA009 | 2013 | 8000 | 5.1 | 5.2 | 4.9 | 4.5 | -0.9 | 33.4 |
| PAPA009 | 2013 | 10000 | 4.8 | 5.0 | 4.7 | 4.3 | -0.7 | 23.6 |
| PAPA009 | 2013 | 12500 | 4.5 | 4.7 | 4.4 | 3.9 | -0.6 | 25.4 |
| PAPA009 | 2013 | 16000 | 4.0 | 4.4 | 3.9 | 3.4 | -0.8 | 25.1 |
| PAPA009 | 2013 | 20000 | 3.0 | 4.1 | 2.8 | 2.5 | -0.3 | 22.5 |
| PAPA010 | 2013 | 12.5 | 52.2 | 55.3 | 49.9 | 45.1 | 25.2 | 76.7 |
| PAPA010 | 2013 | 15.8 | 53.1 | 55.7 | 52.0 | 47.6 | 33.0 | 74.8 |
| PAPA010 | 2013 | 20 | 53.7 | 56.5 | 51.9 | 47.3 | 34.8 | 74.5 |
| PAPA010 | 2013 | 25 | 50.2 | 53.0 | 48.1 | 44.4 | 31.6 | 73.6 |
| PAPA010 | 2013 | 31.5 | 48.1 | 50.7 | 46.9 | 42.9 | 32.9 | 69.6 |
| PAPA010 | 2013 | 40 | 43.4 | 45.5 | 42.5 | 39.1 | 29.9 | 65.6 |
| PAPA010 | 2013 | 50 | 42.6 | 45.4 | 40.8 | 37.6 | 25.0 | 64.1 |
| PAPA010 | 2013 | 63 | 40.0 | 41.9 | 38.4 | 35.4 | 24.6 | 61.2 |
| PAPA010 | 2013 | 80 | 37.5 | 39.5 | 35.5 | 32.6 | 21.9 | 70.4 |
| PAPA010 | 2013 | 100 | 35.9 | 37.6 | 34.0 | 31.4 | 18.9 | 66.3 |
| PAPA010 | 2013 | 125 | 33.9 | 36.4 | 32.7 | 29.8 | 18.6 | 69.5 |
| PAPA010 | 2013 | 160 | 31.4 | 33.6 | 30.4 | 27.6 | 15.4 | 63.9 |
| PAPA010 | 2013 | 200 | 30.8 | 33.2 | 29.2 | 26.4 | 14.1 | 59.4 |
| PAPA010 | 2013 | 250 | 27.8 | 30.8 | 26.4 | 23.4 | 11.5 | 55.1 |
| PAPA010 | 2013 | 315 | 24.0 | 27.4 | 22.6 | 19.0 | 5.9 | 44.7 |
| PAPA010 | 2013 | 400 | 21.7 | 25.7 | 19.5 | 16.1 | 3.1 | 43.4 |
| PAPA010 | 2013 | 500 | 18.5 | 20.8 | 14.7 | 11.4 | 0.0 | 48.9 |
| PAPA010 | 2013 | 630 | 16.0 | 18.8 | 12.5 | 8.3 | -1.7 | 43.8 |
| PAPA010 | 2013 | 800 | 14.1 | 16.1 | 9.7 | 5.5 | -1.3 | 41.1 |
| PAPA010 | 2013 | 1000 | 13.7 | 16.5 | 8.6 | 4.8 | -1.1 | 40.8 |
| PAPA010 | 2013 | 1250 | 12.4 | 15.5 | 7.2 | 3.6 | -0.4 | 37.5 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA010 | 2013 | 1600 | 10.2 | 13.0 | 5.1 | 2.9 | 0.2 | 36.5 |
| PAPA010 | 2013 | 2000 | 7.7 | 9.7 | 3.7 | 2.9 | 1.2 | 41.2 |
| PAPA010 | 2013 | 2500 | 8.1 | 8.6 | 3.8 | 3.4 | 2.0 | 58.5 |
| PAPA010 | 2013 | 3150 | 6.6 | 7.0 | 4.5 | 4.1 | 3.0 | 50.0 |
| PAPA010 | 2013 | 4000 | 6.4 | 6.8 | 5.1 | 4.8 | 3.3 | 42.6 |
| PAPA010 | 2013 | 5000 | 7.2 | 6.4 | 5.5 | 5.3 | 1.4 | 50.8 |
| PAPA010 | 2013 | 6300 | 6.0 | 6.1 | 5.8 | 5.5 | 1.6 | 42.0 |
| PAPA010 | 2013 | 8000 | 5.8 | 6.0 | 5.7 | 5.5 | -0.2 | 27.3 |
| PAPA010 | 2013 | 10000 | 5.5 | 5.7 | 5.4 | 5.2 | -0.3 | 23.9 |
| PAPA010 | 2013 | 12500 | 4.9 | 5.2 | 4.8 | 4.5 | -0.6 | 22.8 |
| PAPA010 | 2013 | 16000 | 4.1 | 4.5 | 3.9 | 3.6 | -0.9 | 20.7 |
| PAPA010 | 2013 | 20000 | 2.7 | 3.1 | 2.5 | 2.2 | -1.1 | 19.4 |
| PAPA011 | 2013 | 12.5 | 48.3 | 52.0 | 40.4 | 34.7 | 19.3 | 77.8 |
| PAPA011 | 2013 | 15.8 | 45.7 | 48.0 | 40.3 | 34.6 | 20.7 | 76.6 |
| PAPA011 | 2013 | 20 | 46.1 | 49.0 | 42.4 | 37.2 | 21.2 | 77.6 |
| PAPA011 | 2013 | 25 | 39.5 | 41.5 | 35.2 | 30.8 | 17.3 | 71.3 |
| PAPA011 | 2013 | 31.5 | 42.7 | 45.0 | 39.0 | 33.3 | 17.8 | 69.6 |
| PAPA011 | 2013 | 40 | 34.9 | 37.1 | 32.7 | 29.2 | 13.6 | 67.4 |
| PAPA011 | 2013 | 50 | 34.4 | 37.0 | 32.2 | 28.7 | 13.4 | 65.7 |
| PAPA011 | 2013 | 63 | 34.2 | 36.9 | 31.5 | 28.4 | 12.8 | 64.5 |
| PAPA011 | 2013 | 80 | 32.0 | 34.2 | 29.9 | 26.5 | 13.1 | 69.3 |
| PAPA011 | 2013 | 100 | 34.7 | 36.7 | 31.5 | 27.1 | 12.5 | 68.1 |
| PAPA011 | 2013 | 125 | 29.3 | 31.5 | 26.7 | 23.0 | 10.3 | 73.3 |
| PAPA011 | 2013 | 160 | 28.1 | 30.4 | 24.7 | 20.0 | 6.2 | 62.7 |
| PAPA011 | 2013 | 200 | 26.6 | 29.2 | 23.2 | 18.7 | 4.2 | 55.9 |
| PAPA011 | 2013 | 250 | 24.2 | 26.6 | 19.7 | 13.7 | 0.0 | 60.0 |
| PAPA011 | 2013 | 315 | 22.4 | 25.2 | 17.8 | 10.7 | -2.3 | 55.8 |
| PAPA011 | 2013 | 400 | 19.4 | 23.0 | 15.2 | 7.2 | -3.4 | 50.1 |
| PAPA011 | 2013 | 500 | 16.1 | 19.0 | 11.8 | 3.2 | -3.8 | 44.7 |
| PAPA011 | 2013 | 630 | 12.6 | 16.3 | 7.4 | 0.6 | -3.5 | 44.5 |
| PAPA011 | 2013 | 800 | 10.5 | 14.3 | 5.1 | -0.1 | -3.1 | 41.5 |
| PAPA011 | 2013 | 1000 | 10.0 | 14.0 | 4.0 | 0.0 | -2.1 | 34.6 |
| PAPA011 | 2013 | 1250 | 9.2 | 13.1 | 3.9 | 0.5 | -1.2 | 34.1 |
| PAPA011 | 2013 | 1600 | 8.8 | 11.8 | 3.4 | 1.3 | -0.3 | 35.1 |
| PAPA011 | 2013 | 2000 | 7.4 | 10.2 | 3.4 | 1.9 | 0.7 | 34.7 |
| PAPA011 | 2013 | 2500 | 6.6 | 8.7 | 3.8 | 2.7 | 1.6 | 34.6 |
| PAPA011 | 2013 | 3150 | 6.7 | 7.7 | 4.4 | 3.4 | 2.2 | 38.6 |
| PAPA011 | 2013 | 4000 | 6.3 | 6.3 | 4.6 | 4.2 | 1.6 | 45.5 |
| PAPA011 | 2013 | 5000 | 6.0 | 6.1 | 5.0 | 4.7 | 1.5 | 49.2 |
| PAPA011 | 2013 | 6300 | 5.6 | 5.8 | 5.3 | 5.0 | 1.5 | 41.2 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA011 | 2013 | 8000 | 5.5 | 5.7 | 5.3 | 5.1 | 1.0 | 23.4 |
| PAPA011 | 2013 | 10000 | 5.2 | 5.4 | 5.1 | 4.9 | 0.7 | 27.3 |
| PAPA011 | 2013 | 12500 | 4.8 | 5.0 | 4.6 | 4.3 | 0.4 | 26.8 |
| PAPA011 | 2013 | 16000 | 4.2 | 4.5 | 3.8 | 3.6 | 0.2 | 28.5 |
| PAPA011 | 2013 | 20000 | 3.4 | 4.1 | 2.7 | 2.4 | 0.4 | 27.2 |
| PAPA012 | 2013 | 12.5 | 45.6 | 48.5 | 43.2 | 38.1 | 20.7 | 73.9 |
| PAPA012 | 2013 | 15.8 | 44.4 | 47.1 | 42.3 | 38.7 | 23.0 | 70.9 |
| PAPA012 | 2013 | 20 | 47.6 | 50.5 | 46.1 | 41.8 | 25.3 | 69.0 |
| PAPA012 | 2013 | 25 | 41.1 | 44.3 | 38.6 | 35.1 | 21.3 | 67.2 |
| PAPA012 | 2013 | 31.5 | 42.5 | 45.5 | 40.3 | 35.8 | 21.8 | 67.6 |
| PAPA012 | 2013 | 40 | 35.8 | 38.0 | 34.2 | 31.3 | 16.2 | 63.5 |
| PAPA012 | 2013 | 50 | 35.0 | 37.3 | 33.6 | 30.9 | 15.2 | 59.7 |
| PAPA012 | 2013 | 63 | 35.2 | 38.3 | 33.9 | 30.7 | 15.8 | 57.6 |
| PAPA012 | 2013 | 80 | 33.5 | 35.3 | 31.5 | 28.5 | 14.6 | 66.2 |
| PAPA012 | 2013 | 100 | 33.2 | 34.9 | 31.3 | 28.3 | 12.6 | 73.4 |
| PAPA012 | 2013 | 125 | 30.4 | 32.0 | 28.4 | 25.5 | 11.8 | 77.0 |
| PAPA012 | 2013 | 160 | 27.9 | 30.0 | 25.6 | 22.8 | 9.2 | 70.0 |
| PAPA012 | 2013 | 200 | 26.5 | 28.5 | 23.6 | 20.5 | 7.4 | 68.1 |
| PAPA012 | 2013 | 250 | 23.8 | 26.1 | 20.6 | 16.5 | 3.3 | 66.7 |
| PAPA012 | 2013 | 315 | 20.7 | 23.7 | 17.4 | 12.4 | -0.3 | 60.5 |
| PAPA012 | 2013 | 400 | 16.5 | 20.0 | 12.5 | 6.9 | -3.0 | 56.7 |
| PAPA012 | 2013 | 500 | 13.3 | 15.5 | 8.0 | 2.1 | -3.8 | 55.1 |
| PAPA012 | 2013 | 630 | 11.0 | 13.8 | 5.8 | -0.3 | -3.7 | 53.2 |
| PAPA012 | 2013 | 800 | 12.2 | 16.1 | 6.3 | -1.0 | -3.7 | 56.5 |
| PAPA012 | 2013 | 1000 | 12.6 | 17.1 | 6.4 | -0.9 | -2.9 | 54.9 |
| PAPA012 | 2013 | 1250 | 12.4 | 16.6 | 5.3 | -0.5 | -2.2 | 51.2 |
| PAPA012 | 2013 | 1600 | 11.5 | 15.0 | 3.6 | 0.3 | -1.4 | 45.2 |
| PAPA012 | 2013 | 2000 | 9.8 | 12.7 | 2.8 | 0.8 | -0.7 | 42.8 |
| PAPA012 | 2013 | 2500 | 7.9 | 10.3 | 2.3 | 1.4 | 0.4 | 41.9 |
| PAPA012 | 2013 | 3150 | 5.3 | 7.1 | 2.6 | 2.2 | 1.3 | 42.3 |
| PAPA012 | 2013 | 4000 | 5.2 | 5.7 | 3.3 | 3.0 | 1.4 | 43.5 |
| PAPA012 | 2013 | 5000 | 4.8 | 4.9 | 4.0 | 3.7 | 1.4 | 41.0 |
| PAPA012 | 2013 | 6300 | 5.0 | 5.0 | 4.6 | 4.4 | 1.0 | 43.5 |
| PAPA012 | 2013 | 8000 | 5.3 | 5.3 | 5.1 | 4.9 | 0.4 | 46.2 |
| PAPA012 | 2013 | 10000 | 5.4 | 5.5 | 5.3 | 5.1 | 0.1 | 38.4 |
| PAPA012 | 2013 | 12500 | 5.0 | 5.2 | 4.9 | 4.7 | 0.3 | 39.7 |
| PAPA012 | 2013 | 16000 | 3.1 | 3.4 | 2.8 | 2.7 | -0.4 | 36.7 |
| PAPA012 | 2013 | 20000 | 0.8 | 2.1 | 0.3 | 0.1 | -0.7 | 29.3 |
| PAPA013 | 2013 | 12.5 | 53.0 | 56.1 | 49.9 | 43.8 | 23.7 | 79.5 |
| PAPA013 | 2013 | 15.8 | 51.6 | 54.8 | 47.0 | 41.3 | 27.0 | 76.5 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA013 | 2013 | 20 | 50.8 | 53.6 | 48.3 | 42.4 | 29.2 | 73.1 |
| PAPA013 | 2013 | 25 | 47.5 | 50.6 | 45.5 | 40.6 | 24.3 | 71.3 |
| PAPA013 | 2013 | 31.5 | 48.3 | 51.1 | 46.4 | 41.7 | 28.3 | 68.3 |
| PAPA013 | 2013 | 40 | 41.6 | 44.3 | 40.0 | 36.7 | 25.6 | 65.9 |
| PAPA013 | 2013 | 50 | 38.2 | 40.2 | 35.8 | 32.5 | 24.0 | 65.1 |
| PAPA013 | 2013 | 63 | 37.3 | 39.7 | 35.3 | 32.2 | 24.1 | 61.9 |
| PAPA013 | 2013 | 80 | 34.7 | 37.1 | 33.3 | 30.1 | 20.6 | 61.8 |
| PAPA013 | 2013 | 100 | 36.7 | 37.8 | 33.9 | 30.5 | 18.7 | 63.9 |
| PAPA013 | 2013 | 125 | 33.6 | 35.1 | 31.2 | 27.5 | 16.3 | 66.3 |
| PAPA013 | 2013 | 160 | 30.5 | 32.1 | 28.4 | 24.7 | 15.1 | 70.2 |
| PAPA013 | 2013 | 200 | 29.4 | 31.9 | 27.8 | 23.5 | 13.4 | 55.5 |
| PAPA013 | 2013 | 250 | 27.0 | 29.9 | 25.3 | 21.2 | 9.7 | 57.3 |
| PAPA013 | 2013 | 315 | 24.1 | 27.2 | 22.3 | 17.2 | 6.4 | 51.2 |
| PAPA013 | 2013 | 400 | 21.7 | 25.2 | 19.8 | 14.5 | 2.6 | 50.5 |
| PAPA013 | 2013 | 500 | 19.0 | 22.8 | 17.1 | 11.2 | -0.7 | 49.2 |
| PAPA013 | 2013 | 630 | 16.9 | 20.0 | 13.5 | 7.5 | -2.6 | 42.7 |
| PAPA013 | 2013 | 800 | 16.3 | 20.0 | 12.3 | 5.5 | -2.8 | 38.2 |
| PAPA013 | 2013 | 1000 | 17.2 | 21.1 | 12.5 | 5.4 | -1.9 | 38.1 |
| PAPA013 | 2013 | 1250 | 14.1 | 18.1 | 8.2 | 2.4 | -1.6 | 38.5 |
| PAPA013 | 2013 | 1600 | 12.6 | 15.8 | 6.2 | 2.0 | -0.7 | 39.4 |
| PAPA013 | 2013 | 2000 | 10.7 | 11.8 | 3.6 | 1.7 | 0.4 | 44.9 |
| PAPA013 | 2013 | 2500 | 11.1 | 10.1 | 3.2 | 2.4 | 1.3 | 62.8 |
| PAPA013 | 2013 | 3150 | 8.8 | 8.8 | 3.6 | 3.1 | 2.1 | 71.2 |
| PAPA013 | 2013 | 4000 | 6.8 | 7.0 | 4.1 | 3.8 | 3.1 | 69.5 |
| PAPA013 | 2013 | 5000 | 6.3 | 6.1 | 4.5 | 4.2 | 2.7 | 45.2 |
| PAPA013 | 2013 | 6300 | 5.3 | 5.3 | 4.7 | 4.5 | 1.6 | 46.7 |
| PAPA013 | 2013 | 8000 | 4.9 | 4.8 | 4.6 | 4.4 | 1.6 | 57.9 |
| PAPA013 | 2013 | 10000 | 4.5 | 4.4 | 4.2 | 4.1 | 0.3 | 38.0 |
| PAPA013 | 2013 | 12500 | 3.7 | 3.8 | 3.5 | 3.3 | 0.1 | 34.6 |
| PAPA013 | 2013 | 16000 | 2.9 | 3.0 | 2.6 | 2.4 | -0.3 | 35.7 |
| PAPA013 | 2013 | 20000 | 1.5 | 1.9 | 1.0 | 0.7 | -1.1 | 29.5 |
| PAPA014 | 2013 | 12.5 | 43.7 | 45.7 | 41.4 | 35.5 | 20.5 | 73.7 |
| PAPA014 | 2013 | 15.8 | 48.8 | 50.6 | 44.4 | 40.1 | 24.6 | 71.1 |
| PAPA014 | 2013 | 20 | 57.8 | 61.4 | 52.6 | 48.4 | 31.0 | 76.1 |
| PAPA014 | 2013 | 25 | 43.2 | 46.0 | 42.4 | 39.2 | 23.6 | 66.3 |
| PAPA014 | 2013 | 31.5 | 48.6 | 51.8 | 47.5 | 42.6 | 26.3 | 66.1 |
| PAPA014 | 2013 | 40 | 44.9 | 47.0 | 44.0 | 41.1 | 25.6 | 64.0 |
| PAPA014 | 2013 | 50 | 43.0 | 45.2 | 41.4 | 38.8 | 25.9 | 67.6 |
| PAPA014 | 2013 | 63 | 42.0 | 43.8 | 40.0 | 36.5 | 25.1 | 68.3 |
| PAPA014 | 2013 | 80 | 38.1 | 40.3 | 36.1 | 33.3 | 22.8 | 70.9 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA014 | 2013 | 100 | 37.9 | 39.7 | 36.2 | 33.0 | 22.2 | 72.8 |
| PAPA014 | 2013 | 125 | 38.8 | 40.3 | 36.8 | 34.1 | 21.6 | 70.4 |
| PAPA014 | 2013 | 160 | 32.6 | 34.8 | 31.5 | 28.0 | 19.1 | 65.4 |
| PAPA014 | 2013 | 200 | 30.5 | 32.9 | 28.1 | 24.2 | 8.6 | 66.2 |
| PAPA014 | 2013 | 250 | 27.3 | 29.7 | 25.2 | 21.4 | 5.8 | 62.0 |
| PAPA014 | 2013 | 315 | 24.7 | 28.2 | 22.6 | 18.9 | 3.4 | 57.5 |
| PAPA014 | 2013 | 400 | 21.3 | 23.7 | 19.0 | 15.5 | 0.3 | 50.6 |
| PAPA014 | 2013 | 500 | 19.2 | 22.9 | 15.3 | 10.6 | -1.6 | 48.6 |
| PAPA014 | 2013 | 630 | 14.9 | 18.3 | 10.3 | 5.8 | -2.9 | 46.9 |
| PAPA014 | 2013 | 800 | 15.4 | 19.4 | 8.7 | 5.4 | -2.1 | 41.9 |
| PAPA014 | 2013 | 1000 | 16.1 | 20.4 | 8.7 | 4.7 | -1.8 | 38.4 |
| PAPA014 | 2013 | 1250 | 17.7 | 21.8 | 11.7 | 5.1 | -1.4 | 42.4 |
| PAPA014 | 2013 | 1600 | 18.2 | 22.1 | 11.0 | 4.2 | -0.9 | 48.6 |
| PAPA014 | 2013 | 2000 | 14.3 | 17.6 | 8.2 | 2.8 | -0.4 | 51.8 |
| PAPA014 | 2013 | 2500 | 10.5 | 12.8 | 5.2 | 2.1 | 0.3 | 53.9 |
| PAPA014 | 2013 | 3150 | 9.4 | 12.2 | 4.5 | 2.9 | 1.3 | 52.6 |
| PAPA014 | 2013 | 4000 | 4.8 | 4.6 | 3.4 | 3.0 | 2.2 | 52.8 |
| PAPA014 | 2013 | 5000 | 4.6 | 4.3 | 3.9 | 3.7 | 1.9 | 57.1 |
| PAPA014 | 2013 | 6300 | 4.8 | 4.7 | 4.5 | 4.4 | 1.1 | 43.7 |
| PAPA014 | 2013 | 8000 | 5.2 | 5.2 | 5.0 | 4.9 | 0.6 | 40.0 |
| PAPA014 | 2013 | 10000 | 5.3 | 5.5 | 5.3 | 5.2 | -0.2 | 31.8 |
| PAPA014 | 2013 | 12500 | 4.9 | 5.0 | 4.9 | 4.7 | -0.5 | 33.1 |
| PAPA014 | 2013 | 16000 | 2.8 | 2.9 | 2.8 | 2.6 | -1.1 | 29.3 |
| PAPA014 | 2013 | 20000 | 0.2 | 0.5 | 0.2 | 0.1 | -1.0 | 22.6 |
| PAPA015 | 2013 | 12.5 | 40.9 | 43.0 | 38.5 | 34.1 | 16.0 | 78.4 |
| PAPA015 | 2013 | 15.8 | 44.0 | 46.4 | 41.9 | 35.8 | 16.8 | 76.1 |
| PAPA015 | 2013 | 20 | 48.7 | 51.6 | 44.6 | 37.4 | 18.3 | 74.0 |
| PAPA015 | 2013 | 25 | 38.3 | 40.9 | 35.0 | 29.0 | 14.2 | 71.8 |
| PAPA015 | 2013 | 31.5 | 39.8 | 42.6 | 35.2 | 29.1 | 13.4 | 68.3 |
| PAPA015 | 2013 | 40 | 32.5 | 34.7 | 28.9 | 24.8 | 11.5 | 65.4 |
| PAPA015 | 2013 | 50 | 31.5 | 33.6 | 27.8 | 23.9 | 9.5 | 64.3 |
| PAPA015 | 2013 | 63 | 30.8 | 33.0 | 27.2 | 23.2 | 8.9 | 66.8 |
| PAPA015 | 2013 | 80 | 30.3 | 32.0 | 24.6 | 20.9 | 7.3 | 72.0 |
| PAPA015 | 2013 | 100 | 28.0 | 29.9 | 23.4 | 19.1 | 3.6 | 71.5 |
| PAPA015 | 2013 | 125 | 27.2 | 28.4 | 21.8 | 17.2 | 1.6 | 67.9 |
| PAPA015 | 2013 | 160 | 24.8 | 25.8 | 19.0 | 13.5 | -0.5 | 60.3 |
| PAPA015 | 2013 | 200 | 23.2 | 23.7 | 17.2 | 11.3 | -1.2 | 59.2 |
| PAPA015 | 2013 | 250 | 19.7 | 21.8 | 12.4 | 6.9 | -3.2 | 53.3 |
| PAPA015 | 2013 | 315 | 16.5 | 17.8 | 8.5 | 3.5 | -3.8 | 45.8 |
| PAPA015 | 2013 | 400 | 14.9 | 13.3 | 5.0 | 1.7 | -3.7 | 47.9 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA015 | 2013 | 500 | 13.5 | 9.5 | 3.3 | 0.1 | -4.0 | 50.0 |
| PAPA015 | 2013 | 630 | 11.5 | 7.0 | 1.0 | -0.8 | -3.8 | 46.0 |
| PAPA015 | 2013 | 800 | 7.8 | 5.0 | -0.5 | -1.4 | -3.8 | 41.4 |
| PAPA015 | 2013 | 1000 | 3.2 | 1.9 | -0.6 | -1.3 | -3.3 | 37.7 |
| PAPA015 | 2013 | 1250 | 1.0 | 0.4 | -0.7 | -1.1 | -2.6 | 37.1 |
| PAPA015 | 2013 | 1600 | 1.0 | 1.0 | 0.0 | -0.5 | -1.9 | 38.1 |
| PAPA015 | 2013 | 2000 | 2.2 | 1.6 | 0.9 | 0.5 | -0.8 | 39.8 |
| PAPA015 | 2013 | 2500 | 2.3 | 2.4 | 1.8 | 1.3 | 0.0 | 39.8 |
| PAPA015 | 2013 | 3150 | 3.1 | 3.2 | 2.5 | 2.2 | 1.2 | 41.0 |
| PAPA015 | 2013 | 4000 | 4.0 | 3.9 | 3.4 | 3.2 | 2.3 | 38.3 |
| PAPA015 | 2013 | 5000 | 4.7 | 4.7 | 4.3 | 4.1 | 3.4 | 43.2 |
| PAPA015 | 2013 | 6300 | 5.2 | 5.4 | 5.0 | 4.8 | 3.8 | 39.0 |
| PAPA015 | 2013 | 8000 | 5.8 | 5.9 | 5.5 | 5.4 | 3.4 | 39.4 |
| PAPA015 | 2013 | 10000 | 5.9 | 6.1 | 5.8 | 5.5 | 3.3 | 45.7 |
| PAPA015 | 2013 | 12500 | 5.4 | 5.5 | 5.2 | 4.8 | 3.0 | 44.1 |
| PAPA015 | 2013 | 16000 | 3.6 | 3.7 | 3.3 | 2.8 | 1.8 | 38.5 |
| PAPA015 | 2013 | 20000 | 0.9 | 1.6 | 0.6 | 0.2 | -0.5 | 35.6 |
| PAPA016 | 2013 | 12.5 | 39.5 | 40.6 | 35.7 | 31.1 | 16.5 | 74.5 |
| PAPA016 | 2013 | 15.8 | 41.2 | 43.4 | 37.0 | 32.4 | 22.3 | 71.8 |
| PAPA016 | 2013 | 20 | 46.2 | 49.1 | 41.6 | 36.3 | 22.9 | 68.9 |
| PAPA016 | 2013 | 25 | 37.9 | 39.6 | 33.6 | 29.9 | 20.2 | 65.2 |
| PAPA016 | 2013 | 31.5 | 38.9 | 41.3 | 34.3 | 29.8 | 18.0 | 65.9 |
| PAPA016 | 2013 | 40 | 34.7 | 35.9 | 30.6 | 27.0 | 15.8 | 58.3 |
| PAPA016 | 2013 | 50 | 33.4 | 36.4 | 29.8 | 25.2 | 13.9 | 58.7 |
| PAPA016 | 2013 | 63 | 34.0 | 36.6 | 29.9 | 24.9 | 12.7 | 66.1 |
| PAPA016 | 2013 | 80 | 33.3 | 35.7 | 28.9 | 25.0 | 9.2 | 71.4 |
| PAPA016 | 2013 | 100 | 32.6 | 34.6 | 28.3 | 24.6 | 7.0 | 75.7 |
| PAPA016 | 2013 | 125 | 30.5 | 32.7 | 26.6 | 23.1 | 4.4 | 73.4 |
| PAPA016 | 2013 | 160 | 28.4 | 29.3 | 23.7 | 20.2 | 2.2 | 64.3 |
| PAPA016 | 2013 | 200 | 25.6 | 27.8 | 21.9 | 17.7 | 0.2 | 56.5 |
| PAPA016 | 2013 | 250 | 20.7 | 21.4 | 17.1 | 12.4 | -3.3 | 52.6 |
| PAPA016 | 2013 | 315 | 15.4 | 17.3 | 13.3 | 7.7 | -4.4 | 46.4 |
| PAPA016 | 2013 | 400 | 12.9 | 13.1 | 8.6 | 2.5 | -4.5 | 52.3 |
| PAPA016 | 2013 | 500 | 11.0 | 9.1 | 2.5 | -0.8 | -4.5 | 48.1 |
| PAPA016 | 2013 | 630 | 9.7 | 9.2 | 1.1 | -1.4 | -4.0 | 40.4 |
| PAPA016 | 2013 | 800 | 6.4 | 9.4 | 1.5 | -1.0 | -3.2 | 42.0 |
| PAPA016 | 2013 | 1000 | 5.7 | 8.3 | 1.2 | -0.5 | -2.4 | 38.5 |
| PAPA016 | 2013 | 1250 | 5.6 | 6.9 | 1.0 | -0.1 | -1.6 | 38.7 |
| PAPA016 | 2013 | 1600 | 5.1 | 6.2 | 1.5 | 0.8 | -0.6 | 48.1 |
| PAPA016 | 2013 | 2000 | 4.0 | 4.4 | 2.1 | 1.5 | 0.4 | 37.8 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA016 | 2013 | 2500 | 3.4 | 3.8 | 2.8 | 2.3 | 1.3 | 35.5 |
| PAPA016 | 2013 | 3150 | 3.8 | 4.1 | 3.5 | 3.1 | 2.2 | 35.0 |
| PAPA016 | 2013 | 4000 | 4.5 | 4.7 | 4.1 | 3.9 | 3.2 | 33.2 |
| PAPA016 | 2013 | 5000 | 5.2 | 5.3 | 4.8 | 4.5 | 3.6 | 37.7 |
| PAPA016 | 2013 | 6300 | 5.4 | 5.6 | 5.2 | 5.0 | 3.5 | 38.0 |
| PAPA016 | 2013 | 8000 | 5.4 | 5.6 | 5.3 | 5.1 | 3.6 | 41.3 |
| PAPA016 | 2013 | 10000 | 5.1 | 5.4 | 5.0 | 4.8 | 3.1 | 35.5 |
| PAPA016 | 2013 | 12500 | 4.4 | 4.7 | 4.3 | 4.1 | 2.8 | 35.7 |
| PAPA016 | 2013 | 16000 | 3.4 | 3.8 | 3.3 | 3.1 | 2.5 | 33.5 |
| PAPA016 | 2013 | 20000 | 2.2 | 2.6 | 2.0 | 1.7 | 1.2 | 32.9 |
| PAPA017 | 2013 | 12.5 | 48.5 | 50.6 | 44.1 | 39.3 | 25.3 | 78.3 |
| PAPA017 | 2013 | 15.8 | 46.8 | 49.7 | 44.1 | 39.3 | 25.1 | 77.6 |
| PAPA017 | 2013 | 20 | 56.3 | 60.8 | 50.8 | 46.2 | 29.6 | 75.9 |
| PAPA017 | 2013 | 25 | 47.7 | 50.3 | 46.3 | 42.8 | 27.6 | 70.6 |
| PAPA017 | 2013 | 31.5 | 54.5 | 58.2 | 52.7 | 46.8 | 26.1 | 69.4 |
| PAPA017 | 2013 | 40 | 42.7 | 45.1 | 41.8 | 38.0 | 24.6 | 64.5 |
| PAPA017 | 2013 | 50 | 39.1 | 41.5 | 37.7 | 34.8 | 24.1 | 63.8 |
| PAPA017 | 2013 | 63 | 37.9 | 40.0 | 36.8 | 33.7 | 21.8 | 62.8 |
| PAPA017 | 2013 | 80 | 34.1 | 36.7 | 32.8 | 29.2 | 17.2 | 68.7 |
| PAPA017 | 2013 | 100 | 32.7 | 35.5 | 30.1 | 26.7 | 13.4 | 69.9 |
| PAPA017 | 2013 | 125 | 31.8 | 34.8 | 29.2 | 25.6 | 7.5 | 74.7 |
| PAPA017 | 2013 | 160 | 30.0 | 32.3 | 27.6 | 24.0 | 4.5 | 71.3 |
| PAPA017 | 2013 | 200 | 28.5 | 30.6 | 26.5 | 22.5 | 4.5 | 57.8 |
| PAPA017 | 2013 | 250 | 24.5 | 26.9 | 23.0 | 19.2 | 1.1 | 55.1 |
| PAPA017 | 2013 | 315 | 20.6 | 23.5 | 18.9 | 15.6 | -1.1 | 47.9 |
| PAPA017 | 2013 | 400 | 17.2 | 19.1 | 15.1 | 11.1 | -3.0 | 49.2 |
| PAPA017 | 2013 | 500 | 13.8 | 14.8 | 9.3 | 6.1 | -3.4 | 47.3 |
| PAPA017 | 2013 | 630 | 8.5 | 10.7 | 4.9 | 1.2 | -3.4 | 41.4 |
| PAPA017 | 2013 | 800 | 6.7 | 8.5 | 2.9 | -0.1 | -3.1 | 39.4 |
| PAPA017 | 2013 | 1000 | 6.1 | 9.1 | 1.7 | -0.1 | -2.1 | 50.9 |
| PAPA017 | 2013 | 1250 | 5.2 | 7.7 | 1.3 | 0.3 | -1.3 | 42.2 |
| PAPA017 | 2013 | 1600 | 4.7 | 5.6 | 1.6 | 1.0 | -0.5 | 37.5 |
| PAPA017 | 2013 | 2000 | 3.8 | 3.8 | 2.3 | 1.7 | 0.6 | 33.7 |
| PAPA017 | 2013 | 2500 | 3.6 | 3.6 | 2.9 | 2.5 | 1.6 | 35.2 |
| PAPA017 | 2013 | 3150 | 3.9 | 4.1 | 3.7 | 3.3 | 2.5 | 48.5 |
| PAPA017 | 2013 | 4000 | 4.8 | 4.8 | 4.4 | 4.1 | 3.2 | 38.5 |
| PAPA017 | 2013 | 5000 | 5.6 | 5.3 | 4.9 | 4.7 | 2.7 | 45.2 |
| PAPA017 | 2013 | 6300 | 5.5 | 5.5 | 5.2 | 5.0 | 2.7 | 41.5 |
| PAPA017 | 2013 | 8000 | 5.3 | 5.5 | 5.3 | 5.1 | 2.2 | 29.5 |
| PAPA017 | 2013 | 10000 | 5.1 | 5.2 | 5.0 | 4.9 | 2.4 | 26.2 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA017 | 2013 | 12500 | 4.6 | 4.7 | 4.5 | 4.3 | 1.9 | 26.2 |
| PAPA017 | 2013 | 16000 | 3.8 | 3.9 | 3.6 | 3.5 | 1.8 | 23.6 |
| PAPA017 | 2013 | 20000 | 2.6 | 3.0 | 2.4 | 2.3 | 1.7 | 20.5 |
| PAPA018 | 2013 | 12.5 | 46.5 | 47.9 | 41.8 | 36.8 | 19.0 | 78.4 |
| PAPA018 | 2013 | 15.8 | 47.7 | 50.1 | 44.7 | 38.4 | 23.7 | 75.3 |
| PAPA018 | 2013 | 20 | 54.0 | 58.5 | 49.3 | 45.1 | 29.4 | 75.1 |
| PAPA018 | 2013 | 25 | 43.3 | 45.5 | 41.0 | 36.5 | 22.0 | 70.9 |
| PAPA018 | 2013 | 31.5 | 48.1 | 51.6 | 45.4 | 39.5 | 23.7 | 69.4 |
| PAPA018 | 2013 | 40 | 40.6 | 42.7 | 37.8 | 34.3 | 21.0 | 65.1 |
| PAPA018 | 2013 | 50 | 38.1 | 40.6 | 36.0 | 32.1 | 20.6 | 64.2 |
| PAPA018 | 2013 | 63 | 38.0 | 40.8 | 34.7 | 30.7 | 17.8 | 66.0 |
| PAPA018 | 2013 | 80 | 34.9 | 37.8 | 31.5 | 26.4 | 14.1 | 68.8 |
| PAPA018 | 2013 | 100 | 34.6 | 37.3 | 29.8 | 25.2 | 12.9 | 77.6 |
| PAPA018 | 2013 | 125 | 32.2 | 35.0 | 28.8 | 24.0 | 11.6 | 76.8 |
| PAPA018 | 2013 | 160 | 30.8 | 32.7 | 26.1 | 22.4 | 8.4 | 60.3 |
| PAPA018 | 2013 | 200 | 29.6 | 32.4 | 26.2 | 21.8 | 7.6 | 68.3 |
| PAPA018 | 2013 | 250 | 24.8 | 28.0 | 22.7 | 18.0 | 2.7 | 63.9 |
| PAPA018 | 2013 | 315 | 21.8 | 24.3 | 19.3 | 15.0 | -0.1 | 52.9 |
| PAPA018 | 2013 | 400 | 16.6 | 19.1 | 13.9 | 9.8 | -3.3 | 57.8 |
| PAPA018 | 2013 | 500 | 11.5 | 14.6 | 9.1 | 4.7 | -3.8 | 59.7 |
| PAPA018 | 2013 | 630 | 8.7 | 10.8 | 5.0 | 1.0 | -3.9 | 52.9 |
| PAPA018 | 2013 | 800 | 7.7 | 10.7 | 2.8 | -0.3 | -3.6 | 39.9 |
| PAPA018 | 2013 | 1000 | 6.0 | 8.3 | 0.5 | -1.1 | -2.9 | 38.3 |
| PAPA018 | 2013 | 1250 | 4.4 | 6.8 | -0.2 | -0.9 | -2.4 | 34.1 |
| PAPA018 | 2013 | 1600 | 3.5 | 3.8 | 0.2 | -0.4 | -1.5 | 35.5 |
| PAPA018 | 2013 | 2000 | 2.6 | 3.0 | 0.9 | 0.3 | -0.7 | 37.3 |
| PAPA018 | 2013 | 2500 | 2.4 | 2.6 | 1.5 | 1.1 | 0.2 | 36.9 |
| PAPA018 | 2013 | 3150 | 2.7 | 2.8 | 2.2 | 1.9 | 1.2 | 34.4 |
| PAPA018 | 2013 | 4000 | 3.4 | 3.4 | 3.0 | 2.8 | 2.2 | 43.8 |
| PAPA018 | 2013 | 5000 | 4.4 | 4.1 | 3.8 | 3.6 | 2.9 | 47.8 |
| PAPA018 | 2013 | 6300 | 4.7 | 4.7 | 4.5 | 4.4 | 2.8 | 54.3 |
| PAPA018 | 2013 | 8000 | 5.1 | 5.2 | 5.1 | 4.9 | 2.6 | 55.8 |
| PAPA018 | 2013 | 10000 | 5.4 | 5.5 | 5.3 | 5.2 | 2.7 | 36.8 |
| PAPA018 | 2013 | 12500 | 5.0 | 5.2 | 4.8 | 4.7 | 2.5 | 28.0 |
| PAPA018 | 2013 | 16000 | 2.9 | 3.2 | 2.8 | 2.6 | 1.6 | 33.5 |
| PAPA018 | 2013 | 20000 | 0.4 | 0.7 | 0.2 | 0.0 | -0.4 | 19.2 |
| PAPA019 | 2013 | 12.5 | 41.5 | 43.7 | 38.5 | 33.9 | 16.2 | 73.2 |
| PAPA019 | 2013 | 15.8 | 42.2 | 44.9 | 40.0 | 34.9 | 19.9 | 69.7 |
| PAPA019 | 2013 | 20 | 49.9 | 52.9 | 43.9 | 39.5 | 22.6 | 71.7 |
| PAPA019 | 2013 | 25 | 39.6 | 42.2 | 36.7 | 32.1 | 20.7 | 63.8 |

| Appendix D. One-third Octave Band Metrics, PAPA Leks, April 2013. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA019 | 2013 | 31.5 | 42.2 | 45.2 | 39.5 | 33.6 | 20.7 | 63.6 |
| PAPA019 | 2013 | 40 | 36.8 | 39.1 | 34.3 | 29.6 | 18.5 | 60.9 |
| PAPA019 | 2013 | 50 | 36.1 | 39.0 | 33.1 | 28.8 | 16.6 | 59.7 |
| PAPA019 | 2013 | 63 | 36.4 | 38.6 | 32.9 | 28.5 | 18.5 | 65.6 |
| PAPA019 | 2013 | 80 | 34.0 | 36.8 | 30.8 | 26.7 | 14.5 | 76.9 |
| PAPA019 | 2013 | 100 | 32.7 | 35.3 | 28.8 | 24.9 | 14.3 | 74.5 |
| PAPA019 | 2013 | 125 | 31.0 | 33.1 | 27.1 | 22.5 | 11.3 | 71.6 |
| PAPA019 | 2013 | 160 | 28.6 | 29.4 | 24.5 | 20.0 | 7.8 | 60.1 |
| PAPA019 | 2013 | 200 | 25.6 | 27.6 | 22.5 | 18.2 | 4.8 | 68.0 |
| PAPA019 | 2013 | 250 | 21.1 | 23.4 | 18.5 | 14.9 | 1.1 | 65.3 |
| PAPA019 | 2013 | 315 | 18.0 | 20.5 | 14.7 | 10.8 | -1.9 | 52.1 |
| PAPA019 | 2013 | 400 | 13.1 | 16.1 | 10.0 | 5.8 | -3.3 | 56.2 |
| PAPA019 | 2013 | 500 | 9.8 | 12.2 | 5.4 | 1.0 | -3.9 | 56.8 |
| PAPA019 | 2013 | 630 | 7.4 | 8.6 | 1.9 | -1.4 | -3.6 | 52.4 |
| PAPA019 | 2013 | 800 | 5.9 | 8.2 | 0.5 | -1.5 | -3.3 | 48.5 |
| PAPA019 | 2013 | 1000 | 6.6 | 7.7 | 0.2 | -1.0 | -2.4 | 50.7 |
| PAPA019 | 2013 | 1250 | 6.2 | 6.9 | 0.4 | -0.3 | -1.6 | 53.4 |
| PAPA019 | 2013 | 1600 | 4.8 | 5.9 | 1.1 | 0.5 | -0.7 | 54.4 |
| PAPA019 | 2013 | 2000 | 3.0 | 3.5 | 1.8 | 1.3 | 0.3 | 49.9 |
| PAPA019 | 2013 | 2500 | 2.8 | 3.1 | 2.5 | 2.0 | 1.3 | 43.8 |
| PAPA019 | 2013 | 3150 | 3.4 | 3.7 | 3.2 | 2.9 | 2.1 | 35.2 |
| PAPA019 | 2013 | 4000 | 4.0 | 4.3 | 3.9 | 3.6 | 2.0 | 37.0 |
| PAPA019 | 2013 | 5000 | 4.5 | 4.7 | 4.4 | 4.2 | 2.4 | 35.9 |
| PAPA019 | 2013 | 6300 | 4.8 | 4.9 | 4.7 | 4.5 | 1.4 | 37.7 |
| PAPA019 | 2013 | 8000 | 4.7 | 4.8 | 4.6 | 4.4 | 1.1 | 29.6 |
| PAPA019 | 2013 | 10000 | 4.2 | 4.5 | 4.2 | 4.0 | 0.5 | 32.1 |
| PAPA019 | 2013 | 12500 | 3.6 | 3.8 | 3.5 | 3.3 | 0.0 | 28.3 |
| PAPA019 | 2013 | 16000 | 2.7 | 2.9 | 2.5 | 2.3 | -0.4 | 26.5 |
| PAPA019 | 2013 | 20000 | 1.1 | 1.4 | 0.9 | 0.6 | -0.3 | 26.4 |

## Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA001 | 2014 | 12.5 | 47.9 | 50.3 | 44.9 | 39.9 | 25.2 | 83.9 |
| PAPA001 | 2014 | 15.8 | 54.6 | 57.4 | 53.8 | 49.6 | 30.7 | 79.1 |
| PAPA001 | 2014 | 20 | 56.9 | 59.3 | 55.7 | 51.9 | 35.8 | 81.9 |
| PAPA001 | 2014 | 25 | 51.2 | 53.2 | 50.1 | 47.5 | 34.2 | 73.0 |
| PAPA001 | 2014 | 31.5 | 61.9 | 65.3 | 60.8 | 54.2 | 37.5 | 78.1 |
| PAPA001 | 2014 | 40 | 44.4 | 46.5 | 43.1 | 40.4 | 28.4 | 68.2 |
| PAPA001 | 2014 | 50 | 40.4 | 42.8 | 39.4 | 36.9 | 20.4 | 63.2 |
| PAPA001 | 2014 | 63 | 40.3 | 43.4 | 38.2 | 34.3 | 18.5 | 69.5 |
| PAPA001 | 2014 | 80 | 37.4 | 38.6 | 31.5 | 29.1 | 13.3 | 69.5 |
| PAPA001 | 2014 | 100 | 34.2 | 36.2 | 31.8 | 28.2 | 11.0 | 72.3 |
| PAPA001 | 2014 | 125 | 31.3 | 33.2 | 28.6 | 25.1 | 7.7 | 62.2 |
| PAPA001 | 2014 | 160 | 27.8 | 28.5 | 23.6 | 20.9 | 4.7 | 58.9 |
| PAPA001 | 2014 | 200 | 26.0 | 26.5 | 22.2 | 18.9 | 0.0 | 60.8 |
| PAPA001 | 2014 | 250 | 23.8 | 23.9 | 18.9 | 16.3 | 0.0 | 55.9 |
| PAPA001 | 2014 | 315 | 21.3 | 19.8 | 16.8 | 14.2 | 0.0 | 51.8 |
| PAPA001 | 2014 | 400 | 19.1 | 18.6 | 14.2 | 11.9 | 0.0 | 57.4 |
| PAPA001 | 2014 | 500 | 16.5 | 16.2 | 10.7 | 7.7 | 0.0 | 53.6 |
| PAPA001 | 2014 | 630 | 13.9 | 15.1 | 8.3 | 4.7 | 0.0 | 48.7 |
| PAPA001 | 2014 | 800 | 12.6 | 14.5 | 8.3 | 5.9 | 0.0 | 43.8 |
| PAPA001 | 2014 | 1000 | 11.2 | 12.2 | 7.7 | 5.9 | 0.0 | 49.2 |
| PAPA001 | 2014 | 1250 | 8.0 | 9.4 | 5.9 | 4.7 | 2.9 | 50.3 |
| PAPA001 | 2014 | 1600 | 7.2 | 8.3 | 5.9 | 4.7 | 2.9 | 37.9 |
| PAPA001 | 2014 | 2000 | 7.3 | 7.7 | 6.9 | 5.9 | 4.7 | 51.9 |
| PAPA001 | 2014 | 2500 | 7.6 | 7.7 | 6.9 | 6.9 | 5.9 | 50.5 |
| PAPA001 | 2014 | 3150 | 8.3 | 8.3 | 7.7 | 7.7 | 6.9 | 41.8 |
| PAPA001 | 2014 | 4000 | 8.7 | 8.9 | 8.3 | 8.3 | 7.7 | 37.7 |
| PAPA001 | 2014 | 5000 | 9.1 | 9.4 | 8.9 | 8.9 | 8.3 | 37.7 |
| PAPA001 | 2014 | 6300 | 9.4 | 9.4 | 9.4 | 8.9 | 8.3 | 46.4 |
| PAPA001 | 2014 | 8000 | 9.3 | 9.4 | 9.4 | 8.9 | 8.9 | 40.7 |
| PAPA001 | 2014 | 10000 | 9.2 | 9.4 | 8.9 | 8.9 | 8.3 | 34.7 |
| PAPA001 | 2014 | 12500 | 9.3 | 9.4 | 9.4 | 8.9 | 8.9 | 35.8 |
| PAPA001 | 2014 | 16000 | 9.9 | 9.9 | 9.9 | 9.4 | 8.9 | 37.2 |
| PAPA001 | 2014 | 20000 | 12.9 | 13.1 | 12.9 | 12.7 | 11.9 | 44.7 |
| PAPA002 | 2014 | 12.5 | 53.4 | 56.0 | 49.0 | 41.9 | 25.9 | 90.6 |
| PAPA002 | 2014 | 15.8 | 55.0 | 57.8 | 53.3 | 49.0 | 32.2 | 88.0 |
| PAPA002 | 2014 | 20 | 57.2 | 59.8 | 56.4 | 52.7 | 35.1 | 85.6 |
| PAPA002 | 2014 | 25 | 49.9 | 53.7 | 45.0 | 41.1 | 30.3 | 82.7 |
| PAPA002 | 2014 | 31.5 | 48.0 | 51.0 | 46.3 | 41.8 | 28.5 | 77.7 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA002 | 2014 | 40 | 41.7 | 44.4 | 40.5 | 36.6 | 25.6 | 75.7 |
| PAPA002 | 2014 | 50 | 39.4 | 41.8 | 37.9 | 34.6 | 23.4 | 71.0 |
| PAPA002 | 2014 | 63 | 36.8 | 39.0 | 34.2 | 31.5 | 20.0 | 68.0 |
| PAPA002 | 2014 | 80 | 33.7 | 36.2 | 31.2 | 28.0 | 14.6 | 74.9 |
| PAPA002 | 2014 | 100 | 32.3 | 33.6 | 28.6 | 25.2 | 11.9 | 66.1 |
| PAPA002 | 2014 | 125 | 30.4 | 31.8 | 26.2 | 23.3 | 9.5 | 60.4 |
| PAPA002 | 2014 | 160 | 27.1 | 28.7 | 23.5 | 20.2 | 6.5 | 56.6 |
| PAPA002 | 2014 | 200 | 25.8 | 26.9 | 21.9 | 18.6 | 5.3 | 58.2 |
| PAPA002 | 2014 | 250 | 23.3 | 25.4 | 19.0 | 15.5 | 3.5 | 55.6 |
| PAPA002 | 2014 | 315 | 20.7 | 22.9 | 17.8 | 14.3 | 0.0 | 55.8 |
| PAPA002 | 2014 | 400 | 20.1 | 18.5 | 13.5 | 9.5 | 0.0 | 56.5 |
| PAPA002 | 2014 | 500 | 19.1 | 16.4 | 8.9 | 5.3 | 0.0 | 59.5 |
| PAPA002 | 2014 | 630 | 16.2 | 15.0 | 7.5 | 3.5 | 0.0 | 55.3 |
| PAPA002 | 2014 | 800 | 11.6 | 13.3 | 6.5 | 3.5 | 0.0 | 45.6 |
| PAPA002 | 2014 | 1000 | 7.7 | 10.5 | 5.3 | 3.5 | 0.0 | 42.6 |
| PAPA002 | 2014 | 1250 | 6.2 | 7.5 | 5.3 | 3.5 | 0.0 | 43.0 |
| PAPA002 | 2014 | 1600 | 7.0 | 7.5 | 5.3 | 5.3 | 3.5 | 47.5 |
| PAPA002 | 2014 | 2000 | 7.6 | 8.3 | 6.5 | 6.5 | 3.5 | 57.6 |
| PAPA002 | 2014 | 2500 | 8.1 | 8.3 | 7.5 | 7.5 | 5.3 | 57.7 |
| PAPA002 | 2014 | 3150 | 8.6 | 8.9 | 8.3 | 8.3 | 6.5 | 47.5 |
| PAPA002 | 2014 | 4000 | 9.6 | 9.5 | 8.9 | 8.9 | 7.5 | 48.1 |
| PAPA002 | 2014 | 5000 | 10.4 | 9.5 | 9.5 | 8.9 | 8.3 | 48.7 |
| PAPA002 | 2014 | 6300 | 9.8 | 10.0 | 9.5 | 9.5 | 8.3 | 49.2 |
| PAPA002 | 2014 | 8000 | 10.0 | 10.0 | 9.5 | 9.5 | 8.3 | 50.4 |
| PAPA002 | 2014 | 10000 | 9.9 | 10.0 | 10.0 | 9.5 | 8.3 | 37.3 |
| PAPA002 | 2014 | 12500 | 10.0 | 10.0 | 10.0 | 9.5 | 8.9 | 37.7 |
| PAPA002 | 2014 | 16000 | 10.4 | 10.5 | 10.0 | 10.0 | 9.5 | 38.3 |
| PAPA002 | 2014 | 20000 | 13.0 | 12.8 | 12.8 | 12.5 | 12.2 | 44.4 |
| PAPA003 | 2014 | 12.5 | 49.1 | 52.2 | 46.4 | 41.1 | 22.4 | 76.9 |
| PAPA003 | 2014 | 15.8 | 54.4 | 57.4 | 53.5 | 48.5 | 29.6 | 76.1 |
| PAPA003 | 2014 | 20 | 57.0 | 59.4 | 55.5 | 51.8 | 35.9 | 73.4 |
| PAPA003 | 2014 | 25 | 51.5 | 54.5 | 48.9 | 44.0 | 30.4 | 71.9 |
| PAPA003 | 2014 | 31.5 | 53.3 | 56.4 | 52.4 | 48.2 | 34.4 | 71.3 |
| PAPA003 | 2014 | 40 | 45.4 | 47.6 | 44.4 | 40.8 | 32.3 | 69.0 |
| PAPA003 | 2014 | 50 | 45.4 | 48.1 | 43.8 | 40.5 | 31.0 | 67.2 |
| PAPA003 | 2014 | 63 | 45.5 | 48.4 | 43.8 | 39.8 | 28.7 | 66.1 |
| PAPA003 | 2014 | 80 | 41.4 | 43.1 | 37.4 | 34.3 | 22.8 | 75.0 |
| PAPA003 | 2014 | 100 | 40.2 | 41.4 | 36.0 | 32.3 | 21.1 | 70.4 |
| PAPA003 | 2014 | 125 | 37.2 | 39.1 | 34.5 | 30.6 | 17.5 | 65.2 |
| PAPA003 | 2014 | 160 | 34.1 | 36.3 | 31.1 | 27.4 | 16.3 | 63.8 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA003 | 2014 | 200 | 31.2 | 33.4 | 28.6 | 25.0 | 14.2 | 64.7 |
| PAPA003 | 2014 | 250 | 28.3 | 30.5 | 25.9 | 22.2 | 12.0 | 56.9 |
| PAPA003 | 2014 | 315 | 25.9 | 28.2 | 23.8 | 20.0 | 9.5 | 51.3 |
| PAPA003 | 2014 | 400 | 22.6 | 24.7 | 20.0 | 16.2 | 6.0 | 48.6 |
| PAPA003 | 2014 | 500 | 19.8 | 20.7 | 16.1 | 12.0 | 1.8 | 50.4 |
| PAPA003 | 2014 | 630 | 16.6 | 17.4 | 12.9 | 8.7 | -0.5 | 47.1 |
| PAPA003 | 2014 | 800 | 12.5 | 14.1 | 9.2 | 4.5 | -1.8 | 47.7 |
| PAPA003 | 2014 | 1000 | 9.5 | 11.2 | 6.1 | 1.8 | -1.8 | 45.7 |
| PAPA003 | 2014 | 1250 | 5.3 | 7.8 | 3.1 | 0.4 | -1.3 | 37.1 |
| PAPA003 | 2014 | 1600 | 3.6 | 4.6 | 1.3 | 0.6 | -0.7 | 40.4 |
| PAPA003 | 2014 | 2000 | 3.5 | 5.3 | 1.7 | 1.2 | 0.0 | 35.3 |
| PAPA003 | 2014 | 2500 | 3.7 | 5.0 | 2.3 | 1.8 | -0.1 | 42.3 |
| PAPA003 | 2014 | 3150 | 3.5 | 3.9 | 2.7 | 2.3 | -0.1 | 36.0 |
| PAPA003 | 2014 | 4000 | 5.0 | 4.7 | 3.0 | 2.6 | -0.8 | 41.2 |
| PAPA003 | 2014 | 5000 | 6.2 | 4.3 | 3.1 | 2.8 | -1.2 | 45.8 |
| PAPA003 | 2014 | 6300 | 3.9 | 3.5 | 3.2 | 2.9 | -1.5 | 42.3 |
| PAPA003 | 2014 | 8000 | 3.2 | 3.4 | 3.2 | 3.1 | -1.6 | 28.4 |
| PAPA003 | 2014 | 10000 | 3.6 | 3.7 | 3.6 | 3.4 | -1.6 | 31.1 |
| PAPA003 | 2014 | 12500 | 3.8 | 3.9 | 3.8 | 3.5 | -1.5 | 31.7 |
| PAPA003 | 2014 | 16000 | 1.9 | 2.0 | 1.9 | 1.8 | -1.7 | 32.0 |
| PAPA003 | 2014 | 20000 | -1.5 | -1.3 | -1.6 | -1.7 | -2.2 | 29.3 |
| PAPA004 | 2014 | 12.5 | 48.8 | 51.3 | 43.9 | 36.1 | 21.7 | 76.8 |
| PAPA004 | 2014 | 15.8 | 49.7 | 52.5 | 45.2 | 39.1 | 26.1 | 73.9 |
| PAPA004 | 2014 | 20 | 51.8 | 54.7 | 49.0 | 45.2 | 30.1 | 75.6 |
| PAPA004 | 2014 | 25 | 45.3 | 47.9 | 40.2 | 36.4 | 23.8 | 71.0 |
| PAPA004 | 2014 | 31.5 | 46.9 | 50.2 | 44.1 | 38.5 | 23.9 | 71.4 |
| PAPA004 | 2014 | 40 | 40.8 | 43.4 | 38.4 | 34.2 | 21.6 | 67.3 |
| PAPA004 | 2014 | 50 | 38.7 | 41.2 | 34.9 | 31.5 | 17.8 | 66.2 |
| PAPA004 | 2014 | 63 | 36.9 | 39.4 | 34.5 | 30.3 | 18.2 | 67.0 |
| PAPA004 | 2014 | 80 | 35.4 | 37.5 | 32.3 | 29.0 | 13.7 | 68.0 |
| PAPA004 | 2014 | 100 | 34.2 | 36.5 | 31.8 | 28.2 | 15.1 | 79.5 |
| PAPA004 | 2014 | 125 | 33.0 | 34.2 | 29.3 | 26.2 | 10.4 | 80.5 |
| PAPA004 | 2014 | 160 | 30.2 | 31.5 | 26.0 | 22.7 | 7.7 | 76.3 |
| PAPA004 | 2014 | 200 | 27.5 | 29.7 | 23.8 | 20.1 | 4.6 | 69.2 |
| PAPA004 | 2014 | 250 | 25.5 | 26.3 | 22.1 | 17.8 | 4.2 | 69.5 |
| PAPA004 | 2014 | 315 | 22.3 | 22.8 | 18.8 | 15.1 | -0.3 | 63.1 |
| PAPA004 | 2014 | 400 | 19.1 | 19.4 | 15.1 | 12.1 | -2.2 | 66.0 |
| PAPA004 | 2014 | 500 | 14.1 | 15.0 | 10.3 | 6.7 | -3.1 | 68.8 |
| PAPA004 | 2014 | 630 | 10.9 | 13.5 | 6.6 | 3.2 | -3.3 | 66.1 |
| PAPA004 | 2014 | 800 | 11.8 | 15.6 | 4.7 | 0.8 | -3.1 | 60.7 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA004 | 2014 | 1000 | 13.3 | 15.1 | 3.4 | 0.1 | -2.5 | 54.4 |
| PAPA004 | 2014 | 1250 | 12.3 | 12.7 | 2.7 | 0.4 | -1.7 | 57.5 |
| PAPA004 | 2014 | 1600 | 10.1 | 10.3 | 2.1 | 0.8 | -0.8 | 52.8 |
| PAPA004 | 2014 | 2000 | 7.8 | 9.6 | 2.3 | 1.3 | 0.1 | 53.4 |
| PAPA004 | 2014 | 2500 | 6.7 | 6.3 | 2.7 | 2.0 | 1.0 | 50.5 |
| PAPA004 | 2014 | 3150 | 7.9 | 5.1 | 3.1 | 2.8 | 1.5 | 59.9 |
| PAPA004 | 2014 | 4000 | 5.3 | 4.3 | 3.9 | 3.7 | 0.9 | 51.9 |
| PAPA004 | 2014 | 5000 | 5.1 | 4.9 | 4.7 | 4.5 | 1.4 | 39.9 |
| PAPA004 | 2014 | 6300 | 5.4 | 5.5 | 5.3 | 5.2 | 1.2 | 30.7 |
| PAPA004 | 2014 | 8000 | 5.9 | 6.0 | 5.8 | 5.7 | 1.5 | 28.8 |
| PAPA004 | 2014 | 10000 | 6.3 | 6.4 | 6.2 | 6.1 | 0.6 | 29.5 |
| PAPA004 | 2014 | 12500 | 6.3 | 6.4 | 6.2 | 6.0 | 0.7 | 30.1 |
| PAPA004 | 2014 | 16000 | 5.6 | 5.9 | 5.6 | 5.4 | 0.8 | 31.3 |
| PAPA004 | 2014 | 20000 | 3.8 | 4.5 | 3.6 | 3.3 | 0.6 | 25.3 |
| PAPA005 | 2014 | 12.5 | 44.3 | 47.3 | 41.1 | 36.4 | 21.6 | 78.3 |
| PAPA005 | 2014 | 15.8 | 48.6 | 51.2 | 47.0 | 42.7 | 27.0 | 75.9 |
| PAPA005 | 2014 | 20 | 57.5 | 59.5 | 56.3 | 52.4 | 33.6 | 73.9 |
| PAPA005 | 2014 | 25 | 60.9 | 63.5 | 59.7 | 55.7 | 27.6 | 76.1 |
| PAPA005 | 2014 | 31.5 | 48.5 | 51.6 | 46.4 | 41.6 | 27.7 | 70.6 |
| PAPA005 | 2014 | 40 | 43.6 | 45.7 | 41.7 | 39.3 | 25.7 | 68.6 |
| PAPA005 | 2014 | 50 | 46.3 | 49.1 | 46.2 | 40.4 | 27.6 | 66.8 |
| PAPA005 | 2014 | 63 | 39.7 | 42.4 | 37.9 | 34.6 | 23.7 | 69.6 |
| PAPA005 | 2014 | 80 | 37.7 | 40.2 | 34.4 | 31.0 | 21.4 | 74.5 |
| PAPA005 | 2014 | 100 | 36.4 | 35.9 | 31.2 | 28.5 | 17.0 | 78.1 |
| PAPA005 | 2014 | 125 | 33.8 | 34.9 | 29.4 | 25.7 | 12.9 | 76.5 |
| PAPA005 | 2014 | 160 | 31.3 | 32.7 | 27.5 | 23.2 | 10.1 | 74.5 |
| PAPA005 | 2014 | 200 | 29.0 | 30.3 | 24.9 | 20.6 | 6.5 | 64.1 |
| PAPA005 | 2014 | 250 | 26.6 | 27.8 | 21.5 | 18.4 | 4.4 | 67.3 |
| PAPA005 | 2014 | 315 | 23.0 | 24.7 | 19.1 | 15.5 | 1.8 | 61.5 |
| PAPA005 | 2014 | 400 | 18.6 | 20.8 | 14.4 | 11.3 | -0.2 | 61.2 |
| PAPA005 | 2014 | 500 | 17.2 | 17.4 | 10.4 | 6.9 | -2.3 | 64.7 |
| PAPA005 | 2014 | 630 | 14.3 | 15.0 | 7.0 | 3.2 | -2.9 | 63.2 |
| PAPA005 | 2014 | 800 | 9.0 | 11.2 | 3.6 | 0.7 | -2.9 | 57.0 |
| PAPA005 | 2014 | 1000 | 4.7 | 6.0 | 1.6 | 0.1 | -2.3 | 45.6 |
| PAPA005 | 2014 | 1250 | 2.6 | 3.1 | 0.9 | 0.4 | -1.6 | 47.6 |
| PAPA005 | 2014 | 1600 | 2.8 | 3.2 | 1.3 | 0.7 | -0.8 | 41.4 |
| PAPA005 | 2014 | 2000 | 7.7 | 8.5 | 2.4 | 1.8 | 0.1 | 41.8 |
| PAPA005 | 2014 | 2500 | 8.5 | 9.3 | 3.2 | 2.6 | 1.0 | 47.4 |
| PAPA005 | 2014 | 3150 | 9.7 | 6.5 | 3.8 | 3.3 | 1.9 | 55.1 |
| PAPA005 | 2014 | 4000 | 12.5 | 7.4 | 4.5 | 4.0 | 1.3 | 53.0 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA005 | 2014 | 5000 | 11.3 | 7.6 | 5.0 | 4.6 | 1.4 | 61.6 |
| PAPA005 | 2014 | 6300 | 7.8 | 6.1 | 5.4 | 5.2 | 1.3 | 50.2 |
| PAPA005 | 2014 | 8000 | 6.1 | 6.1 | 5.9 | 5.7 | 0.5 | 41.4 |
| PAPA005 | 2014 | 10000 | 6.4 | 6.4 | 6.2 | 6.1 | 0.2 | 31.3 |
| PAPA005 | 2014 | 12500 | 6.5 | 6.5 | 6.3 | 6.1 | 0.0 | 31.9 |
| PAPA005 | 2014 | 16000 | 5.9 | 5.9 | 5.7 | 5.5 | 0.3 | 33.1 |
| PAPA005 | 2014 | 20000 | 3.7 | 3.8 | 3.6 | 3.5 | 0.0 | 35.2 |
| PAPA006 | 2014 | 12.5 | 51.9 | 55.2 | 48.1 | 42.3 | 27.3 | 96.7 |
| PAPA006 | 2014 | 15.8 | 53.6 | 56.0 | 52.9 | 48.7 | 32.9 | 93.4 |
| PAPA006 | 2014 | 20 | 61.3 | 63.3 | 61.0 | 57.6 | 43.2 | 94.5 |
| PAPA006 | 2014 | 25 | 56.3 | 57.8 | 55.6 | 52.4 | 40.9 | 89.1 |
| PAPA006 | 2014 | 31.5 | 51.9 | 53.9 | 50.8 | 46.8 | 35.1 | 86.2 |
| PAPA006 | 2014 | 40 | 50.1 | 52.2 | 48.7 | 45.0 | 34.9 | 86.7 |
| PAPA006 | 2014 | 50 | 47.1 | 48.6 | 45.8 | 42.1 | 34.4 | 79.4 |
| PAPA006 | 2014 | 63 | 45.0 | 47.0 | 44.4 | 42.0 | 33.1 | 79.1 |
| PAPA006 | 2014 | 80 | 41.7 | 43.2 | 40.6 | 37.8 | 29.4 | 76.1 |
| PAPA006 | 2014 | 100 | 40.6 | 42.6 | 39.9 | 37.2 | 26.9 | 71.3 |
| PAPA006 | 2014 | 125 | 37.8 | 39.4 | 36.9 | 34.1 | 25.4 | 69.0 |
| PAPA006 | 2014 | 160 | 34.9 | 36.5 | 33.9 | 31.2 | 21.6 | 64.7 |
| PAPA006 | 2014 | 200 | 32.1 | 33.9 | 31.0 | 28.4 | 18.1 | 66.6 |
| PAPA006 | 2014 | 250 | 29.0 | 31.1 | 27.6 | 24.9 | 14.5 | 63.9 |
| PAPA006 | 2014 | 315 | 28.7 | 30.7 | 27.9 | 25.5 | 11.0 | 59.0 |
| PAPA006 | 2014 | 400 | 24.1 | 25.9 | 22.8 | 19.9 | 7.1 | 59.9 |
| PAPA006 | 2014 | 500 | 17.4 | 18.7 | 15.1 | 12.6 | 2.3 | 64.9 |
| PAPA006 | 2014 | 630 | 13.6 | 15.0 | 9.9 | 7.4 | 0.0 | 60.4 |
| PAPA006 | 2014 | 800 | 11.7 | 13.3 | 6.3 | 4.1 | 0.0 | 51.4 |
| PAPA006 | 2014 | 1000 | 8.5 | 7.7 | 4.1 | 2.3 | 0.0 | 51.6 |
| PAPA006 | 2014 | 1250 | 8.7 | 6.7 | 4.1 | 4.1 | 2.3 | 51.4 |
| PAPA006 | 2014 | 1600 | 11.1 | 8.0 | 5.3 | 4.1 | 4.1 | 51.5 |
| PAPA006 | 2014 | 2000 | 9.5 | 9.3 | 6.3 | 5.3 | 4.1 | 51.0 |
| PAPA006 | 2014 | 2500 | 10.3 | 9.9 | 7.1 | 6.3 | 5.3 | 62.5 |
| PAPA006 | 2014 | 3150 | 8.6 | 8.3 | 7.7 | 7.1 | 6.3 | 65.8 |
| PAPA006 | 2014 | 4000 | 8.7 | 8.3 | 8.3 | 7.7 | 7.1 | 60.4 |
| PAPA006 | 2014 | 5000 | 9.0 | 8.8 | 8.3 | 8.3 | 7.7 | 44.5 |
| PAPA006 | 2014 | 6300 | 8.8 | 8.8 | 8.8 | 8.3 | 8.3 | 42.6 |
| PAPA006 | 2014 | 8000 | 8.9 | 8.8 | 8.8 | 8.3 | 8.3 | 40.0 |
| PAPA006 | 2014 | 10000 | 8.7 | 8.8 | 8.8 | 8.3 | 8.3 | 37.1 |
| PAPA006 | 2014 | 12500 | 8.8 | 8.8 | 8.8 | 8.3 | 8.3 | 36.7 |
| PAPA006 | 2014 | 16000 | 9.7 | 9.3 | 9.3 | 8.8 | 8.8 | 38.3 |
| PAPA006 | 2014 | 20000 | 12.2 | 12.1 | 12.1 | 11.8 | 11.3 | 44.5 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA007 | 2014 | 12.5 | 49.0 | 51.8 | 45.8 | 40.2 | 27.5 | 76.2 |
| PAPA007 | 2014 | 15.8 | 51.0 | 53.7 | 49.0 | 44.8 | 30.0 | 74.3 |
| PAPA007 | 2014 | 20 | 52.0 | 53.8 | 50.7 | 47.5 | 34.6 | 72.0 |
| PAPA007 | 2014 | 25 | 50.2 | 53.7 | 47.7 | 43.7 | 31.1 | 72.1 |
| PAPA007 | 2014 | 31.5 | 49.8 | 52.9 | 48.1 | 43.9 | 32.7 | 69.1 |
| PAPA007 | 2014 | 40 | 44.1 | 46.9 | 42.6 | 39.9 | 29.2 | 67.1 |
| PAPA007 | 2014 | 50 | 44.6 | 47.5 | 40.8 | 37.1 | 28.2 | 69.4 |
| PAPA007 | 2014 | 63 | 40.7 | 43.3 | 38.3 | 35.1 | 24.1 | 70.8 |
| PAPA007 | 2014 | 80 | 39.1 | 41.0 | 35.7 | 32.5 | 23.4 | 76.9 |
| PAPA007 | 2014 | 100 | 37.5 | 40.4 | 35.2 | 31.9 | 21.6 | 66.3 |
| PAPA007 | 2014 | 125 | 34.3 | 36.7 | 32.1 | 28.9 | 20.8 | 65.4 |
| PAPA007 | 2014 | 160 | 31.6 | 34.4 | 29.7 | 26.7 | 16.4 | 58.9 |
| PAPA007 | 2014 | 200 | 29.6 | 32.4 | 28.2 | 25.1 | 13.5 | 57.6 |
| PAPA007 | 2014 | 250 | 26.5 | 28.4 | 25.0 | 22.3 | 10.8 | 56.1 |
| PAPA007 | 2014 | 315 | 23.3 | 25.6 | 22.3 | 18.8 | 4.2 | 54.2 |
| PAPA007 | 2014 | 400 | 20.6 | 23.5 | 19.6 | 16.0 | -0.8 | 50.6 |
| PAPA007 | 2014 | 500 | 16.9 | 19.5 | 14.9 | 11.7 | -2.6 | 45.5 |
| PAPA007 | 2014 | 630 | 11.8 | 15.1 | 10.5 | 5.7 | -3.9 | 42.9 |
| PAPA007 | 2014 | 800 | 9.8 | 11.5 | 7.6 | 2.7 | -3.3 | 39.6 |
| PAPA007 | 2014 | 1000 | 6.8 | 8.5 | 5.4 | 1.7 | -2.7 | 48.0 |
| PAPA007 | 2014 | 1250 | 6.0 | 6.1 | 2.1 | 0.5 | -1.6 | 45.9 |
| PAPA007 | 2014 | 1600 | 5.3 | 6.5 | 2.4 | 1.2 | -0.9 | 36.7 |
| PAPA007 | 2014 | 2000 | 7.5 | 7.8 | 2.0 | 1.3 | -0.6 | 43.9 |
| PAPA007 | 2014 | 2500 | 11.6 | 9.6 | 2.3 | 1.9 | -1.0 | 58.1 |
| PAPA007 | 2014 | 3150 | 8.3 | 6.3 | 2.7 | 2.2 | -1.5 | 63.6 |
| PAPA007 | 2014 | 4000 | 7.7 | 5.1 | 3.0 | 2.5 | -1.8 | 63.7 |
| PAPA007 | 2014 | 5000 | 4.2 | 3.5 | 3.0 | 2.7 | -1.8 | 56.5 |
| PAPA007 | 2014 | 6300 | 4.2 | 3.4 | 3.1 | 2.9 | -1.8 | 51.2 |
| PAPA007 | 2014 | 8000 | 3.3 | 3.4 | 3.2 | 3.0 | -2.0 | 58.4 |
| PAPA007 | 2014 | 10000 | 3.6 | 3.7 | 3.5 | 3.3 | -2.0 | 34.1 |
| PAPA007 | 2014 | 12500 | 3.6 | 3.9 | 3.6 | 3.3 | -2.2 | 31.9 |
| PAPA007 | 2014 | 16000 | 2.1 | 2.3 | 1.9 | 1.5 | -2.7 | 36.4 |
| PAPA007 | 2014 | 20000 | -0.3 | 0.3 | -1.1 | -1.6 | -3.1 | 29.4 |
| PAPA008 | 2014 | 12.5 | 51.0 | 54.5 | 48.0 | 41.8 | 23.2 | 76.0 |
| PAPA008 | 2014 | 15.8 | 53.9 | 57.0 | 52.1 | 46.4 | 28.5 | 73.9 |
| PAPA008 | 2014 | 20 | 54.2 | 57.6 | 52.1 | 47.5 | 34.1 | 72.4 |
| PAPA008 | 2014 | 25 | 48.2 | 51.4 | 46.6 | 42.8 | 27.5 | 71.4 |
| PAPA008 | 2014 | 31.5 | 47.0 | 49.9 | 45.3 | 41.8 | 28.0 | 70.2 |
| PAPA008 | 2014 | 40 | 45.3 | 47.7 | 44.6 | 41.0 | 24.6 | 71.7 |
| PAPA008 | 2014 | 50 | 39.8 | 42.1 | 37.5 | 34.6 | 20.5 | 71.6 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA008 | 2014 | 63 | 38.2 | 40.4 | 36.1 | 33.1 | 18.7 | 69.1 |
| PAPA008 | 2014 | 80 | 36.2 | 38.7 | 33.9 | 30.6 | 17.7 | 67.7 |
| PAPA008 | 2014 | 100 | 36.1 | 38.6 | 34.3 | 31.3 | 15.3 | 68.6 |
| PAPA008 | 2014 | 125 | 32.2 | 34.2 | 29.9 | 27.5 | 13.3 | 63.2 |
| PAPA008 | 2014 | 160 | 29.6 | 31.2 | 27.0 | 24.0 | 11.0 | 61.0 |
| PAPA008 | 2014 | 200 | 27.3 | 29.5 | 25.2 | 22.2 | 9.3 | 60.7 |
| PAPA008 | 2014 | 250 | 24.8 | 26.7 | 22.7 | 19.3 | 6.7 | 54.7 |
| PAPA008 | 2014 | 315 | 21.9 | 24.3 | 19.4 | 16.2 | 2.5 | 52.2 |
| PAPA008 | 2014 | 400 | 18.8 | 21.3 | 15.8 | 12.4 | 0.1 | 49.0 |
| PAPA008 | 2014 | 500 | 16.4 | 17.6 | 12.1 | 8.5 | -1.8 | 47.1 |
| PAPA008 | 2014 | 630 | 13.8 | 15.4 | 9.2 | 5.3 | -2.6 | 44.6 |
| PAPA008 | 2014 | 800 | 11.8 | 14.4 | 8.5 | 4.1 | -2.8 | 46.9 |
| PAPA008 | 2014 | 1000 | 10.3 | 13.0 | 6.8 | 2.4 | -2.1 | 46.2 |
| PAPA008 | 2014 | 1250 | 8.2 | 11.1 | 4.1 | 1.2 | -1.8 | 52.0 |
| PAPA008 | 2014 | 1600 | 6.3 | 9.1 | 2.6 | 1.0 | -0.8 | 46.7 |
| PAPA008 | 2014 | 2000 | 9.3 | 10.0 | 3.0 | 1.6 | -1.5 | 47.9 |
| PAPA008 | 2014 | 2500 | 9.1 | 10.6 | 3.6 | 2.1 | -2.6 | 47.0 |
| PAPA008 | 2014 | 3150 | 8.2 | 8.3 | 3.2 | 2.4 | -2.3 | 44.4 |
| PAPA008 | 2014 | 4000 | 7.5 | 6.7 | 3.0 | 2.6 | -2.4 | 48.5 |
| PAPA008 | 2014 | 5000 | 7.4 | 5.6 | 3.1 | 2.8 | -2.3 | 49.3 |
| PAPA008 | 2014 | 6300 | 5.5 | 4.2 | 3.2 | 2.9 | -2.0 | 43.9 |
| PAPA008 | 2014 | 8000 | 3.7 | 3.6 | 3.3 | 3.1 | -2.2 | 54.5 |
| PAPA008 | 2014 | 10000 | 3.7 | 3.9 | 3.7 | 3.4 | -2.6 | 36.6 |
| PAPA008 | 2014 | 12500 | 3.8 | 4.2 | 3.7 | 3.4 | -3.4 | 35.1 |
| PAPA008 | 2014 | 16000 | 1.8 | 2.3 | 1.8 | 1.2 | -4.4 | 37.1 |
| PAPA008 | 2014 | 20000 | 0.2 | 1.5 | -0.3 | -1.1 | -4.5 | 31.6 |
| PAPA009 | 2014 | 12.5 | 51.5 | 54.3 | 48.7 | 42.3 | 22.7 | 75.9 |
| PAPA009 | 2014 | 15.8 | 53.1 | 56.6 | 51.1 | 46.4 | 29.9 | 74.3 |
| PAPA009 | 2014 | 20 | 56.5 | 59.5 | 55.2 | 50.4 | 33.6 | 73.8 |
| PAPA009 | 2014 | 25 | 48.6 | 51.8 | 46.4 | 41.3 | 27.0 | 72.4 |
| PAPA009 | 2014 | 31.5 | 47.5 | 50.5 | 45.8 | 41.9 | 28.7 | 70.6 |
| PAPA009 | 2014 | 40 | 42.6 | 44.8 | 39.8 | 36.3 | 22.8 | 68.6 |
| PAPA009 | 2014 | 50 | 40.2 | 43.0 | 37.0 | 33.6 | 21.0 | 67.4 |
| PAPA009 | 2014 | 63 | 37.8 | 40.7 | 34.8 | 31.2 | 16.4 | 65.0 |
| PAPA009 | 2014 | 80 | 35.7 | 38.3 | 33.1 | 29.1 | 14.1 | 62.9 |
| PAPA009 | 2014 | 100 | 34.0 | 36.7 | 31.8 | 28.9 | 14.2 | 64.2 |
| PAPA009 | 2014 | 125 | 33.3 | 36.1 | 30.6 | 26.2 | 12.6 | 68.3 |
| PAPA009 | 2014 | 160 | 31.1 | 33.0 | 28.3 | 23.6 | 10.0 | 57.7 |
| PAPA009 | 2014 | 200 | 27.2 | 29.8 | 25.3 | 21.9 | 8.5 | 55.1 |
| PAPA009 | 2014 | 250 | 24.4 | 27.5 | 22.5 | 17.7 | 6.8 | 55.4 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA009 | 2014 | 315 | 21.7 | 24.4 | 19.6 | 15.3 | 1.5 | 50.7 |
| PAPA009 | 2014 | 400 | 19.7 | 22.8 | 17.4 | 12.5 | -1.3 | 48.6 |
| PAPA009 | 2014 | 500 | 14.3 | 17.5 | 11.7 | 7.6 | -3.9 | 47.4 |
| PAPA009 | 2014 | 630 | 10.3 | 13.4 | 7.2 | 2.7 | -4.0 | 45.1 |
| PAPA009 | 2014 | 800 | 8.3 | 11.1 | 5.0 | 1.1 | -3.4 | 42.2 |
| PAPA009 | 2014 | 1000 | 7.0 | 10.9 | 3.1 | 0.7 | -2.6 | 39.3 |
| PAPA009 | 2014 | 1250 | 4.2 | 6.6 | 1.7 | 0.4 | -1.8 | 38.6 |
| PAPA009 | 2014 | 1600 | 5.3 | 6.0 | 1.5 | 0.8 | -0.9 | 39.6 |
| PAPA009 | 2014 | 2000 | 8.0 | 10.6 | 2.4 | 1.5 | -0.1 | 52.0 |
| PAPA009 | 2014 | 2500 | 9.1 | 10.5 | 2.7 | 2.1 | -0.5 | 58.8 |
| PAPA009 | 2014 | 3150 | 5.8 | 7.1 | 2.9 | 2.5 | -1.8 | 52.7 |
| PAPA009 | 2014 | 4000 | 6.1 | 6.3 | 3.1 | 2.7 | -1.5 | 46.1 |
| PAPA009 | 2014 | 5000 | 6.2 | 4.7 | 3.2 | 2.8 | -1.9 | 46.7 |
| PAPA009 | 2014 | 6300 | 3.6 | 3.7 | 3.2 | 2.9 | -1.8 | 39.7 |
| PAPA009 | 2014 | 8000 | 3.4 | 3.5 | 3.3 | 3.1 | -1.8 | 31.8 |
| PAPA009 | 2014 | 10000 | 3.7 | 4.0 | 3.7 | 3.5 | -2.2 | 31.1 |
| PAPA009 | 2014 | 12500 | 3.9 | 4.3 | 3.9 | 3.5 | -2.3 | 26.4 |
| PAPA009 | 2014 | 16000 | 2.1 | 2.5 | 2.0 | 1.5 | -2.7 | 24.2 |
| PAPA009 | 2014 | 20000 | -0.2 | 0.6 | -0.7 | -1.0 | -2.9 | 22.1 |
| PAPA010 | 2014 | 12.5 | 51.8 | 54.8 | 49.2 | 42.2 | 11.7 | 78.9 |
| PAPA010 | 2014 | 15.8 | 54.7 | 57.8 | 52.4 | 47.7 | 9.5 | 76.9 |
| PAPA010 | 2014 | 20 | 59.7 | 62.4 | 58.7 | 53.6 | 16.7 | 73.3 |
| PAPA010 | 2014 | 25 | 48.0 | 50.4 | 45.7 | 41.3 | 2.0 | 72.4 |
| PAPA010 | 2014 | 31.5 | 48.2 | 50.6 | 46.7 | 42.8 | 14.1 | 69.0 |
| PAPA010 | 2014 | 40 | 42.9 | 45.1 | 40.6 | 37.4 | 4.9 | 69.3 |
| PAPA010 | 2014 | 50 | 40.1 | 42.6 | 38.1 | 34.7 | -7.3 | 66.5 |
| PAPA010 | 2014 | 63 | 37.5 | 40.1 | 35.5 | 32.1 | -6.8 | 64.2 |
| PAPA010 | 2014 | 80 | 35.8 | 38.4 | 33.8 | 30.1 | -7.0 | 63.3 |
| PAPA010 | 2014 | 100 | 36.6 | 38.8 | 33.6 | 29.9 | 9.9 | 67.3 |
| PAPA010 | 2014 | 125 | 38.7 | 41.4 | 36.4 | 33.2 | 16.3 | 73.8 |
| PAPA010 | 2014 | 160 | 33.5 | 35.8 | 31.6 | 27.8 | 3.2 | 64.9 |
| PAPA010 | 2014 | 200 | 29.7 | 32.4 | 27.7 | 24.4 | -9.8 | 61.9 |
| PAPA010 | 2014 | 250 | 28.6 | 31.1 | 26.4 | 22.3 | -10.4 | 66.9 |
| PAPA010 | 2014 | 315 | 25.2 | 28.3 | 22.8 | 18.3 | -10.1 | 57.6 |
| PAPA010 | 2014 | 400 | 23.5 | 26.3 | 19.6 | 15.0 | -9.8 | 59.5 |
| PAPA010 | 2014 | 500 | 19.6 | 22.2 | 16.4 | 11.4 | -9.3 | 57.6 |
| PAPA010 | 2014 | 630 | 17.2 | 19.8 | 13.6 | 7.9 | -9.2 | 58.1 |
| PAPA010 | 2014 | 800 | 16.4 | 19.4 | 12.8 | 6.1 | -8.4 | 62.8 |
| PAPA010 | 2014 | 1000 | 14.2 | 17.6 | 11.2 | 4.9 | -8.1 | 88.2 |
| PAPA010 | 2014 | 1250 | 12.2 | 15.8 | 8.7 | 2.9 | -7.6 | 69.2 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA010 | 2014 | 1600 | 8.8 | 11.2 | 4.6 | 1.8 | -7.1 | 71.0 |
| PAPA010 | 2014 | 2000 | 7.9 | 10.8 | 3.8 | 2.1 | -6.2 | 74.6 |
| PAPA010 | 2014 | 2500 | 7.4 | 9.8 | 3.6 | 2.7 | -5.5 | 64.4 |
| PAPA010 | 2014 | 3150 | 8.3 | 8.7 | 4.0 | 3.3 | -4.9 | 76.7 |
| PAPA010 | 2014 | 4000 | 9.1 | 7.6 | 4.5 | 4.1 | -4.4 | 67.3 |
| PAPA010 | 2014 | 5000 | 8.9 | 6.9 | 5.1 | 4.8 | -3.9 | 67.1 |
| PAPA010 | 2014 | 6300 | 6.4 | 6.1 | 5.6 | 5.3 | -3.7 | 62.4 |
| PAPA010 | 2014 | 8000 | 6.1 | 6.2 | 6.0 | 5.7 | -3.6 | 60.3 |
| PAPA010 | 2014 | 10000 | 6.3 | 6.5 | 6.3 | 6.1 | -3.8 | 57.9 |
| PAPA010 | 2014 | 12500 | 6.4 | 6.6 | 6.4 | 6.1 | -4.2 | 57.6 |
| PAPA010 | 2014 | 16000 | 5.9 | 6.2 | 5.9 | 5.5 | -4.9 | 60.8 |
| PAPA010 | 2014 | 20000 | 4.1 | 4.5 | 3.9 | 3.6 | -5.6 | 66.3 |
| PAPA011 | 2014 | 12.5 | 44.3 | 47.1 | 42.8 | 37.5 | 21.3 | 79.9 |
| PAPA011 | 2014 | 15.8 | 46.7 | 49.2 | 45.4 | 38.9 | 23.8 | 75.2 |
| PAPA011 | 2014 | 20 | 47.1 | 49.7 | 45.4 | 39.0 | 26.8 | 73.9 |
| PAPA011 | 2014 | 25 | 41.2 | 43.5 | 39.5 | 34.1 | 18.2 | 72.0 |
| PAPA011 | 2014 | 31.5 | 43.7 | 46.8 | 40.4 | 35.1 | 18.7 | 67.8 |
| PAPA011 | 2014 | 40 | 35.8 | 38.1 | 34.8 | 29.8 | 15.7 | 66.8 |
| PAPA011 | 2014 | 50 | 32.3 | 34.5 | 31.1 | 26.9 | 12.6 | 64.1 |
| PAPA011 | 2014 | 63 | 31.0 | 33.6 | 29.2 | 25.4 | 12.2 | 63.8 |
| PAPA011 | 2014 | 80 | 29.2 | 31.7 | 27.5 | 23.5 | 12.9 | 63.3 |
| PAPA011 | 2014 | 100 | 27.3 | 29.5 | 25.2 | 21.7 | 9.3 | 67.0 |
| PAPA011 | 2014 | 125 | 26.1 | 27.5 | 22.0 | 19.7 | 7.4 | 69.4 |
| PAPA011 | 2014 | 160 | 23.2 | 23.5 | 18.0 | 15.8 | 3.8 | 72.2 |
| PAPA011 | 2014 | 200 | 20.8 | 20.3 | 16.7 | 13.8 | 2.0 | 63.8 |
| PAPA011 | 2014 | 250 | 16.1 | 15.6 | 11.9 | 9.0 | -1.1 | 58.2 |
| PAPA011 | 2014 | 315 | 12.9 | 14.1 | 8.8 | 5.7 | -2.1 | 56.5 |
| PAPA011 | 2014 | 400 | 6.9 | 8.3 | 4.1 | 1.6 | -3.3 | 58.9 |
| PAPA011 | 2014 | 500 | 2.6 | 5.0 | 0.1 | -1.5 | -3.8 | 59.8 |
| PAPA011 | 2014 | 630 | -1.2 | -0.3 | -1.7 | -2.3 | -3.7 | 57.8 |
| PAPA011 | 2014 | 800 | -0.9 | -0.2 | -1.4 | -2.0 | -3.3 | 52.3 |
| PAPA011 | 2014 | 1000 | 0.2 | 1.2 | -0.9 | -1.5 | -2.5 | 46.3 |
| PAPA011 | 2014 | 1250 | 1.0 | 1.9 | -0.2 | -0.8 | -1.7 | 46.4 |
| PAPA011 | 2014 | 1600 | 9.0 | 6.9 | 0.7 | 0.2 | -0.9 | 56.4 |
| PAPA011 | 2014 | 2000 | 15.0 | 15.4 | 1.5 | 1.1 | 0.1 | 69.8 |
| PAPA011 | 2014 | 2500 | 20.2 | 15.7 | 2.3 | 2.0 | 1.0 | 70.9 |
| PAPA011 | 2014 | 3150 | 13.5 | 11.6 | 3.1 | 2.9 | 0.8 | 71.0 |
| PAPA011 | 2014 | 4000 | 9.7 | 8.1 | 4.0 | 3.7 | 1.1 | 69.5 |
| PAPA011 | 2014 | 5000 | 6.3 | 6.3 | 4.7 | 4.5 | 0.1 | 64.1 |
| PAPA011 | 2014 | 6300 | 6.2 | 5.8 | 5.4 | 5.0 | 0.0 | 54.5 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA011 | 2014 | 8000 | 6.0 | 6.0 | 5.8 | 5.6 | 0.0 | 57.9 |
| PAPA011 | 2014 | 10000 | 6.3 | 6.4 | 6.2 | 6.0 | 0.5 | 46.8 |
| PAPA011 | 2014 | 12500 | 6.2 | 6.3 | 6.2 | 6.0 | 0.9 | 43.6 |
| PAPA011 | 2014 | 16000 | 5.5 | 5.6 | 5.5 | 5.3 | 1.0 | 40.0 |
| PAPA011 | 2014 | 20000 | 3.3 | 3.4 | 3.3 | 3.3 | 1.5 | 40.6 |
| PAPA012 | 2014 | 12.5 | 44.0 | 46.7 | 41.2 | 36.4 | 18.3 | 72.4 |
| PAPA012 | 2014 | 15.8 | 47.8 | 50.6 | 46.5 | 42.0 | 24.5 | 71.5 |
| PAPA012 | 2014 | 20 | 48.9 | 51.7 | 47.8 | 43.9 | 27.0 | 71.9 |
| PAPA012 | 2014 | 25 | 42.1 | 44.9 | 39.5 | 36.0 | 19.8 | 69.3 |
| PAPA012 | 2014 | 31.5 | 44.5 | 47.7 | 43.1 | 38.5 | 22.2 | 65.6 |
| PAPA012 | 2014 | 40 | 35.6 | 37.8 | 34.2 | 31.1 | 18.9 | 63.6 |
| PAPA012 | 2014 | 50 | 33.1 | 35.7 | 30.4 | 26.6 | 11.3 | 62.0 |
| PAPA012 | 2014 | 63 | 33.2 | 35.7 | 29.9 | 25.8 | 8.1 | 67.7 |
| PAPA012 | 2014 | 80 | 30.6 | 32.6 | 27.6 | 23.4 | 5.7 | 75.2 |
| PAPA012 | 2014 | 100 | 29.3 | 31.2 | 25.7 | 22.2 | 3.8 | 76.5 |
| PAPA012 | 2014 | 125 | 26.6 | 27.6 | 20.2 | 17.2 | 0.4 | 74.9 |
| PAPA012 | 2014 | 160 | 24.7 | 25.6 | 16.2 | 13.1 | -1.4 | 68.8 |
| PAPA012 | 2014 | 200 | 22.9 | 23.4 | 15.1 | 11.6 | -2.1 | 69.1 |
| PAPA012 | 2014 | 250 | 20.2 | 20.5 | 10.7 | 6.9 | -3.3 | 65.3 |
| PAPA012 | 2014 | 315 | 17.5 | 16.2 | 6.3 | 3.5 | -4.0 | 58.6 |
| PAPA012 | 2014 | 400 | 14.6 | 12.7 | 4.2 | 1.4 | -4.5 | 62.2 |
| PAPA012 | 2014 | 500 | 12.2 | 8.1 | 1.3 | -0.9 | -4.2 | 63.7 |
| PAPA012 | 2014 | 630 | 9.7 | 5.5 | -0.1 | -1.6 | -4.1 | 58.3 |
| PAPA012 | 2014 | 800 | 6.4 | 4.2 | -0.5 | -1.7 | -4.1 | 49.2 |
| PAPA012 | 2014 | 1000 | 2.2 | 2.3 | -0.8 | -1.4 | -3.4 | 50.1 |
| PAPA012 | 2014 | 1250 | 1.3 | 1.3 | -0.5 | -1.0 | -2.8 | 44.7 |
| PAPA012 | 2014 | 1600 | 1.9 | 2.2 | 0.2 | -0.3 | -1.9 | 51.3 |
| PAPA012 | 2014 | 2000 | 3.1 | 3.0 | 1.1 | 0.6 | -0.9 | 54.3 |
| PAPA012 | 2014 | 2500 | 4.9 | 4.7 | 1.9 | 1.5 | 0.0 | 59.9 |
| PAPA012 | 2014 | 3150 | 4.6 | 4.3 | 2.7 | 2.3 | 1.1 | 63.5 |
| PAPA012 | 2014 | 4000 | 5.0 | 5.5 | 3.6 | 3.2 | 1.2 | 68.8 |
| PAPA012 | 2014 | 5000 | 5.3 | 5.4 | 4.3 | 4.0 | 1.6 | 62.8 |
| PAPA012 | 2014 | 6300 | 5.6 | 5.2 | 4.9 | 4.7 | 1.5 | 52.6 |
| PAPA012 | 2014 | 8000 | 5.5 | 5.5 | 5.3 | 5.1 | 1.3 | 51.4 |
| PAPA012 | 2014 | 10000 | 5.6 | 5.6 | 5.4 | 5.3 | 0.9 | 49.7 |
| PAPA012 | 2014 | 12500 | 5.1 | 5.2 | 4.9 | 4.7 | 0.8 | 51.7 |
| PAPA012 | 2014 | 16000 | 3.4 | 3.5 | 3.1 | 2.9 | 0.2 | 44.0 |
| PAPA012 | 2014 | 20000 | 0.7 | 0.7 | 0.4 | 0.1 | -0.8 | 47.5 |
| PAPA013 | 2014 | 12.5 | 52.5 | 55.8 | 50.5 | 43.6 | 20.1 | 75.1 |
| PAPA013 | 2014 | 15.8 | 55.7 | 59.4 | 53.9 | 49.0 | 29.0 | 73.0 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA013 | 2014 | 20 | 52.4 | 55.0 | 49.5 | 45.5 | 30.9 | 74.1 |
| PAPA013 | 2014 | 25 | 47.3 | 50.5 | 44.9 | 39.8 | 25.7 | 70.4 |
| PAPA013 | 2014 | 31.5 | 44.4 | 46.8 | 43.0 | 39.2 | 24.6 | 67.7 |
| PAPA013 | 2014 | 40 | 38.6 | 40.8 | 37.3 | 34.3 | 19.6 | 65.1 |
| PAPA013 | 2014 | 50 | 37.0 | 38.8 | 35.2 | 31.9 | 16.7 | 65.3 |
| PAPA013 | 2014 | 63 | 36.9 | 39.1 | 34.4 | 30.6 | 12.2 | 78.8 |
| PAPA013 | 2014 | 80 | 34.3 | 36.4 | 31.6 | 27.3 | 12.2 | 80.0 |
| PAPA013 | 2014 | 100 | 37.0 | 38.3 | 33.0 | 28.6 | 12.0 | 75.3 |
| PAPA013 | 2014 | 125 | 31.3 | 32.9 | 28.2 | 22.7 | 8.9 | 78.5 |
| PAPA013 | 2014 | 160 | 27.9 | 29.5 | 24.5 | 19.2 | 6.1 | 68.6 |
| PAPA013 | 2014 | 200 | 28.4 | 30.4 | 24.3 | 18.6 | 5.2 | 71.1 |
| PAPA013 | 2014 | 250 | 23.3 | 24.6 | 20.2 | 15.5 | 2.2 | 67.3 |
| PAPA013 | 2014 | 315 | 22.0 | 22.1 | 17.1 | 12.2 | -0.8 | 58.6 |
| PAPA013 | 2014 | 400 | 17.7 | 17.7 | 12.5 | 7.2 | -2.4 | 57.2 |
| PAPA013 | 2014 | 500 | 17.0 | 16.9 | 11.0 | 6.2 | -3.5 | 56.4 |
| PAPA013 | 2014 | 630 | 13.7 | 13.5 | 7.7 | 3.6 | -3.4 | 54.0 |
| PAPA013 | 2014 | 800 | 11.9 | 14.2 | 7.4 | 3.4 | -2.7 | 45.8 |
| PAPA013 | 2014 | 1000 | 12.2 | 15.6 | 8.8 | 4.1 | -2.1 | 39.6 |
| PAPA013 | 2014 | 1250 | 6.8 | 9.5 | 3.9 | 1.3 | -1.3 | 40.0 |
| PAPA013 | 2014 | 1600 | 3.9 | 5.7 | 1.9 | 0.9 | -0.9 | 37.7 |
| PAPA013 | 2014 | 2000 | 2.5 | 3.1 | 1.7 | 1.2 | -0.6 | 46.9 |
| PAPA013 | 2014 | 2500 | 3.2 | 2.8 | 2.0 | 1.6 | -0.3 | 62.2 |
| PAPA013 | 2014 | 3150 | 4.0 | 3.5 | 2.5 | 2.2 | -0.6 | 69.0 |
| PAPA013 | 2014 | 4000 | 4.1 | 3.9 | 2.9 | 2.6 | -0.9 | 60.9 |
| PAPA013 | 2014 | 5000 | 4.3 | 4.1 | 3.1 | 2.8 | -1.0 | 56.5 |
| PAPA013 | 2014 | 6300 | 4.1 | 3.7 | 3.2 | 2.9 | -1.5 | 64.9 |
| PAPA013 | 2014 | 8000 | 3.6 | 3.5 | 3.3 | 3.1 | -1.6 | 59.0 |
| PAPA013 | 2014 | 10000 | 3.9 | 3.8 | 3.6 | 3.4 | -1.7 | 40.9 |
| PAPA013 | 2014 | 12500 | 4.2 | 4.3 | 3.9 | 3.6 | -1.5 | 45.5 |
| PAPA013 | 2014 | 16000 | 2.7 | 2.8 | 2.1 | 1.9 | -1.9 | 39.3 |
| PAPA013 | 2014 | 20000 | -0.6 | -0.3 | -1.2 | -1.5 | -2.4 | 42.0 |
| PAPA014 | 2014 | 12.5 | 44.9 | 47.7 | 41.6 | 37.5 | 22.7 | 101.5 |
| PAPA014 | 2014 | 15.8 | 49.6 | 52.0 | 48.0 | 44.7 | 27.7 | 99.4 |
| PAPA014 | 2014 | 20 | 61.5 | 64.0 | 60.9 | 55.2 | 35.9 | 97.4 |
| PAPA014 | 2014 | 25 | 49.9 | 52.2 | 48.2 | 45.4 | 29.2 | 95.5 |
| PAPA014 | 2014 | 31.5 | 51.5 | 54.4 | 50.0 | 44.7 | 28.0 | 90.8 |
| PAPA014 | 2014 | 40 | 47.4 | 49.4 | 46.2 | 42.4 | 23.8 | 89.4 |
| PAPA014 | 2014 | 50 | 46.6 | 48.7 | 44.9 | 39.5 | 24.5 | 87.0 |
| PAPA014 | 2014 | 63 | 44.4 | 45.5 | 42.1 | 39.4 | 26.5 | 81.8 |
| PAPA014 | 2014 | 80 | 39.2 | 40.6 | 38.9 | 35.2 | 22.9 | 78.4 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA014 | 2014 | 100 | 38.9 | 40.5 | 38.0 | 35.6 | 22.6 | 74.5 |
| PAPA014 | 2014 | 125 | 35.5 | 37.7 | 34.8 | 32.1 | 18.3 | 73.7 |
| PAPA014 | 2014 | 160 | 31.8 | 33.8 | 30.8 | 27.8 | 14.6 | 68.3 |
| PAPA014 | 2014 | 200 | 28.6 | 29.9 | 26.6 | 23.9 | 8.1 | 66.7 |
| PAPA014 | 2014 | 250 | 27.9 | 30.2 | 25.2 | 22.7 | 3.3 | 64.0 |
| PAPA014 | 2014 | 315 | 23.3 | 25.4 | 22.0 | 19.3 | 0.0 | 58.4 |
| PAPA014 | 2014 | 400 | 21.2 | 23.4 | 18.3 | 15.3 | 0.0 | 54.1 |
| PAPA014 | 2014 | 500 | 18.5 | 21.3 | 14.6 | 10.7 | 0.0 | 56.0 |
| PAPA014 | 2014 | 630 | 14.2 | 16.1 | 9.8 | 6.3 | 0.0 | 55.1 |
| PAPA014 | 2014 | 800 | 14.6 | 17.5 | 9.3 | 6.3 | 0.0 | 51.7 |
| PAPA014 | 2014 | 1000 | 16.0 | 18.0 | 9.3 | 6.3 | 0.0 | 49.4 |
| PAPA014 | 2014 | 1250 | 19.2 | 23.4 | 10.7 | 7.3 | 3.3 | 50.3 |
| PAPA014 | 2014 | 1600 | 13.9 | 17.8 | 9.3 | 6.3 | 3.3 | 50.7 |
| PAPA014 | 2014 | 2000 | 11.5 | 13.7 | 8.1 | 7.3 | 5.1 | 50.6 |
| PAPA014 | 2014 | 2500 | 8.5 | 9.3 | 8.1 | 7.3 | 6.3 | 49.8 |
| PAPA014 | 2014 | 3150 | 8.7 | 8.7 | 8.7 | 8.1 | 7.3 | 48.3 |
| PAPA014 | 2014 | 4000 | 9.1 | 9.3 | 8.7 | 8.7 | 8.1 | 46.4 |
| PAPA014 | 2014 | 5000 | 9.5 | 9.3 | 9.3 | 9.3 | 8.7 | 44.7 |
| PAPA014 | 2014 | 6300 | 9.6 | 9.8 | 9.8 | 9.3 | 8.7 | 43.7 |
| PAPA014 | 2014 | 8000 | 9.7 | 9.8 | 9.8 | 9.3 | 9.3 | 41.8 |
| PAPA014 | 2014 | 10000 | 9.7 | 9.8 | 9.8 | 9.3 | 9.3 | 40.5 |
| PAPA014 | 2014 | 12500 | 9.8 | 9.8 | 9.8 | 9.8 | 9.3 | 40.0 |
| PAPA014 | 2014 | 16000 | 10.3 | 10.3 | 10.3 | 9.8 | 9.8 | 39.7 |
| PAPA014 | 2014 | 20000 | 12.9 | 13.1 | 12.8 | 12.6 | 12.3 | 44.8 |
| PAPA015 | 2014 | 12.5 | 38.7 | 41.7 | 36.6 | 32.0 | 13.9 | 76.0 |
| PAPA015 | 2014 | 15.8 | 43.6 | 45.9 | 41.5 | 33.5 | 18.7 | 72.1 |
| PAPA015 | 2014 | 20 | 48.9 | 51.4 | 46.8 | 41.6 | 26.2 | 71.3 |
| PAPA015 | 2014 | 25 | 40.3 | 43.1 | 38.0 | 31.7 | 17.1 | 68.1 |
| PAPA015 | 2014 | 31.5 | 45.1 | 48.2 | 37.1 | 30.5 | 15.1 | 66.0 |
| PAPA015 | 2014 | 40 | 36.9 | 39.4 | 33.2 | 27.8 | 9.6 | 65.1 |
| PAPA015 | 2014 | 50 | 36.4 | 38.8 | 31.5 | 26.5 | 9.9 | 62.9 |
| PAPA015 | 2014 | 63 | 35.6 | 38.3 | 30.5 | 26.3 | 10.2 | 65.3 |
| PAPA015 | 2014 | 80 | 34.1 | 36.7 | 29.2 | 24.8 | 8.5 | 72.8 |
| PAPA015 | 2014 | 100 | 30.7 | 32.8 | 27.4 | 22.9 | 6.0 | 71.6 |
| PAPA015 | 2014 | 125 | 27.7 | 28.6 | 24.7 | 20.7 | 4.0 | 67.7 |
| PAPA015 | 2014 | 160 | 25.5 | 25.2 | 20.7 | 16.9 | 1.6 | 64.3 |
| PAPA015 | 2014 | 200 | 20.9 | 21.4 | 17.2 | 13.4 | -0.3 | 65.7 |
| PAPA015 | 2014 | 250 | 18.3 | 18.5 | 14.0 | 9.7 | -1.9 | 57.5 |
| PAPA015 | 2014 | 315 | 14.5 | 14.8 | 9.0 | 5.7 | -3.7 | 49.1 |
| PAPA015 | 2014 | 400 | 12.6 | 10.6 | 5.3 | 1.8 | -4.3 | 53.0 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA015 | 2014 | 500 | 10.7 | 6.8 | 1.8 | -0.9 | -4.5 | 53.6 |
| PAPA015 | 2014 | 630 | 5.3 | 3.7 | -0.6 | -1.8 | -4.5 | 50.1 |
| PAPA015 | 2014 | 800 | 2.7 | 3.2 | -1.0 | -2.0 | -3.6 | 41.6 |
| PAPA015 | 2014 | 1000 | 0.9 | 1.7 | -1.0 | -1.8 | -3.1 | 40.9 |
| PAPA015 | 2014 | 1250 | -0.6 | 0.1 | -0.9 | -1.3 | -2.6 | 44.0 |
| PAPA015 | 2014 | 1600 | 2.2 | 0.5 | -0.2 | -0.6 | -1.7 | 36.3 |
| PAPA015 | 2014 | 2000 | 5.5 | 2.9 | 1.0 | 0.4 | -0.8 | 45.5 |
| PAPA015 | 2014 | 2500 | 11.8 | 5.8 | 1.9 | 1.2 | 0.1 | 53.3 |
| PAPA015 | 2014 | 3150 | 9.1 | 7.5 | 2.5 | 2.0 | 0.7 | 59.3 |
| PAPA015 | 2014 | 4000 | 4.0 | 3.9 | 2.9 | 2.6 | 0.9 | 43.8 |
| PAPA015 | 2014 | 5000 | 4.0 | 3.9 | 3.4 | 3.2 | 0.3 | 52.5 |
| PAPA015 | 2014 | 6300 | 4.3 | 4.2 | 3.9 | 3.8 | 0.0 | 42.3 |
| PAPA015 | 2014 | 8000 | 4.4 | 4.5 | 4.4 | 4.2 | -0.9 | 41.1 |
| PAPA015 | 2014 | 10000 | 4.7 | 4.8 | 4.7 | 4.5 | -0.9 | 41.0 |
| PAPA015 | 2014 | 12500 | 4.1 | 4.2 | 4.1 | 3.9 | -1.1 | 42.5 |
| PAPA015 | 2014 | 16000 | 1.2 | 1.3 | 1.2 | 1.1 | -2.1 | 35.3 |
| PAPA015 | 2014 | 20000 | -1.0 | -0.9 | -1.0 | -1.1 | -2.0 | 34.2 |
| PAPA016 | 2014 | 12.5 | 43.6 | 45.8 | 36.0 | 30.5 | 13.8 | 74.9 |
| PAPA016 | 2014 | 15.8 | 43.3 | 46.2 | 38.0 | 32.3 | 13.4 | 75.8 |
| PAPA016 | 2014 | 20 | 43.4 | 46.8 | 39.2 | 34.2 | 16.6 | 74.1 |
| PAPA016 | 2014 | 25 | 37.3 | 39.5 | 34.1 | 29.8 | 14.1 | 76.6 |
| PAPA016 | 2014 | 31.5 | 39.1 | 42.0 | 37.0 | 31.7 | 14.0 | 76.6 |
| PAPA016 | 2014 | 40 | 35.0 | 37.7 | 32.3 | 28.7 | 12.2 | 76.6 |
| PAPA016 | 2014 | 50 | 34.2 | 36.5 | 31.3 | 27.4 | 10.4 | 78.7 |
| PAPA016 | 2014 | 63 | 34.0 | 36.3 | 31.2 | 27.5 | 8.7 | 79.2 |
| PAPA016 | 2014 | 80 | 32.6 | 35.2 | 29.2 | 25.5 | 8.2 | 79.7 |
| PAPA016 | 2014 | 100 | 31.9 | 34.0 | 28.0 | 24.0 | 6.9 | 78.7 |
| PAPA016 | 2014 | 125 | 30.7 | 32.9 | 26.6 | 22.9 | 4.8 | 81.3 |
| PAPA016 | 2014 | 160 | 28.7 | 30.5 | 24.4 | 20.4 | 1.9 | 79.1 |
| PAPA016 | 2014 | 200 | 27.0 | 28.5 | 22.6 | 19.2 | -0.1 | 79.4 |
| PAPA016 | 2014 | 250 | 24.1 | 25.9 | 20.5 | 16.4 | -1.9 | 79.3 |
| PAPA016 | 2014 | 315 | 20.6 | 22.8 | 17.9 | 12.8 | -3.2 | 75.1 |
| PAPA016 | 2014 | 400 | 17.0 | 19.5 | 14.2 | 9.5 | -3.6 | 72.6 |
| PAPA016 | 2014 | 500 | 15.0 | 16.7 | 9.6 | 4.8 | -3.9 | 75.9 |
| PAPA016 | 2014 | 630 | 14.2 | 15.7 | 5.5 | 1.3 | -3.4 | 77.1 |
| PAPA016 | 2014 | 800 | 13.1 | 14.7 | 4.4 | 0.7 | -2.7 | 76.1 |
| PAPA016 | 2014 | 1000 | 12.0 | 13.4 | 4.3 | 1.2 | -2.0 | 73.5 |
| PAPA016 | 2014 | 1250 | 10.7 | 12.1 | 3.9 | 1.0 | -1.5 | 74.0 |
| PAPA016 | 2014 | 1600 | 8.5 | 10.0 | 2.5 | 1.1 | -0.7 | 72.9 |
| PAPA016 | 2014 | 2000 | 7.7 | 7.5 | 2.4 | 1.6 | 0.1 | 70.5 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA016 | 2014 | 2500 | 6.9 | 6.2 | 3.1 | 2.3 | 1.0 | 69.1 |
| PAPA016 | 2014 | 3150 | 5.3 | 5.4 | 3.6 | 3.0 | 1.4 | 65.9 |
| PAPA016 | 2014 | 4000 | 5.7 | 5.8 | 4.2 | 3.8 | 0.9 | 62.8 |
| PAPA016 | 2014 | 5000 | 6.0 | 6.0 | 4.9 | 4.6 | 1.4 | 59.8 |
| PAPA016 | 2014 | 6300 | 5.8 | 6.0 | 5.4 | 5.2 | 1.4 | 56.6 |
| PAPA016 | 2014 | 8000 | 6.1 | 6.3 | 5.9 | 5.8 | -0.2 | 53.3 |
| PAPA016 | 2014 | 10000 | 6.5 | 6.7 | 6.3 | 6.1 | 0.7 | 50.4 |
| PAPA016 | 2014 | 12500 | 6.5 | 6.8 | 6.4 | 6.2 | 0.0 | 47.4 |
| PAPA016 | 2014 | 16000 | 5.9 | 6.3 | 5.7 | 5.6 | 1.5 | 45.0 |
| PAPA016 | 2014 | 20000 | 3.9 | 4.6 | 3.6 | 3.4 | 0.5 | 53.0 |
| PAPA017 | 2014 | 12.5 | 43.2 | 45.4 | 41.5 | 34.3 | 19.8 | 75.6 |
| PAPA017 | 2014 | 15.8 | 49.2 | 51.8 | 45.3 | 38.0 | 22.0 | 72.0 |
| PAPA017 | 2014 | 20 | 51.0 | 55.0 | 47.6 | 40.6 | 25.1 | 69.2 |
| PAPA017 | 2014 | 25 | 48.5 | 52.0 | 45.4 | 40.2 | 24.0 | 67.6 |
| PAPA017 | 2014 | 31.5 | 57.0 | 60.6 | 54.8 | 48.2 | 25.5 | 73.0 |
| PAPA017 | 2014 | 40 | 47.8 | 51.0 | 45.5 | 41.8 | 20.7 | 64.1 |
| PAPA017 | 2014 | 50 | 46.6 | 49.1 | 45.3 | 41.6 | 20.5 | 63.5 |
| PAPA017 | 2014 | 63 | 42.0 | 44.4 | 40.3 | 37.2 | 19.9 | 67.6 |
| PAPA017 | 2014 | 80 | 39.4 | 41.1 | 37.8 | 34.7 | 17.9 | 72.5 |
| PAPA017 | 2014 | 100 | 39.0 | 39.5 | 35.4 | 31.3 | 16.8 | 81.0 |
| PAPA017 | 2014 | 125 | 35.5 | 36.0 | 31.0 | 27.0 | 10.8 | 77.2 |
| PAPA017 | 2014 | 160 | 33.8 | 34.0 | 28.9 | 24.9 | 5.7 | 71.5 |
| PAPA017 | 2014 | 200 | 30.7 | 32.8 | 27.7 | 23.6 | 3.0 | 63.1 |
| PAPA017 | 2014 | 250 | 28.5 | 29.9 | 25.6 | 21.5 | 1.2 | 63.2 |
| PAPA017 | 2014 | 315 | 25.2 | 27.1 | 22.9 | 18.8 | -1.3 | 64.0 |
| PAPA017 | 2014 | 400 | 22.0 | 24.3 | 19.9 | 15.6 | -2.1 | 56.9 |
| PAPA017 | 2014 | 500 | 19.0 | 20.9 | 15.4 | 11.6 | -3.4 | 54.1 |
| PAPA017 | 2014 | 630 | 15.7 | 18.1 | 12.6 | 7.1 | -3.7 | 52.1 |
| PAPA017 | 2014 | 800 | 13.4 | 15.3 | 10.1 | 4.6 | -3.5 | 49.2 |
| PAPA017 | 2014 | 1000 | 12.0 | 14.0 | 8.1 | 3.1 | -2.7 | 44.8 |
| PAPA017 | 2014 | 1250 | 9.1 | 10.4 | 3.9 | 1.0 | -2.1 | 44.4 |
| PAPA017 | 2014 | 1600 | 6.9 | 6.5 | 2.0 | 0.7 | -1.5 | 50.5 |
| PAPA017 | 2014 | 2000 | 10.4 | 9.5 | 1.9 | 1.1 | -0.5 | 60.8 |
| PAPA017 | 2014 | 2500 | 10.5 | 6.9 | 2.5 | 1.9 | 0.4 | 65.3 |
| PAPA017 | 2014 | 3150 | 7.1 | 5.0 | 3.1 | 2.5 | 0.3 | 61.1 |
| PAPA017 | 2014 | 4000 | 5.0 | 4.2 | 3.6 | 3.3 | -0.2 | 56.1 |
| PAPA017 | 2014 | 5000 | 4.8 | 4.6 | 4.2 | 4.0 | -1.0 | 55.1 |
| PAPA017 | 2014 | 6300 | 5.0 | 5.1 | 4.8 | 4.6 | -1.0 | 50.3 |
| PAPA017 | 2014 | 8000 | 5.3 | 5.5 | 5.3 | 5.1 | -1.1 | 50.7 |
| PAPA017 | 2014 | 10000 | 5.4 | 5.5 | 5.4 | 5.2 | -0.8 | 34.5 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA017 | 2014 | 12500 | 5.0 | 5.1 | 4.9 | 4.6 | -1.2 | 37.9 |
| PAPA017 | 2014 | 16000 | 3.2 | 3.4 | 3.1 | 3.0 | -1.8 | 30.6 |
| PAPA017 | 2014 | 20000 | 0.4 | 0.6 | 0.4 | 0.1 | -1.4 | 28.2 |
| PAPA018 | 2014 | 12.5 | 38.3 | 40.2 | 35.2 | 31.0 | 16.2 | 75.1 |
| PAPA018 | 2014 | 15.8 | 41.2 | 43.7 | 38.9 | 33.4 | 20.5 | 73.5 |
| PAPA018 | 2014 | 20 | 50.2 | 54.2 | 47.3 | 39.9 | 23.1 | 73.4 |
| PAPA018 | 2014 | 25 | 45.7 | 49.2 | 40.5 | 34.2 | 20.1 | 70.0 |
| PAPA018 | 2014 | 31.5 | 41.0 | 44.5 | 38.5 | 33.4 | 19.6 | 67.6 |
| PAPA018 | 2014 | 40 | 36.1 | 38.9 | 33.4 | 28.9 | 18.4 | 65.2 |
| PAPA018 | 2014 | 50 | 33.9 | 36.7 | 30.0 | 26.2 | 15.5 | 62.8 |
| PAPA018 | 2014 | 63 | 32.8 | 35.6 | 29.1 | 24.7 | 10.5 | 63.5 |
| PAPA018 | 2014 | 80 | 30.1 | 32.7 | 26.0 | 21.6 | 4.7 | 71.8 |
| PAPA018 | 2014 | 100 | 29.5 | 31.8 | 25.0 | 20.4 | 3.4 | 68.8 |
| PAPA018 | 2014 | 125 | 26.8 | 29.2 | 23.7 | 19.4 | 3.2 | 67.2 |
| PAPA018 | 2014 | 160 | 25.1 | 27.5 | 21.0 | 15.6 | 1.9 | 67.0 |
| PAPA018 | 2014 | 200 | 22.6 | 24.8 | 18.8 | 13.4 | 0.2 | 57.4 |
| PAPA018 | 2014 | 250 | 19.7 | 22.1 | 16.1 | 11.6 | -0.3 | 56.8 |
| PAPA018 | 2014 | 315 | 17.4 | 18.6 | 13.3 | 8.6 | -2.6 | 51.3 |
| PAPA018 | 2014 | 400 | 13.5 | 14.7 | 9.1 | 5.1 | -3.5 | 47.2 |
| PAPA018 | 2014 | 500 | 11.4 | 11.6 | 4.2 | 1.1 | -4.2 | 51.6 |
| PAPA018 | 2014 | 630 | 6.7 | 6.1 | 0.4 | -1.2 | -4.1 | 54.7 |
| PAPA018 | 2014 | 800 | 3.4 | 3.4 | -0.9 | -1.8 | -3.9 | 52.3 |
| PAPA018 | 2014 | 1000 | 2.0 | 1.8 | -0.8 | -1.6 | -3.1 | 46.5 |
| PAPA018 | 2014 | 1250 | 2.1 | 1.8 | -0.5 | -1.1 | -2.3 | 43.5 |
| PAPA018 | 2014 | 1600 | 4.0 | 2.4 | 0.3 | -0.3 | -1.6 | 46.6 |
| PAPA018 | 2014 | 2000 | 5.9 | 7.5 | 1.5 | 0.8 | -0.6 | 56.1 |
| PAPA018 | 2014 | 2500 | 7.8 | 9.5 | 2.4 | 1.5 | -0.8 | 63.4 |
| PAPA018 | 2014 | 3150 | 11.5 | 11.4 | 2.8 | 2.2 | -1.3 | 69.5 |
| PAPA018 | 2014 | 4000 | 7.7 | 7.5 | 3.1 | 2.8 | -1.4 | 66.3 |
| PAPA018 | 2014 | 5000 | 4.7 | 4.5 | 3.5 | 3.2 | -1.7 | 60.3 |
| PAPA018 | 2014 | 6300 | 4.6 | 4.2 | 3.8 | 3.6 | -1.9 | 62.4 |
| PAPA018 | 2014 | 8000 | 4.3 | 4.4 | 4.2 | 4.0 | -1.9 | 56.0 |
| PAPA018 | 2014 | 10000 | 4.5 | 4.7 | 4.6 | 4.3 | -2.1 | 33.2 |
| PAPA018 | 2014 | 12500 | 4.4 | 4.5 | 4.3 | 4.0 | -2.3 | 40.7 |
| PAPA018 | 2014 | 16000 | 2.1 | 2.1 | 1.9 | 1.7 | -2.6 | 37.6 |
| PAPA018 | 2014 | 20000 | -0.7 | -0.5 | -1.0 | -1.2 | -2.8 | 30.5 |
| PAPA019 | 2014 | 12.5 | 36.6 | 38.3 | 32.1 | 28.1 | 15.3 | 74.4 |
| PAPA019 | 2014 | 15.8 | 36.4 | 38.2 | 33.3 | 29.3 | 15.7 | 73.6 |
| PAPA019 | 2014 | 20 | 44.5 | 47.0 | 41.0 | 33.0 | 17.2 | 72.4 |
| PAPA019 | 2014 | 25 | 38.0 | 40.8 | 35.6 | 29.6 | 15.8 | 66.3 |

| Appendix E. One-third Octave Band Metrics, PAPA Leks, April 2014. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Year | Freq | Leq | L10 | L50 | L90 | LMin | LMax |
| PAPA019 | 2014 | 31.5 | 33.9 | 36.4 | 30.9 | 26.5 | 14.1 | 65.7 |
| PAPA019 | 2014 | 40 | 31.1 | 33.9 | 27.7 | 23.5 | 10.3 | 63.6 |
| PAPA019 | 2014 | 50 | 30.5 | 33.2 | 25.9 | 21.3 | 8.8 | 60.9 |
| PAPA019 | 2014 | 63 | 30.8 | 33.4 | 25.7 | 22.2 | 7.9 | 68.4 |
| PAPA019 | 2014 | 80 | 30.4 | 31.8 | 23.8 | 19.5 | 4.9 | 69.8 |
| PAPA019 | 2014 | 100 | 29.3 | 29.9 | 22.2 | 19.1 | 2.8 | 70.7 |
| PAPA019 | 2014 | 125 | 27.0 | 28.3 | 21.0 | 17.2 | 2.0 | 66.7 |
| PAPA019 | 2014 | 160 | 24.0 | 25.4 | 18.2 | 14.8 | 0.0 | 65.0 |
| PAPA019 | 2014 | 200 | 21.1 | 22.1 | 14.6 | 10.8 | -1.3 | 54.6 |
| PAPA019 | 2014 | 250 | 18.6 | 18.6 | 11.3 | 8.0 | -2.6 | 56.7 |
| PAPA019 | 2014 | 315 | 15.8 | 17.0 | 9.9 | 5.6 | -3.3 | 51.0 |
| PAPA019 | 2014 | 400 | 12.8 | 13.1 | 6.2 | 2.4 | -3.7 | 49.6 |
| PAPA019 | 2014 | 500 | 12.8 | 11.8 | 3.7 | 0.2 | -3.8 | 51.2 |
| PAPA019 | 2014 | 630 | 7.4 | 5.2 | 0.3 | -1.3 | -3.5 | 50.3 |
| PAPA019 | 2014 | 800 | 4.3 | 4.1 | -0.3 | -1.3 | -3.2 | 48.0 |
| PAPA019 | 2014 | 1000 | 3.1 | 3.6 | 0.1 | -0.8 | -2.5 | 48.2 |
| PAPA019 | 2014 | 1250 | 2.9 | 2.5 | 0.5 | -0.3 | -1.5 | 50.9 |
| PAPA019 | 2014 | 1600 | 3.0 | 2.7 | 1.1 | 0.5 | -0.9 | 44.3 |
| PAPA019 | 2014 | 2000 | 7.3 | 4.4 | 2.0 | 1.5 | 0.1 | 51.5 |
| PAPA019 | 2014 | 2500 | 7.2 | 6.4 | 3.0 | 2.4 | 1.1 | 61.9 |
| PAPA019 | 2014 | 3150 | 6.0 | 6.5 | 3.8 | 3.3 | 1.9 | 63.7 |
| PAPA019 | 2014 | 4000 | 5.0 | 5.0 | 4.2 | 3.9 | 1.9 | 39.5 |
| PAPA019 | 2014 | 5000 | 5.3 | 5.3 | 4.8 | 4.6 | 1.2 | 38.7 |
| PAPA019 | 2014 | 6300 | 5.7 | 5.7 | 5.4 | 5.2 | 0.9 | 47.9 |
| PAPA019 | 2014 | 8000 | 5.9 | 6.0 | 5.9 | 5.7 | 0.9 | 47.6 |
| PAPA019 | 2014 | 10000 | 6.2 | 6.3 | 6.2 | 6.1 | 1.1 | 24.3 |
| PAPA019 | 2014 | 12500 | 6.3 | 6.4 | 6.3 | 6.1 | 1.4 | 29.4 |
| PAPA019 | 2014 | 16000 | 5.8 | 5.9 | 5.7 | 5.6 | 1.6 | 27.6 |
| PAPA019 | 2014 | 20000 | 3.9 | 4.0 | 3.8 | 3.6 | 1.7 | 29.8 |

## Appendix F. Credentials of Authors

The three authors of this report have over 75 years combined experience working in the field of acoustics, sound level measurements, and assessing impacts on wildlife resources. All three were involved in initial measurements National Parks in an effort to determine existing ambient and baseline ambient sound levels in order to assess impacts of anthropogenic sounds on resources. This work involved sound level measurements in remote places with little human activity for long periods of time, and consequently very, very low sound levels. This work required development of new tools and techniques, many of which were pioneered by the authors. In total, these three individuals have collected data at over 250 locations throughout North America.

**Skip Ambrose**
Clemson University, B.S., 1969
Mr. Ambrose worked for the Fish and Wildlife Service in Alaska for 28 years as head of the Endangered Species Program in Fairbanks, AK. Much of this work involved assessing and protecting listed species from human impacts, including impacts from anthropogenic sounds. In 2001, Mr. Ambrose began working for the National Park Service to development the Acoustic Division of the Natural Sounds Program. The work involved developing new tools and techniques to study sound levels in very remote and very quiet places, and working with acousticians from other federal, state, and private organizations. In 2005, Mr. Ambrose retired from the National Park Service and co-founded Sandhill Company, a consulting firm specializing in avian and acoustic studies. Mr. Ambrose has participated in over 50 sound level measurement studies throughout North America, and has authored over 30 reports on sound level measurements in national parks and other rural and remote locations.

**Christine Florian**
Northern Arizona University, B.S., 1994.
Beginning in 1993, Ms. Florian worked for the National Park Service in Arizona surveying and studying wildlife resources in northern Arizona parks, primary avian species. In 1997, she began working in Alaska conducting avian and acoustic surveys in national parks in interior Alaska. In 2001, Ms. Florian started working for the National Park Service's new Natural Sounds Program, and participated in equipment and software development for sound level measurements and acoustic studies in National Parks throughout North America. She retired from the National Park Service in 2005 and co-founded Sandhill Company, a consulting firm specializing in avian and acoustic studies. Ms. Florian has participated in over 50 sound level studies throughout North America, and co-authored over 25 reports on this work.

**John MacDonald**
General Motors Engineering and Management Institute, B.S. Electrical Engineering, 1990
University of Central Florida, Master of Science, Environmental Engineering, 1996
University of Central Florida, Ph.D., Environmental Engineering, 2001
Licensed Professional Engineer; State of Florida; PE# 63038

Dr. MacDonald has been performing engineering tests and analyzing engineering data since 1986 when he worked as an engineer at General Motors in Flint, Michigan. He began performing environmental noise measurements in 1995 and has conducted environmental noise and vibration studies since that time. Dr. MacDonald developed the "Community Noise Model" that was in use at one time in 35 different countries. The CNM was a PC based simulation program that predicted sound levels at residential receivers from common sources of environmental noise such as automobiles, aircraft, rail operations, and point sources of sound such as HVAC, generators, exhaust ports, etc. Dr. MacDonald has conducted long term environmental sound surveys in 40 National Parks and has developed numerous custom software methods to analyze environmental acoustic data. He is a computer modeling expert, a programmer and has developed custom data acquisition systems for his engineering work.