King County

Department of Natural Resources and Parks
Solid Waste Division

DETAILED PERIMETER NOISE STUDY AT CEDAR HILLS REGIONAL LANDFILL

December 2012

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Prepared for King County by:
AMEC Environment & Infrastructure, Inc.

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GLOSSARY

A-weighting: A method of processing measured sound to reflect how audible that sound is to people. The measured sound pressure in each frequency composing the sound is adjusted by a weighting factor to approximate human hearing sensitivity to that frequency.

A-weighted decibels (dBA): The most-commonly used measure of noise exposure among people, which uses a logarithmic scale (the decibel) to represent a wide range of sound pressure levels.

ambient noise levels: The level of noise arising from all sources, as measured at a location.

amplitude: The range representing the height (from peak to valley) of the waves that comprise sound at a given frequency (distance between peaks).

average (equivalent) sound level (L_{eq}): The constant sound level in a given time period that conveys the same sound energy as the actual time-varying sound.

broadband sound level: The sound level expressed as a single value, integrating levels across all measured frequencies.

decibels (dB): The sound level measured in decibels

Fast Fourier Transform (FFT) analysis: A method of analyzing a spectrum of time-varying data that uses the FFT algorithm to calculate a spectrum from a time domain signal, that provides the optimum frequency resolution allowing identification of pure tone and harmonic content, as well as resonant frequencies.

hertz (Hz): The frequency from peak to peak of sound waves (in cycles per second).

noise: The intensity, duration and character of sounds from any or all sources.

maximum permissible sound level limits: The limits on noise levels at a receptor as established by King County in Title 12, Chapter 12.88 of the King County Code.

maximum sound level (L_{max}): The maximum sound level over a measurement interval determined by using a sound level meter set to “fast” response time.

octave band: An interval of the sound frequency spectrum, such that the center frequency of the octave band is at the logarithmic center of the frequency range for that band; the frequency spectrum is divided so that the upper limit of each band is twice the preceding center frequency. The commonly used center frequencies in octave band analysis are 63, 125, 250, 500, 1000, 2000, 4000 and 8,000 Hz.

1/3 octave band: A further subdivision of the sound frequency spectrum, such that each octave band is divided into three logarithmically-centered bands, where the center frequency is defined by $10^{0.1N}$, where N is a whole number from 10 to 50.

pitch: A term to describe the frequency of a noise— a “high pitched” noise has a high frequency (short distance between sound waves).

receptor site: The location receiving the sound.

sound: A wave-form disturbance of pressure propagating through a medium, such as the air.

Sound Level Meter (SLM): An instrument for measuring sound levels that measures rapid variations in air pressure with time, using a microphone and signal processing electronics.

vibration: Repetitive displacement of an object in two or more dimensions, usually caused by a physical source of energy to an object.

white noise: Noise that has significant pressure in many frequencies, such that no one frequency dominates the spectrum.

DETAILED PERIMETER NOISE STUDY
AT CEDAR HILLS REGIONAL LANDFILL

Cedar Hills Regional Landfill
Maple Valley, Washington

EXECUTIVE SUMMARY

PROJECT SCOPE

King County Department of Natural Resources and Parks, Solid Waste Division (KCSWD) contracted with AMEC Environment & Infrastructure, Inc. (AMEC), in collaboration with ENVIRON International Corporation (ENVIRON) and JGL Acoustics, Inc. (JGL), to measure and analyze ambient noise levels at five perimeter locations and three noise source locations at the Cedar Hills Regional Landfill (CHRLF) in the fall of 2012. The intent of the measurements and analyses was to determine to what extent operational noise from CHRLF contributes to ambient noise levels at perimeter locations, if the ambient noise levels were higher than the noise standards established by King County.

This study was planned as a detailed evaluation of 1-second A-weighted ambient noise levels at each location on three week days and two weekend days. The resulting noise data was used to characterize the hourly noise levels at each location, including statistical descriptors appropriate for comparison with the community noise standards established by King County.

Ambient noise measurements taken near the three noise source locations included industrial/ commercial operations that may contribute to the ambient noise environment: Source Area 1 on the CHRLF fence line by the Cedar Grove composting (CGC) facility; Source Area 2 near the CHRLF North Flare Station; and Source Area 3 northeast of the entrance driveway to the CHRLF main operations area, near the Bio-Energy Washington (BEW) plant. The data from these noise source locations were used to assist in the identification of noises audible at the perimeter locations to determine whether they originated from activities at CHRLF or from other nearby sources such as CGC facility operations, the BEW plant, or local business and residential activities.

To further identify noise sources, all sound level meters were programmed to record one minute of ambient noise at the start of each hour, and further record a short audio clip whenever clearly audible noises occurred.

Along with the noise measurements, portable ambient weather stations were set up at four of the five perimeter noise monitoring locations to measure ambient wind speed and direction.

The noise and audio data collected at all eight noise measurement locations was supplemented by frequent observer visits during both daytime and nighttime hours over the duration of the measurement program. Observers noted distinctly audible noise events as they occurred and recorded the events using time-synchronized notes.

PROJECT RESULTS

The fieldwork occurred between September 26 and October 5, 2012. During this time, measurements were collected of 1-second average (L_{eq}) and maximum (L_{max}) ambient noise levels. Hourly ambient noise level statistics were calculated at all five perimeter locations during five 24-hour periods, obtaining 620 unique location-hours of data (i.e., 124 hours at each perimeter location). Due to high winds on September 30 and a forecast of further inclement weather, all noise monitoring activities through October 3, 2012 were cancelled. Noise monitoring resumed on October 4, 2012, when wind speeds were such that wind-related noise had abated and conditions were suitable for noise measurements.

The following summarizes general observation and results of the noise monitoring program:

- The acoustical soundscape in the vicinity of the CHRLF is complex and varied across the site and over a 24-hour period.
- Ambient noise contributions at perimeter locations vary in source and level; however, there are sources that are continuously present at some locations, including frequent aircraft noise and distant traffic.
- Ambient noise levels were above KCC noise limits at times at all perimeter locations over the duration of the measurement program; however, ambient levels above the $L_{8.3}$, $L_{2.5}$,and L_{max} limits were typically a result of ambient noises not associated with CHRLF operations (i.e., aircraft, birds, or other sources).
- After excluding known extraneous sources of noise (i.e., aircraft, birds, etc.), the ambient noise described by the L_{25} noise metric (the level exceeded for 15 minutes in any one hour) was above the KCC maximum permissible sound level limit during multiple daytime and nighttime hours at all locations.
- Because contributing noise sources (i.e., CHRLF, the CGC facility, the NFS, and the BEW plant) are varied and often complex, extracting contributing sources from overall levels at any one location was not feasible using broadband data.
- Review of 1/3 octave data and Fast Fourier Transform (FFT) analysis of audio recordings revealed some correlation between low frequency noises measured near the BEW plant and as received at P1 and P5.
- Review of 1/3 octave data revealed correlation between 1,000-hertz noise at the North Flare Station that was received at P2.

- Although some correlation was noted, there was no significant correlation between 1/3 octave (and FFT) data and the broadband sound level data that are used to determine noise metrics for comparison with KCC limits.

CONCLUSIONS AND RECOMMENDATIONS

Following completion of the noise monitoring program, and with consideration of the results identified above, the following summarizes the conclusions of this study and further recommendations:

- Due to the complexities of the acoustical soundscape, a definitive quantification of the contribution of CHRLF activity to ambient noise levels at each of the perimeter locations is not feasible with monitoring data alone.
- In order to quantify the contribution of specific sources at each of the monitoring locations, additional assessment would be necessary and would include predictive noise modeling tools to assess source-specific contributions at each perimeter location.

DETAILED PERIMETER NOISE STUDY AT CEDAR HILLS REGIONAL LANDFILL
OF CEDAR HILLS REGIONAL LANDFILL

Cedar Hills Regional Landfill
Maple Valley, Washington

1.0 INTRODUCTION

King County Department of Natural Resources and Parks, Solid Waste Division (KCSWD) contracted with AMEC Environment & Infrastructure, Inc. (AMEC), in collaboration with ENVIRON International Corporation (ENVIRON) and JGL Acoustics, Inc. (JGL), to measure and analyze ambient noise levels at five perimeter locations and three noise source locations at the Cedar Hills Regional Landfill (CHRLF) in the fall of 2012. The intent of the measurements and analyses was to determine whether CHRLF operational noise contributed to ambient noise levels at perimeter locations that exceeded the noise standards established by King County.

Ambient noise includes noise from all sources audible at a given location. This detailed study was designed to measure 1-second A-weighted ambient noise levels at each perimeter location. Monitoring was planned to record these levels for five consecutive days at each location (three weekdays and two weekend days), supplemented by an automatic short audio recording when clearly elevated noise levels occurred. The resulting noise data was analyzed to characterize the 24 hourly-average noise levels at each location, including statistical descriptors appropriate for comparison to the State and King County noise standards. Where possible, the noises recorded at each site were attributed to identifiable source categories, to determine whether they were originating from activities at CHRLF or from other sources, such as the Bio-Energy Washington (BEW) landfill gas-to-energy plant, the Cedar Grove Composting (CGC) facility operations, the North Flare Station, or local business and residential activities.

If the ambient sound levels were below applicable noise standards, this would support a conclusion that no noise sources currently exceed the standards at the property boundary. However, ambient noise levels were found to exceed the noise standards, so the noise contribution of clearly identifiable noise sources not associated with CHRLF were mathematically removed to determine whether noise from CHRLF operations was causing ambient noise levels to exceed the standards at the property boundary.

A definitive assessment of CHRLF compliance with King County Code (KCC) limits is not feasible at the current time, and further evaluation is recommended.

1.1 SOUND MEASUREMENT UNITS

Noise, in the environmental sense, is defined as any sound that is undesired or interferes with one's hearing of something.[1] Essentially, it is unwanted sound. Sounds occur from many sources, but a sound is considered noise when we expect peace and quiet, or when it interferes with sleep, thought, or our enjoyment of desirable sounds like conversation, nature, or music. Sound in a physical sense is a rapid fluctuation in ambient air pressure versus a reference level, transmitted through the air by spherical wave propagation.[2] As the variations in air pressure become larger (the waves increase in amplitude), a sound increases in loudness. The loudness is measured in decibels (dB), a logarithmic scale that conveniently represents a wide range of pressure variation. People vary in their ability to detect sounds, but human hearing generally ranges from about zero dB (barely detectible) to about 120 dB (the threshold of pain).[3] Our sensitivity to changes in sound levels varies, but typically a sound level increase of 3 dB is perceptible under ideal listening conditions, 5 dB is clearly perceptible in most environments, and 10 dB is perceived as a doubling of loudness.[4] Typical levels of some common sounds are shown in the chart below.

Typical Noise Environment	Sound Pressure Level (dB)
Jet aircraft takeoff at 100 feet	120
Motorcycle at 25 feet	90
Heavy truck at 50 feet	85
Garbage disposal	80
City street corner	70
Large store	65
Conversational speech	60
TV listening at 10 feet	55
Typical office	50
Living room	40
Quiet bedroom at night	30

Source: U.S. Environmental Protection Agency, Office of Noise Abatement and Control. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. 550/9-74-004. USEPA. Washington DC, 1974.

Along with the amplitude of sound waves, the distance between their peaks is important because it defines the pitch (or frequency) of the sound. This is measured in hertz (Hz), or wave cycles per second. Many sound sources are things that vibrate, as when a hammer strike causes a sheet of steel to vibrate, or when a guitar string is plucked. The resulting vibration moves the air around the

[1] Webster's New Collegiate Dictionary. G.&C. Merriam Co., Springfield, MA 1980.
[2] Mestre, V.E., and D.C. Wooten. *Noise Impact Analysis*, Chapter 4 in Environmental Impact Analysis Handbook. Rau, J.G., and D.C. Wooten, Editors. McGraw-Hill, Inc., New York, NY 1980.
[3] Peterson, A.P.G., and E.E. Gross, Jr. *Handbook of Noise Measurement.* 7th Edition. General Radio Co., Concord, MA. 1972.
[4] U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch. *Highway Traffic Noise Analysis and Aba*tement Policy and Guidance. USDOT, Washington, DC, 1995.

vibrating source, each movement creating a wave with a certain frequency. The vibration of the guitar string is at a single frequency, so it generates a pure tone, while the vibration of the sheet of steel is a combination of tones, each at a different frequency. Sound is therefore composed of multiple waves that move with specific amplitude and frequencies. Therefore, sound can be physically described by its loudness (in dB) as a function of frequency (in Hz). Noises that are louder in one or a few frequencies can be very annoying, while noises that are equally loud in many frequencies can be described as “white noise,” which tends to be less intrusive.

People with excellent hearing can detect sounds over a frequency range of 20 to 20,000 Hz. But people do not hear all frequencies equally well—we are most sensitive to frequencies between 1,000 and 4,000 Hz, and our sensitivity drops off at lower and higher frequencies. The A-weighting system was developed to adjust sound, by way of an A-weighting filter, to the characteristic sensitivity of human hearing. A-weighting is an adjustment or “weight” applied to frequencies when measured through a microphone of a sound level meter, to approximately the frequency response of the human ear. These values are in A-weighted decibels (dBA), and this is the basic measure of sound commonly used when evaluating environmental noise. A broadband A-weighted sound is a logarithmic combination of all A-weighted frequencies to a single numerical description of the loudness. The resulting level is approximately correlated to the way humans hear.

Sounds are often more audible or discernible when they are isolated to one frequency and are higher in energy than other frequencies originating from the same noise source. These sounds are referred to as “pure tones.” Pure tones, or noises that are defined as tonal, may be discernible in environments even where overall ambient levels are high. Examples would be construction back-up alarms or a train horn.

Ambient noise levels vary continuously with time. As various sources of noise occur, the ambient noise level is louder at some times, and quieter at others. Statistical descriptors have been developed to describe this variation. The maximum sound level (L_{max}) is the highest sound level recorded, including instantaneous sounds that last only milliseconds. The average (equivalent) sound level for any time interval (such as a minute or an hour) is the logarithmically averaged sound level over that time interval, denoted as its L_{eq}. Along with the L_{eq} are other statistical values that define the percentage of time that exceeds a specific sound level. For example, over the course of an hour, noise levels may be above a relatively quiet level 90 percent of the time (54 minutes), or exceed a relatively loud level only 2.5 percent of the time (1.5 minutes), expressed as the L_{90} and $L_{2.5}$, respectively. It is useful to note that the L_{90} is commonly accepted as an approximate representation of background noise levels. In other words, events that exceed a noise level for 10 percent of the time can be attributed to infrequent and clearly audible short-term events, not considered representative of background conditions.

In general, the degree of a perceived noise impact depends, among other factors, on existing ambient sound levels versus the noise source in question, the frequency spectrum of the noise source, the timing and duration of the noise event, and the hearing abilities of the person listening.

1.2 KING COUNTY CODE

The noise criteria established in the KCC apply to the CHRLF site and surrounding properties. These criteria are defined in Title 12, Chapter 12.88 of the KCC (KCC 12.88) and are reproduced in the chart below.

King County Maximum Permissible Sound Levels[1,2,3] (dBA)

Sound Source	Receiving Property Within King County			
	Rural	Residential	Commercial	Industrial
Rural	49	52	55	57
Residential	52	55	57	60
Commercial	55	57	60	65
Industrial	57	60	65	70

Notes
King County criteria established in King County Code, Chapter 12.88.

1. Between 10:00 PM and 7:00 AM on weekdays, and between 10:00 PM and 9:00 AM on weekends, the levels are reduced by 10 dBA where the receiving property lies within a rural or residential district of King County.
2. For any source of sound that is of short duration, the levels established are increased by:
   5 dBA for a total of 15 minutes in any 1-hour period, or
   10 dBA for a total of 5 minutes in any 1-hour period, or
   15 dBA for a total of 1.5 minutes in any 1-hour period.
3. For the equipment and activities described in this subsection, the maximum permissible sound levels specified in King County Code 12.88.020A and 12.88.030 may be exceeded as measured at the real property of another person or fifty feet from the equipment, whichever is greater, between 7:00 AM and 10:00 PM on weekdays and between 9:00 AM and 10:00 PM on weekends, by no more than: (1) 25 dB(A) for equipment used on construction sites, including crawlers, tractors, bulldozers, rotary drills and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors and pneumatic-powered equipment; (2) 20 dB(A) for portable powered equipment used in temporary locations in support of construction activities or used in the maintenance of public facilities, including chainsaws, log chippers, lawn and garden maintenance equipment and powered hand tools; or (3) 15 dB(A) for powered equipment used in temporary or periodic maintenance or repair of the grounds or appurtenances of any property, including lawnmowers, powered hand tools, snow-removal equipment and composters.

Abbreviations
dBA = A-weighted decibels

Note that night time noise limits (between 10:00 PM and 7:00 AM) are 10 dBA lower than daytime/evening limits. In KCC 12.88, King County allows for short-term increases above the maximum permissible limits identified in the chart above as follows:

- up to 5 dBA for no more than 15 minutes in an hour,
- up to 10 dBA for no more than 5 minutes in an hour, and
- up to 15 dBA for no more than 1.5 minutes in an hour.

In addition to the maximum permissible sound level limits, KCC 12.88 regulates noise from construction activity. Noise from construction is permitted between the hours of 7:00 AM to 10:00 PM on weekdays (9:00 AM to 10:00 PM on weekends), provided the source sound levels do not exceed the maximum permissible limits by more than the following:

- 25 dBA, when equipment includes construction site equipment like off-highway trucks, loaders, bulldozers, etc.;
- 20 dBA, when activity includes temporary construction support and equipment includes portable powered equipment like chainsaws, log chippers, hand tools, etc.; or
- 15 dBA, when activity includes periodic maintenance and repair, and equipment like power hand-tools, snow blowers, etc.

Additional sound level limit exemptions exist for impact-type construction equipment, as specified in KCC 12.88.040 (B). It should be noted that KCSWD restricts solid waste truck hauling to CHRLF and landfill operation (and associated heavy equipment operations) as follows:

Truck trips to CHRLF:	6:00 AM to 9:30 PM weekdays (6:00 AM to 6:30 PM weekends)
Landfill operation:	6:00 AM to 6:00 PM on weekdays (6:00 AM to 5:00 PM weekends)

Relative to pure tones, KCC 12.87.260 defines pure tones as “sound having the following qualities: a one third octave band sound pressure level in the band with the tone that exceeds the arithmetic average of the sound pressure levels of the two contiguous one third octave bands…”

- by 5 dB for center frequencies of 500 Hz and above,
- by 8 dB for center frequencies between 160 and 400 Hz, and
- by 15 dB for center frequencies less than or equal to 125 Hz”

That is, a pure tone is a 1/3 octave frequency that is of a higher sound level than neighboring 1/3 octave frequencies by a defined amount. Note that pure tones are typically assessed at a noise receptor, not near the noise source.

KCC 12.88.030(B) states that “for any source of sound that...has a pure tone component…the levels established by this chapter shall be reduced by 5 dB(A).”

1.3 TECHNICAL APPROACH

The 1-second A-weighted ambient noise levels (L_{eq} and L_{max}) and associated statistical noise descriptors were measured at five specific locations on the north, west, and east sides of CHRLF, with automated capture of a short noise recording when clearly distinct ambient noises occurred. The

five ambient noise measuring locations used for this detailed study are identified below and shown in Figure 1.

- Perimeter 1 (P1): At gas probe (GP) 35 in the southwest portion of the property, near the west fence line with residential property;
- Perimeter 2 (P2): At GP29 in the northwest portion of the property, near the west fence line with residential property;
- Perimeter 3 (P3): At GP24 in the northeast portion of the property, near the northeast fence line with residential property;
- Perimeter 4 (P4): Northeast of the cellular phone towers north of the Passage Point Center, approximately 200 feet west of the fence line with residential property, halfway up the east side of CHRLF;
- Perimeter 5 (P5): At GP45 by the southeast CHRLF property line with residential property, under power lines north of the southeast corner of the site, and east of 227th Avenue SE.

KCSWD and AMEC identified potentially audible industrial and commercial sources in the vicinity of CHRLF. These included:

- Activity at the CGC facility on the south side of CHRLF;
- Activity within CHRLF (such as the landfill gas extraction fans and flares at the North Flare Station (NFS) on the north-central portion of the CHRLF property, and the maintenance shops, landfill construction, and on-site truck and equipment operation on the south-central and southeast portion of the CHRLF property), and
- Activity at the BEW plant on the southeast portion of the CHRLF property.

Noise measuring locations were selected to represent the ambient noise levels close to these source areas. These are listed below and also shown in Figure 1.

- Source Area 1 (S1): At GP39 at the southwest corner of the property, near the southern fence line with the Cedar Grove Compost property;
- Source Area 2 (S2): About 50 feet east of the gravel road bypassing the west side of the NFS, and 20 feet northwest of the gravel driveway into the NFS;
- Source Area 3 (S3): Northeast of the entrance driveway to the CHRLF main gate, about 100 feet south of the stormwater channel from the landfill, and 100 feet northeast of the driveway.

Ambient noise levels were to be measured for five consecutive 24-hour periods at each location. The following noise measurement equipment was assembled and deployed at each location:

- Larson Davis Model 831 Type 1 Integrating Sound Level Meter;

- Larson Davis Model 828 Preamplifier; and
- PCB Model 377B02 ½ inch Free Field Microphone.

The microphone was placed in a vertical orientation at 8 feet elevation, protected by a windscreen with bird spikes. The microphone was calibrated before and after each day's data collection using a Larson Davis Model Cal200 calibrator. For each 1-second period throughout the monitoring program, L_{eq} and L_{max} data, in addition to 1/3 octave band data, were measured at each location. The sound level meters were equipped with audio recording software to record noise events that exceeded specified thresholds above the background noise level, which varied from site to site. Starting at a threshold of 10 dBA above the current L_{90}, trigger level parameters were adjusted downward daily to 5 dBA above the current L_{90} to capture progressively fainter noises without exceeding available data storage capacity while the measurements occurred all night.

Field notes were synchronized to the nearest second when documenting audible noises at each noise monitoring location. Observers checked each source and perimeter location on a rotating schedule (i.e., observations were made at one location for a specified duration of time, and then the observer moved to another location). Observer notes were matched with audio recordings, when such recordings were triggered, to identify or confirm the source and/or duration of specific noise events. Field notes are included in Appendix A.

Average wind speed data were collected in 1-minute intervals over the entire monitoring program at locations P1, P2, P3, and P5, representing the four outer quadrants of the landfill. These data were collected using Davis Instruments Model Vantage Pro Plus portable weather stations equipped with sensors for wind direction and speed. Sensors were placed at a nominal height of 7 feet above ground. Wind data were supplemented by hourly average data obtained by the existing permanent meteorological station located at the landfill. Note that the existing meteorological tower is 10 meters (33 feet) tall and located on a hill, where it is much more exposed to the wind than the perimeter noise monitoring locations.

1.4 DATA QUALITY

1.4.1 Completeness – Noise Monitoring

Noise monitoring was initially due to commence the evening of Tuesday, September 25. However, due to sound level measurement equipment errors at S3, data was not collected at S3 until the error could be resolved. As such, a complete data set (i.e., data from all perimeter and source locations) did not commence until 11:00 AM on Wednesday, September 26. Monitoring continued through Sunday, September 30 until suspended due to weather. Monitoring resumed at 7:00 PM on Thursday, October 4 and continued through 6:00 PM on Friday, October 5, at which time the monitoring program was completed.

A faulty data storage card in the sound level meter at location S2 resulted in lost data on September 28 between 12:00 AM and 4:00 AM, and between 5:00 PM on September 29 and 1:00 AM on September 30. The noise environment at S2 is dominated by the landfill gas extraction blowers (fans). These blowers emit a relatively constant noise source because they must maintain a constant vacuum on the landfill interior to collect the naturally-produced landfill gas. Therefore, the loss of data at S2 did not warrant interruption of the noise study, because there was little change in the sound levels at S2 at any time over the duration of the noise monitoring program.

Additional brief interruptions or losses of data (lasting several minutes at most) occurred at each station during each day of measurement, to allow for calibrating the instruments and downloading data to a portable computer. No other data losses were reported at any of the measurement locations.

1.4.2 Completeness – Portable Weather Stations

Between 11:00 AM on September 26 and the afternoon of September 28, 1-minute average wind speed data were collected only intermittently due to technical difficulties at all perimeter portable weather stations. The issues were resolved on September 28 (between 2:40 PM and 5:40 PM, depending on the station). Weather conditions during the entire period of intermittent data were observed to be clear and calm, with little to no wind. Further, wind speeds measured at the permanent CHRLF meteorological station (which is considerably more exposed to higher wind speeds) were below 5.9 miles per hour during this same period.

For the remainder of the monitoring program there were only minor gaps (data losses) of 1-minute average wind speed data, not considered significant or of concern.

1.4.3 Inclement Weather

The Washington State Department of Ecology specifies in Title 173 of the Washington Administrative Code (WAC), Chapter 173-58-040, that sound level measurements shall not be made when average ambient wind speeds exceed 12 miles per hour. High wind can affect noise monitoring even with use of a properly fitted wind screen due to leaves rustling in trees, a sound that can contribute to ambient levels in a given area. Also, wind affects the transmission of sound waves through the air, and the higher the wind speeds, the greater the effect on sound transmission (i.e., either an increase or decrease in perceived levels, depending on wind direction relative to the source and receiver).

During the afternoon of September 30, wind speeds increased and created noticeable wind-related noise in the trees surrounding several monitoring locations. In response, noise monitoring was temporarily suspended at all sites. Monitoring resumed at 7:00 PM on Thursday, October 4 following

passage of a weather system that included rain and high winds. Wind speeds never exceeded 12 miles per hour at any of the portable weather stations during hours that are included for this study.

1.4.4 Accuracy

All eight sound level meters were supplied with current calibration certificates from the manufacturer or the rental company (The Modal Shop, Inc., Cincinnati, OH). Each was also checked for calibration response in the field before and after each 24-hour monitoring period with a Larson Davis Cal200 calibrator at 114 dB. Calibration checks revealed the instruments were within ±0.25 dB of the calibrator reference value, an indication of accuracy of measured ambient noise levels.

All four perimeter weather stations were provided with manufacturer calibration certificates that stated each had accuracy of ± 2 miles per hour or 5 percent, whichever was greater. This level of accuracy is considered adequate for the purposes of this study (i.e., to document whether wind speeds remained below 12 miles per hour at the monitoring locations).

1.4.5 Quality Control

To ensure the quality of sound level calculations and subsequent interpretations, sound level calculations and observation data were reviewed to ensure accuracy and correctness. At a minimum, 5 percent of the calculations to compute the hourly metrics were to be reviewed. Assuming a review of 5 percent of the data calculated over 124 hours at five perimeter monitoring locations (620 hours total) a total of at least 32 hourly noise calculations were to be reviewed. However, more than 200 hours were assessed in detail to review audible noise sources when ambient levels were above the KCC limits, and calculations were verified during this process. The total hours that were reviewed represent approximately 34 percent of the sound level data calculated to summarize the noise monitoring results. Additional data were reviewed during the assessment as required. During review of each hour of sound level data, the L_{25}, $L_{8.3}$, $L_{2.5}$ and L_{max} were verified to ensure the initial calculations were correct and accurate. In all cases, there were no errors found in the initial sound level data analysis. Additionally, observation notes and audio recordings files were reviewed during the detailed review of the more than 200 hours of sound level data. Events noted by the observers and through audio playback were used to further verify the noise data calculations.

1.5 METHOD OF ANALYSIS

The following steps were taken to complete the analysis:

1. Summarize and tabulate L_ns
2. Summarize audible noise sources and remove identifiable extraneous sounds to calculate corrected hourly L_n statistics
3. Assess traffic data
4. Perform detailed review of selected hours
5. Assess source-receiver frequency spectra

1.5.1 Summary and Tabulation of L_ns

Sound level data collected with the Larson Davis Model 831 sound level meters were downloaded to a computer through processing software (SLM Utility G3©) specific to the Larson Davis instruments and available free from PCB Piezotronics, Inc. Once downloaded, these data were then exported to a spreadsheet format for further processing. As noted, the data were collected in 1-second intervals, including A-weighted broadband and 1/3-octave data. To summarize the data and compute hourly metrics to be compared with KCC limits, all 1-second A-weighted broadband data (1-second L_{eq} and L_{max}) were extracted for each day at each location. The L_{25}, $L_{8.3}$, and $L_{2.5}$ were calculated using the 1-second L_{eq} data based on calculations of percentile over the entire 1-hour period for each data set. These metrics are comparable with the KCC maximum permissible sound levels and allowable exceedances (i.e., L_{25}, $L_{8.3}$, and $L_{2.5}$ are comparable to the maximum permissible sound levels and allowable exceedances for 15 minutes, 5 minutes, and 1.5 minute, respectively). The L_{max} was computed using the highest 1-second L_{max} over the entire 1-hour period, and is directly comparable with the maximum not-to-be-exceeded value of the KCC (15 dBA above the maximum permissible sound level).

1.5.2 Summary of Audible Noise Sources and Corrected Hourly L_n Statistics

After the hourly L_n statistics were computed for the entire monitoring program, values that exceeded the KCC allowable exceedances were highlighted for further assessment. That is, for all hours where L_n metrics were calculated at or below the KCC limits, no further assessment was performed. However, for those hours where KCC limits were exceeded, an additional assessment was completed to determine the source of the contributing noise, if feasible. The intent was to identify clearly audible noise events that are not related to CHRLF, the BEW plant, or the CGC facility. Once identified, these data from extraneous events were removed, and the hourly statistics were re-calculated to determine corrected sound levels without extraneous events.

To extract data from extraneous events, the 1-second L_{eq} and L_{max} sound level data for each hour were graphed for internal review such that time was presented across the x-axis and sound levels on the y-axis. In many cases, clearly extraneous noise events are presented as spikes or peaks in the graphs. Once these peaks were identified, a review of observer notes and the triggered-audio recordings was completed to determine the sources of the spike or peak event. Reviewing the event audio recordings (when triggered) allowed the noise source to be assessed by signature sound (e.g., an aircraft overhead, nearby birds, cars, etc.). In some cases the observer may have been at another location and/or no audio files were recorded. In these cases, observer notes were consulted in the event that the observer noted an event that would be expected to be audible at other locations (e.g., aircraft noise). Also, matching patterns of aircraft noise may be clearly represented at multiple perimeter locations for the same time periods. If the event was not identified under any of the above methods, it was labeled as such. In some cases, suspected sources were also noted (e.g., birds calling before or after the noted event).

Once clearly audible extraneous events were identified, the exact beginning and end were identified and the entire event was flagged in the spreadsheet table. The event was then removed from the hourly sound level table, and a linear trend of values was assigned to the now-missing data between the beginning and end of the flagged event. Multiple events may have been flagged and removed for any given 1-hour period. Using the corrected values, hourly L_n statistics were then recalculated and a determination of compliance with the KCC was completed.

The data were compared with the uncorrected measurement data for all perimeter monitoring locations.

1.5.3 Assessment of Traffic Data

To assist in determining noise sources, car and truck traffic to and from CHRLF and the BEW plant was reviewed. To complete this task, a review was completed of time-stamped video surveillance footage taken near the main entrance gate to CHRLF. When car or truck traffic was visually present in the video and shown to be crossing into or out of CHRLF property, the event was flagged in a spreadsheet table and the vehicle type and direction noted. These data were then tabulated according to vehicle direction and whether they serviced CHRLF, the BEW plant, or were unknown. The events were then plotted over graphs representing sound levels recorded at S3, taken near the BEW plant, which is near the CHRLF entrance gate.

1.5.4 Detailed Review of Selected Hours

A detailed review of noise data was completed for selected locations and hours to assist in the quantitative evaluation of contribution from various sources. The review included graphically plotting 1-second L_{eq} data of each perimeter location with 1-second data collected at S1, S2, and S3

(measurements near the CGC facility, NFS, and BEW plant, respectively). Correlation between activities at the various sources would be reflected in the perimeter sound level data, if a correlation was in fact observed. Known peak events were highlighted through text call-outs, and traffic data from video surveillance review also was highlighted on each graph.

1.5.5 Assessment of Source-Receiver Frequency Spectra

The 1/3 octave frequency data were reviewed to further assess the potential relationship between noise sources and noise received at perimeter receptor locations. The review included examining selected time periods where noise levels at perimeter locations increased, even after removal of extraneous noise events. The goal of this review was to identify patterns and/or frequencies from source measurement locations that are clearly discernible at a perimeter receiver location.

This assessment was completed by analyzing the 1/3 octave sound level data over the entire frequency spectra and comparing similar frequencies at a perimeter receptor location. Audio files, observer notes and traffic data summaries were used to aid in the identification of noise sources.

Additionally, select audio files were analyzed using Fast Fourier Transform (FFT) analysis, which allows for frequency-specific evaluation of digital audio data, including manipulation of these data to extract patterns or trends that otherwise may not be discernible.

2.0 RESULTS

This section presents the results of the sounds level measurement program, including data summaries and results of data analysis.

2.1 SUMMARY AND TABULATION OF L_NS

Sound level data from each perimeter location are presented at end of this report in Tables 1 through 5, summarizing sound level data for P1 through P5, respectively. Note that the entire monitoring program, as analyzed for this report, extends from 11:00 AM September 26 to 6:00 PM October 5.

The sound level data are also displayed in Figures 2a through 5e. Figures 2a, 3a, 4a, and 5a present the time period September 26–27, Figures 2b, 3b, 4b, and 5b present September 27–28, Figures 2c, 3c, 4c, and 5c present September 28–29, Figures 2d, 3d, 4d, and 5d present September 29 through 2:00 PM September 30, and Figures 2e, 3e, 4e, and 5e present 7:00 PM October 4 though 7:00 PM October 5.

The graphs in Figures 2a through 2e present the measured hourly sound level statistical values for the L_{25} (the sound level exceeded 15 minutes per hour). Figures 3a through 3e show the measured hourly values for $L_{8.3}$ (the sound level exceeded 5 minutes per hour). Figures 4a through 4e show the $L_{2.5}$ (the sound level exceeded 1.5 minutes per hour) by time of day, and Figures 5a through 5e show the maximum instantaneous sound levels during each hour of each day. The graphs also depict the corresponding maximum permissible sound level limits and allowed exceedances (i.e., L_{25}, $L_{8.3}$, $L_{2.5}$ and L_{max}) from KCC 12.88 for a rural source and rural receptor during daytime/evening and nighttime periods. Note that Figures 2a through 5e are hourly sound level statistics, and therefore each value represents one sound level metric over an entire hour (e.g., an L_{25} for 8:00 AM is the value that applies to the entire hour between 8:00 AM and 9:00 AM). The corresponding sound level limits apply to hourly metrics only. The KCC limits are presented in Figures 2a through 5e as solid lines that appear to extend beyond each of the single Ln statistical values, but are displayed for illustration only and ease of interpretation.

As illustrated in Tables 1 through 5, and as presented in Figures 2a through 5e, ambient noise levels were above the KCC limits at all locations at various times through each day of the monitoring program.

2.2 SUMMARY OF AUDIBLE NOISE SOURCES AND CORRECTED HOURLY L_N STATISTICS

In general, hourly data appear to trend quieter during nighttime hours, increasing around 5:00 AM and reducing in level around 10:00 PM. However, there are multiple examples of hourly metrics that

do not follow general trends or exceed the KCC limits, or both. Observations noted by field technicians indicate that ambient noise sources affect all perimeter locations. Review of audio files suggests these ambient sources may have contributed to some hourly statistics that exceeded applicable limits. Therefore, a detailed assessment was completed of hours where KCC metrics were exceeded so that extraneous events could be removed from the data set and corrected L_n metrics could be calculated. During this assessment, sound level sources for each monitoring location were summarized.

2.2.1 Summary of Audible Ambient Noise

This section summarizes ambient (i.e., background) noise sources or activities that were audible over the duration of the monitoring program and describes the observed sound or activity. Section 2.2.3 discusses which of these sources were audible at each of the perimeter locations.

- ***Overhead aircraft:*** This category included propeller airplanes and jet aircraft. Helicopters were also audible at times, though less frequently. Aircraft noises were typically noted at multiple perimeter locations and lasted up to one or two minutes in duration, depending on proximity.
- ***Distant traffic:*** This category included traffic activity from distant but heavily traveled roads, or nearby off-site roads.
- ***Birds:*** This category included crows and other birds that may have been calling when very near a sound level meter. In some cases, birds represented some of the highest sources of ambient noise.
- ***Wildlife:*** There were some events that were identified as wildlife typically during nighttime hours (i.e., branches breaking and possibly scratching or shuffling sounds). This category may have included the calls of small mammals or birds.
- ***Residential activity:*** This category included voices and music that were audible at some locations.
- ***Overhead electrical lines:*** At P5, a constant but not dominant hum and coronal discharge popping noise could be heard emanating from the electrical transmission lines located overhead. Noise related to overhead wires was more noticeable during nighttime hours.
- ***Cellular tower cooling unit:*** At P4, a cooling unit associated with a cellular transmission tower cycled on and off during the monitoring program. Noise related to this equipment was more noticeable during nighttime hours.

2.2.2 Summary of Audible Activity Noise

This section summarizes audible activity noises, such as activity from CHRLF, the BEW plant, the CGC facility, or the NFS. Section 2.2.3 summarizes which of these sources were audible at each perimeter location.

- ***CHRLF activity:*** This may have included the sound of tracked equipment moving though the active pit area, engine noise, or both.
- ***CHRLF vehicles:*** CHRLF staff completed routine surveillance around the perimeter of the site and often would drive near some of the monitoring locations. Most notably during nighttime hours, these vehicles passing by perimeter locations would result in high levels of recorded vehicle noise.
- ***CGC facility:*** Isolated to P1, CGC facility activity typically included engine noise associated with equipment moving within the CGC facility.
- ***BEW plant:*** Several sounds were noted and described by observers as originating at the BEW plant. Commonly, a “screech” sound was emitted that was due to high pressure gas movement in equipment at the BEW plant. Depending on the observer’s orientation relative to the BEW plant, the sound may have been constant or varied.
- ***NFS:*** The blowers at the NFS emitted a sound that, when near the source, emits a clearly defined 1,000-Hz noise. The NFS was at times noticeable at other perimeter locations, although not defined as a pure tonal noise at any perimeter location, per KCC 12.87.260. Further, the NFS blower noise was at times observed to oscillate.
- ***Bird deterrent devices:*** this may have included bird deterrent whistles and percussion blasts, or Washington Department of Fish and Wildlife staff equipped with deterrent firearms.

2.2.3 Summary of Audible Noise Sources

The following summarizes audible noise sources at each of the perimeter monitoring locations. Each was noted as a constant or reoccurring event.

Location P1

Multiple noise sources were audible at P1. Ambient noise sources included frequent aircraft noise, birds, and distant traffic. Aircraft noise generally represents the loudest source of noise audible at P1 and resulted in multiple events where the ambient noise was above KCC limits.

Noise events attributed to industrial activities included the BEW plant, traffic within the CHRLF, and possibly the CGC facility. At times observers noted the NFS was audible. Bird deterrent devices were observed infrequently.

Location P2

As with P1, ambient noise included frequent aircraft noise and birds. Overall, sound levels at P2 were fairly low, especially during nighttime hours. Noise from the NFS was audible during daytime and nighttime hours, notably at 1,000 Hz, although this did not qualify as a pure tonal source as measured at P2. Other sources audible or noted at this location included the BEW plant and CHRLF activity, as well as infrequent bird-deterrent noises.

Location P3

As with P1 and P2, ambient noise included frequent aircraft noise and birds. Other ambient noise included distant traffic, voices, and music from nearby residences and workers at the adjacent tree farm. Noise sources audible at this location included CHRLF activity, the BEW plant, and the NFS.

Levels at P3 were generally low. During nighttime hours, the BEW plant was audible at times. Early morning and daytime activity audible at P3 included CHRLF vehicle activity.

Location P4

Ambient noise audible at P4 included aircraft and traffic noise, as well as cycling of a cooling unit associated with a nearby cell tower. During nighttime hours the BEW plant was noted and audible. During early morning hours truck traffic was often noted, including track-wheel equipment from within the CHRLF.

Location P5

The highest levels of noise were collected at P5, near the BEW plant and entrance to the CHRLF. At this location, the BEW plant was audible at most times during the day and night. During early morning hours after 6:00 AM, truck traffic (including backup alarms) was noted. During quiet nighttime hours, popping noises from a nearby overheard power transmission line were audible.

2.2.4 Corrected Hourly L_n Statistics

Following detailed review and identification of the hourly sound level data, corrected hourly L_n statistics were computed. The corrected values represent hourly sound level data with clearly extraneous events removed from the data set. The methods used to remove these extraneous events are outlined in Section 1.5.2. The corrected data are found in Tables 1 through 5 and Figures 6a through 9e, which correspond with the uncorrected data presented in Figures 2a through 5e.

As illustrated in Tables 1 through 5, many of the exceeded $L_{8.3}$, $L_{2.5}$ and L_{max} statistics were clearly due to extraneous events such as aircraft, birds, observer interference, and other noted events. Removing these events often resulted in L_n statistics that are within the KCC limits.

There were several hours of data where the L_{25} values exceeded the KCC limits even after adjustment to remove clearly extraneous events. For these hours, audible noises included various ambient sources and operational activities that were not easily identified or isolated.

2.2.5 Detailed Review of Select Hours

The detailed review of noise data was completed for the following selected hours at all locations:

- September 29, 5:00 AM to 6:00 AM (Figures 10a though 10e)
- September 29, 6:00 AM to 7:00 AM (Figures 11a through 11e)
- October 5, 5:00 AM to 6:00 AM (Figures 12a though 12e)
- October 5, 6:00 AM to 7:00 AM (Figures 13a through 13e)

These dates and times were selected because they represent multiple operating conditions: weekend (September 29) vs. weekday (October 5) and minimal activity (5:00 AM) vs. greater activity (6:00 AM).

September 29, 5:00 AM to 6:00 AM

In general, sound levels at each of the perimeter noise monitoring locations increased over the course of the 1-hour period from 5:00 AM to 6:00 AM—the exception is at P5, where sound levels remained relatively constant over the 1-hour period. Broadband levels of the BEW plant were relativity unchanged through the 1-hour period, as were noise levels of the CGC facility, which was not operational at the time. The NFS was also relatively steady and continuous.

There was a small increase in the frequency of traffic events in the latter half of the hour, approximately when sound levels at perimeter locations began to rise. It is therefore possible that increases in sound levels at perimeter locations are due to increased activity at CHRLF. However, due to the overall increase in ambient activity, it is not possible to determine the contribution of CHRLF noises from these broadband data.

At P2 there was a sound at 1,000 Hz that was audible in the recorded audio files. The noise has been attributed to the NFS, as source measurements at S2 reveal a pure tonal noise at 1,000 Hz. However, as indicated earlier, the sound is not considered a pure tone at P2 according to KCC 12.87.260. As ambient levels increased during this 1-hour period, the NFS was less audible at S2.

September 29, 6:00 AM to 7:00 AM

During the 6:00 AM hour, sound levels were slightly higher than during the 5:00 AM hour. This appears to be due to increased activity of the CHRLF and possibly to other sources such as trucks, the BEW plant, and an increase in ambient noises including traffic and airplanes.

The NFS continued to be is less noticeable at P2 between 6:00 AM and 7:00 AM due to an increase in ambient noises. Overall, there does not appear to be a clear correlation between broadband sound levels measured near any one of the sources and sound levels at the perimeter locations.

October 5, 5:00 AM to 6:00 AM

As noted on September 29, sound levels at each of the perimeter noise monitoring locations increased over the course of the 1-hour period from 5:00 AM to 6:00 AM. This pattern was particularly noticeable at P1, P2, and P3, and less noticeable at P5. At P4 there appeared to be even less of a rise in sound levels over the 1-hour period.

Truck activity at CHRLF increased at approximately 5:30 AM on October 5, and continued through the hour. During the latter half of this hour, trucks and other heavy equipment, including backup alarms, were audible at P1, P2, P3 and P5. Noise levels at S3 increased noticeably; however, it is possible that levels increased due to truck traffic near S3 and not due to BEW plant activity.

As noted for September 29, a 1,000-Hz noise was audible at P2, attributed to the NFS. As ambient noises increased over the 1-hour period, the NFS was less audible.

At P4, sound levels fluctuated, but generally remained within 40 to 45 dBA (with a few exceptions). Upon review of audio files at this location, it was evident that the BEW plant emitted screeching noises that were clearly audible at P4. Upon further examination of the frequency data at P4, it was found that multiple spikes in the sound level data were a result of sound levels at 400 Hz, which appeared to match the observed screeching noise pattern of the BEW plant. This suggests that noise from the BEW plant may contribute to high levels of noise at P4. The potential contribution of BEW at P4 is shown on Figure 12d.

October 5, 6:00 AM to 7:00 AM

As noted for September 29, during the 6:00 AM hour, sound levels were slightly higher than during the 5:00 AM hour and the data suggest this may be due to increased activity of the CHRLF and possibly of other sources such as trucks, the BEW plant, and increases in ambient noises, including traffic, aircraft, birds, and other sources.

The NFS continued to be is less noticeable at P2 between 6:00 AM and 7:00 AM, due to an increase in ambient noises.

The potential contribution of a 400-Hz tone from BEW at P4 was evaluated, but as illustrated in Figure 13d, there does not appear to be a correlation during this hour between overall levels at P4 and the 400 Hz tone that may be attributed to the screeching noise from BEW.

2.2.6 Assessment of Source-Receiver Frequency Spectra

The broadband sound level data do not suggest clear correlations between noise measured near each of the sources and at the perimeter locations. Therefore, the 1/3 octave and audio data was assessed to determine whether a clear correlation between these data can be detected, and whether such a correlation could translate to an exceedance of the KCC, or whether it translates to the potential for impact based on a perception of nuisance.

Bio-Energy Washington Plant and Cedar Grove Composting Facility

Detailed review of frequency-specific data was completed for two hours (2:00 AM to 3:00 AM and 5:00 AM to 6 AM) on October 5. These hours were selected because they represent two operating scenarios near the CHRLF: minimal activity (2:00 AM) and observed increased activity of CHRLF and the BEW plant (5:00 AM).

The assessment included perimeter locations P1 and P5, where observer notes and observations indicate the BEW plant is audible during all times of the day. The 1/3 octave data collected at S3 (near the BEW plant) was plotted over time. Low, mid and high frequency data were grouped to simplify the assessment. Further refinement of these frequency data resulted in a grouping of between 31.5 and 63 Hz (considered low frequency), where a clearly distinct pattern emerged. These same frequencies were then grouped and plotted for measurements taken at P1 and P5 during the same time period. The low-frequency groupings of P1, P5, and S3 were plotted against broadband data for these same locations. As noted above, the broadband data do not suggest a correlation between S3 and P1 or P5. However, when the low-frequency data are compared, the data suggest a clear correlation (i.e., visually distinguishable) between S3 and P1 and P5. These results are illustrated on Figure 14.

The data do not allow for a determination of whether the BEW plant noise specifically results in exceedances of the KCC limits, but a correlation of the low frequency data suggest very low levels of noise from the BEW plant is received at P1 during nighttime hours.

An additional assessment of 1/3 octave data collected at S1, S3 and P1 was completed for October 5 at the 5:00 AM hour. The 5:00 AM hour is considered much more active than 2:00 AM. At 5:00 AM,

noted activities near S1, S3 and P1 include increased truck and automobile traffic, BEW plant activity, increased CGC facility activity and increased ambient noise (i.e., background traffic, birds, etc.). Due to the complex acoustical soundscape at 5:00 AM, an assessment of audio data at S1, S3, and P1 was completed using FFT analysis methods.

Results of the FFT analysis reveal no clear correlation between noise at the CGC facility and noises audible at P1. However, the FFT analysis results support the 1/3 octave analysis of 2:00 AM data that suggest there is a clear correlation between low frequency noise emitted from the BEW and received at P1.

North Flare Station

Analysis of 1/3 octave frequency data was completed for P2 on October 5 at 2:00 AM. The goal of this assessment was to determine the contribution of noise from the NFS at P2. The assessment was completed because observer notes and audio recordings at P2 indicated that the NFS was clearly audible at P2, especially during nighttime hours when there was little or no interference from other sources. During daytime hours the NFS was audible at times; however, due to high levels of ambient noise, it is much more difficult to determine the correlation between noise generated at the NFS and noise received at P2. Location P3 was not included in this assessment because noise from the NFS was not noted as a constant or dominant source at P3 during this study.

As mentioned earlier, the analysis results indicate that noise from the NFS is audible at P2 most notably during nighttime hours. Measurements taken near the NFS (S2) reveal a very constant and tonal noise at 1,000 Hz. Figure 15 shows the tonal nature of the S2 measurement, where the 1/3 octave center frequency at 1,000 Hz is clearly louder than neighboring frequencies. Also illustrated in Figure 15 is the 1/3 octave frequency data at S2 over the same period. As outlined in Section 1.2, KCC defines a pure tone as when the 1/3 octave center frequency is higher than the two contiguous center frequency bands by 5 dB for center frequencies of 500 Hz and above. Therefore, a 1,000-Hz noise must be at least 5 dBA higher than the noise at 800 Hz and 1,250 Hz. Based on this definition, the 1,000 Hz noise at S2 is not a pure tone.

Figure 16 presents the broadband data at S2 and P2, as well the 1,000 Hz data at P2. This figure demonstrates the contribution of S2 at P2 during nighttime hours. Also, it illustrates the close correlation between broadband levels at S2 and levels at 1,000 Hz. That is, fluctuations in sound levels at P2 correlate closely to the 1,000 Hz noise that was emitted by S2. Although the NFS does not result in a pure tonal noise at S2 per KCC definition, it does appear to contribute to noise levels at S2, especially during nighttime hours when ambient noise levels are low. Further, although sound levels at P2 are typically within acceptable KCC limits during nighttime hours, it is possible that the NFS could be discernible at nearby receiving properties.

3.0 CONCLUSIONS

Ambient sound level measurement data were collected at five perimeter locations around the CHRLF between September 26, 2012 and October 5, 2012. In addition, sound level measurements were collected at three source areas suspected of contributing to overall noise levels at each of the perimeter locations. The intent of the monitoring program was to determine, through detailed study and analysis of the noise measurement results, to what extent the CHRLF or other nearby sources contribute to overall levels at the perimeter locations.

Due to the complexities of the acoustical soundscape in the vicinity of the project area, it was concluded that a definitive quantification of the contribution of CHRLF activity at each of the perimeter locations is not feasible; therefore, an assessment of compliance of CHRLF with KCC sound level limits also is not feasible from measurements alone.

Although the study was unable to determine compliance with KCC sound level limits for each source, several observations were made following measurement and analysis of the sound levels in the project vicinity:

- The acoustical soundscape in the vicinity of the CHRLF is complex and varied across the site and over a 24-hour period.
- Ambient noise contributions at perimeter locations vary in source and level; however, there are sources that are continuously present at some locations, including frequent aircraft noise and distant traffic.
- Ambient noise levels were above KCC noise limits at times at all perimeter locations over the duration of the measurement program; however, ambient levels above the $L_{8.3}$, $L_{2.5}$,and L_{max} limits were typically a result of ambient noise sources not associated with CHRLF operations (i.e., aircraft, birds, or other sources).
- After excluding known extraneous sources of noise (i.e., aircraft, birds, etc.), the ambient noise described by the L_{25} noise metric (the level exceed for 15 minutes in any one hour) was above the KCC maximum permissible sound level limit during multiple daytime and nighttime hours at all locations.
- Because contributing noise sources (i.e., CHRLF, the CGC facility, the NFS, and the BEW plant) are varied and often complex, extracting contributing sources from overall levels at any one location was not feasible using broadband data (i.e., a single, A-weighted sound level over a specified duration of time such as 1 second).
- Review of 1/3 octave data and FFT analysis of audio recordings revealed some correlation between low frequency noises at the BEW plant and as received at P1 and P5.

- Review of 1/3 octave data revealed correlation between 1,000-Hz noise at the NFS that was received at P2, although this noise was not considered a pure tone at P2 per KCC definition. CHRLF is aware of the noise generated by the NFS and has been activity working to mitigate noise from this source. A 2001 study completed by JGL Acoustics, Inc. (which can be found as Appendix E-2 to King County's July 2010, Final Environmental Impact Statement, Cedar Hills Regional Landfill 2010 Site Development Plan) summarized the noise emissions from this source at that time. Since 2001, efforts have been made to mitigate noise at NFS and reduce the potential for noise-related nuisances at nearby residential areas. Further noise mitigation efforts are currently underway to reduce noise from the NFS.

- Although some correlation was noted, there was no significant correlation between 1/3 octave (and FFT) data and the broadband sound level data that are used to determine noise metrics for comparison with KCC limits.

In order to quantify the contribution of specific sources at each of the monitoring locations, additional assessment would be necessary. It is anticipated that this additional assessment would include predictive noise modeling using computer modeling tools to assess source-specific contributions at each perimeter location.

Predictive noise modeling would be completed using detailed source data of the major noise sources at the site, typically collected through source-specific sound level measurements. The noise model would account for terrain, meteorology, ground surface, vegetation, intervening structures, distance, and other factors. Results of the modeling assessment would allow for a quantification of noise levels from each source at each perimeter location, and determine the expected compliance specific to each source.

TABLES

TABLE 1

Hourly Noise Level Data, Perimeter Location P1 (SW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	**Hour**	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	**Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels**
Wed. 9/26/12	11:00 AM	49	54	59	64	41	43	47	58	41	43	47	58	No events removed
Wed. 9/26/12	12:00 PM	49	54	59	64	40	44	48	59	40	44	48	59	No events removed
Wed. 9/26/12	1:00 PM	49	54	59	64	41	44	49	68	41	43	46	58	AMEC observer checking meter
Wed. 9/26/12	2:00 PM	49	54	59	64	42	45	49	62	42	45	49	62	No events removed
Wed. 9/26/12	3:00 PM	49	54	59	64	41	46	50	61	41	46	50	61	No events removed
Wed. 9/26/12	4:00 PM	49	54	59	64	40	43	51	79	40	42	50	64	Truck or motorcycle in distance
Wed. 9/26/12	5:00 PM	49	54	59	64	39	43	49	67	39	43	47	57	One airplane overhead, not noted as observer was traveling, but illustrated within all perimeter data
Wed. 9/26/12	6:00 PM	49	54	59	64	38	44	49	61	38	44	49	61	No events removed
Wed. 9/26/12	7:00 PM	49	54	59	64	39	40	42	51	39	40	42	51	No events removed
Wed. 9/26/12	8:00 PM	49	54	59	64	41	45	50	59	41	45	50	59	No events removed
Wed. 9/26/12	9:00 PM	49	54	59	64	42	44	46	58	42	44	46	58	No events removed
Wed. 9/26/12	10:00 PM	39	44	49	54	39	40	43	64	39	40	41	48	Two airplanes overhead and one extraneous event at meter less than 1 second duration
Wed. 9/26/12	11:00 PM	39	44	49	54	42	43	47	55	42	43	44	47	Three airplanes overhead, two of which were not noted as observer was traveling (one observed in all perimeter data)
Thu. 9/27/12	12:00 AM	39	44	49	54	39	41	42	45	39	41	42	45	No events removed
Thu. 9/27/12	1:00 AM	39	44	49	54	41	43	45	52	41	43	45	52	No events removed
Thu. 9/27/12	2:00 AM	39	44	49	54	40	42	44	51	40	42	44	51	No events removed
Thu. 9/27/12	3:00 AM	39	44	49	54	40	41	42	46	40	41	42	46	No events removed
Thu. 9/27/12	4:00 AM	39	44	49	54	41	43	44	47	41	43	44	47	No events removed
Thu. 9/27/12	5:00 AM	39	44	49	54	45	47	47	57	45	46	47	57	One airplane, not noted by traveling observer, but obvious in all perimeter data; peak event at 5:27 not identified
Thu. 9/27/12	6:00 AM	39	44	49	54	46	47	49	57	46	47	49	57	No events removed
Thu. 9/27/12	7:00 AM	49	54	59	64	48	50	51	61	48	50	51	61	No events removed
Thu. 9/27/12	8:00 AM	49	54	59	64	47	48	52	72	47	48	52	72	King County (CHRLF) truck passing by
Thu. 9/27/12	9:00 AM	49	54	59	64	43	45	49	59	43	45	49	59	No events removed
Thu. 9/27/12	10:00 AM	49	54	59	64	40	46	52	71	40	47	52	61	Birds at 10:08
Thu. 9/27/12	11:00 AM	49	54	59	64	39	42	48	69	39	42	46	60	Birds at 11:02
Thu. 9/27/12	12:00 PM	49	54	59	64	43	49	53	78	43	49	53	78	No events removed; nearby car at 12:33; vehicle source not identified
Thu. 9/27/12	1:00 PM	49	54	59	64	41	45	51	75	41	45	51	75	No events removed; nearby car at 13:29; vehicle source not identified
Thu. 9/27/12	2:00 PM	49	54	59	64	40	46	53	77	40	46	53	63	One-second event at 14:57:11, not recorded but likely a bird or nearby wildlife noise
Thu. 9/27/12	3:00 PM	49	54	59	64	44	50	54	78	44	50	54	78	No events removed; back-up alarms and noise from CHRLF, otherwise birds; unidentified peak at 15:50
Thu. 9/27/12	4:00 PM	49	54	59	64	41	45	53	86	41	45	53	86	Nearby car at 16:21; vehicle source not identified
Thu. 9/27/12	5:00 PM	49	54	59	64	41	45	52	60	41	45	52	60	No events removed
Thu. 9/27/12	6:00 PM	49	54	59	64	38	41	44	56	38	41	44	56	No events removed
Thu. 9/27/12	7:00 PM	49	54	59	64	41	45	49	59	41	45	49	59	No events removed
Thu. 9/27/12	8:00 PM	49	54	59	64	45	46	48	58	45	46	48	58	No events removed
Thu. 9/27/12	9:00 PM	49	54	59	64	42	44	47	61	42	44	47	61	No events removed
Thu. 9/27/12	10:00 PM	39	44	49	54	40	41	43	54	40	41	43	54	No events removed
Thu. 9/27/12	11:00 PM	39	44	49	54	45	47	51	60	44	46	47	58	Three airplanes overhead; other isolated short-duration events not identified and result in L_{max} exceedance
Fri. 9/28/12	12:00 AM	39	44	49	54	46	47	48	69	46	47	48	56	One-second event at 00:11:47, not recorded but likely a bird or nearby wildlife noise; one airplane not significant
Fri. 9/28/12	1:00 AM	39	44	49	54	43	45	47	51	43	45	47	51	No events removed
Fri. 9/28/12	2:00 AM	39	44	49	54	46	47	48	52	46	47	48	52	No events removed
Fri. 9/28/12	3:00 AM	39	44	49	54	44	46	46	51	44	46	46	51	No events removed
Fri. 9/28/12	4:00 AM	39	44	49	54	41	42	43	46	41	42	43	46	No events removed
Fri. 9/28/12	5:00 AM	39	44	49	54	42	43	45	57	42	43	43	46	Two airplanes overhead
Fri. 9/28/12	6:00 AM	39	44	49	54	48	49	50	55	48	49	49	52	One airplane overhead; overall levels of noise increased over duration of hour
Fri. 9/28/12	7:00 AM	49	54	59	64	50	52	53	59	50	52	53	59	No events removed
Fri. 9/28/12	8:00 AM	49	54	59	64	49	50	52	75	49	50	52	62	Birds near meter
Fri. 9/28/12	9:00 AM	49	54	59	64	46	49	51	60	46	49	51	60	No events removed
Fri. 9/28/12	10:00 AM	49	54	59	64	44	48	57	80	44	45	47	58	Helicopter overhead, crows, airplane

TABLE 1

Hourly Noise Level Data, Perimeter Location P1 (SW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	Hour	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
Fri. 9/28/12	11:00 AM	49	54	59	64	40	42	44	54	40	42	44	54	No events removed
Fri. 9/28/12	12:00 PM	49	54	59	64	41	43	46	59	41	43	46	59	No events removed
Fri. 9/28/12	1:00 PM	49	54	59	64	42	47	53	65	42	46	51	64	One airplane
Fri. 9/28/12	2:00 PM	49	54	59	64	39	42	48	73	39	42	48	60	Birds near meter
Fri. 9/28/12	3:00 PM	49	54	59	64	40	44	51	75	40	44	51	75	Hammering noises near meter at 15:21 and 15:22, source not identified
Fri. 9/28/12	4:00 PM	49	54	59	64	40	46	51	70	38	41	45	61	AMEC observer checking meter, birds and two overhead airplanes
Fri. 9/28/12	5:00 PM	49	54	59	64	38	42	49	60	38	42	49	60	No events removed
Fri. 9/28/12	6:00 PM	49	54	59	64	39	44	51	60	39	44	51	60	No events removed
Fri. 9/28/12	7:00 PM	49	54	59	64	40	44	51	72	40	43	48	57	One airplane
Fri. 9/28/12	8:00 PM	49	54	59	64	45	46	49	60	45	46	49	60	No events removed
Fri. 9/28/12	9:00 PM	49	54	59	64	41	44	46	61	41	44	46	61	No events removed
Fri. 9/28/12	10:00 PM	39	44	49	54	43	44	45	57	43	44	44	54	One airplane
Fri. 9/28/12	11:00 PM	39	44	49	54	43	45	51	62	43	43	44	56	Five airplanes; L_{max} event due to truck horn, source not identified
Sat. 9/29/12	12:00 AM	39	44	49	54	44	45	48	61	44	45	46	54	Three airplanes overhead;1-sec event at 00:36:38, likely unrecorded AMEC observer checking meter
Sat. 9/29/12	1:00 AM	39	44	49	54	37	39	40	60	37	39	40	52	One-second event at 1:52:42, not recorded but likely a bird or nearby wildlife noise
Sat. 9/29/12	2:00 AM	39	44	49	54	34	36	38	51	34	36	38	51	No events removed
Sat. 9/29/12	3:00 AM	39	44	49	54	32	34	36	42	32	34	36	42	No events removed
Sat. 9/29/12	4:00 AM	39	44	49	54	32	34	36	46	32	34	36	46	No events removed
Sat. 9/29/12	5:00 AM	39	44	49	54	36	38	40	50	36	38	40	50	No events removed
Sat. 9/29/12	6:00 AM	39	44	49	54	42	45	48	63	42	45	48	63	No events removed; unidentified peak events 6:10–6:15 (no audio recording) that result in L_{max} at 63 dBA
Sat. 9/29/12	7:00 AM	49	54	59	64	44	47	49	63	44	47	49	63	No events removed
Sat. 9/29/12	8:00 AM	49	54	59	64	43	47	50	77	43	47	50	77	No events removed; 2 events exceeding 64 dBA, #1 was vehicle near P1, #2 likely same (no audio recording)
Sat. 9/29/12	9:00 AM	49	54	59	64	42	45	49	68	42	44	48	63	One airplane
Sat. 9/29/12	10:00 AM	49	54	59	64	40	43	49	61	40	43	49	61	No events removed
Sat. 9/29/12	11:00 AM	49	54	59	64	39	42	46	53	39	42	46	53	No events removed
Sat. 9/29/12	12:00 PM	49	54	59	64	41	45	50	63	41	45	50	63	No events removed
Sat. 9/29/12	1:00 PM	49	54	59	64	38	42	46	56	38	42	46	56	No events removed
Sat. 9/29/12	2:00 PM	49	54	59	64	43	46	50	62	43	46	50	62	No events removed
Sat. 9/29/12	3:00 PM	49	54	59	64	41	45	48	61	41	45	48	61	No events removed
Sat. 9/29/12	4:00 PM	49	54	59	64	41	45	49	62	41	45	49	62	No events removed
Sat. 9/29/12	5:00 PM	49	54	59	64	42	47	50	68	40	44	47	61	AMEC observer checking meter
Sat. 9/29/12	6:00 PM	49	54	59	64	40	45	49	60	40	45	49	60	No events removed
Sat. 9/29/12	7:00 PM	49	54	59	64	37	40	45	60	37	40	45	60	No events removed
Sat. 9/29/12	8:00 PM	49	54	59	64	38	41	48	61	38	41	48	61	No events removed
Sat. 9/29/12	9:00 PM	49	54	59	64	36	39	41	52	36	39	41	52	No events removed
Sat. 9/29/12	10:00 PM	39	44	49	54	36	38	41	52	36	38	41	52	No events removed
Sat. 9/29/12	11:00 PM	39	44	49	54	37	42	49	68	37	40	45	54	One airplane
Sun. 9/30/12	12:00 AM	39	44	49	54	36	38	39	52	36	38	39	52	No events removed
Sun. 9/30/12	1:00 AM	39	44	49	54	37	38	39	46	37	38	39	46	No events removed
Sun. 9/30/12	2:00 AM	39	44	49	54	38	40	41	59	38	39	41	46	Unidentified peaks at 2:07 assumed continuation of wildlife noises immediately prior (no audio); 1 airplane
Sun. 9/30/12	3:00 AM	39	44	49	54	41	42	43	58	41	42	43	51	Motorcycle at 3:19
Sun. 9/30/12	4:00 AM	39	44	49	54	42	43	45	47	42	43	45	47	No events removed
Sun. 9/30/12	5:00 AM	39	44	49	54	42	43	44	51	42	43	44	51	No events removed
Sun. 9/30/12	6:00 AM	39	44	49	54	42	46	50	57	42	44	46	52	Three airplanes overhead
Sun. 9/30/12	7:00 AM	49	54	59	64	49	50	52	61	49	50	52	61	No events removed
Sun. 9/30/12	8:00 AM	49	54	59	64	45	47	52	72	45	47	52	72	No events removed; nearby car at 8:39, vehicle origin unidentified
Sun. 9/30/12	9:00 AM	49	54	59	64	41	46	50	64	41	46	50	64	No events removed
Sun. 9/30/12	10:00 AM	49	54	59	64	43	48	52	63	43	48	52	63	No events removed

TABLE 1

Hourly Noise Level Data, Perimeter Location P1 (SW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	**Hour**	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	**Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels**
Sun. 9/30/12	11:00 AM	49	54	59	64	42	46	50	59	42	46	50	59	No events removed
Sun. 9/30/12	12:00 PM	49	54	59	64	41	46	51	62	41	46	51	62	No events removed
Sun. 9/30/12	1:00 PM	49	54	59	64	44	48	52	64	44	48	52	64	No events removed
Sun. 9/30/12	2:00 PM	49	54	59	64	45	49	52	66	42	45	47	53	Five airplanes overhead, AMEC observer checking meter at end of measurement
Thu. 10/4/12	7:00 PM	49	54	59	64	41	44	48	60	41	44	48	60	No events removed
Thu. 10/4/12	8:00 PM	49	54	59	64	40	45	49	62	40	45	49	62	No events removed
Thu. 10/4/12	9:00 PM	49	54	59	64	42	44	48	61	42	44	48	61	No events removed
Thu. 10/4/12	10:00 PM	39	44	49	54	40	42	44	53	40	42	44	53	No events removed
Thu. 10/4/12	11:00 PM	39	44	49	54	39	42	47	59	39	40	42	46	Three airplanes overhead
Fri. 10/5/12	12:00 AM	39	44	49	54	42	43	44	54	42	43	44	54	No events removed
Fri. 10/5/12	1:00 AM	39	44	49	54	41	43	44	49	41	43	44	49	No events removed
Fri. 10/5/12	2:00 AM	39	44	49	54	45	47	49	54	45	47	49	54	No events removed
Fri. 10/5/12	3:00 AM	39	44	49	54	44	46	49	68	44	46	49	54	One airplane overhead
Fri. 10/5/12	4:00 AM	39	44	49	54	43	44	46	49	43	44	46	49	No events removed
Fri. 10/5/12	5:00 AM	39	44	49	54	46	48	49	54	46	48	49	54	No events removed
Fri. 10/5/12	6:00 AM	39	44	49	54	47	49	51	60	47	49	50	55	Two airplanes overhead; Cedar Hills Regional Landfill and Bio-Energy Washington activity increased
Fri. 10/5/12	7:00 AM	49	54	59	64	51	53	54	78	51	53	54	78	No events removed; bird deterrent gun at 7:53 and metal clang at 7:45—both assumed CHRLF sources (>64 dBA)
Fri. 10/5/12	8:00 AM	49	54	59	64	52	53	55	70	52	53	55	70	No events removed; 2 unidentified short noises at 8:22. No audio - likely bird gun (levels = bird gun noise)
Fri. 10/5/12	9:00 AM	49	54	59	64	52	54	55	71	52	54	55	71	No events removed; Max event due to bird gun at 9:11
Fri. 10/5/12	10:00 AM	49	54	59	64	48	50	53	80	48	50	53	80	No events removed; 1 unidentified short-duration noise at 10:34; no audio
Fri. 10/5/12	11:00 AM	49	54	59	64	47	49	53	66	47	49	53	66	No events removed; 1 unidentified short-duration noise at 11:39; no audio
Fri. 10/5/12	12:00 PM	49	54	59	64	48	50	52	67	48	50	52	67	No events removed; 1 unidentified short-duration noise at 12:45; no audio, possibly birds but not definitive
Fri. 10/5/12	1:00 PM	49	54	59	64	51	53	55	68	51	53	55	62	One airplane overhead
Fri. 10/5/12	2:00 PM	49	54	59	64	51	53	54	62	51	53	54	62	No events removed
Fri. 10/5/12	3:00 PM	49	54	59	64	50	52	53	68	50	52	53	63	One airplane overhead
Fri. 10/5/12	4:00 PM	49	54	59	64	47	49	51	73	47	49	50	62	One airplane overhead
Fri. 10/5/12	5:00 PM	49	54	59	64	43	45	49	76	43	45	49	76	No events removed; nearby car at 17:57; King County contractor vehicle
Fri. 10/5/12	6:00 PM	49	54	59	64	40	42	48	78	40	42	48	78	No events removed; nearby car at 18:02; King County contractor vehicle

Notes
Highlighted numbers exceed the corresponding King County Noise Limit.
CHRLF = Cedar Hills Regional Landfill
dBA = A-weighted decibel
$L_{2.5}$ = Level exceeded 2.5% (1.5 minutes) per hour
$L_{8.3}$ = Level exceeded 8.3% (5 minutes) per hour
L_{25} = Level exceeded 25% (15 minutes) per hour
L_{max} = Maximum noise level measured (including impulsive noise)

TABLE 2

Hourly Noise Level Data, Perimeter Location P2 (NW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Wed. 9/26/12	11:00 AM	49	54	59	64	35	40	49	66	35	39	45	58	One airplane overhead
Wed. 9/26/12	12:00 PM	49	54	59	64	36	42	46	58	36	42	46	58	No events removed
Wed. 9/26/12	1:00 PM	49	54	59	64	36	42	49	71	35	41	49	61	AMEC observer checking meter
Wed. 9/26/12	2:00 PM	49	54	59	64	35	42	49	64	35	42	49	64	No events removed
Wed. 9/26/12	3:00 PM	49	54	59	64	36	45	51	61	36	45	51	61	No events removed
Wed. 9/26/12	4:00 PM	49	54	59	64	35	40	46	58	35	40	46	58	No events removed
Wed. 9/26/12	5:00 PM	49	54	59	64	34	40	47	58	34	40	47	58	No events removed
Wed. 9/26/12	6:00 PM	49	54	59	64	34	42	49	60	34	42	49	60	No events removed
Wed. 9/26/12	7:00 PM	49	54	59	64	33	36	41	55	33	36	41	55	No events removed
Wed. 9/26/12	8:00 PM	49	54	59	64	35	43	50	62	35	43	50	62	No events removed
Wed. 9/26/12	9:00 PM	49	54	59	64	32	34	41	60	32	34	41	60	No events removed
Wed. 9/26/12	10:00 PM	39	44	49	54	30	31	34	57	29	31	32	40	One airplane overhead
Wed. 9/26/12	11:00 PM	39	44	49	54	29	33	42	55	29	32	34	40	Three airplanes overhead
Thu. 9/27/12	12:00 AM	39	44	49	54	29	30	32	41	29	30	32	41	No events removed
Thu. 9/27/12	1:00 AM	39	44	49	54	30	32	35	57	30	32	35	57	No events removed; peak events at 1:11 not identified, no audio recording, likely wildlife
Thu. 9/27/12	2:00 AM	39	44	49	54	28	30	33	53	28	30	33	53	No events removed
Thu. 9/27/12	3:00 AM	39	44	49	54	27	28	31	39	27	28	31	39	No events removed
Thu. 9/27/12	4:00 AM	39	44	49	54	30	31	33	44	30	31	33	44	No events removed
Thu. 9/27/12	5:00 AM	39	44	49	54	33	34	38	55	33	34	35	43	One airplane overhead, not noted as observer was traveling, but illustrated within all perimeter data
Thu. 9/27/12	6:00 AM	39	44	49	54	37	39	42	49	37	39	42	49	No events removed
Thu. 9/27/12	7:00 AM	49	54	59	64	38	40	45	56	38	40	45	56	No events removed
Thu. 9/27/12	8:00 AM	49	54	59	64	35	39	46	58	35	39	46	58	No events removed
Thu. 9/27/12	9:00 AM	49	54	59	64	35	40	46	59	35	40	46	59	No events removed
Thu. 9/27/12	10:00 AM	49	54	59	64	35	42	51	62	35	42	51	62	No events removed
Thu. 9/27/12	11:00 AM	49	54	59	64	33	36	40	58	33	36	40	58	No events removed
Thu. 9/27/12	12:00 PM	49	54	59	64	42	48	52	69	42	48	52	63	AMEC observer checking meter
Thu. 9/27/12	1:00 PM	49	54	59	64	38	42	48	61	38	42	48	61	No events removed
Thu. 9/27/12	2:00 PM	49	54	59	64	43	53	57	77	43	53	57	70	Four bird gun shots, other peak events due to continuous nearby birds; L_{max} likely below 64 dBA without birds
Thu. 9/27/12	3:00 PM	49	54	59	64	39	47	52	67	38	45	50	58	Two airplanes overhead
Thu. 9/27/12	4:00 PM	49	54	59	64	37	43	51	62	37	43	51	62	No events removed
Thu. 9/27/12	5:00 PM	49	54	59	64	36	42	51	60	36	42	51	60	No events removed
Thu. 9/27/12	6:00 PM	49	54	59	64	37	40	43	62	37	40	43	62	No events removed
Thu. 9/27/12	7:00 PM	49	54	59	64	38	44	49	59	38	44	49	59	No events removed
Thu. 9/27/12	8:00 PM	49	54	59	64	37	44	48	61	37	44	48	61	No events removed
Thu. 9/27/12	9:00 PM	49	54	59	64	34	40	47	59	34	40	47	59	No events removed
Thu. 9/27/12	10:00 PM	39	44	49	54	33	35	37	57	33	34	36	44	One airplane overhead
Thu. 9/27/12	11:00 PM	39	44	49	54	32	41	49	58	30	33	34	40	Five airplanes overhead
Fri. 9/28/12	12:00 AM	39	44	49	54	29	31	37	52	29	31	37	52	No events removed
Fri. 9/28/12	1:00 AM	39	44	49	54	32	34	35	44	32	34	35	44	No events removed
Fri. 9/28/12	2:00 AM	39	44	49	54	34	36	38	40	34	36	38	40	No events removed
Fri. 9/28/12	3:00 AM	39	44	49	54	29	31	34	46	29	31	34	46	No events removed
Fri. 9/28/12	4:00 AM	39	44	49	54	28	30	32	38	28	30	32	38	No events removed
Fri. 9/28/12	5:00 AM	39	44	49	54	32	35	39	52	32	35	39	52	No events removed
Fri. 9/28/12	6:00 AM	39	44	49	54	37	38	41	56	37	38	40	49	One airplane overhead
Fri. 9/28/12	7:00 AM	49	54	59	64	44	50	52	57	44	50	52	57	No events removed
Fri. 9/28/12	8:00 AM	49	54	59	64	42	46	50	59	42	46	50	59	No events removed
Fri. 9/28/12	9:00 AM	49	54	59	64	40	44	49	61	40	44	49	61	No events removed
Fri. 9/28/12	10:00 AM	49	54	59	64	36	43	48	70	36	43	48	70	No events removed; One unidentified short-duration source at 10:07; no audio
Fri. 9/28/12	11:00 AM	49	54	59	64	32	36	39	51	32	36	39	51	No events removed
Fri. 9/28/12	12:00 PM	49	54	59	64	32	38	43	61	32	38	43	61	No events removed
Fri. 9/28/12	1:00 PM	49	54	59	64	34	45	52	63	34	45	52	63	No events removed
Fri. 9/28/12	2:00 PM	49	54	59	64	31	36	42	55	31	36	42	55	No events removed

TABLE 2

Hourly Noise Level Data, Perimeter Location P2 (NW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	Hour	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
Fri. 9/28/12	3:00 PM	49	54	59	64	34	42	47	61	34	42	47	61	No events removed
Fri. 9/28/12	4:00 PM	49	54	59	64	34	41	48	60	34	41	48	60	No events removed
Fri. 9/28/12	5:00 PM	49	54	59	64	35	41	49	69	34	41	49	62	Max event due to bird deterrent gun at 17:13
Fri. 9/28/12	6:00 PM	49	54	59	64	37	45	51	63	37	45	51	63	No events removed
Fri. 9/28/12	7:00 PM	49	54	59	64	38	44	51	68	37	42	47	57	One airplane
Fri. 9/28/12	8:00 PM	49	54	59	64	35	43	50	61	35	43	50	61	No events removed
Fri. 9/28/12	9:00 PM	49	54	59	64	34	39	44	58	34	39	44	58	No events removed
Fri. 9/28/12	10:00 PM	39	44	49	54	35	37	41	61	35	37	39	47	One airplane
Fri. 9/28/12	11:00 PM	39	44	49	54	34	40	50	59	32	34	36	40	Five airplanes
Sat. 9/29/12	12:00 AM	39	44	49	54	33	36	46	57	32	35	36	40	Three airplanes
Sat. 9/29/12	1:00 AM	39	44	49	54	26	30	35	53	26	30	35	53	No events removed
Sat. 9/29/12	2:00 AM	39	44	49	54	26	28	30	43	26	28	30	43	No events removed
Sat. 9/29/12	3:00 AM	39	44	49	54	25	27	30	47	25	27	30	47	No events removed
Sat. 9/29/12	4:00 AM	39	44	49	54	24	26	30	46	24	26	30	46	No events removed
Sat. 9/29/12	5:00 AM	39	44	49	54	29	35	38	47	29	35	38	47	No events removed
Sat. 9/29/12	6:00 AM	39	44	49	54	39	43	49	61	39	43	49	61	No events removed; unidentified noises between 6:10 and 6:15 cause L_{max} at 61 dBA (no audio recording)
Sat. 9/29/12	7:00 AM	49	54	59	64	40	44	49	62	40	44	49	62	No events removed
Sat. 9/29/12	8:00 AM	49	54	59	64	39	43	48	61	39	43	48	61	No events removed
Sat. 9/29/12	9:00 AM	49	54	59	64	37	42	46	58	37	42	46	58	No events removed
Sat. 9/29/12	10:00 AM	49	54	59	64	34	40	47	59	34	40	47	59	No events removed
Sat. 9/29/12	11:00 AM	49	54	59	64	34	39	45	60	34	39	45	60	No events removed
Sat. 9/29/12	12:00 PM	49	54	59	64	38	44	49	60	38	44	49	60	No events removed
Sat. 9/29/12	1:00 PM	49	54	59	64	36	40	45	56	36	40	45	56	No events removed
Sat. 9/29/12	2:00 PM	49	54	59	64	35	42	48	61	35	42	48	61	No events removed
Sat. 9/29/12	3:00 PM	49	54	59	64	39	44	47	60	39	44	47	60	No events removed
Sat. 9/29/12	4:00 PM	49	54	59	64	38	42	47	60	38	42	47	60	No events removed
Sat. 9/29/12	5:00 PM	49	54	59	64	38	44	51	64	38	44	51	64	No events removed
Sat. 9/29/12	6:00 PM	49	54	59	64	36	42	46	61	36	42	46	61	No events removed
Sat. 9/29/12	7:00 PM	49	54	59	64	34	38	43	55	34	38	43	55	No events removed
Sat. 9/29/12	8:00 PM	49	54	59	64	34	39	48	62	34	39	48	62	No events removed
Sat. 9/29/12	9:00 PM	49	54	59	64	32	35	39	49	32	35	39	49	No events removed
Sat. 9/29/12	10:00 PM	39	44	49	54	32	35	39	57	32	34	38	49	One airplane
Sat. 9/29/12	11:00 PM	39	44	49	54	32	40	49	70	30	32	33	40	Four airplanes overhead
Sun. 9/30/12	12:00 AM	39	44	49	54	30	32	34	48	30	32	34	48	No events removed
Sun. 9/30/12	1:00 AM	39	44	49	54	29	31	35	50	29	31	35	50	No events removed
Sun. 9/30/12	2:00 AM	39	44	49	54	28	31	34	48	28	31	34	48	No events removed
Sun. 9/30/12	3:00 AM	39	44	49	54	26	28	31	59	26	28	30	41	One airplane
Sun. 9/30/12	4:00 AM	39	44	49	54	27	29	30	44	27	29	30	44	No events removed
Sun. 9/30/12	5:00 AM	39	44	49	54	32	38	44	51	32	38	44	51	No events removed
Sun. 9/30/12	6:00 AM	39	44	49	54	35	40	49	58	31	34	35	45	Three airplanes overhead; multiple bird events - only peak bird events removed
Sun. 9/30/12	7:00 AM	49	54	59	64	40	44	51	57	40	44	51	57	No events removed
Sun. 9/30/12	8:00 AM	49	54	59	64	39	42	52	64	39	42	52	64	No events removed
Sun. 9/30/12	9:00 AM	49	54	59	64	38	44	48	58	38	44	48	58	No events removed
Sun. 9/30/12	10:00 AM	49	54	59	64	38	43	48	59	38	43	48	59	No events removed
Sun. 9/30/12	11:00 AM	49	54	59	64	41	46	51	61	41	46	51	61	No events removed
Sun. 9/30/12	12:00 PM	49	54	59	64	41	47	52	72	41	46	52	63	Activity near meter at 12:44pm, possible wildlife but not obvious; source very close to meter removed
Sun. 9/30/12	1:00 PM	49	54	59	64	39	44	50	67	39	43	49	60	One airplane
Sun. 9/30/12	2:00 PM	49	54	59	64	41	46	51	63	41	46	51	63	No events removed
Thu. 10/4/12	7:00 PM	49	54	59	64	40	44	47	60	40	44	47	60	No events removed
Thu. 10/4/12	8:00 PM	49	54	59	64	36	43	51	63	36	43	51	63	No events removed
Thu. 10/4/12	9:00 PM	49	54	59	64	35	38	48	58	35	38	48	58	No events removed
Thu. 10/4/12	10:00 PM	39	44	49	54	33	37	44	63	33	37	42	53	One airplane; AMEC observer checking meter at 10:49

TABLE 2

Hourly Noise Level Data, Perimeter Location P2 (NW Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	**Hour**	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	**Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels**
Thu. 10/4/12	11:00 PM	39	44	49	54	33	36	48	60	33	34	36	47	Three airplanes overhead
Fri. 10/5/12	12:00 AM	39	44	49	54	32	33	37	50	32	33	37	50	No events removed
Fri. 10/5/12	1:00 AM	39	44	49	54	33	34	36	40	33	34	36	40	No events removed
Fri. 10/5/12	2:00 AM	39	44	49	54	34	35	36	41	34	35	36	41	No events removed
Fri. 10/5/12	3:00 AM	39	44	49	54	35	36	38	59	35	36	37	41	One airplane
Fri. 10/5/12	4:00 AM	39	44	49	54	34	35	36	51	34	35	36	51	No events removed
Fri. 10/5/12	5:00 AM	39	44	49	54	37	39	41	51	37	39	41	51	No events removed
Fri. 10/5/12	6:00 AM	39	44	49	54	42	44	47	60	42	43	44	51	Four airplanes overhead
Fri. 10/5/12	7:00 AM	49	54	59	64	44	47	50	63	44	47	50	63	No events removed
Fri. 10/5/12	8:00 AM	49	54	59	64	44	46	48	63	44	46	48	63	No events removed
Fri. 10/5/12	9:00 AM	49	54	59	64	42	44	47	61	42	44	47	61	No events removed
Fri. 10/5/12	10:00 AM	49	54	59	64	39	45	51	61	39	45	51	61	No events removed
Fri. 10/5/12	11:00 AM	49	54	59	64	39	41	46	71	38	40	43	58	One airplane overhead
Fri. 10/5/12	12:00 PM	49	54	59	64	38	43	48	60	38	43	48	60	No events removed
Fri. 10/5/12	1:00 PM	49	54	59	64	42	44	49	68	41	43	45	53	Three airplanes overhead
Fri. 10/5/12	2:00 PM	49	54	59	64	43	46	48	62	43	46	48	62	No events removed
Fri. 10/5/12	3:00 PM	49	54	59	64	41	43	47	62	41	43	47	62	No events removed
Fri. 10/5/12	4:00 PM	49	54	59	64	40	43	47	64	40	43	47	64	No events removed
Fri. 10/5/12	5:00 PM	49	54	59	64	39	43	48	59	39	43	48	59	No events removed
Fri. 10/5/12	6:00 PM	49	54	59	64	37	39	44	61	37	39	44	61	No events removed

Notes
Highlighted numbers exceed the corresponding King County Noise Limit.
dBA = A-weighted decibel
$L_{2.5}$ = Level exceeded 2.5% (1.5 minutes) per hour
$L_{8.3}$ = Level exceeded 8.3% (5 minutes) per hour
L_{25} = Level exceeded 25% (15 minutes) per hour
L_{max} = Maximum noise level measured (including impulsive noise)

TABLE 3

Hourly Noise Level Data, Perimeter Location P3 (NE Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Wed. 9/26/12	11:00 AM	49	54	59	64	39	42	48	65	38	41	44	58	One airplane overhead
Wed. 9/26/12	12:00 PM	49	54	59	64	38	43	48	72	38	43	48	62	AMEC observer checking meter
Wed. 9/26/12	1:00 PM	49	54	59	64	41	45	50	68	41	45	50	68	Nearby vehicle passing by, gravel noise
Wed. 9/26/12	2:00 PM	49	54	59	64	41	45	50	68	41	45	50	65	birds; nearby radio and gravel noises noted, source not identified
Wed. 9/26/12	3:00 PM	49	54	59	64	39	44	49	62	39	44	49	62	No events removed
Wed. 9/26/12	4:00 PM	49	54	59	64	38	42	47	60	38	42	47	60	No events removed
Wed. 9/26/12	5:00 PM	49	54	59	64	39	42	47	65	39	42	47	62	One airplane overhead
Wed. 9/26/12	6:00 PM	49	54	59	64	39	42	47	62	39	42	47	62	No events removed
Wed. 9/26/12	7:00 PM	49	54	59	64	39	41	44	52	39	41	44	52	No events removed
Wed. 9/26/12	8:00 PM	49	54	59	64	40	45	52	60	40	45	52	60	No events removed
Wed. 9/26/12	9:00 PM	49	54	59	64	39	41	44	70	39	41	44	56	Nearby animal noise
Wed. 9/26/12	10:00 PM	39	44	49	54	36	38	41	52	36	38	41	52	No events removed
Wed. 9/26/12	11:00 PM	39	44	49	54	36	39	43	54	36	39	43	54	No events removed
Thu. 9/27/12	12:00 AM	39	44	49	54	33	35	38	63	33	35	38	63	unidentified source, no audio recorded
Thu. 9/27/12	1:00 AM	39	44	49	54	32	35	39	53	32	35	39	53	No events removed
Thu. 9/27/12	2:00 AM	39	44	49	54	32	36	39	52	32	36	39	52	No events removed
Thu. 9/27/12	3:00 AM	39	44	49	54	34	35	37	46	34	35	37	46	No events removed
Thu. 9/27/12	4:00 AM	39	44	49	54	34	36	37	47	34	36	37	47	No events removed
Thu. 9/27/12	5:00 AM	39	44	49	54	39	41	42	55	39	41	42	45	One airplane overhead
Thu. 9/27/12	6:00 AM	39	44	49	54	43	44	45	51	43	44	45	51	No events removed
Thu. 9/27/12	7:00 AM	49	54	59	64	43	44	47	62	43	44	47	62	No events removed
Thu. 9/27/12	8:00 AM	49	54	59	64	39	41	46	56	39	41	46	56	No events removed
Thu. 9/27/12	9:00 AM	49	54	59	64	38	40	45	55	38	40	45	55	No events removed
Thu. 9/27/12	10:00 AM	49	54	59	64	38	44	52	74	38	44	52	74	No events removed; likely airplane but unidentified and no audio for Lmax event
Thu. 9/27/12	11:00 AM	49	54	59	64	37	40	43	56	37	40	43	56	No events removed
Thu. 9/27/12	12:00 PM	49	54	59	64	42	50	54	71	42	50	54	71	No events removed; likely airplane but unidentified and no audio for Lmax event
Thu. 9/27/12	1:00 PM	49	54	59	64	38	42	47	56	38	42	47	56	No events removed
Thu. 9/27/12	2:00 PM	49	54	59	64	38	45	53	64	38	45	53	64	No events removed
Thu. 9/27/12	3:00 PM	49	54	59	64	39	47	52	66	39	47	52	62	Multiple airplanes overhead; peak event due to airplane
Thu. 9/27/12	4:00 PM	49	54	59	64	40	44	52	63	40	44	52	63	No events removed
Thu. 9/27/12	5:00 PM	49	54	59	64	39	44	49	70	39	44	48	63	AMEC observer checking meter
Thu. 9/27/12	6:00 PM	49	54	59	64	37	39	42	58	37	39	42	58	No events removed
Thu. 9/27/12	7:00 PM	49	54	59	64	41	44	49	58	41	44	49	58	No events removed
Thu. 9/27/12	8:00 PM	49	54	59	64	42	46	50	60	42	46	50	60	No events removed
Thu. 9/27/12	9:00 PM	49	54	59	64	40	42	50	58	40	42	50	58	No events removed
Thu. 9/27/12	10:00 PM	39	44	49	54	39	41	43	54	39	41	43	54	No events removed
Thu. 9/27/12	11:00 PM	39	44	49	54	37	42	48	56	36	38	40	51	Five airplanes overhead
Fri. 9/28/12	12:00 AM	39	44	49	54	34	37	40	50	34	37	40	50	No events removed
Fri. 9/28/12	1:00 AM	39	44	49	54	35	37	39	45	35	37	39	45	No events removed
Fri. 9/28/12	2:00 AM	39	44	49	54	35	36	38	46	35	36	38	46	No events removed
Fri. 9/28/12	3:00 AM	39	44	49	54	34	35	37	43	34	35	37	43	No events removed
Fri. 9/28/12	4:00 AM	39	44	49	54	36	38	39	45	36	38	39	45	No events removed
Fri. 9/28/12	5:00 AM	39	44	49	54	37	38	41	52	37	38	41	52	No events removed
Fri. 9/28/12	6:00 AM	39	44	49	54	39	41	43	55	39	40	42	51	One airplane overhead
Fri. 9/28/12	7:00 AM	49	54	59	64	43	49	51	60	43	49	51	60	No events removed
Fri. 9/28/12	8:00 AM	49	54	59	64	44	49	51	57	44	49	51	57	No events removed
Fri. 9/28/12	9:00 AM	49	54	59	64	41	44	49	69	41	44	49	69	No events removed; one unidentified brief noise at 9:06; no audio recorded
Fri. 9/28/12	10:00 AM	49	54	59	64	40	44	49	64	40	44	49	64	No events removed
Fri. 9/28/12	11:00 AM	49	54	59	64	37	39	41	55	37	39	41	55	No events removed
Fri. 9/28/12	12:00 PM	49	54	59	64	33	38	43	57	33	38	43	57	No events removed

TABLE 3

Hourly Noise Level Data, Perimeter Location P3 (NE Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Fri. 9/28/12	1:00 PM	49	54	59	64	35	43	49	57	35	43	49	57	No events removed
Fri. 9/28/12	2:00 PM	49	54	59	64	33	38	45	59	33	38	45	59	No events removed
Fri. 9/28/12	3:00 PM	49	54	59	64	41	45	51	71	41	44	50	61	Neighbor voices; music audible through hour
Fri. 9/28/12	4:00 PM	49	54	59	64	43	45	49	62	43	45	49	62	No events removed
Fri. 9/28/12	5:00 PM	49	54	59	64	43	46	52	63	43	46	52	63	No events removed
Fri. 9/28/12	6:00 PM	49	54	59	64	41	45	51	64	41	45	51	64	No events removed
Fri. 9/28/12	7:00 PM	49	54	59	64	41	44	50	73	40	42	47	57	One airplane overhead
Fri. 9/28/12	8:00 PM	49	54	59	64	40	44	49	59	40	44	49	59	No events removed
Fri. 9/28/12	9:00 PM	49	54	59	64	38	41	46	55	38	41	46	55	No events removed
Fri. 9/28/12	10:00 PM	39	44	49	54	36	39	43	57	36	38	41	48	One airplane overhead
Fri. 9/28/12	11:00 PM	39	44	49	54	37	41	49	57	36	37	38	47	Five airplanes overhead
Sat. 9/29/12	12:00 AM	39	44	49	54	36	38	47	59	35	37	38	45	Three airplanes overhead, one loud bird call at 12:31
Sat. 9/29/12	1:00 AM	39	44	49	54	31	33	37	52	31	33	37	52	No events removed
Sat. 9/29/12	2:00 AM	39	44	49	54	32	36	39	47	32	36	39	47	No events removed
Sat. 9/29/12	3:00 AM	39	44	49	54	34	37	40	48	34	37	40	48	No events removed
Sat. 9/29/12	4:00 AM	39	44	49	54	34	38	41	52	34	38	41	52	No events removed
Sat. 9/29/12	5:00 AM	39	44	49	54	37	43	47	60	37	43	47	60	No events removed; routine CHRLF vehicle at 5:40
Sat. 9/29/12	6:00 AM	39	44	49	54	45	49	53	60	45	49	53	60	No events removed; peaks likely airplanes; but background levels too high for adjustment
Sat. 9/29/12	7:00 AM	49	54	59	64	50	53	55	67	50	53	55	67	Unidentified peak at 7:56; overall levels raised due to acitivty at CHRLF and some aircraft
Sat. 9/29/12	8:00 AM	49	54	59	64	50	53	56	62	50	53	56	62	No events removed
Sat. 9/29/12	9:00 AM	49	54	59	64	48	51	54	67	48	51	54	59	One airplane overhead
Sat. 9/29/12	10:00 AM	49	54	59	64	41	45	48	60	41	45	48	60	No events removed
Sat. 9/29/12	11:00 AM	49	54	59	64	40	43	48	59	40	43	48	59	No events removed
Sat. 9/29/12	12:00 PM	49	54	59	64	39	43	49	64	39	43	49	64	No events removed
Sat. 9/29/12	1:00 PM	49	54	59	64	39	41	46	57	39	41	46	57	No events removed
Sat. 9/29/12	2:00 PM	49	54	59	64	39	48	57	76	38	42	49	60	Birds near meter; one overhead airplane
Sat. 9/29/12	3:00 PM	49	54	59	64	42	47	52	67	42	47	52	67	No events removed; one unidentified brief noise at 3:42; no audio
Sat. 9/29/12	4:00 PM	49	54	59	64	40	43	47	63	40	43	47	63	No events removed
Sat. 9/29/12	5:00 PM	49	54	59	64	39	42	50	69	38	41	47	62	One airplane overhead
Sat. 9/29/12	6:00 PM	49	54	59	64	37	42	49	64	37	42	49	64	No events removed
Sat. 9/29/12	7:00 PM	49	54	59	64	37	39	43	55	37	39	43	55	No events removed
Sat. 9/29/12	8:00 PM	49	54	59	64	38	41	49	61	38	41	49	61	No events removed
Sat. 9/29/12	9:00 PM	49	54	59	64	37	39	40	49	37	39	40	49	No events removed
Sat. 9/29/12	10:00 PM	39	44	49	54	37	38	40	65	37	38	40	54	One airplane overhead
Sat. 9/29/12	11:00 PM	39	44	49	54	39	44	51	65	38	39	41	49	Four airplanes overhead
Sun. 9/30/12	12:00 AM	39	44	49	54	33	34	35	48	33	34	35	48	No events removed
Sun. 9/30/12	1:00 AM	39	44	49	54	35	38	40	59	35	38	40	49	Neighborhood gun shot at 1:07 am
Sun. 9/30/12	2:00 AM	39	44	49	54	33	36	38	50	33	36	38	50	No events removed
Sun. 9/30/12	3:00 AM	39	44	49	54	33	34	37	56	33	34	36	47	One loud car accelerating, one airplane overhead
Sun. 9/30/12	4:00 AM	39	44	49	54	33	36	38	46	33	36	38	46	No events removed
Sun. 9/30/12	5:00 AM	39	44	49	54	35	37	39	48	35	37	39	48	No events removed
Sun. 9/30/12	6:00 AM	39	44	49	54	39	42	48	76	39	42	48	76	No events removed; 6:52 vehicle noise possilbly neighbor or CHRLF, no notes
Sun. 9/30/12	7:00 AM	49	54	59	64	41	45	50	62	41	45	50	62	No events removed
Sun. 9/30/12	8:00 AM	49	54	59	64	41	44	52	62	41	44	52	62	No events removed
Sun. 9/30/12	9:00 AM	49	54	59	64	38	42	47	59	38	42	47	59	No events removed
Sun. 9/30/12	10:00 AM	49	54	59	64	39	44	51	63	39	44	51	63	No events removed
Sun. 9/30/12	11:00 AM	49	54	59	64	42	47	52	60	42	47	52	60	No events removed
Sun. 9/30/12	12:00 PM	49	54	59	64	43	47	52	64	43	47	52	64	No events removed
Sun. 9/30/12	1:00 PM	49	54	59	64	42	45	50	75	42	45	48	64	One airplane overhead
Sun. 9/30/12	2:00 PM	49	54	59	64	43	47	53	68	43	46	41	62	One airplane overhead

TABLE 3

Hourly Noise Level Data, Perimeter Location P3 (NE Fence Line)
September 26–October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Thu. 10/4/12	7:00 PM	49	54	59	64	50	52	55	63	50	52	55	63	No events removed
Thu. 10/4/12	8:00 PM	49	54	59	64	42	46	52	64	42	46	52	64	No events removed
Thu. 10/4/12	9:00 PM	49	54	59	64	40	43	49	61	40	43	49	61	No events removed
Thu. 10/4/12	10:00 PM	39	44	49	54	37	40	44	62	37	40	43	51	One airplane overhead
Thu. 10/4/12	11:00 PM	39	44	49	54	37	40	48	59	36	37	40	49	Four airplanes overhead; AMEC observer checking meter
Fri. 10/5/12	12:00 AM	39	44	49	54	37	38	40	50	37	38	40	50	No events removed
Fri. 10/5/12	1:00 AM	39	44	49	54	39	41	43	46	39	41	43	46	No events removed
Fri. 10/5/12	2:00 AM	39	44	49	54	40	41	42	50	40	41	42	50	No events removed
Fri. 10/5/12	3:00 AM	39	44	49	54	40	41	42	61	40	41	42	51	One airplane overhead
Fri. 10/5/12	4:00 AM	39	44	49	54	41	43	44	48	41	43	44	48	No events removed
Fri. 10/5/12	5:00 AM	39	44	49	54	46	47	49	64	46	47	49	53	AMEC observer checking meter; noise from CHRLF audible
Fri. 10/5/12	6:00 AM	39	44	49	54	48	49	51	66	48	49	50	56	Three airplanes overhead; peak event at 6:54 not identified, no audio
Fri. 10/5/12	7:00 AM	49	54	59	64	49	51	52	68	49	50	52	60	One airplane overhead
Fri. 10/5/12	8:00 AM	49	54	59	64	50	52	53	61	50	52	53	61	No events removed
Fri. 10/5/12	9:00 AM	49	54	59	64	46	47	49	62	46	47	49	62	No events removed
Fri. 10/5/12	10:00 AM	49	54	59	64	44	47	51	60	44	47	51	60	No events removed
Fri. 10/5/12	11:00 AM	49	54	59	64	43	45	48	69	43	45	47	60	One airplane overhead
Fri. 10/5/12	12:00 PM	49	54	59	64	43	48	50	59	43	48	50	59	No events removed
Fri. 10/5/12	1:00 PM	49	54	59	64	47	50	52	65	47	49	51	55	Two airplanes overhead
Fri. 10/5/12	2:00 PM	49	54	59	64	45	48	51	61	45	48	51	61	No events removed
Fri. 10/5/12	3:00 PM	49	54	59	64	43	47	50	60	43	47	50	60	No events removed
Fri. 10/5/12	4:00 PM	49	54	59	64	43	46	49	59	43	46	49	59	No events removed
Fri. 10/5/12	5:00 PM	49	54	59	64	42	45	49	57	42	45	49	57	No events removed
Fri. 10/5/12	6:00 PM	49	54	59	64	41	42	44	56	41	42	44	56	No events removed

Notes
Highlighted numbers exceed the corresponding King County Noise Limit.
CHRLF = Cedar Hills Regional Landfill
dBA = A-weighted decibel
$L_{2.5}$ = Level exceeded 2.5% (1.5 minutes) per hour
$L_{8.3}$ = Level exceeded 8.3% (5 minutes) per hour
L_{25} = Level exceeded 25% (15 minutes) per hour
L_{max} = Maximum noise level measured (including impulsive noise)

TABLE 4

Hourly Noise Level Data, Perimeter Location P4 (East Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	**Hour**	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	**Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels**
Wed. 9/26/12	11:00 AM	49	54	59	64	38	42	48	74	38	42	48	74	One unidentified short-duration noise at 11:26; No audio.
Wed. 9/26/12	12:00 PM	49	54	59	64	39	43	46	63	39	43	46	63	No events removed
Wed. 9/26/12	1:00 PM	49	54	59	64	41	44	49	61	41	44	49	61	No events removed
Wed. 9/26/12	2:00 PM	49	54	59	64	40	44	49	71	40	44	49	71	Unidentified high frequency noise peak at 2:57
Wed. 9/26/12	3:00 PM	49	54	59	64	40	43	48	60	40	43	48	60	No events removed
Wed. 9/26/12	4:00 PM	49	54	59	64	39	43	50	70	39	43	50	70	Vehicle noise at 4:27, possibly CHRLF, brake squeal at 4:52, possibly at CHRLF
Wed. 9/26/12	5:00 PM	49	54	59	64	39	43	48	67	39	43	48	67	Three recorded unidentified high frequency noise peaks
Wed. 9/26/12	6:00 PM	49	54	59	64	39	43	47	60	39	43	47	60	No events removed
Wed. 9/26/12	7:00 PM	49	54	59	64	37	39	43	53	37	39	43	53	No events removed
Wed. 9/26/12	8:00 PM	49	54	59	64	39	45	53	62	39	45	53	62	No events removed
Wed. 9/26/12	9:00 PM	49	54	59	64	38	39	43	53	38	39	43	53	No events removed
Wed. 9/26/12	10:00 PM	39	44	49	54	36	38	40	56	36	37	39	48	One airplane overhead
Wed. 9/26/12	11:00 PM	39	44	49	54	36	38	44	53	36	38	44	53	No events removed
Thu. 9/27/12	12:00 AM	39	44	49	54	34	36	37	62	34	36	37	62	No events removed
Thu. 9/27/12	1:00 AM	39	44	49	54	35	37	40	51	35	37	40	51	No events removed
Thu. 9/27/12	2:00 AM	39	44	49	54	33	36	37	52	33	36	37	52	No events removed
Thu. 9/27/12	3:00 AM	39	44	49	54	38	40	42	52	38	40	42	52	No events removed
Thu. 9/27/12	4:00 AM	39	44	49	54	33	36	37	43	33	36	37	43	No events removed
Thu. 9/27/12	5:00 AM	39	44	49	54	37	39	41	53	37	39	41	53	No events removed
Thu. 9/27/12	6:00 AM	39	44	49	54	42	44	46	59	42	44	46	52	AMEC observer checking meter
Thu. 9/27/12	7:00 AM	49	54	59	64	42	44	46	59	42	44	46	59	No events removed
Thu. 9/27/12	8:00 AM	49	54	59	64	42	44	50	59	42	44	50	59	No events removed
Thu. 9/27/12	9:00 AM	49	54	59	64	43	46	48	59	43	46	48	59	No events removed
Thu. 9/27/12	10:00 AM	49	54	59	64	44	46	52	71	44	46	49	62	Likely airplane due to similar event noted at P3
Thu. 9/27/12	11:00 AM	49	54	59	64	38	41	45	65	38	41	45	65	One airplane overhead
Thu. 9/27/12	12:00 PM	49	54	59	64	42	48	53	66	42	48	53	66	Unidentified high frequency noise peak at 11:45
Thu. 9/27/12	1:00 PM	49	54	59	64	39	43	47	57	39	43	47	57	No events removed
Thu. 9/27/12	2:00 PM	49	54	59	64	39	46	53	61	39	46	53	61	No events removed
Thu. 9/27/12	3:00 PM	49	54	59	64	41	47	53	62	41	47	53	62	No events removed
Thu. 9/27/12	4:00 PM	49	54	59	64	40	45	52	75	40	45	52	61	AMEC observer checking meter
Thu. 9/27/12	5:00 PM	49	54	59	64	39	44	49	62	39	44	49	62	No events removed
Thu. 9/27/12	6:00 PM	49	54	59	64	38	41	43	59	38	41	43	59	No events removed
Thu. 9/27/12	7:00 PM	49	54	59	64	41	44	49	57	41	44	49	57	No events removed
Thu. 9/27/12	8:00 PM	49	54	59	64	44	46	50	56	44	46	50	56	No events removed
Thu. 9/27/12	9:00 PM	49	54	59	64	38	41	48	59	38	41	48	59	No events removed
Thu. 9/27/12	10:00 PM	39	44	49	54	38	40	42	55	38	39	41	50	One airplane overhead
Thu. 9/27/12	11:00 PM	39	44	49	54	38	42	50	59	38	40	42	49	Five airplanes overhead
Fri. 9/28/12	12:00 AM	39	44	49	54	40	44	46	58	40	44	46	58	Noise from BEW peak event at 12:56; birds contribute multiple lower-level peak events
Fri. 9/28/12	1:00 AM	39	44	49	54	38	40	43	52	38	40	43	52	No events removed
Fri. 9/28/12	2:00 AM	39	44	49	54	39	42	44	52	39	42	44	52	No events removed
Fri. 9/28/12	3:00 AM	39	44	49	54	36	37	38	47	36	37	38	47	No events removed
Fri. 9/28/12	4:00 AM	39	44	49	54	37	38	39	47	37	38	39	47	No events removed
Fri. 9/28/12	5:00 AM	39	44	49	54	38	39	44	58	38	39	41	49	One airplane overhead
Fri. 9/28/12	6:00 AM	39	44	49	54	41	42	45	53	41	42	45	53	No events removed
Fri. 9/28/12	7:00 AM	49	54	59	64	45	50	53	60	45	50	53	60	No events removed
Fri. 9/28/12	8:00 AM	49	54	59	64	44	50	54	60	44	50	54	60	No events removed
Fri. 9/28/12	9:00 AM	49	54	59	64	41	45	50	58	41	45	50	58	No events removed
Fri. 9/28/12	10:00 AM	49	54	59	64	40	46	50	66	40	46	50	66	Vehicle noise at CHRLF
Fri. 9/28/12	11:00 AM	49	54	59	64	38	40	45	74	38	40	44	55	AMEC observer checking meter; nearby birds
Fri. 9/28/12	12:00 PM	49	54	59	64	38	40	45	54	38	40	45	54	No events removed
Fri. 9/28/12	1:00 PM	49	54	59	64	40	45	50	65	40	44	48	59	One airplane overhead
Fri. 9/28/12	2:00 PM	49	54	59	64	38	41	45	58	38	41	45	58	No events removed

TABLE 4

Hourly Noise Level Data, Perimeter Location P4 (East Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	**Hour**	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	**Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels**
Fri. 9/28/12	3:00 PM	49	54	59	64	43	47	55	63	43	47	55	63	No events removed
Fri. 9/28/12	4:00 PM	49	54	59	64	38	43	50	63	38	43	50	63	No events removed
Fri. 9/28/12	5:00 PM	49	54	59	64	40	46	51	64	40	46	51	64	No events removed
Fri. 9/28/12	6:00 PM	49	54	59	64	40	45	50	76	40	45	50	76	One unidentified short-duration noise at 6:47; No audio; possibly due to airplane
Fri. 9/28/12	7:00 PM	49	54	59	64	40	45	50	71	40	44	49	57	One airplane overhead
Fri. 9/28/12	8:00 PM	49	54	59	64	39	43	49	58	39	43	49	58	No events removed
Fri. 9/28/12	9:00 PM	49	54	59	64	38	41	47	56	38	41	47	56	No events removed
Fri. 9/28/12	10:00 PM	39	44	49	54	40	44	47	60	39	44	47	56	One airplane overhead; multiple additional peak events likely due to BEW
Fri. 9/28/12	11:00 PM	39	44	49	54	38	43	49	59	38	39	40	47	Five airplanes overhead
Sat. 9/29/12	12:00 AM	39	44	49	54	40	42	46	57	39	41	43	51	Three airplanes overhead; BEW audible
Sat. 9/29/12	1:00 AM	39	44	49	54	38	40	42	51	38	40	42	51	No events removed
Sat. 9/29/12	2:00 AM	39	44	49	54	34	36	37	48	34	36	37	48	No events removed
Sat. 9/29/12	3:00 AM	39	44	49	54	35	37	38	56	35	37	38	44	Nearby wildlife
Sat. 9/29/12	4:00 AM	39	44	49	54	36	37	39	47	36	37	39	47	No events removed
Sat. 9/29/12	5:00 AM	39	44	49	54	38	40	43	48	38	40	43	48	No events removed
Sat. 9/29/12	6:00 AM	39	44	49	54	42	45	48	60	42	45	48	60	Peak events at 6:01 and 6:07; 6:01 event likely truck traffic; additional peaks not identified
Sat. 9/29/12	7:00 AM	49	54	59	64	43	47	50	57	43	47	50	57	No events removed
Sat. 9/29/12	8:00 AM	49	54	59	64	44	46	49	58	44	46	49	58	No events removed
Sat. 9/29/12	9:00 AM	49	54	59	64	45	49	54	69	45	47	50	56	Nearby birds, one airplane overhead
Sat. 9/29/12	10:00 AM	49	54	59	64	44	46	49	64	44	46	49	64	No events removed
Sat. 9/29/12	11:00 AM	49	54	59	64	43	46	49	63	43	46	49	63	No events removed
Sat. 9/29/12	12:00 PM	49	54	59	64	44	48	50	63	44	48	50	63	No events removed
Sat. 9/29/12	1:00 PM	49	54	59	64	38	42	46	60	38	42	46	60	No events removed
Sat. 9/29/12	2:00 PM	49	54	59	64	40	44	53	66	40	43	48	61	Two airplanes overhead; observer interference
Sat. 9/29/12	3:00 PM	49	54	59	64	41	44	51	75	41	44	51	75	One unidentified short-duration noise at 3:14 No audio
Sat. 9/29/12	4:00 PM	49	54	59	64	39	42	47	59	39	42	47	59	No events removed
Sat. 9/29/12	5:00 PM	49	54	59	64	38	42	49	69	38	41	45	62	One airplane overhead
Sat. 9/29/12	6:00 PM	49	54	59	64	37	42	48	64	37	42	48	64	No events removed
Sat. 9/29/12	7:00 PM	49	54	59	64	36	38	43	56	36	38	43	56	No events removed
Sat. 9/29/12	8:00 PM	49	54	59	64	38	41	48	61	38	41	48	61	No events removed
Sat. 9/29/12	9:00 PM	49	54	59	64	39	42	45	53	39	42	45	53	No events removed
Sat. 9/29/12	10:00 PM	39	44	49	54	41	43	45	51	41	43	45	51	No events removed
Sat. 9/29/12	11:00 PM	39	44	49	54	42	46	50	69	40	43	45	52	Four airplanes overhead
Sun. 9/30/12	12:00 AM	39	44	49	54	36	39	42	48	36	39	42	48	No events removed
Sun. 9/30/12	1:00 AM	39	44	49	54	36	38	40	59	36	38	40	59	Gun shot from neighborhood identified at P3 at 1:07
Sun. 9/30/12	2:00 AM	39	44	49	54	33	36	38	54	33	36	38	54	No events removed
Sun. 9/30/12	3:00 AM	39	44	49	54	35	37	38	50	35	37	38	50	No events removed
Sun. 9/30/12	4:00 AM	39	44	49	54	34	36	37	43	34	36	37	43	No events removed
Sun. 9/30/12	5:00 AM	39	44	49	54	34	35	37	46	34	35	37	46	No events removed
Sun. 9/30/12	6:00 AM	39	44	49	54	37	40	47	55	36	38	39	49	Three airplanes overhead
Sun. 9/30/12	7:00 AM	49	54	59	64	40	45	50	59	40	45	50	59	No events removed
Sun. 9/30/12	8:00 AM	49	54	59	64	39	43	49	56	39	43	49	56	No events removed
Sun. 9/30/12	9:00 AM	49	54	59	64	41	43	47	58	41	43	47	58	No events removed
Sun. 9/30/12	10:00 AM	49	54	59	64	44	47	51	65	44	47	50	60	One airplane overhead; no audio or notes but illustrated at other locations
Sun. 9/30/12	11:00 AM	49	54	59	64	46	49	51	61	46	49	51	61	No events removed
Sun. 9/30/12	12:00 PM	49	54	59	64	46	50	53	63	46	50	53	63	No events removed
Sun. 9/30/12	1:00 PM	49	54	59	64	46	48	51	67	46	48	50	58	One airplane overhead
Sun. 9/30/12	2:00 PM	49	54	59	64	45	54	61	70	44	47	52	65	Birds; nearby chainsaw activity. Remaining peaks likely chainsaw events but no notes or audio
Thu. 10/4/12	7:00 PM	49	54	59	64	39	41	46	62	39	41	46	62	No events removed
Thu. 10/4/12	8:00 PM	49	54	59	64	38	43	49	61	38	43	49	61	No events removed
Thu. 10/4/12	9:00 PM	49	54	59	64	39	42	49	73	39	42	49	73	Two airplanes overhead; AMEC observer checking meter
Thu. 10/4/12	10:00 PM	39	44	49	54	36	38	43	66	36	38	39	48	Two airplanes overhead; AMEC observer checking meter

TABLE 4

Hourly Noise Level Data, Perimeter Location P4 (East Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Thu. 10/4/12	11:00 PM	39	44	49	54	36	39	48	72	36	37	38	67	Three airplanes overhead; AMEC observer checking meter; unidentified peak at 11:37, no notes or audio
Fri. 10/5/12	12:00 AM	39	44	49	54	36	37	40	59	36	37	39	50	Coyotes howling
Fri. 10/5/12	1:00 AM	39	44	49	54	36	37	38	46	36	37	38	46	No events removed
Fri. 10/5/12	2:00 AM	39	44	49	54	40	42	44	50	40	42	44	50	No events removed
Fri. 10/5/12	3:00 AM	39	44	49	54	38	40	43	63	38	40	41	46	One airplane overhead
Fri. 10/5/12	4:00 AM	39	44	49	54	43	45	46	51	43	45	46	51	BEW plant audible and increased noise at approximately 4:35
Fri. 10/5/12	5:00 AM	39	44	49	54	44	47	48	55	44	47	48	55	CHRLF and BEW activity noted; peak event not identified
Fri. 10/5/12	6:00 AM	39	44	49	54	46	48	50	62	46	47	49	55	Two airplanes overhead; CHRLF and BEW activity noted
Fri. 10/5/12	7:00 AM	49	54	59	64	47	49	51	67	47	49	51	67	Peak event (67 dBA) at 7:31 not identified. Peak at 7:59 identified as tonal back-up alarms (65 dBA)
Fri. 10/5/12	8:00 AM	49	54	59	64	46	48	50	69	46	48	50	58	Birds near meter
Fri. 10/5/12	9:00 AM	49	54	59	64	41	43	47	61	41	43	47	61	No events removed
Fri. 10/5/12	10:00 AM	49	54	59	64	40	45	50	61	40	45	50	61	No events removed
Fri. 10/5/12	11:00 AM	49	54	59	64	41	45	49	59	41	45	49	59	No events removed
Fri. 10/5/12	12:00 PM	49	54	59	64	46	47	50	73	46	47	50	73	One unidentified short-duration noise at 12:17; no notes or audio
Fri. 10/5/12	1:00 PM	49	54	59	64	46	49	51	65	46	49	51	65	Short duration noise event at 1:26; not identified, possibly birds
Fri. 10/5/12	2:00 PM	49	54	59	64	43	45	48	63	43	45	48	63	No events removed
Fri. 10/5/12	3:00 PM	49	54	59	64	44	47	50	60	44	47	50	60	No events removed
Fri. 10/5/12	4:00 PM	49	54	59	64	43	47	49	71	43	46	49	71	Peak event at 4:03 likely aircraft but not identified and no audio; additional airplane noted and corrected
Fri. 10/5/12	5:00 PM	49	54	59	64	40	43	46	61	40	43	46	61	No events removed
Fri. 10/5/12	6:00 PM	49	54	59	64	38	40	44	57	38	40	44	57	No events removed

Notes
Highlighted numbers exceed the corresponding King County Noise Limit.
CHRLF = Cedar Hills Regional Landfill
dBA = A-weighted decibel
$L_{2.5}$ = Level exceeded 2.5% (1.5 minutes) per hour
$L_{8.3}$ = Level exceeded 8.3% (5 minutes) per hour
L_{25} = Level exceeded 25% (15 minutes) per hour
L_{max} = Maximum noise level measured (including impulsive noise)

TABLE 5

Hourly Noise Level Data, Perimeter Location P5 (SE Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	Hour	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
Wed. 9/26/12	11:00 AM	49	54	59	64	47	51	54	59	47	51	54	59	No events removed
Wed. 9/26/12	12:00 PM	49	54	59	64	47	50	53	66	47	50	53	66	Unidentified short-duration noises at 12:04; No notes or audio
Wed. 9/26/12	1:00 PM	49	54	59	64	49	53	55	66	49	52	55	63	One airplane overhead
Wed. 9/26/12	2:00 PM	49	54	59	64	48	51	54	61	48	51	54	61	No events removed
Wed. 9/26/12	3:00 PM	49	54	59	64	47	51	54	64	47	51	54	64	No events removed
Wed. 9/26/12	4:00 PM	49	54	59	64	47	51	54	63	47	51	54	63	No events removed
Wed. 9/26/12	5:00 PM	49	54	59	64	47	49	53	71	47	49	52	62	Dog barks
Wed. 9/26/12	6:00 PM	49	54	59	64	44	47	50	66	44	47	50	66	Unidentified short-duration noise at 6:12; No notes or audio
Wed. 9/26/12	7:00 PM	49	54	59	64	43	45	49	69	43	45	48	56	AMEC observer checking meter
Wed. 9/26/12	8:00 PM	49	54	59	64	44	48	52	67	43	46	49	63	AMEC observer checking meter; one overhead airplane
Wed. 9/26/12	9:00 PM	49	54	59	64	42	44	47	57	42	44	47	57	No events removed
Wed. 9/26/12	10:00 PM	39	44	49	54	41	42	44	52	41	42	44	52	No events removed
Wed. 9/26/12	11:00 PM	39	44	49	54	43	45	48	54	43	44	46	54	Three airplanes overhead
Thu. 9/27/12	12:00 AM	39	44	49	54	40	41	41	45	40	41	41	45	No events removed
Thu. 9/27/12	1:00 AM	39	44	49	54	41	42	43	51	41	42	43	51	No events removed
Thu. 9/27/12	2:00 AM	39	44	49	54	44	45	47	54	44	45	47	54	BEW audible, peak events not identified
Thu. 9/27/12	3:00 AM	39	44	49	54	44	44	45	49	44	44	45	49	No events removed
Thu. 9/27/12	4:00 AM	39	44	49	54	43	44	45	48	43	44	45	48	No events removed
Thu. 9/27/12	5:00 AM	39	44	49	54	44	45	47	55	44	45	47	55	No notes or audio of peak events
Thu. 9/27/12	6:00 AM	39	44	49	54	49	50	52	59	49	50	52	59	Overall levels increased, BEW audible, peak events not identified
Thu. 9/27/12	7:00 AM	49	54	59	64	50	51	54	60	50	51	54	60	No events removed
Thu. 9/27/12	8:00 AM	49	54	59	64	51	54	56	64	51	54	56	64	No events removed
Thu. 9/27/12	9:00 AM	49	54	59	64	49	52	55	62	49	52	55	62	No events removed
Thu. 9/27/12	10:00 AM	49	54	59	64	46	50	54	68	46	50	54	68	One airplane overhead
Thu. 9/27/12	11:00 AM	49	54	59	64	45	49	53	64	45	49	53	64	No events removed
Thu. 9/27/12	12:00 PM	49	54	59	64	47	52	55	78	46	50	54	59	Three airplanes overhead
Thu. 9/27/12	1:00 PM	49	54	59	64	48	51	54	66	48	51	54	61	One airplane overhead
Thu. 9/27/12	2:00 PM	49	54	59	64	51	55	59	94	50	54	57	67	AMEC observer checking meter; very loud motorcycle at 2:53; barking dog caused remaining peaks
Thu. 9/27/12	3:00 PM	49	54	59	64	49	52	54	63	49	52	54	63	No events removed
Thu. 9/27/12	4:00 PM	49	54	59	64	50	53	55	62	50	53	55	62	No events removed
Thu. 9/27/12	5:00 PM	49	54	59	64	46	50	54	74	45	49	52	59	One overhead airplane based on notes at P2
Thu. 9/27/12	6:00 PM	49	54	59	64	43	45	48	59	43	45	48	59	No events removed
Thu. 9/27/12	7:00 PM	49	54	59	64	43	46	50	58	43	46	50	58	No events removed
Thu. 9/27/12	8:00 PM	49	54	59	64	42	45	49	55	42	45	49	55	No events removed
Thu. 9/27/12	9:00 PM	49	54	59	64	46	48	50	60	46	48	50	60	No events removed
Thu. 9/27/12	10:00 PM	39	44	49	54	42	43	45	55	42	43	44	53	One airplane overhead; observer interference
Thu. 9/27/12	11:00 PM	39	44	49	54	43	46	50	58	43	44	46	51	Four airplanes overhead
Fri. 9/28/12	12:00 AM	39	44	49	54	44	45	47	53	44	45	47	53	No events removed
Fri. 9/28/12	1:00 AM	39	44	49	54	44	45	46	52	44	45	46	52	No events removed
Fri. 9/28/12	2:00 AM	39	44	49	54	45	46	46	49	45	46	46	49	No events removed
Fri. 9/28/12	3:00 AM	39	44	49	54	42	44	45	50	42	44	45	50	No events removed
Fri. 9/28/12	4:00 AM	39	44	49	54	43	44	45	49	43	44	45	49	No events removed
Fri. 9/28/12	5:00 AM	39	44	49	54	44	45	48	60	43	45	46	53	One airplane overhead from observations at P3
Fri. 9/28/12	6:00 AM	39	44	49	54	45	46	49	58	45	46	49	58	Peak identified as truck noise, possible CHRLF
Fri. 9/28/12	7:00 AM	49	54	59	64	50	53	56	71	49	53	55	66	Dog barks; unidentified peaks likely also due to dogs but no notes or audio
Fri. 9/28/12	8:00 AM	49	54	59	64	49	52	54	65	49	52	53	60	One airplane overhead; based on observed pattern at other locations
Fri. 9/28/12	9:00 AM	49	54	59	64	47	51	54	61	47	51	54	61	No events removed
Fri. 9/28/12	10:00 AM	49	54	59	64	48	52	55	65	48	52	55	65	Unidentified noise peak, possibly vehicle noise at CHRLF based on P4 observations
Fri. 9/28/12	11:00 AM	49	54	59	64	45	49	52	60	45	49	52	60	No events removed
Fri. 9/28/12	12:00 PM	49	54	59	64	46	49	53	63	46	49	53	63	No events removed
Fri. 9/28/12	1:00 PM	49	54	59	64	47	51	54	65	47	50	53	59	One overhead airplane
Fri. 9/28/12	2:00 PM	49	54	59	64	46	49	52	58	46	49	52	58	No events removed

TABLE 5

Hourly Noise Level Data, Perimeter Location P5 (SE Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

		King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				
Date	Hour	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
Fri. 9/28/12	3:00 PM	49	54	59	64	45	50	54	73	45	50	54	67	AMEC observer checking meter; unidentified noise peak at 3:23, no notes or audio
Fri. 9/28/12	4:00 PM	49	54	59	64	46	49	53	66	46	49	53	66	Unidentified noise peak at 4:06, no notes or audio
Fri. 9/28/12	5:00 PM	49	54	59	64	45	48	53	64	45	48	53	64	No events removed
Fri. 9/28/12	6:00 PM	49	54	59	64	44	48	52	60	44	48	52	60	No events removed
Fri. 9/28/12	7:00 PM	49	54	59	64	43	46	51	69	43	45	49	59	One overhead airplane
Fri. 9/28/12	8:00 PM	49	54	59	64	43	46	49	59	43	46	49	59	No events removed
Fri. 9/28/12	9:00 PM	49	54	59	64	42	46	48	58	42	46	48	58	No events removed
Fri. 9/28/12	10:00 PM	39	44	49	54	42	51	55	72	41	42	43	53	One airplane overhead; peak events due to car near meter for an extended time
Fri. 9/28/12	11:00 PM	39	44	49	54	40	44	50	60	40	41	43	52	Five airplanes overhead
Sat. 9/29/12	12:00 AM	39	44	49	54	41	43	47	60	41	42	43	52	Three airplanes overhead
Sat. 9/29/12	1:00 AM	39	44	49	54	40	42	43	55	40	42	43	51	AMEC observer checking meter
Sat. 9/29/12	2:00 AM	39	44	49	54	40	41	42	45	40	41	42	45	No events removed
Sat. 9/29/12	3:00 AM	39	44	49	54	41	42	43	45	41	42	43	45	No events removed
Sat. 9/29/12	4:00 AM	39	44	49	54	42	43	43	47	42	43	43	47	No events removed
Sat. 9/29/12	5:00 AM	39	44	49	54	45	45	46	48	45	45	46	48	No events removed
Sat. 9/29/12	6:00 AM	39	44	49	54	46	48	49	56	46	48	49	56	Peak events between 6:10 and 6:15 that result in Lmax at 56 dBA, not identified and no audio recording
Sat. 9/29/12	7:00 AM	49	54	59	64	47	49	51	59	47	49	51	59	No events removed
Sat. 9/29/12	8:00 AM	49	54	59	64	47	49	51	60	47	49	51	60	No events removed
Sat. 9/29/12	9:00 AM	49	54	59	64	48	50	52	65	48	50	51	61	One airplane overhead
Sat. 9/29/12	10:00 AM	49	54	59	64	46	48	52	67	46	48	51	62	AMEC observer checking meter
Sat. 9/29/12	11:00 AM	49	54	59	64	47	50	52	77	47	50	52	77	Unidentified noise peak at 11:08, no notes or audio
Sat. 9/29/12	12:00 PM	49	54	59	64	45	49	53	71	45	47	51	58	Two airplanes overhead
Sat. 9/29/12	1:00 PM	49	54	59	64	45	48	50	60	45	48	50	60	No events removed
Sat. 9/29/12	2:00 PM	49	54	59	64	46	50	54	79	46	50	54	79	Unidentified peak events
Sat. 9/29/12	3:00 PM	49	54	59	64	48	52	55	63	48	52	55	63	No events removed
Sat. 9/29/12	4:00 PM	49	54	59	64	53	55	57	62	53	55	57	62	No events removed
Sat. 9/29/12	5:00 PM	49	54	59	64	51	52	54	72	51	52	53	64	One airplane overhead
Sat. 9/29/12	6:00 PM	49	54	59	64	47	51	54	63	47	51	54	63	No events removed
Sat. 9/29/12	7:00 PM	49	54	59	64	43	45	47	66	43	45	47	59	Dog barks
Sat. 9/29/12	8:00 PM	49	54	59	64	44	46	50	60	44	46	50	60	No events removed
Sat. 9/29/12	9:00 PM	49	54	59	64	47	48	50	65	47	48	50	55	Nearby clanging of gate
Sat. 9/29/12	10:00 PM	39	44	49	54	48	49	51	56	48	49	51	56	Peak events not identified, overall levels with a 5-dBA range, gradual decrease over hour
Sat. 9/29/12	11:00 PM	39	44	49	54	48	51	53	69	48	49	50	54	Five airplanes overhead
Sun. 9/30/12	12:00 AM	39	44	49	54	44	45	47	52	44	45	47	52	No events removed
Sun. 9/30/12	1:00 AM	39	44	49	54	43	44	45	51	43	44	45	51	No events removed
Sun. 9/30/12	2:00 AM	39	44	49	54	41	42	43	53	41	42	43	53	No events removed
Sun. 9/30/12	3:00 AM	39	44	49	54	40	41	42	54	40	41	42	54	No events removed
Sun. 9/30/12	4:00 AM	39	44	49	54	43	44	45	54	43	44	45	54	No events removed
Sun. 9/30/12	5:00 AM	39	44	49	54	42	44	45	49	42	44	45	49	No events removed
Sun. 9/30/12	6:00 AM	39	44	49	54	45	47	50	62	45	47	48	55	Three airplanes overhead; dog barks; peak at 6:58 (55 dBA) due to truck traffic
Sun. 9/30/12	7:00 AM	49	54	59	64	46	48	51	60	46	48	51	60	No events removed
Sun. 9/30/12	8:00 AM	49	54	59	64	44	47	52	59	44	47	52	59	No events removed
Sun. 9/30/12	9:00 AM	49	54	59	64	43	46	48	60	43	46	48	60	No events removed
Sun. 9/30/12	10:00 AM	49	54	59	64	43	47	53	63	43	47	53	63	No events removed
Sun. 9/30/12	11:00 AM	49	54	59	64	44	48	51	60	44	48	51	60	No events removed
Sun. 9/30/12	12:00 PM	49	54	59	64	45	48	52	65	45	47	51	60	One airplane overhead
Sun. 9/30/12	1:00 PM	49	54	59	64	47	50	52	65	47	50	52	65	Multiple unidentified peak events
Sun. 9/30/12	2:00 PM	49	54	59	64	47	49	53	66	47	49	51	62	One airplane overhead
Thu. 10/4/12	7:00 PM	49	54	59	64	45	47	49	61	45	47	49	61	No events removed
Thu. 10/4/12	8:00 PM	49	54	59	64	44	46	49	63	44	46	49	63	No events removed
Thu. 10/4/12	9:00 PM	49	54	59	64	45	46	50	62	45	46	50	62	No events removed
Thu. 10/4/12	10:00 PM	39	44	49	54	43	45	46	72	43	45	46	54	AMEC observer checking meter

TABLE 5

Hourly Noise Level Data, Perimeter Location P5 (SE Fence Line)
September 26-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

Date	Hour	King County Noise Limits (dBA)				Hourly Ambient Noise Levels (dBA)				Corrected Hourly Ambient Noise Levels (dBA)				Notes on Noise Sources and Extraneous Noises Removed to Correct Hourly Ambient Noise Levels
		L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	L_{25}	$L_{8.3}$	$L_{2.5}$	L_{max}	
Thu. 10/4/12	11:00 PM	39	44	49	54	45	46	50	59	44	46	48	53	Two airplanes overhead
Fri. 10/5/12	12:00 AM	39	44	49	54	46	47	48	51	46	47	48	51	BEW audible
Fri. 10/5/12	1:00 AM	39	44	49	54	44	45	46	49	44	45	46	49	BEW audible
Fri. 10/5/12	2:00 AM	39	44	49	54	45	46	47	49	45	46	47	49	BEW audible
Fri. 10/5/12	3:00 AM	39	44	49	54	44	46	47	63	44	46	47	52	One airplane overhead, BEW audible
Fri. 10/5/12	4:00 AM	39	44	49	54	44	45	45	48	44	45	45	48	No events removed
Fri. 10/5/12	5:00 AM	39	44	49	54	45	46	47	52	45	46	47	52	No events removed
Fri. 10/5/12	6:00 AM	39	44	49	54	49	50	51	66	49	50	51	58	Two airplanes overhead; CHRLF and BEW activity noted; additional peak events not identified
Fri. 10/5/12	7:00 AM	49	54	59	64	50	53	55	63	50	53	55	63	No events removed
Fri. 10/5/12	8:00 AM	49	54	59	64	48	50	53	65	48	50	53	65	Unidentified noise peak at 8:22, no notes or audio
Fri. 10/5/12	9:00 AM	49	54	59	64	46	50	53	59	46	50	53	59	No events removed
Fri. 10/5/12	10:00 AM	49	54	59	64	45	49	53	65	45	49	52	62	One airplane overhead
Fri. 10/5/12	11:00 AM	49	54	59	64	48	51	53	65	48	51	53	65	AMEC observer checking meter; CHRLF and BEW activity noted
Fri. 10/5/12	12:00 PM	49	54	59	64	48	51	53	62	48	51	53	62	No events removed
Fri. 10/5/12	1:00 PM	49	54	59	64	48	51	54	63	48	51	54	63	No events removed
Fri. 10/5/12	2:00 PM	49	54	59	64	50	52	54	62	50	52	54	62	No events removed
Fri. 10/5/12	3:00 PM	49	54	59	64	49	53	55	62	49	53	55	62	No events removed
Fri. 10/5/12	4:00 PM	49	54	59	64	47	51	53	58	47	51	53	58	No events removed
Fri. 10/5/12	5:00 PM	49	54	59	64	45	48	51	63	45	48	51	63	No events removed
Fri. 10/5/12	6:00 PM	49	54	59	64	43	45	49	57	43	45	49	57	No events removed

Notes
Highlighted numbers exceed the corresponding King County Noise Limit.
CHRLF = Cedar Hills Regional Landfill
dBA = A-weighted decibel
$L_{2.5}$ = Level exceeded 2.5% (1.5 minutes) per hour
$L_{8.3}$ = Level exceeded 8.3% (5 minutes) per hour
L_{25} = Level exceeded 25% (15 minutes) per hour
L_{max} = Maximum noise level measured (including impulsive noise)

FIGURES

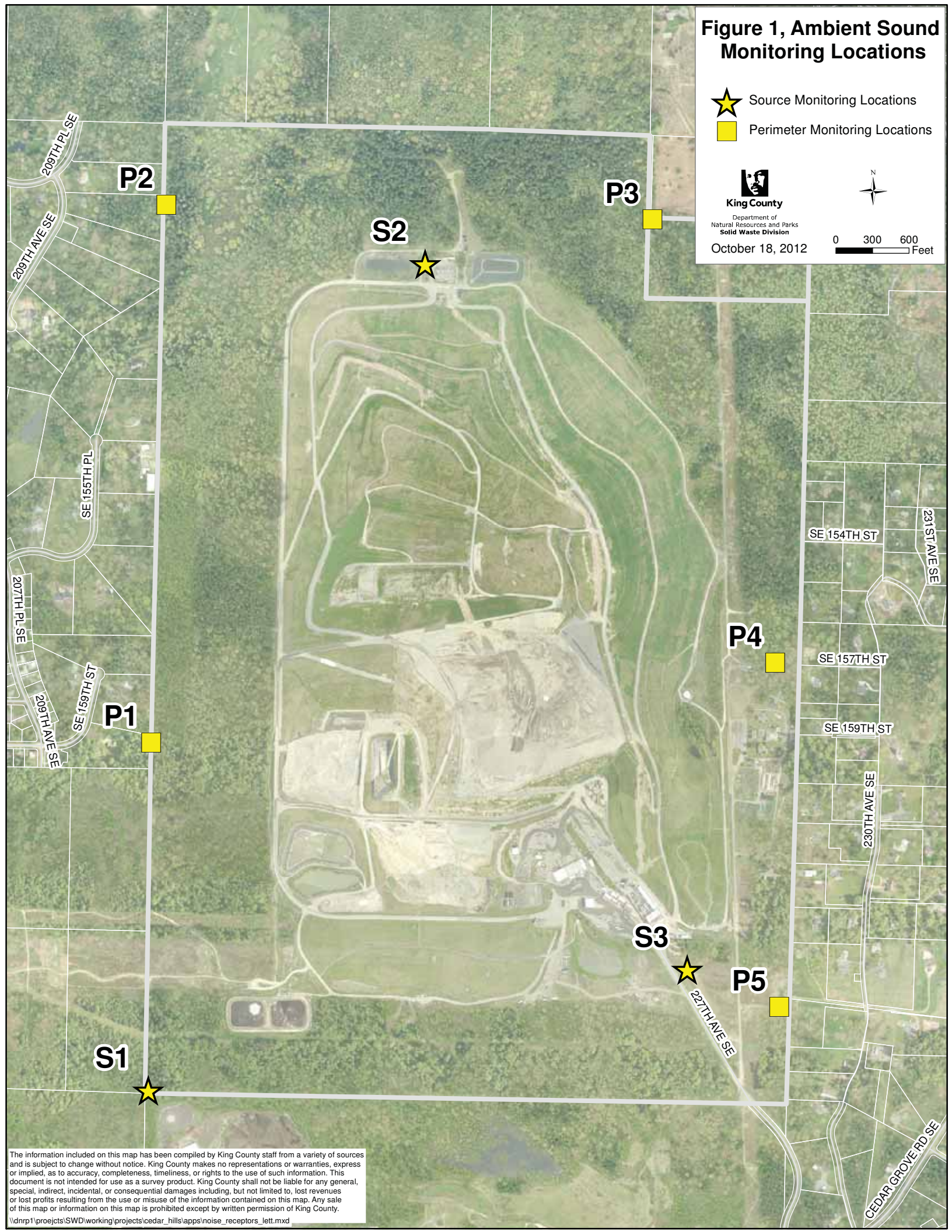


Figure 1, Ambient Sound Monitoring Locations
Source Monitoring Locations
Perimeter Monitoring Locations
King County
Department of Natural Resources and Parks
Solid Waste Division
October 18, 2012
0 300 600 Feet
N
P1
P2
P3
P4
P5
S1
S2
S3
209TH PL SE
209TH AVE SE
SE 155TH PL
207TH PL SE
SE 159TH ST
209TH AVE SE
SE 154TH ST
231ST AVE SE
SE 157TH ST
SE 159TH ST
230TH AVE SE
227TH AVE SE
CEDAR GROVE RD SE
The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.
\\dnrp1\proejcts\SWD\working\projects\cedar_hills\apps\noise_receptors_lett.mxd

Figure 2a
Hourly L_{25} Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

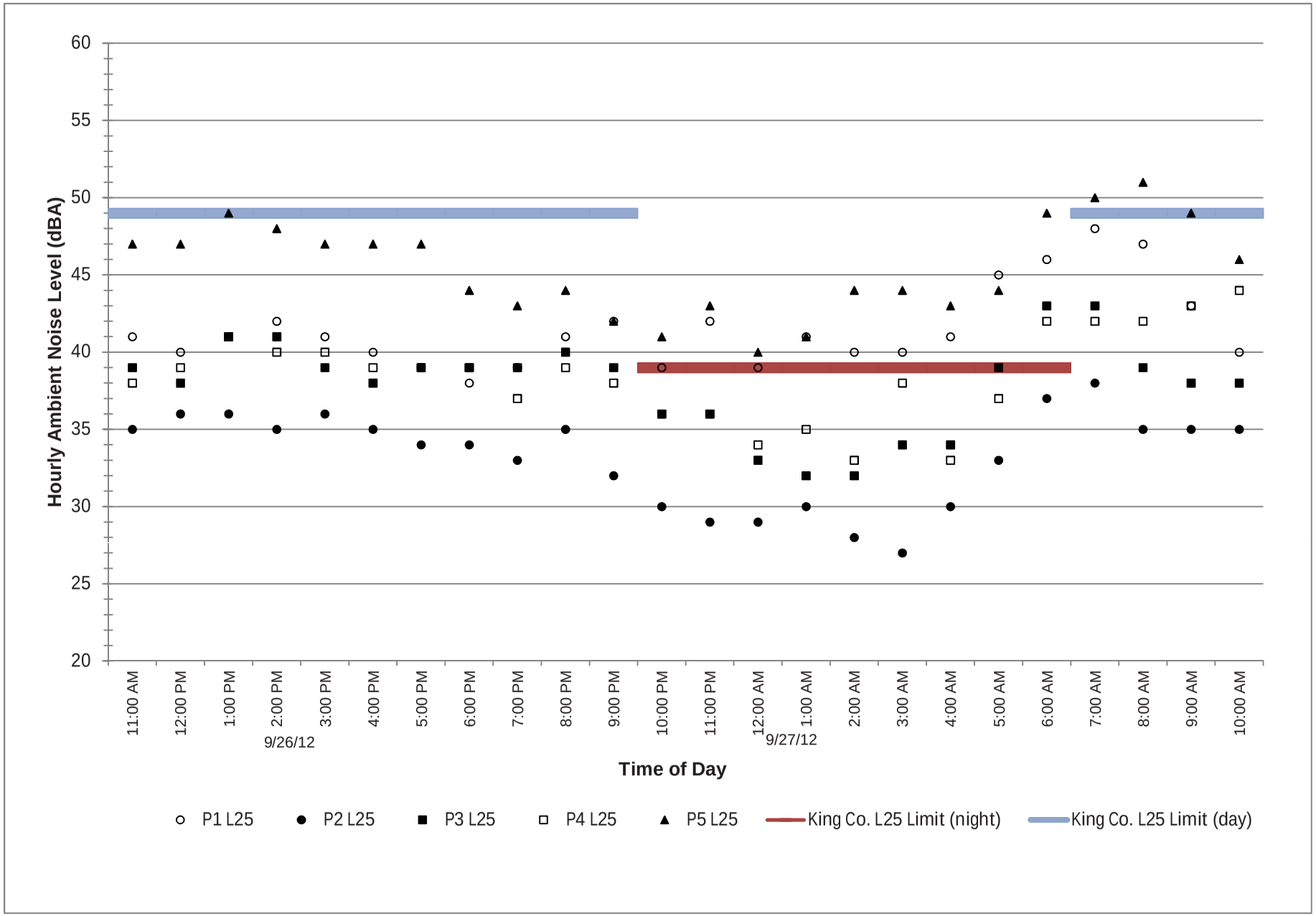


Figure 2b
Hourly L_{25} Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

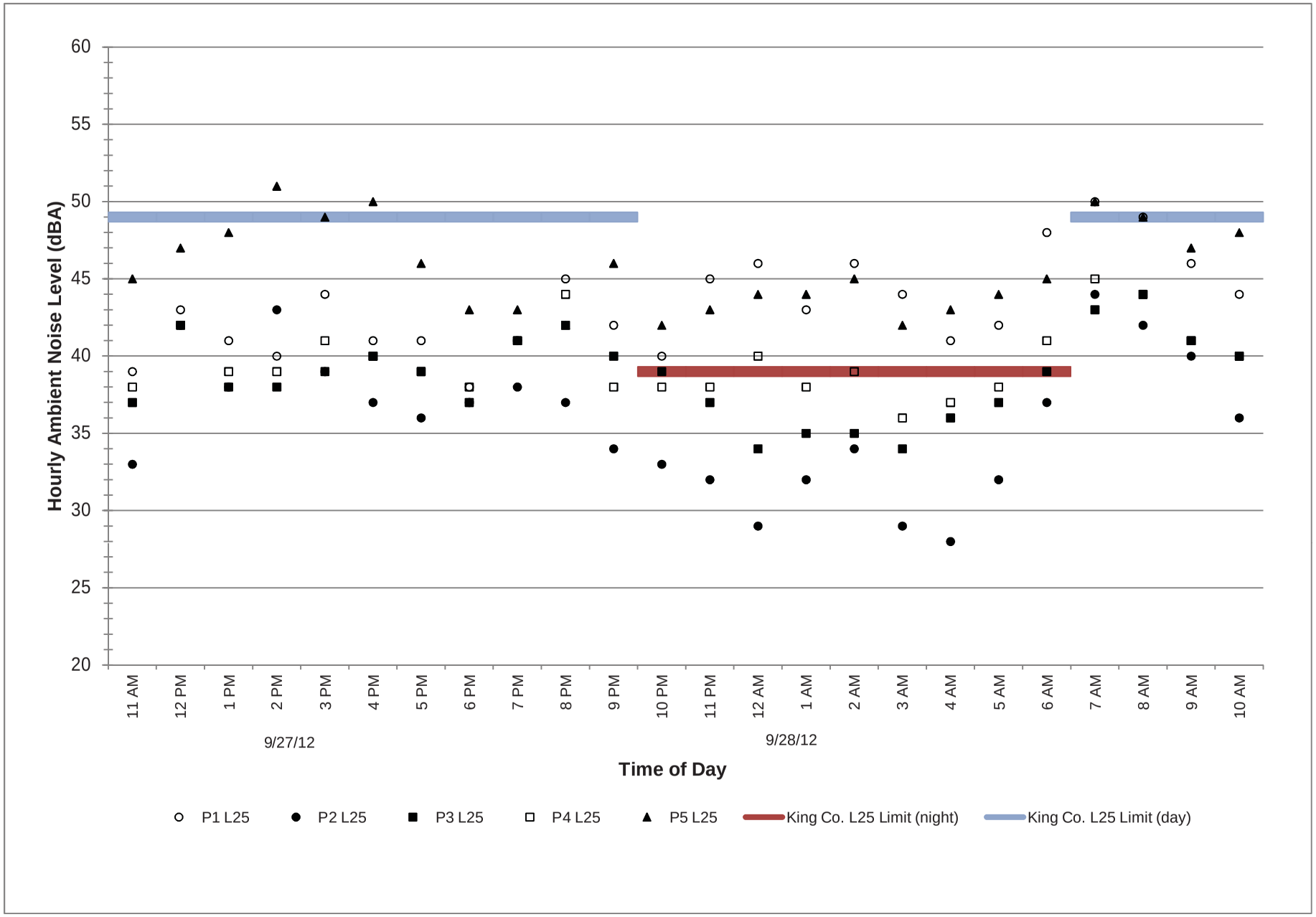


Figure 2c
Hourly L_{25} Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

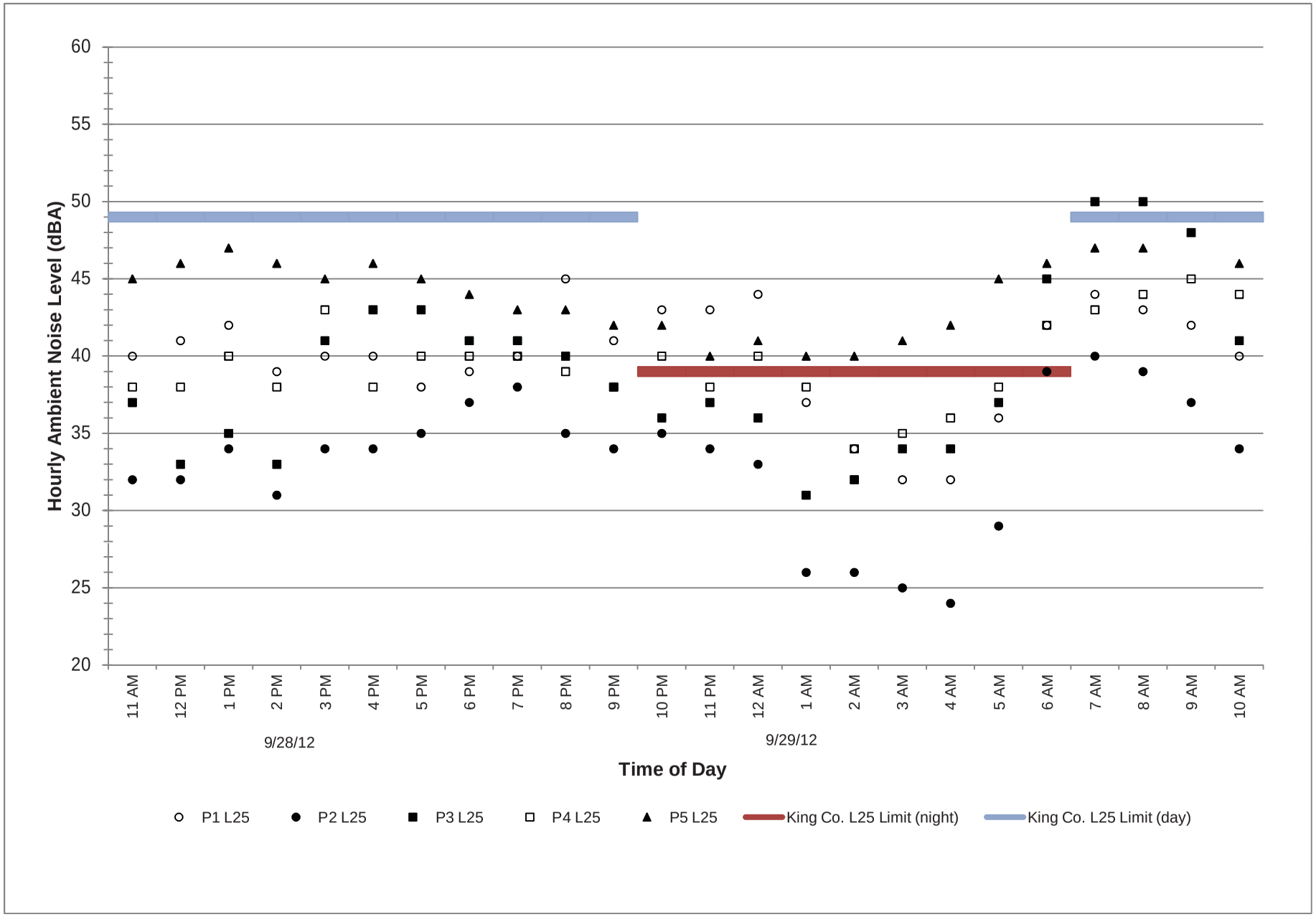


Figure 2d
Hourly L_{25} Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

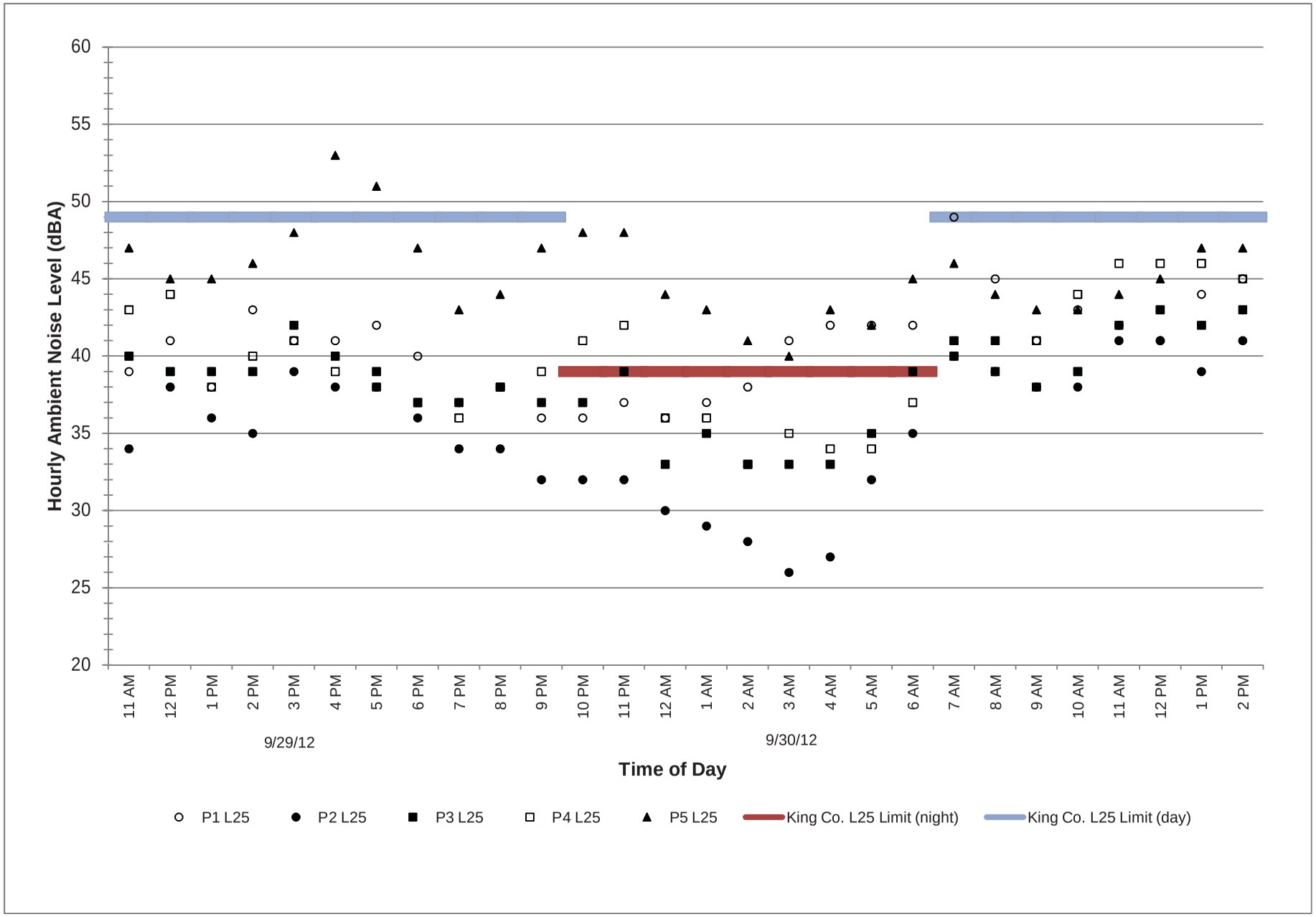


Figure 2e
Hourly L_{25} Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

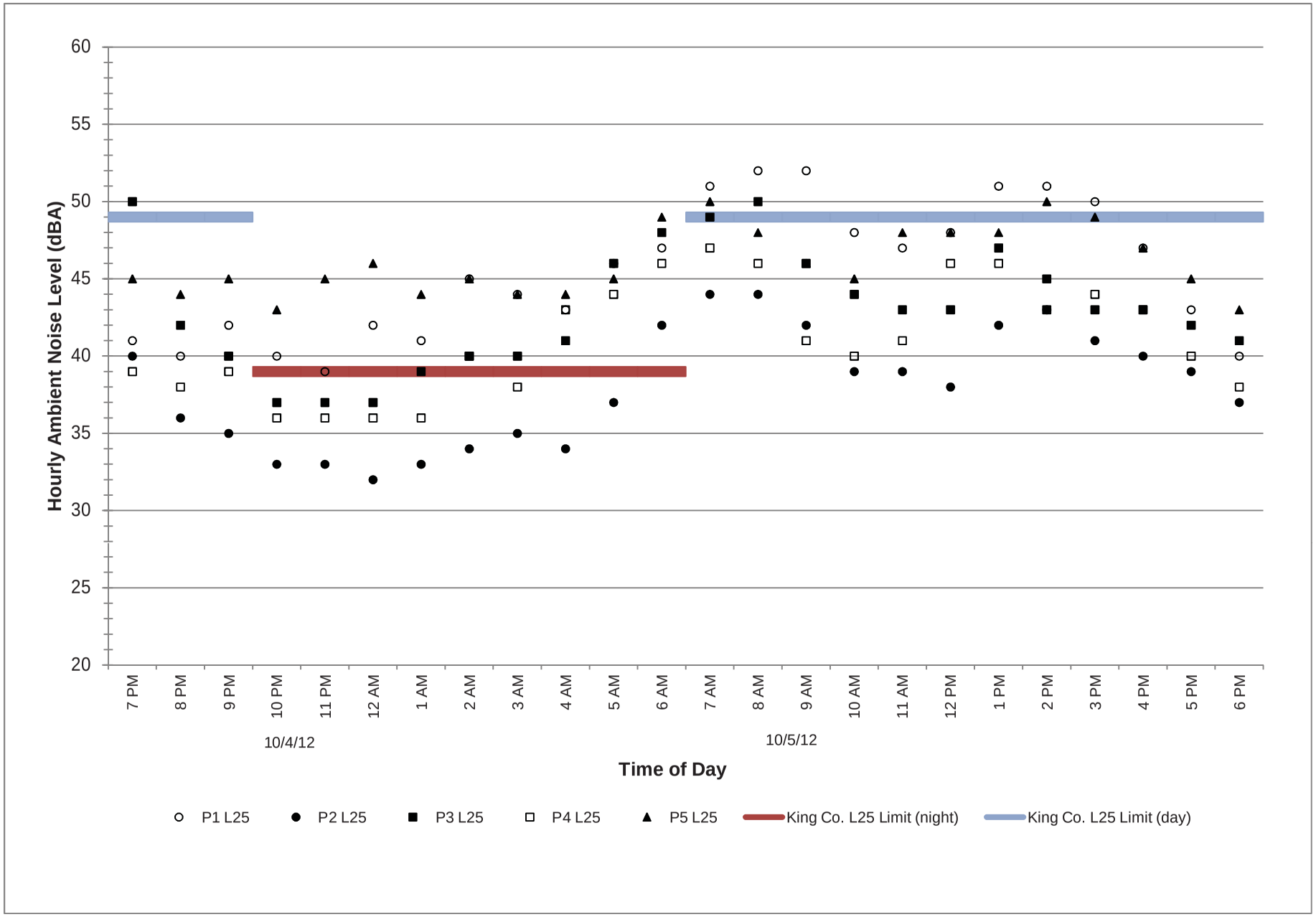


Figure 3a
Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

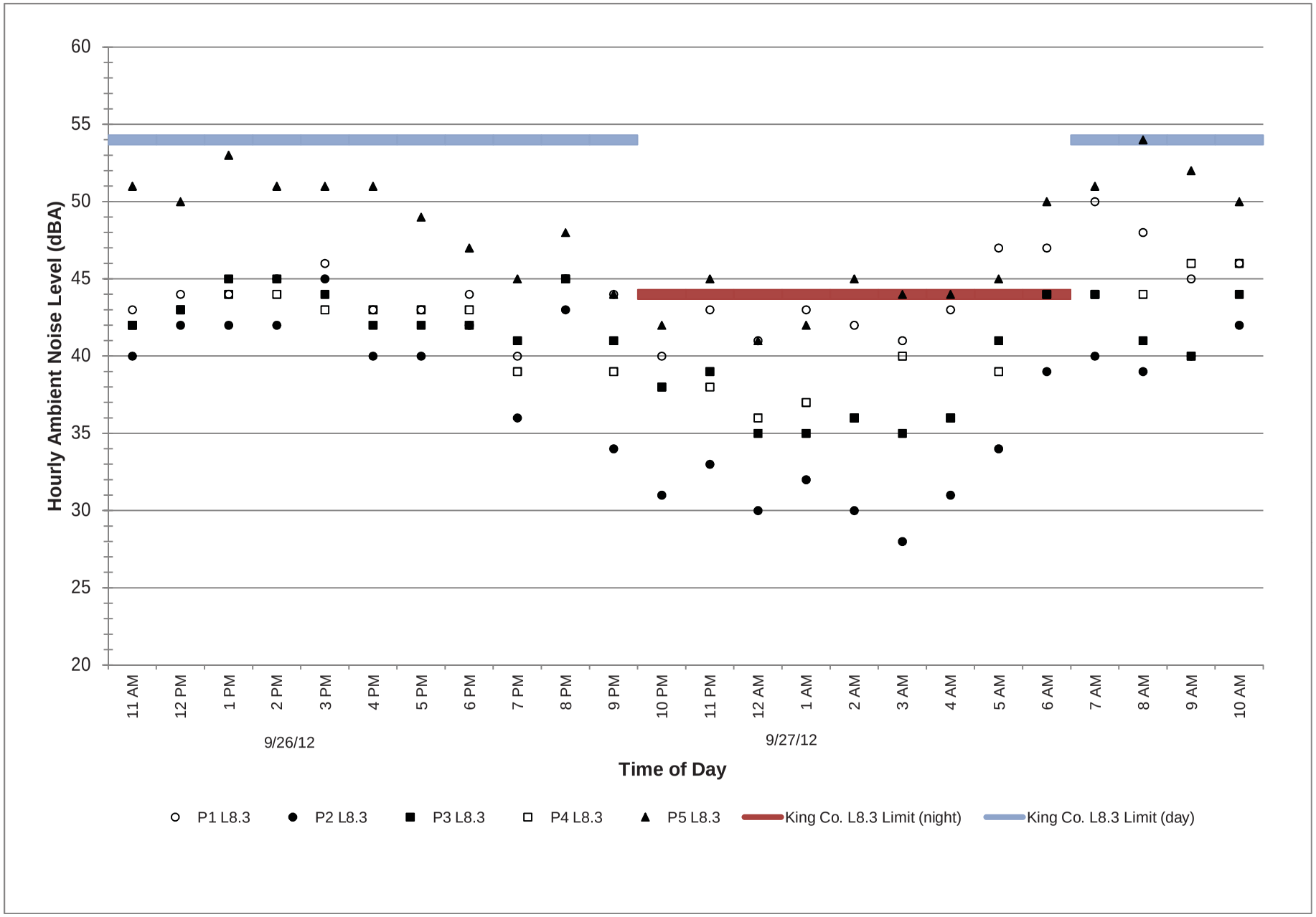


Figure 3b
Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

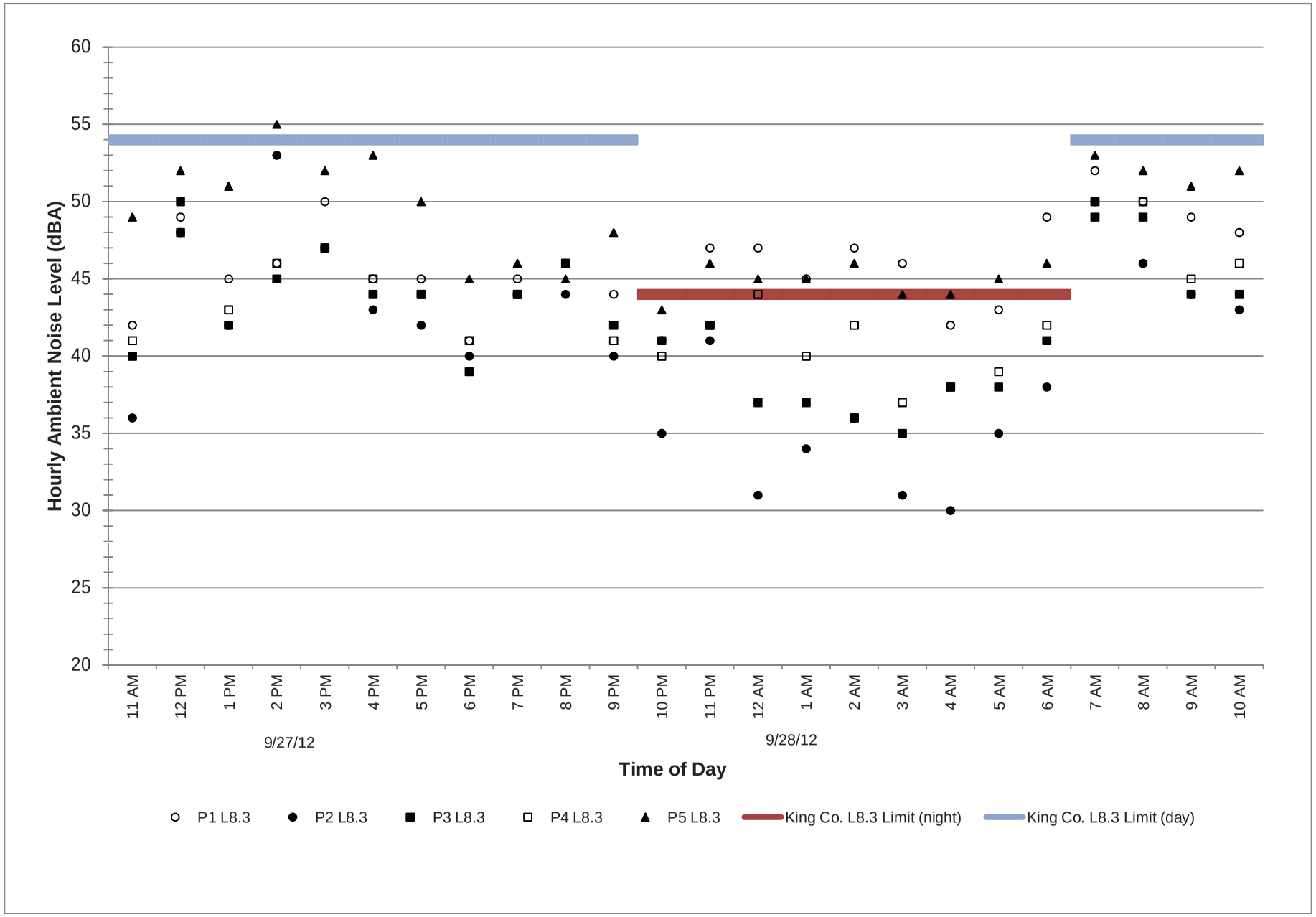


Figure 3c
Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

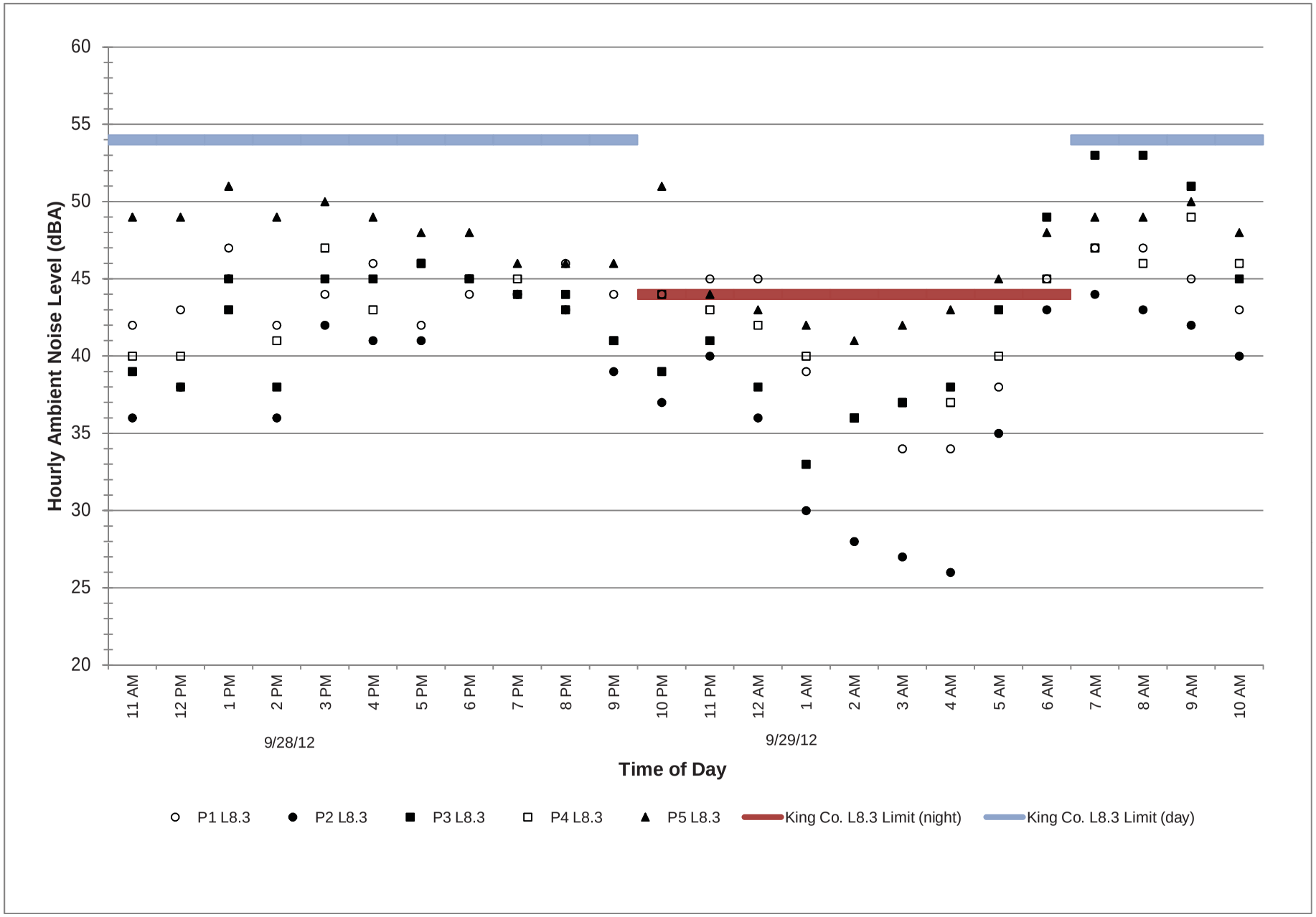


Figure 3d
Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

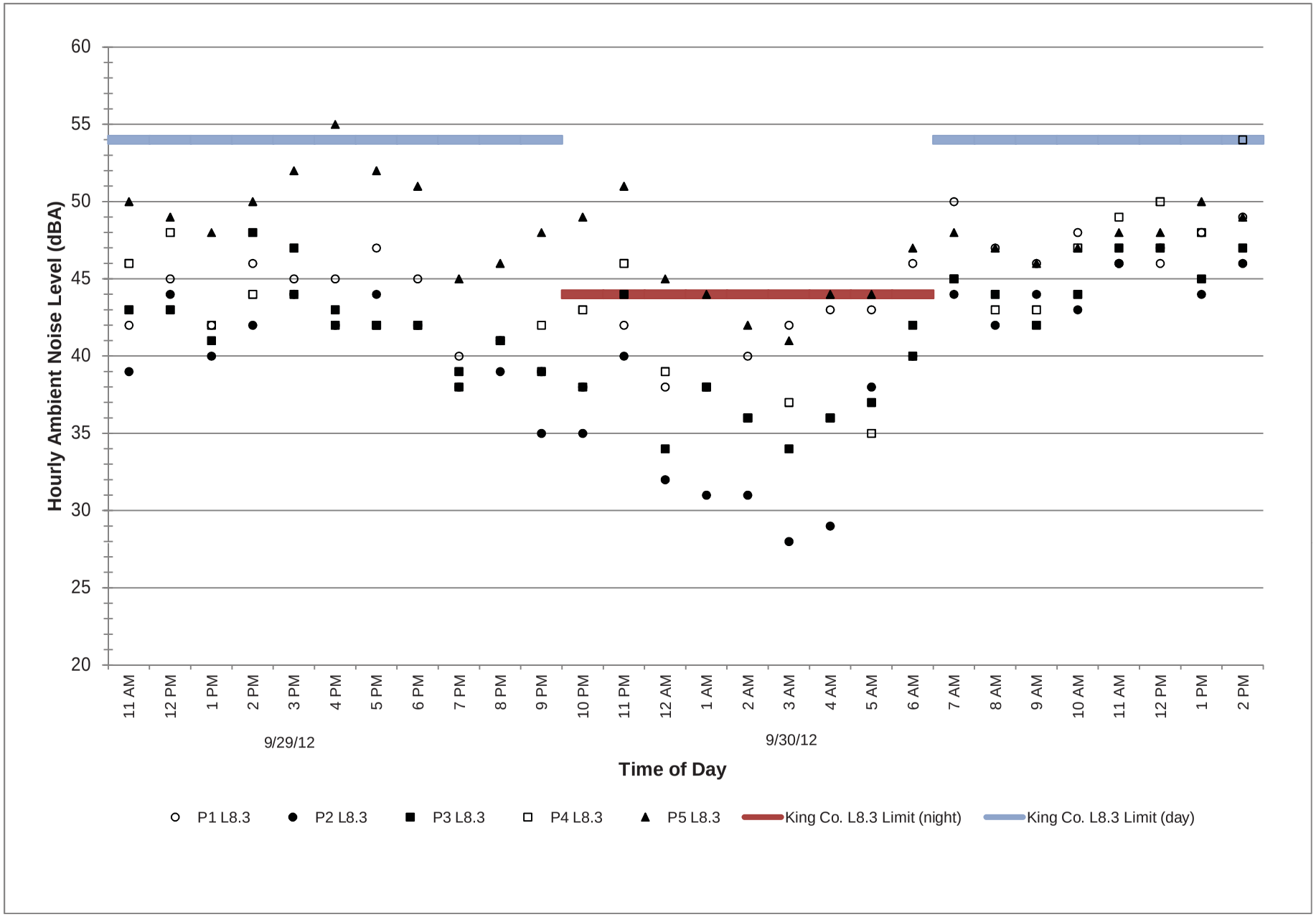


Figure 3e
Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

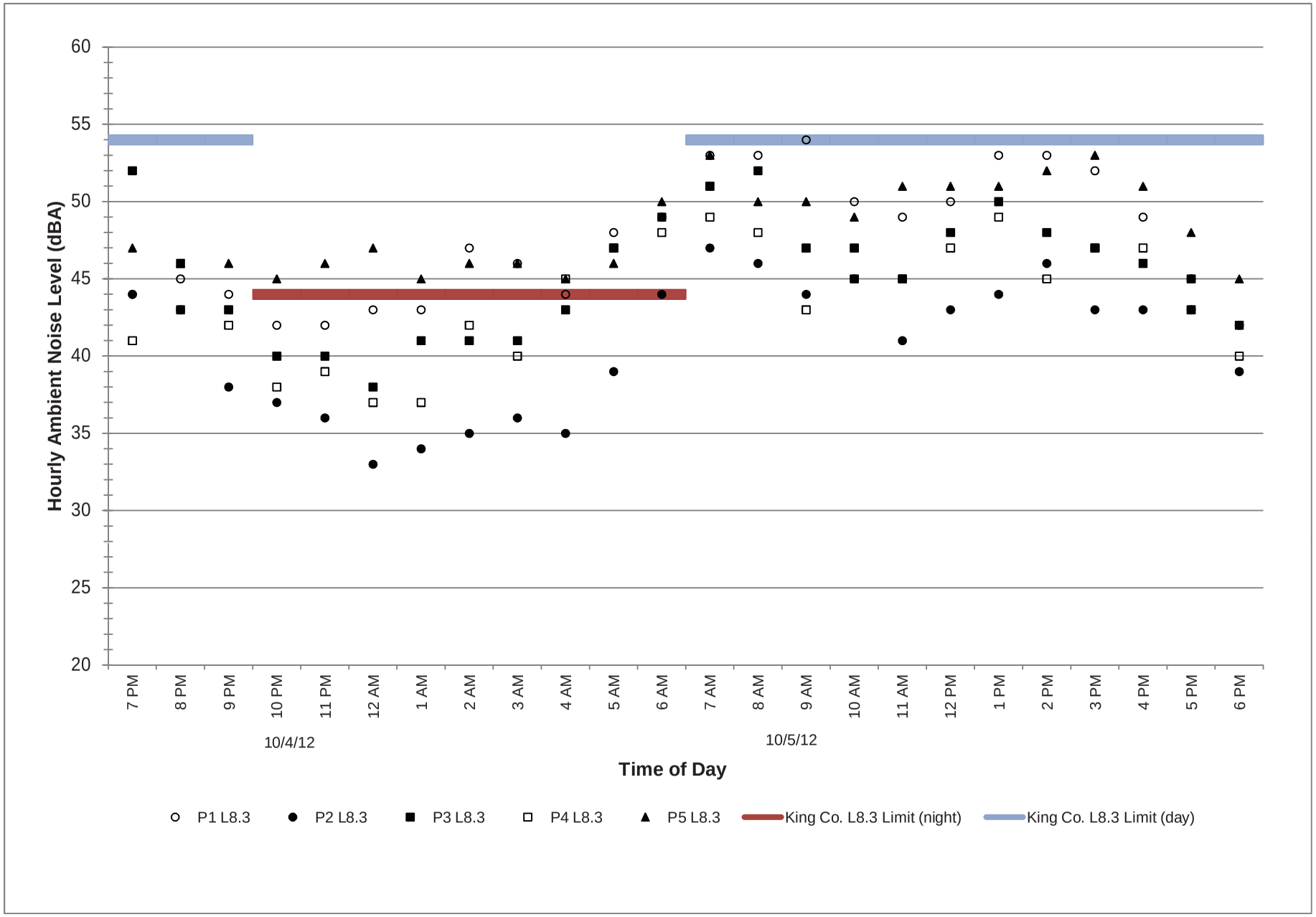


Figure 4a
Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

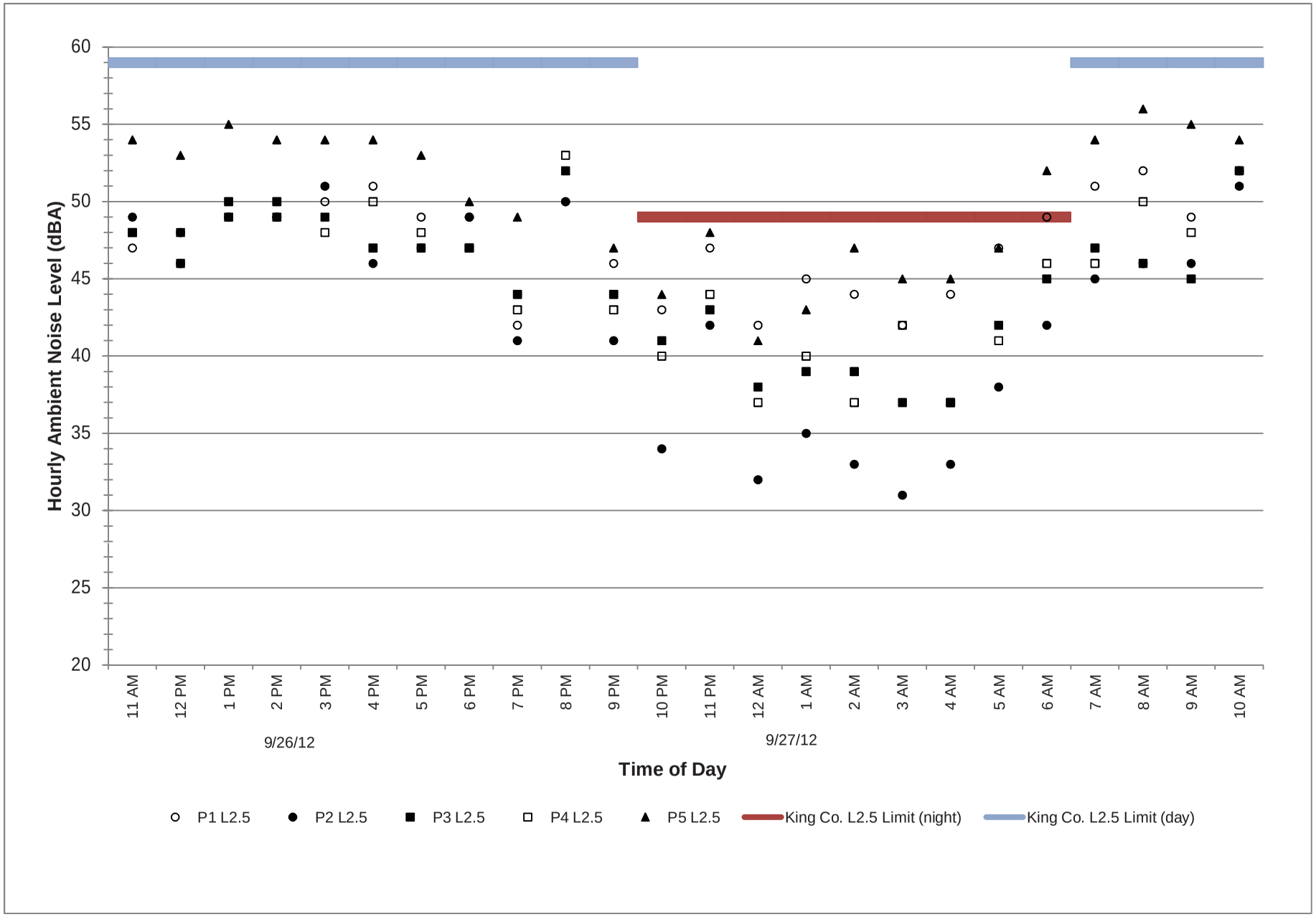


Figure 4b
Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

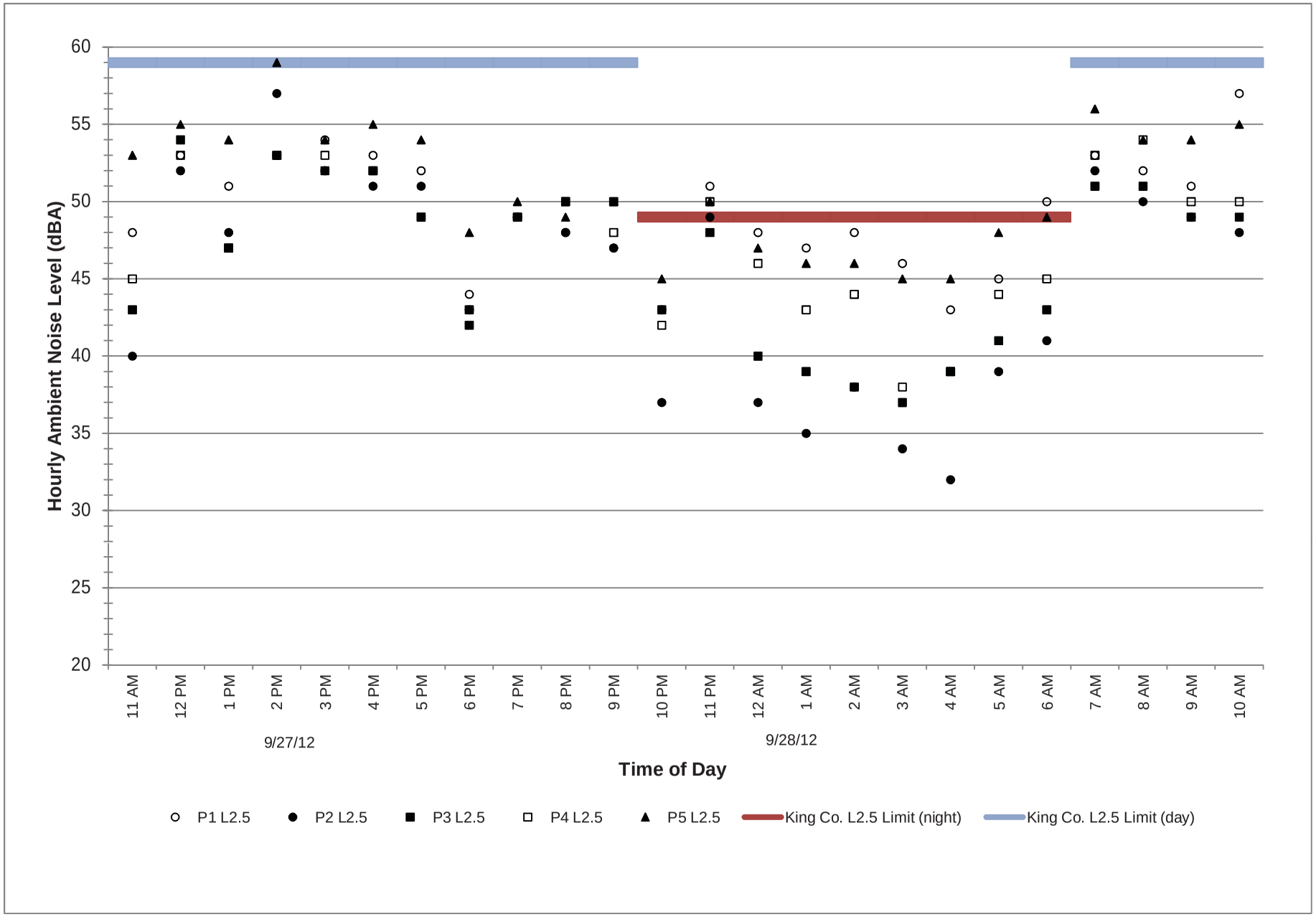


Figure 4c
Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

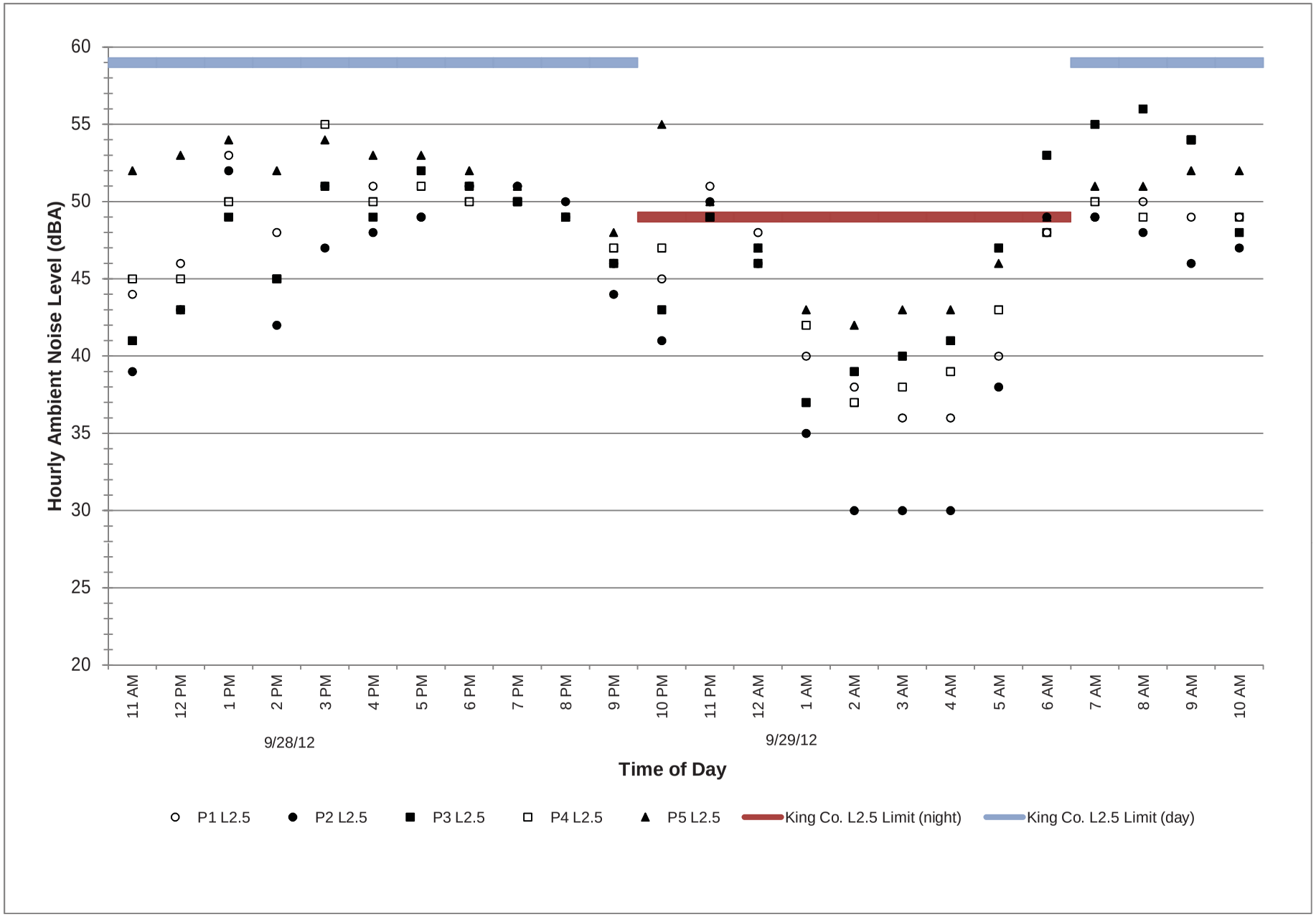


Figure 4d
Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

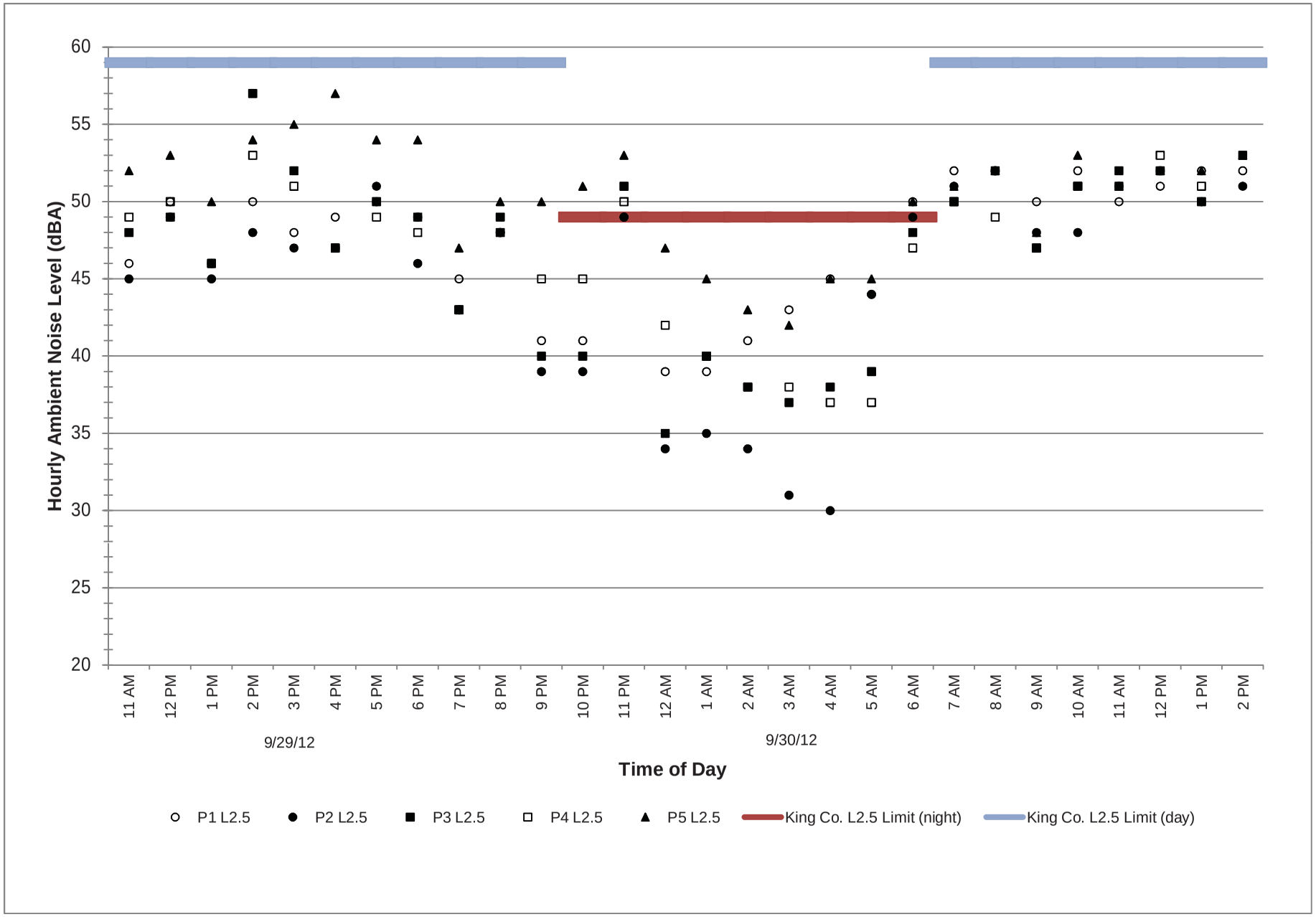


Figure 4e
Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

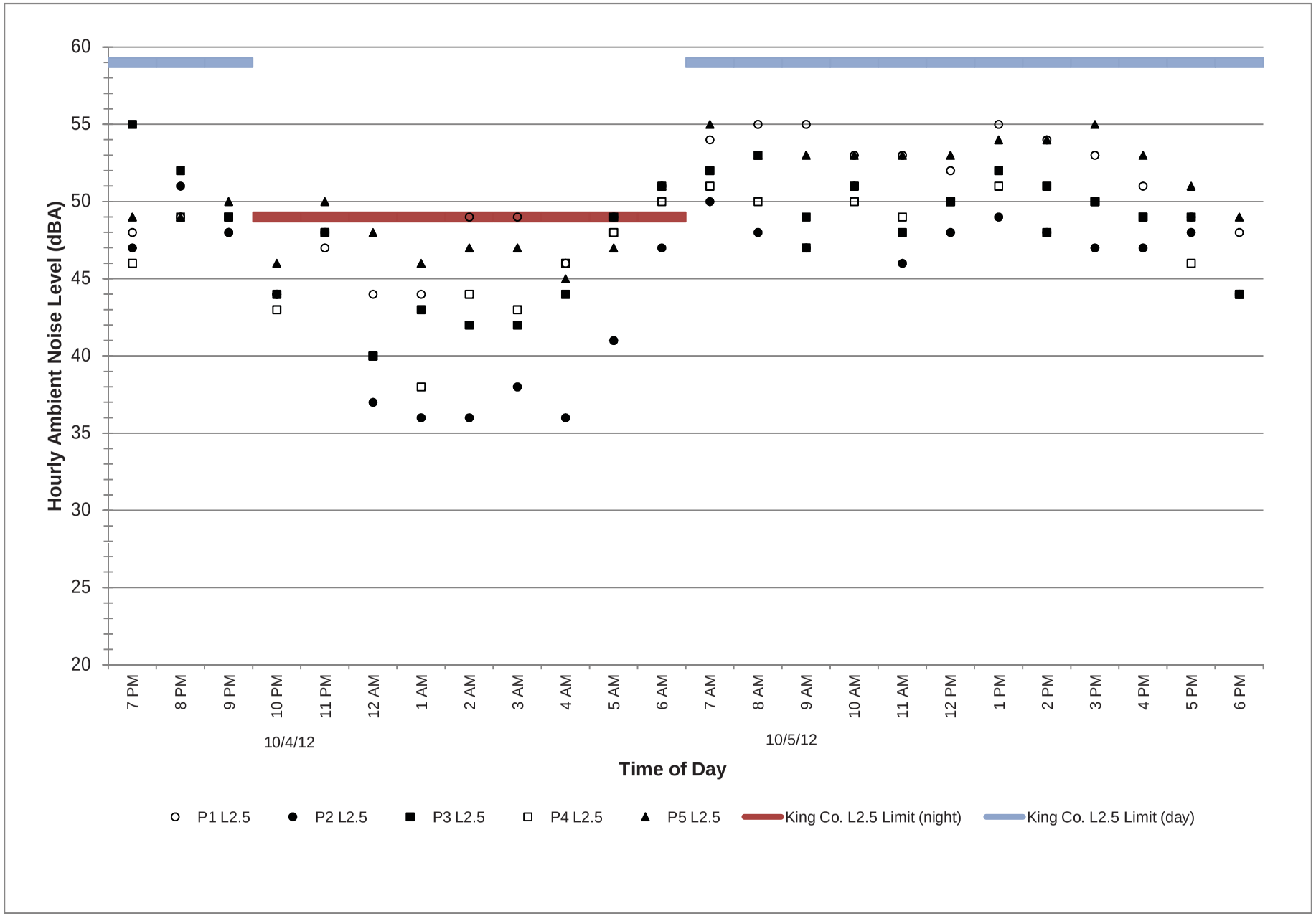


Figure 5a
Hourly L_{max} Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

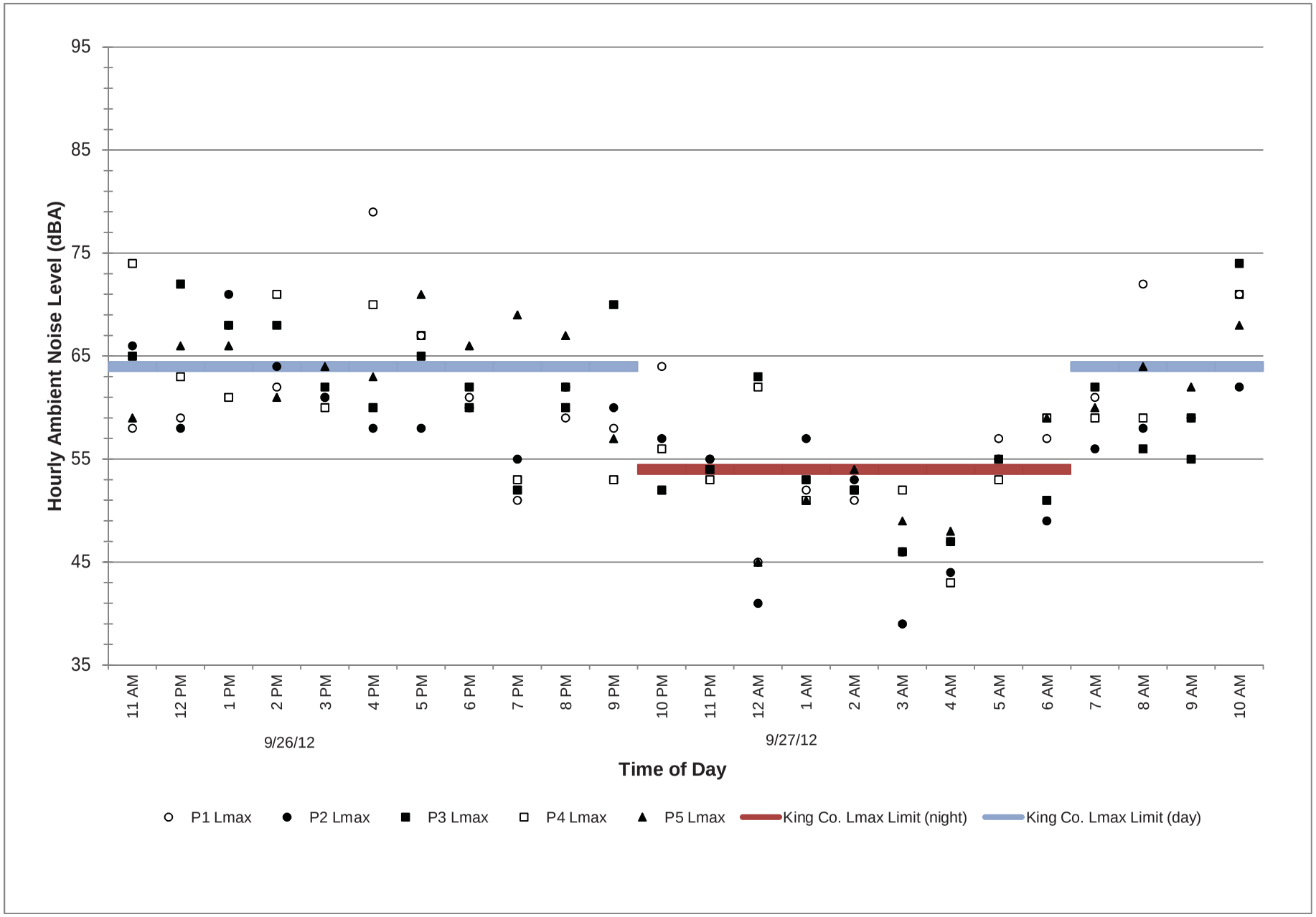


Figure 5b
Hourly L_{max} Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

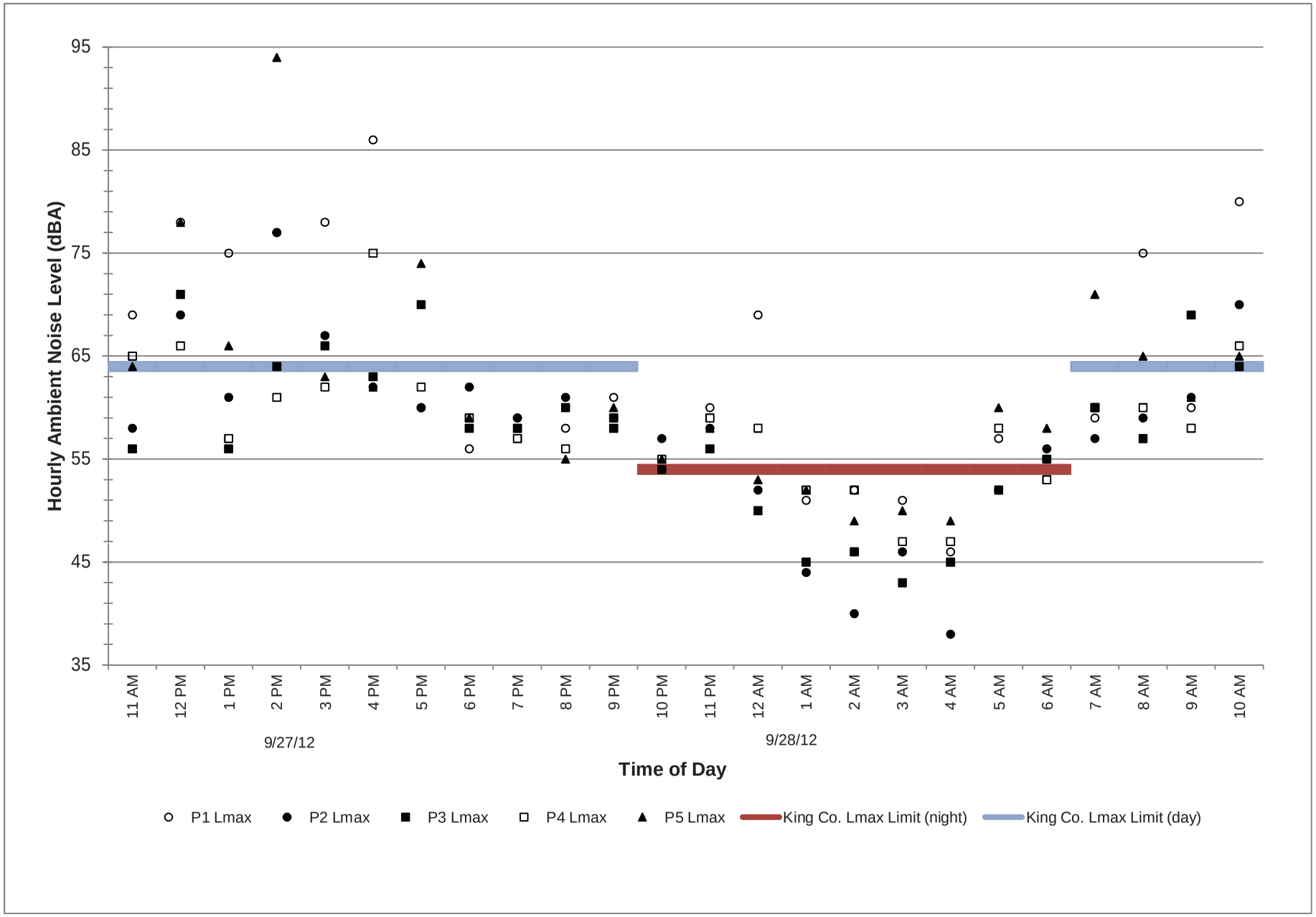


Figure 5c
Hourly L_{max} Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

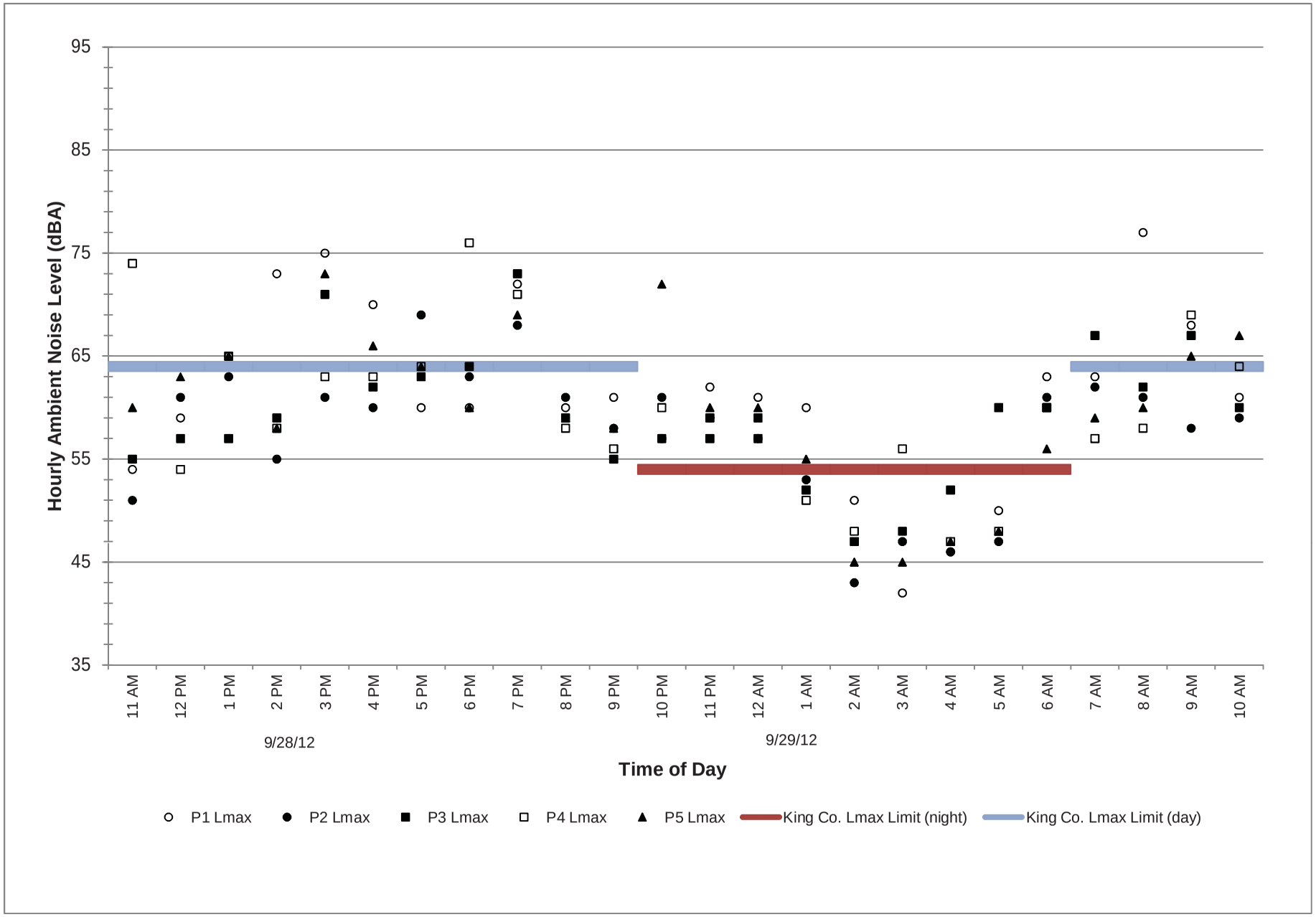


Figure 5d
Hourly L_{max} Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

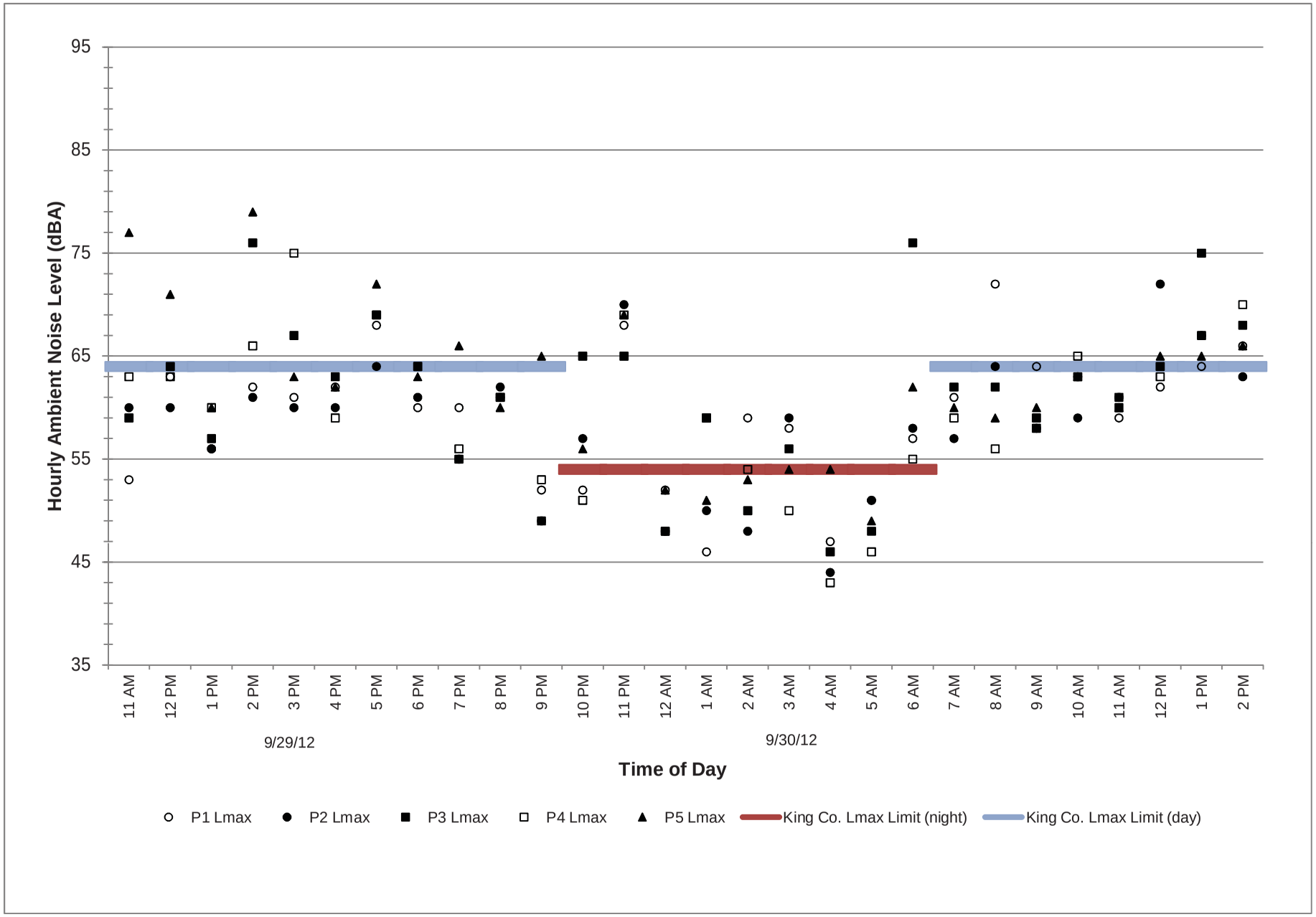


Figure 5e
Hourly L_{max} Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

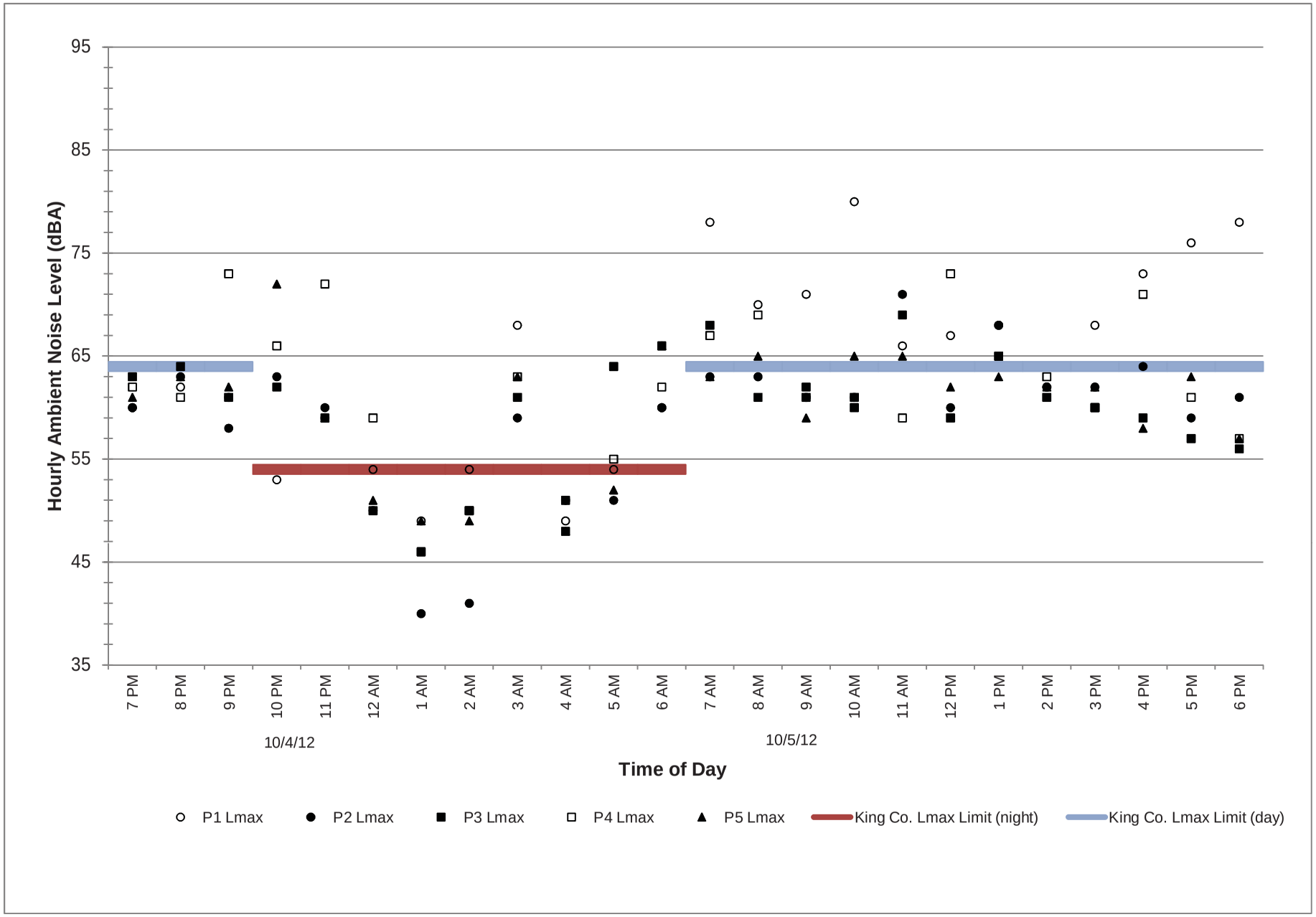


Figure 6a
Corrected Hourly L_{25} Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

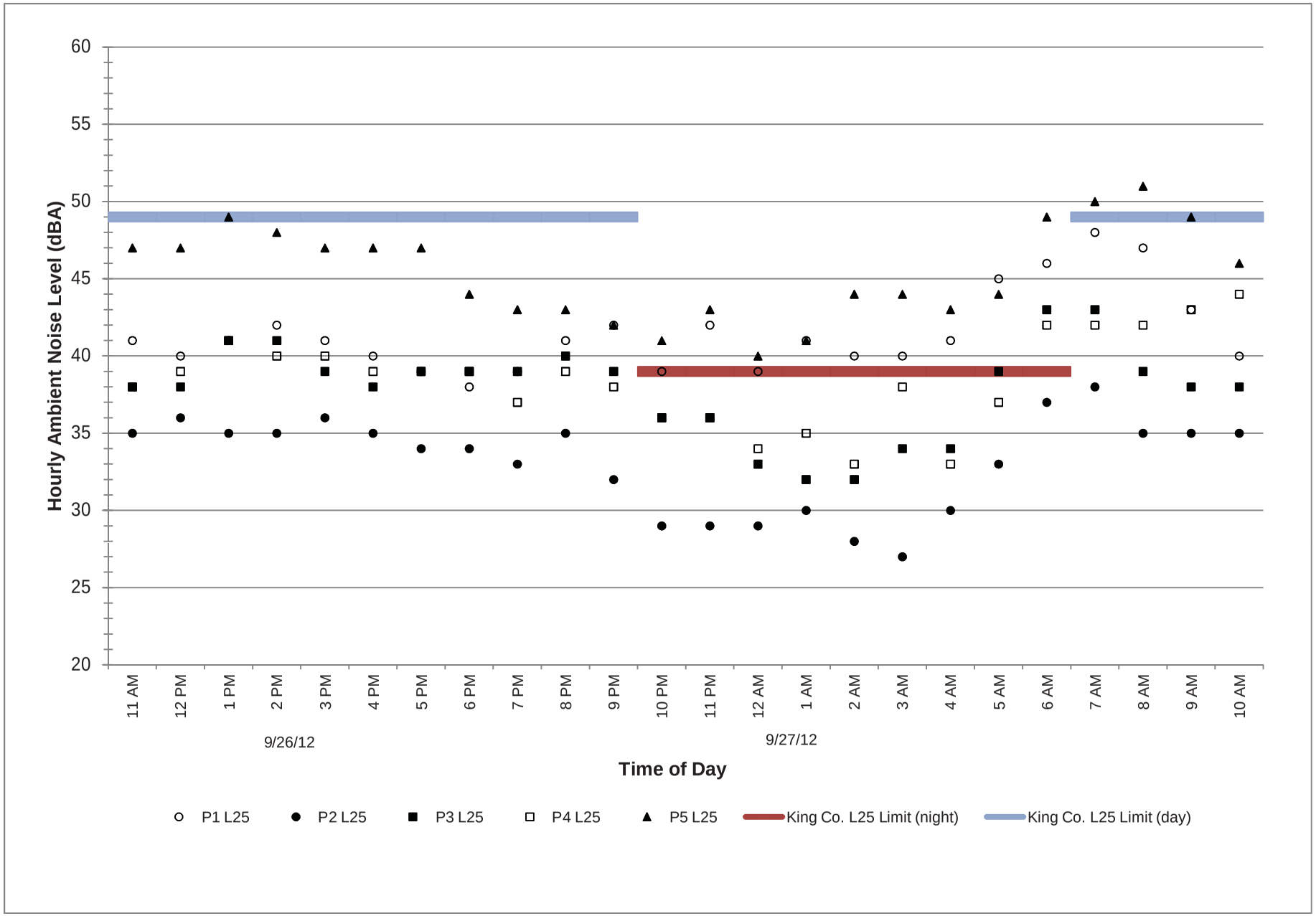


Figure 6b
Corrected Hourly L_{25} Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

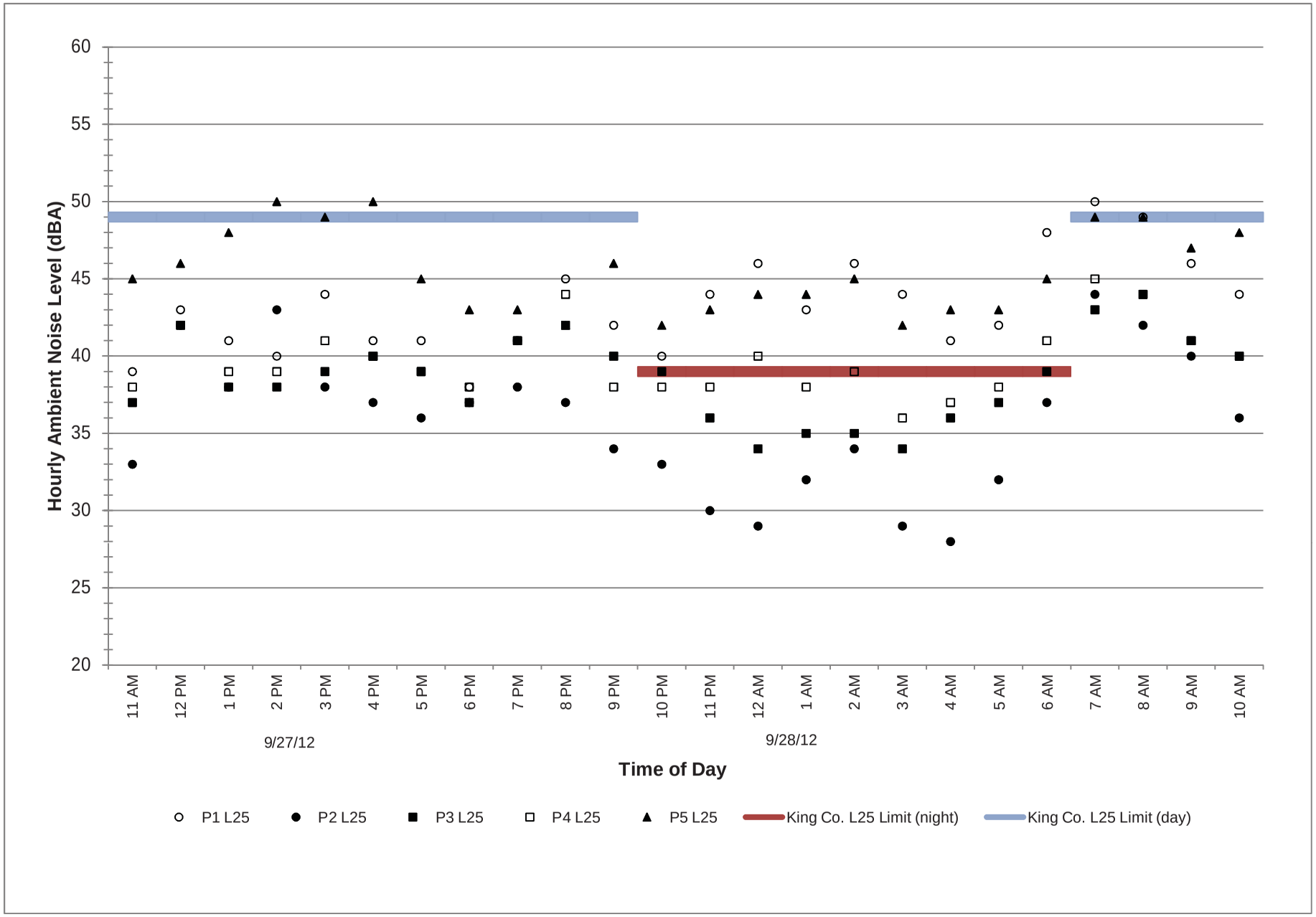


Figure 6c
Corrected Hourly L_{25} Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

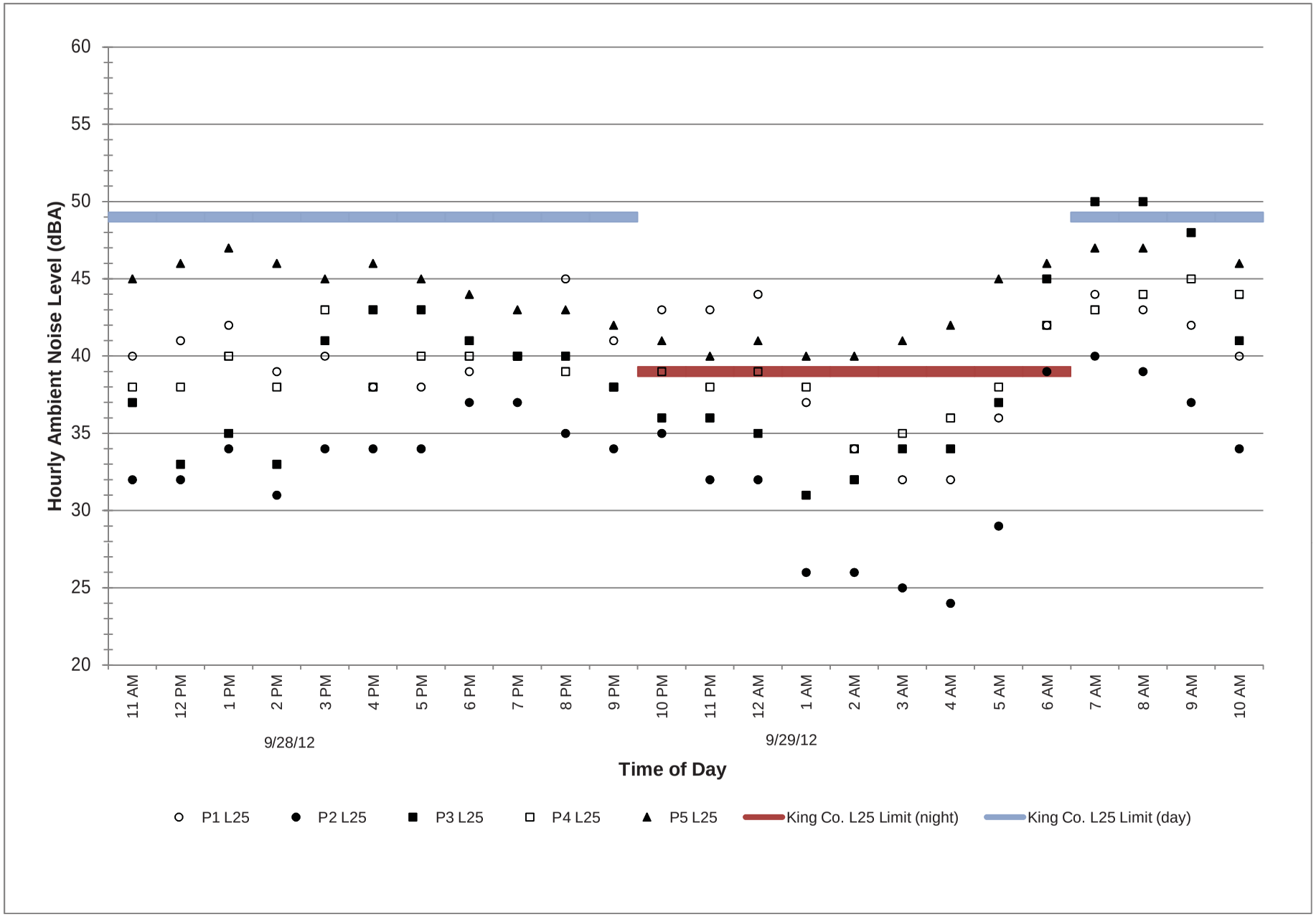


Figure 6d
Corrected Hourly L_{25} Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

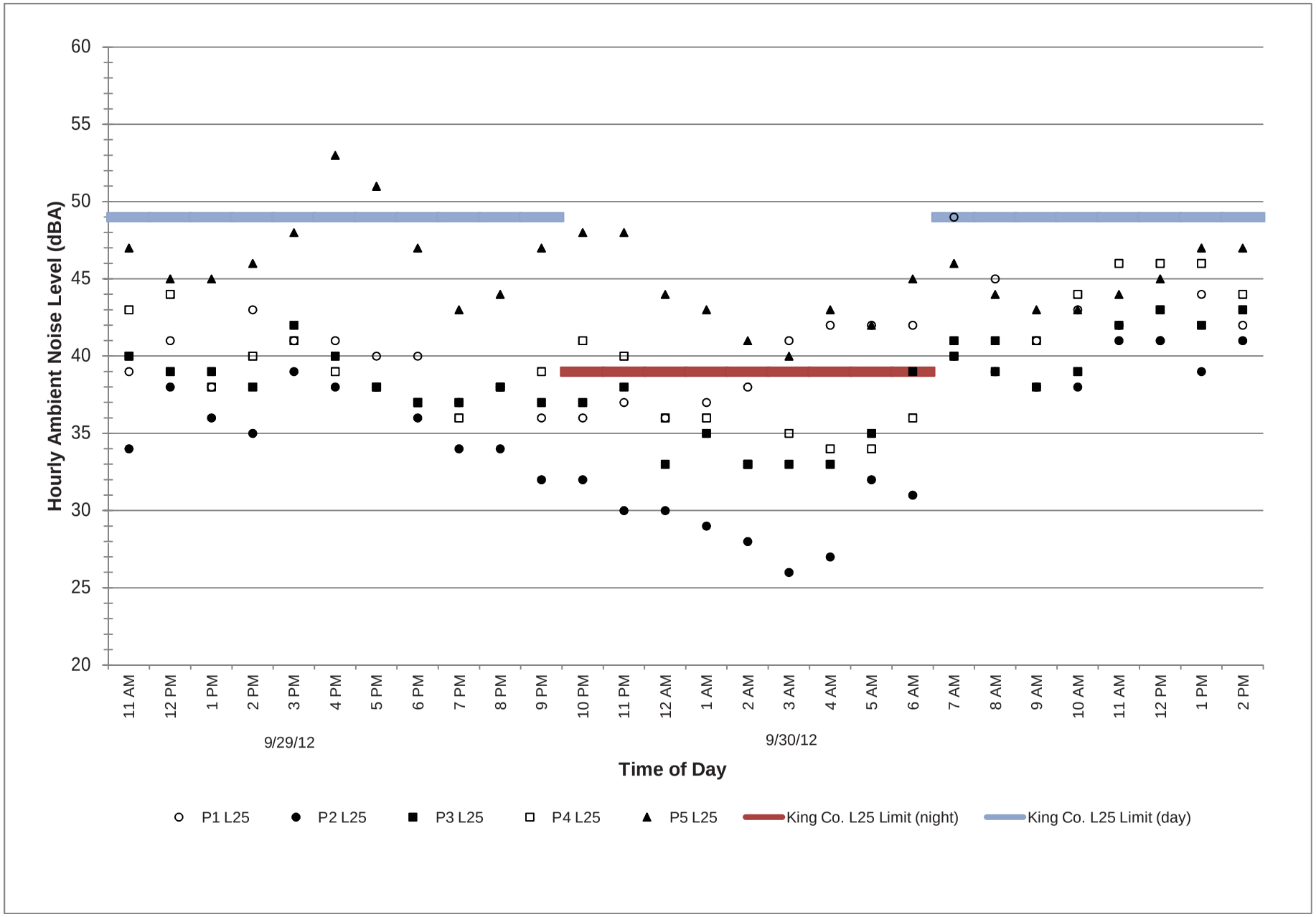


Figure 6e
Corrected Hourly L_{25} Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

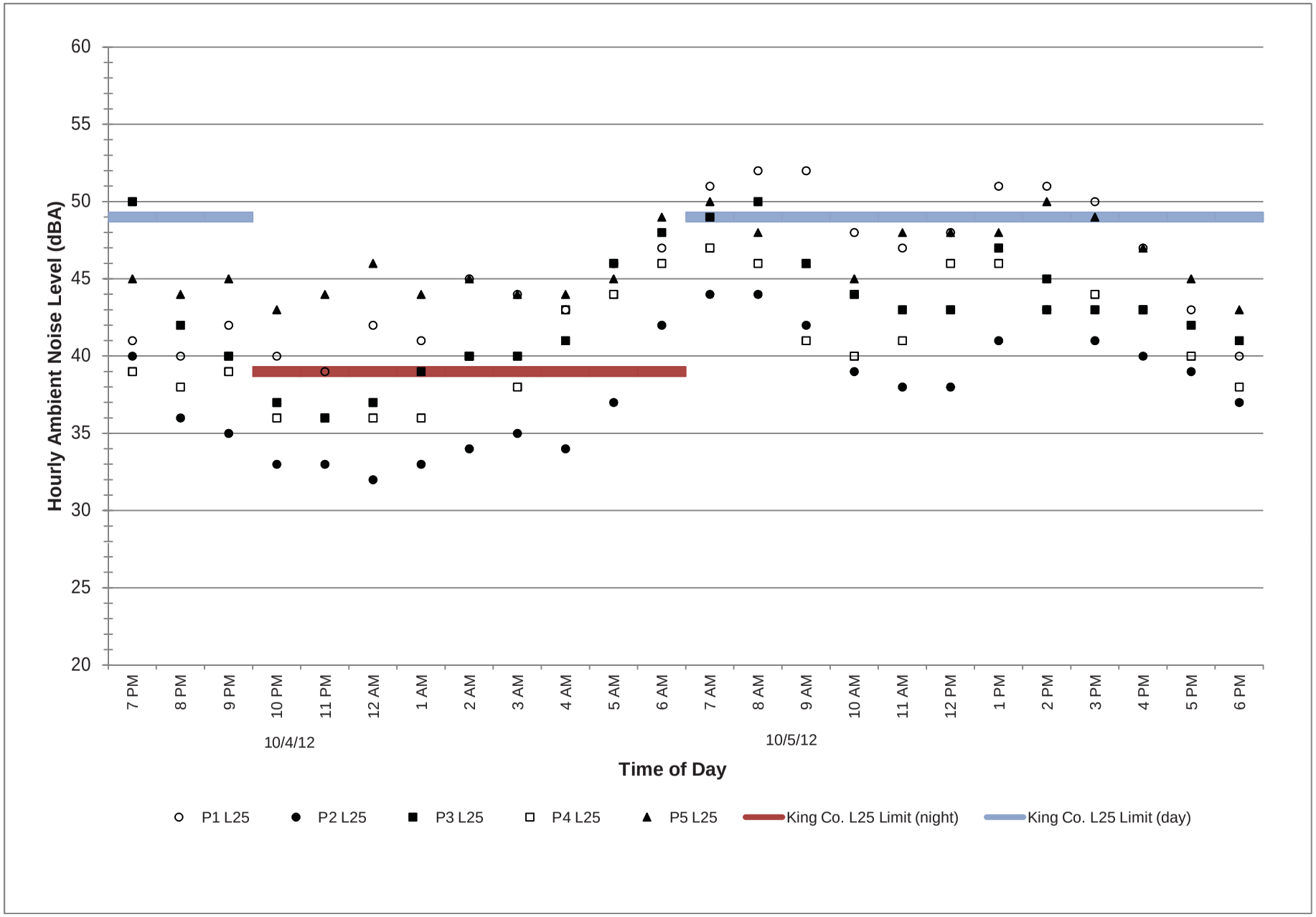


Figure 7a
Corrected Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

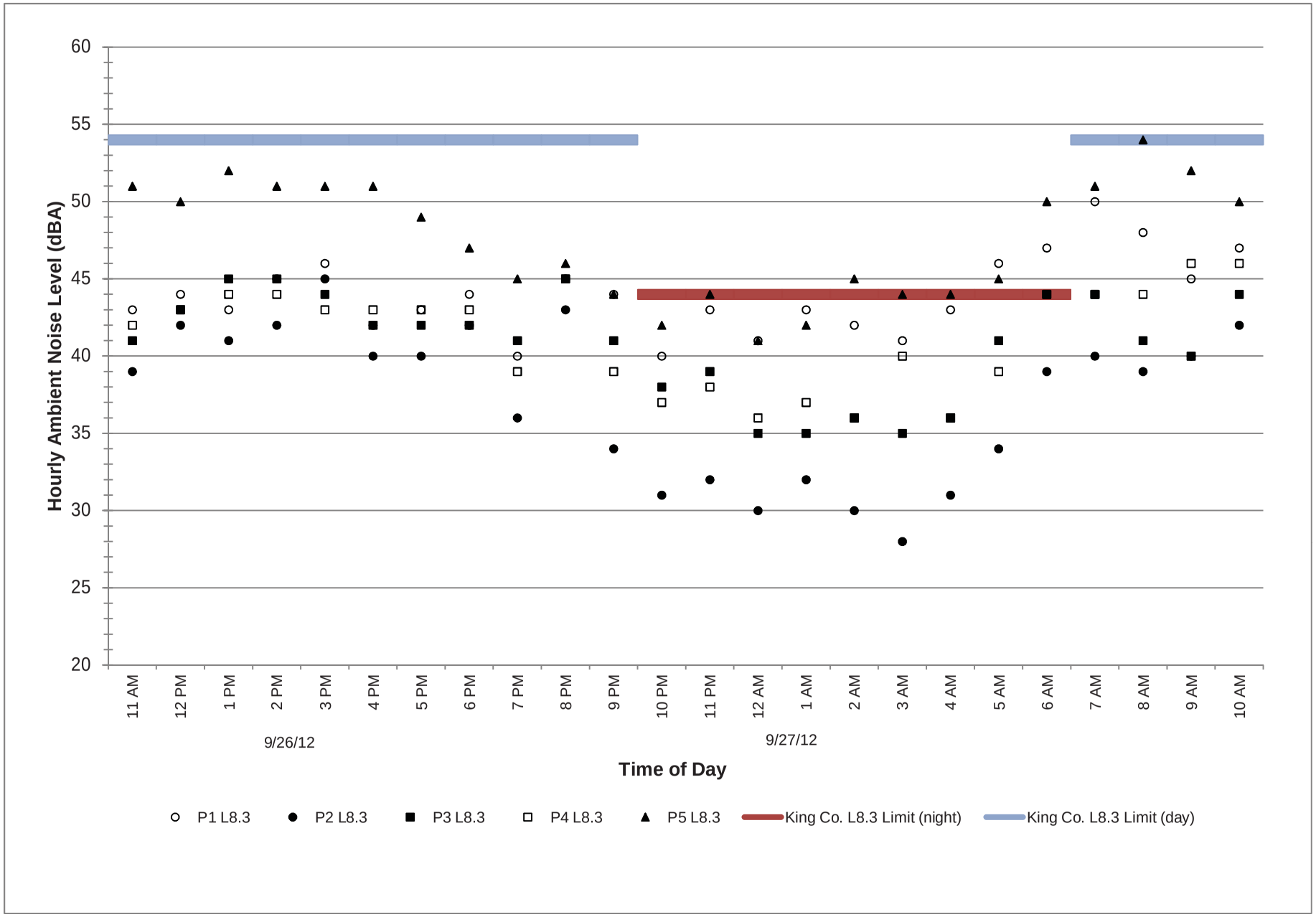


Figure 7b
Corrected Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

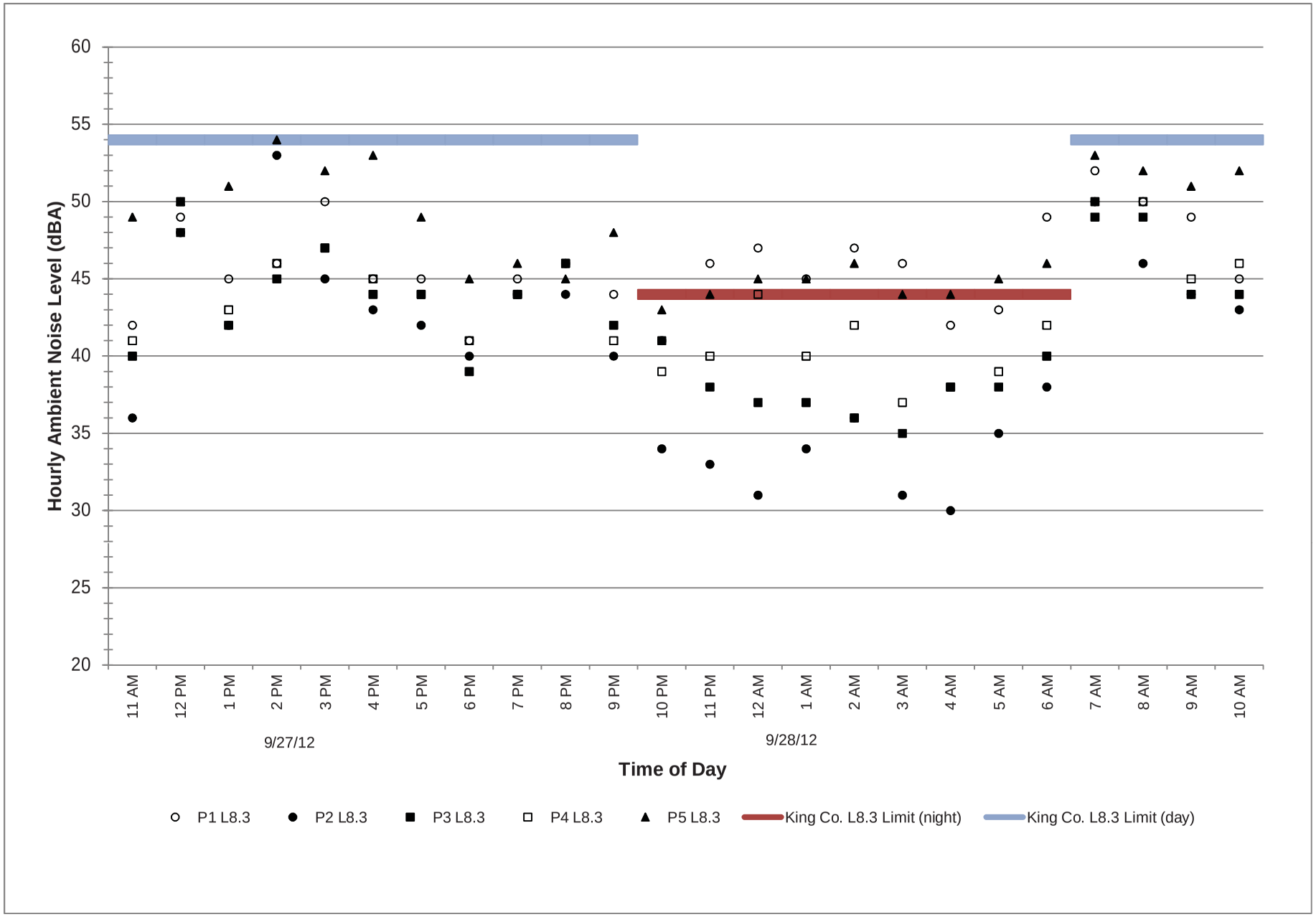


Figure 7c
Corrected Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

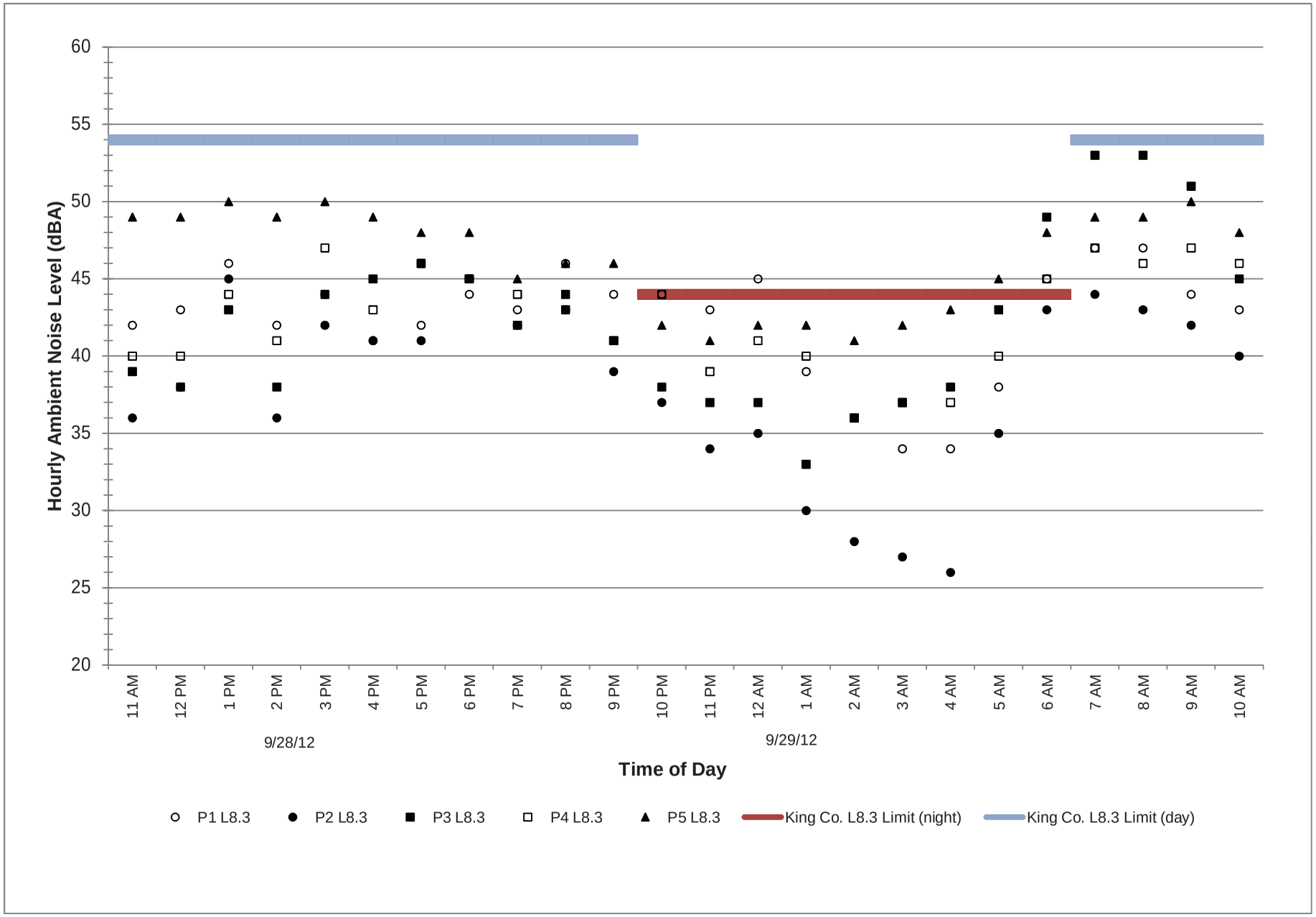


Figure 7d
Corrected Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

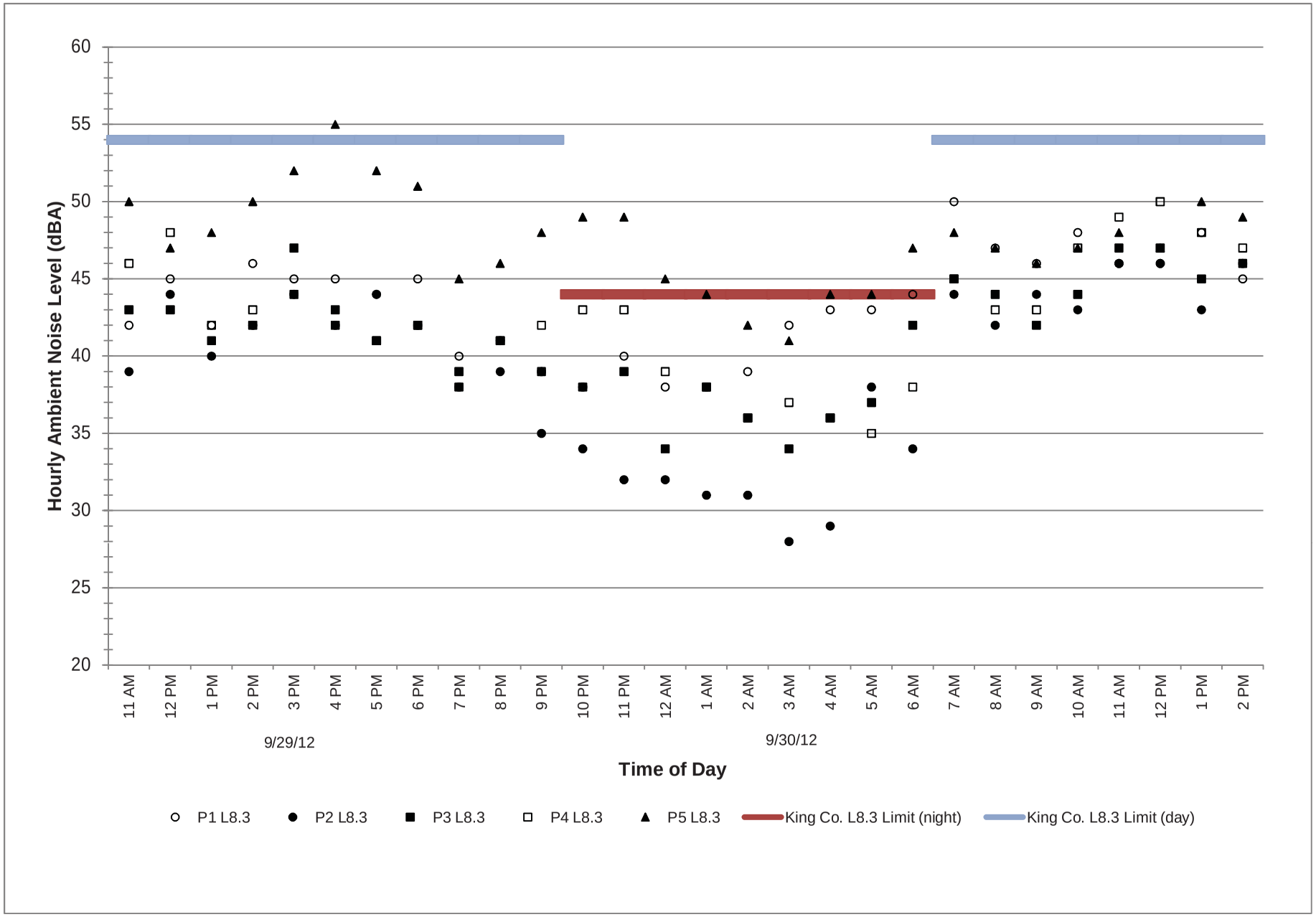


Figure 7e
Corrected Hourly $L_{8.3}$ Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

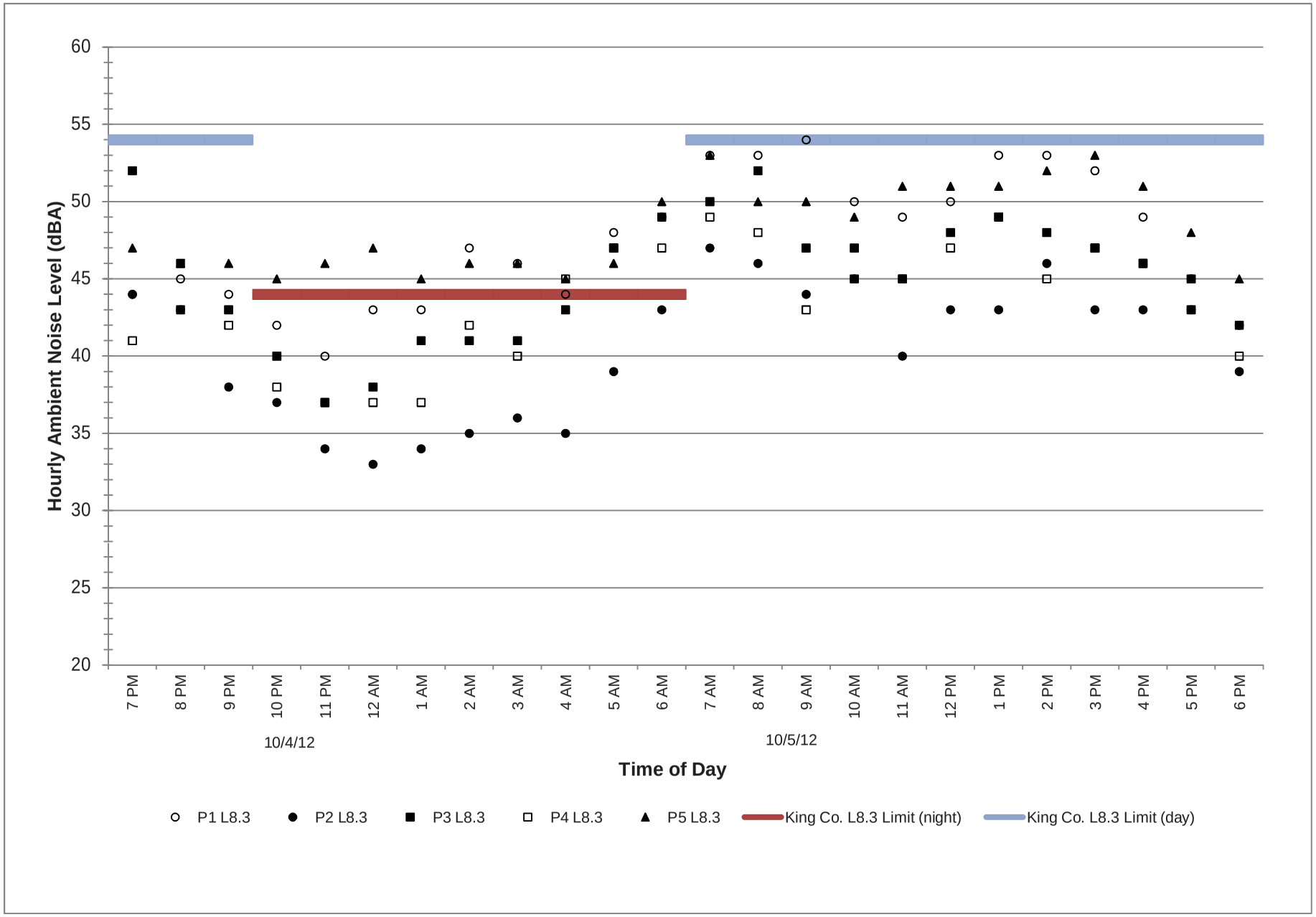


Figure 8a
Corrected Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

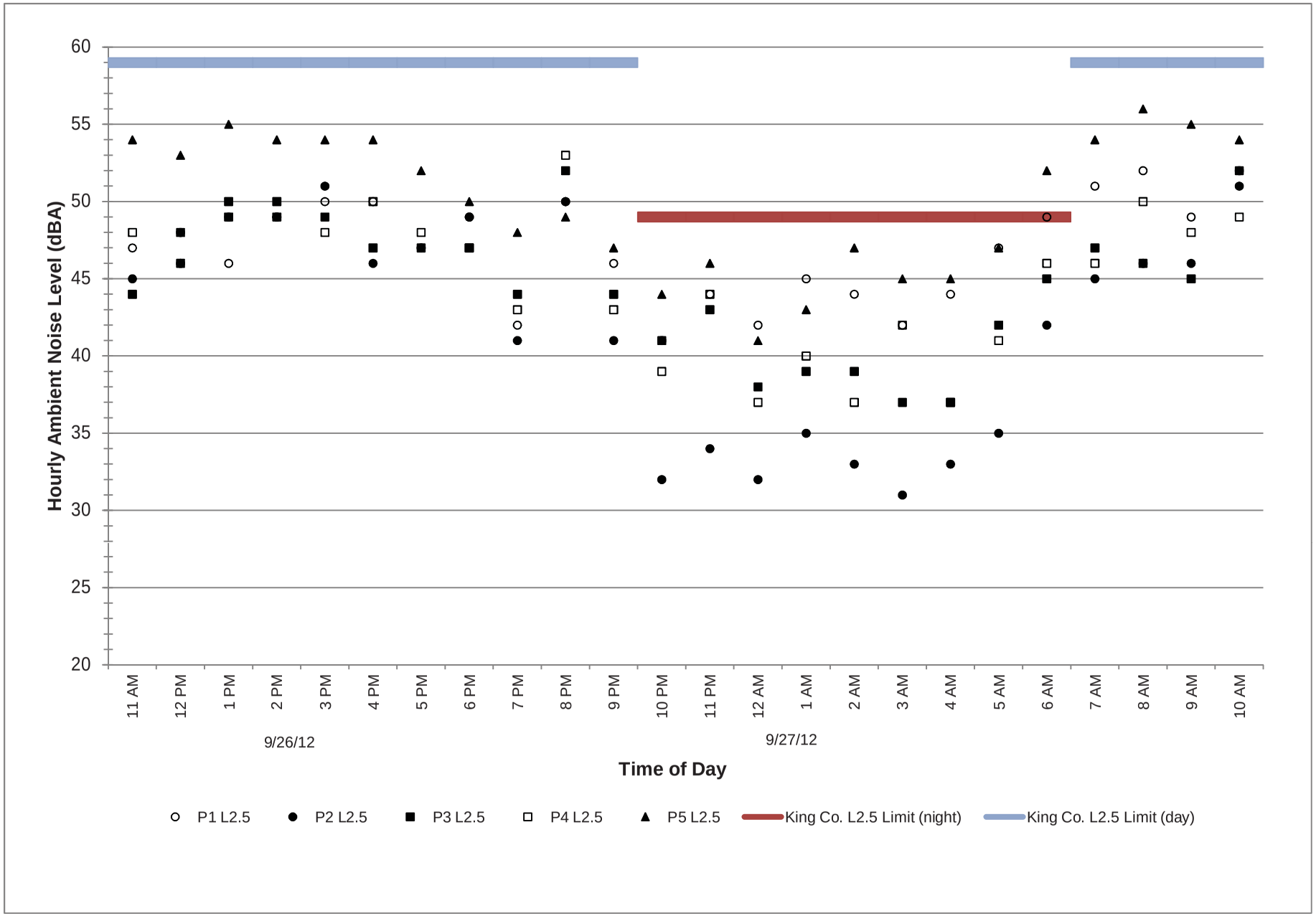


Figure 8b
Corrected Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

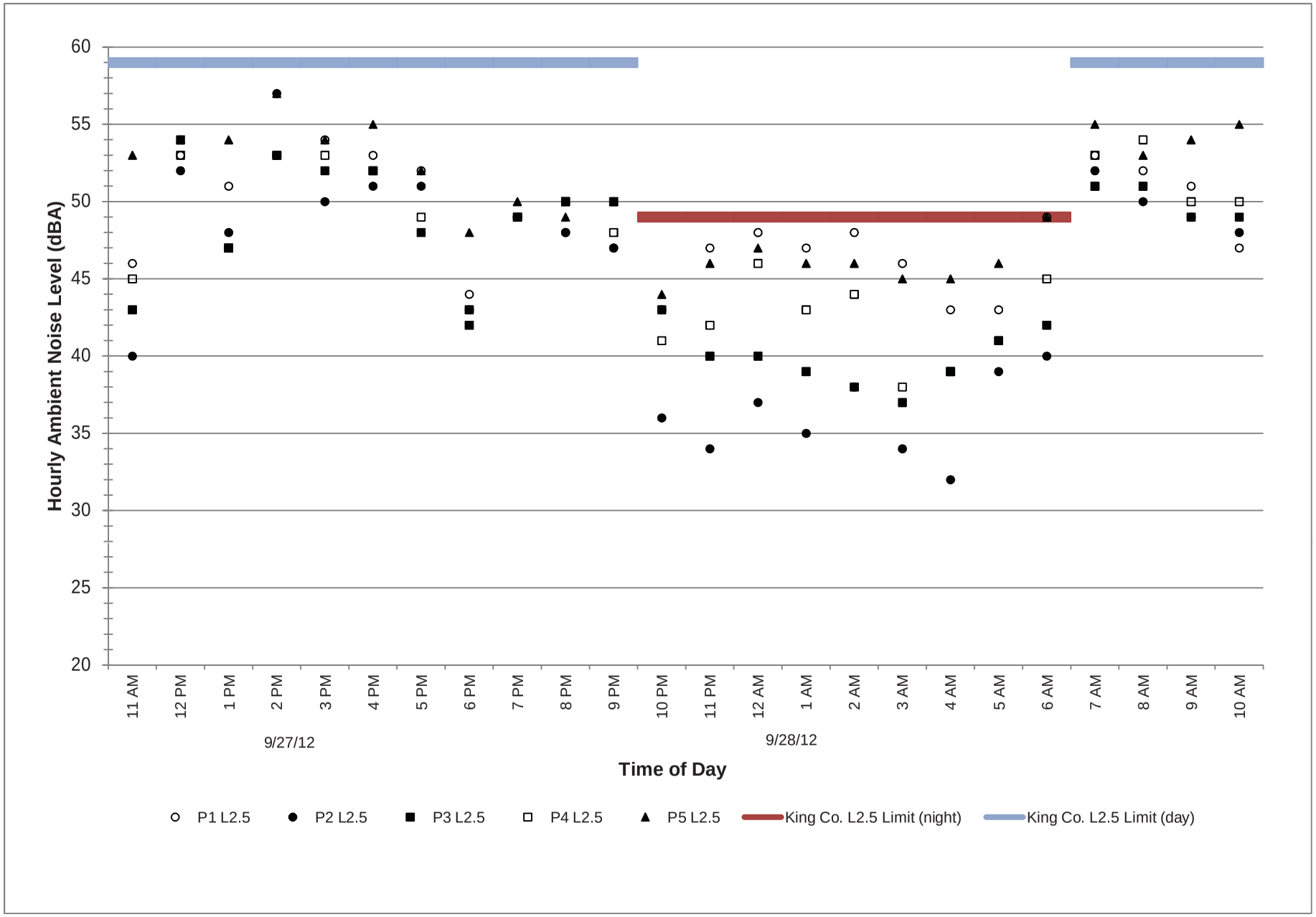


Figure 8c
Corrected Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

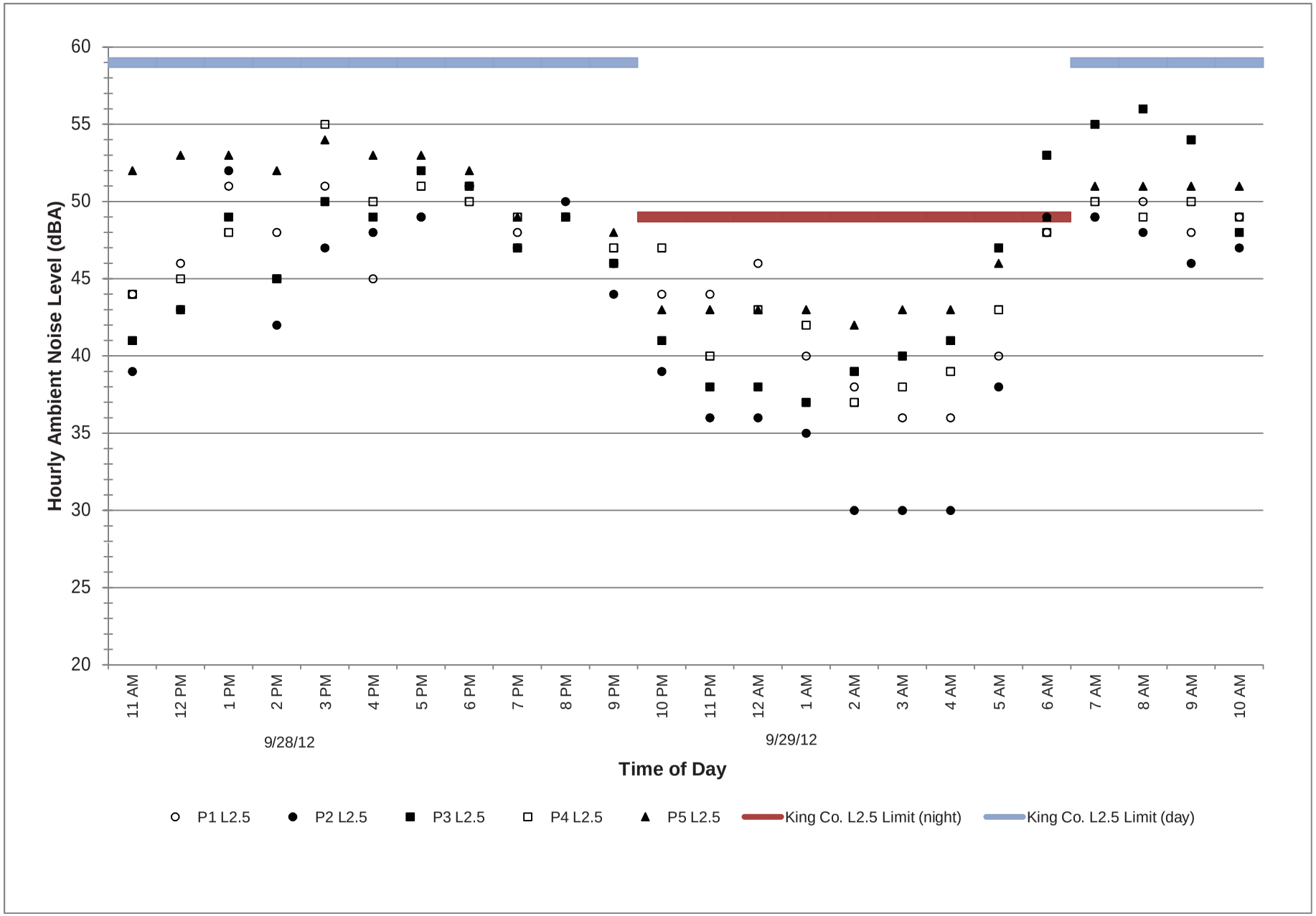


Figure 8d
Corrected Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

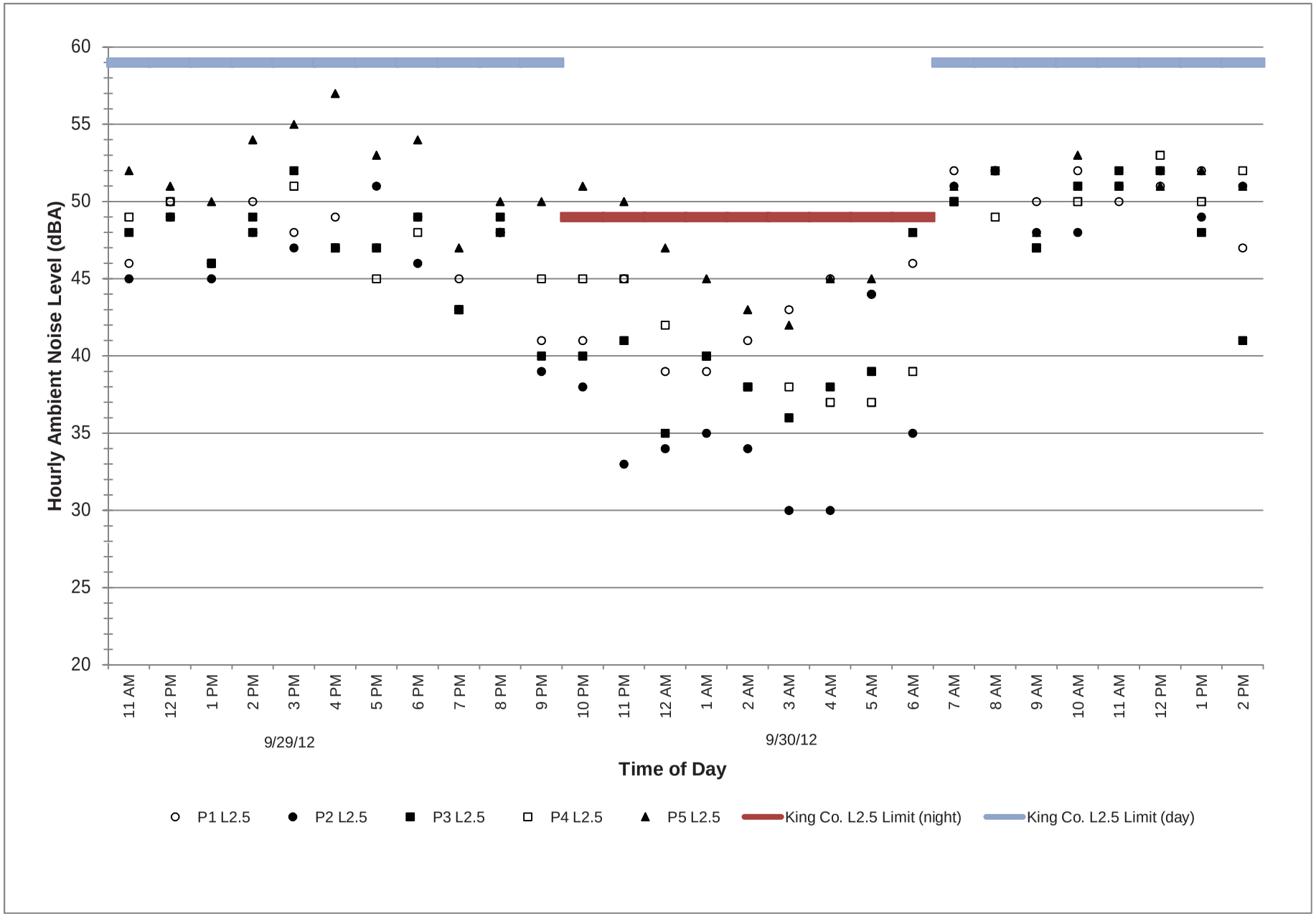


Figure 8e
Corrected Hourly $L_{2.5}$ Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

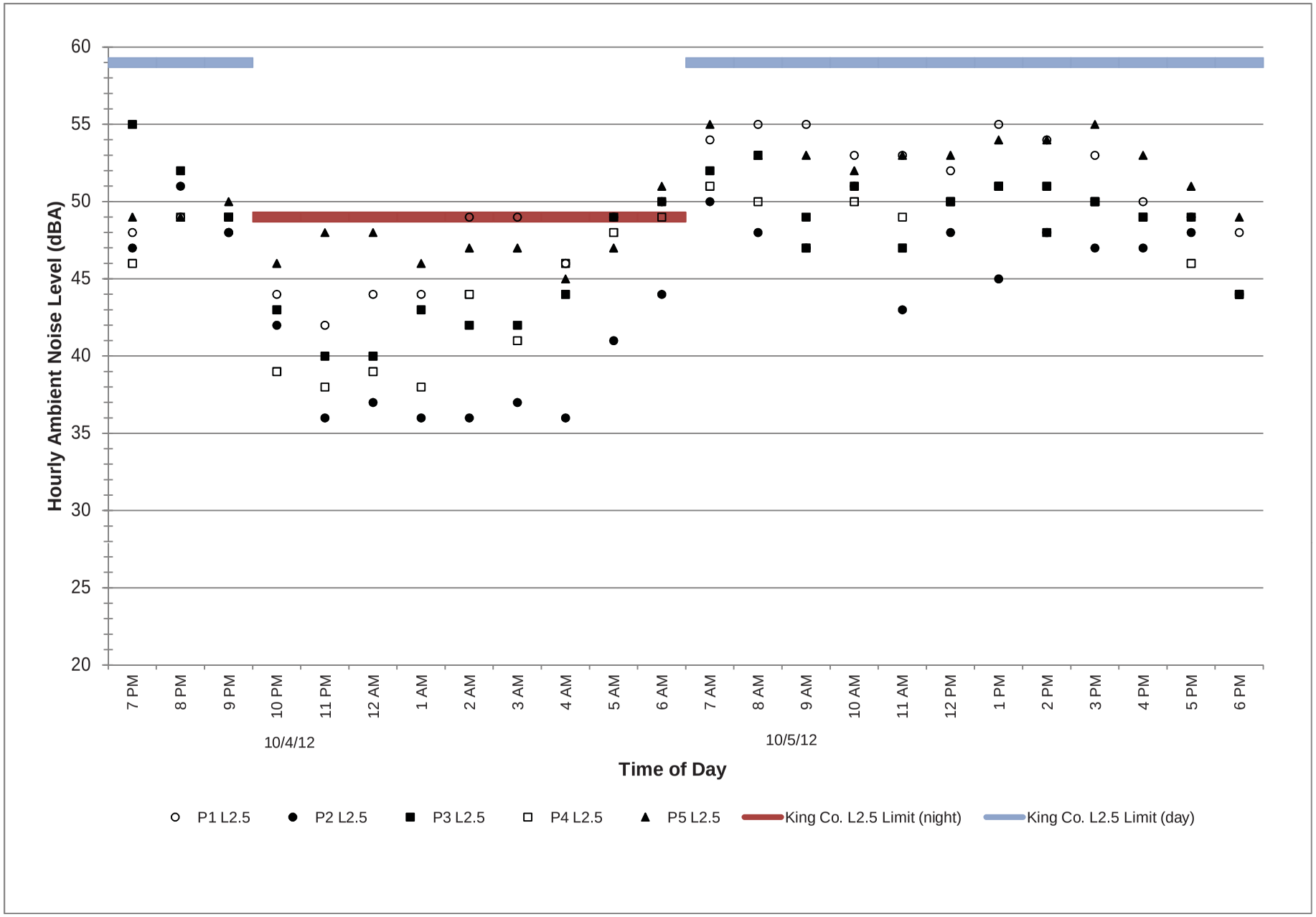


Figure 9a
Corrected Hourly L_{max} Noise Level Data at Perimeter Locations
September 26-September 27, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

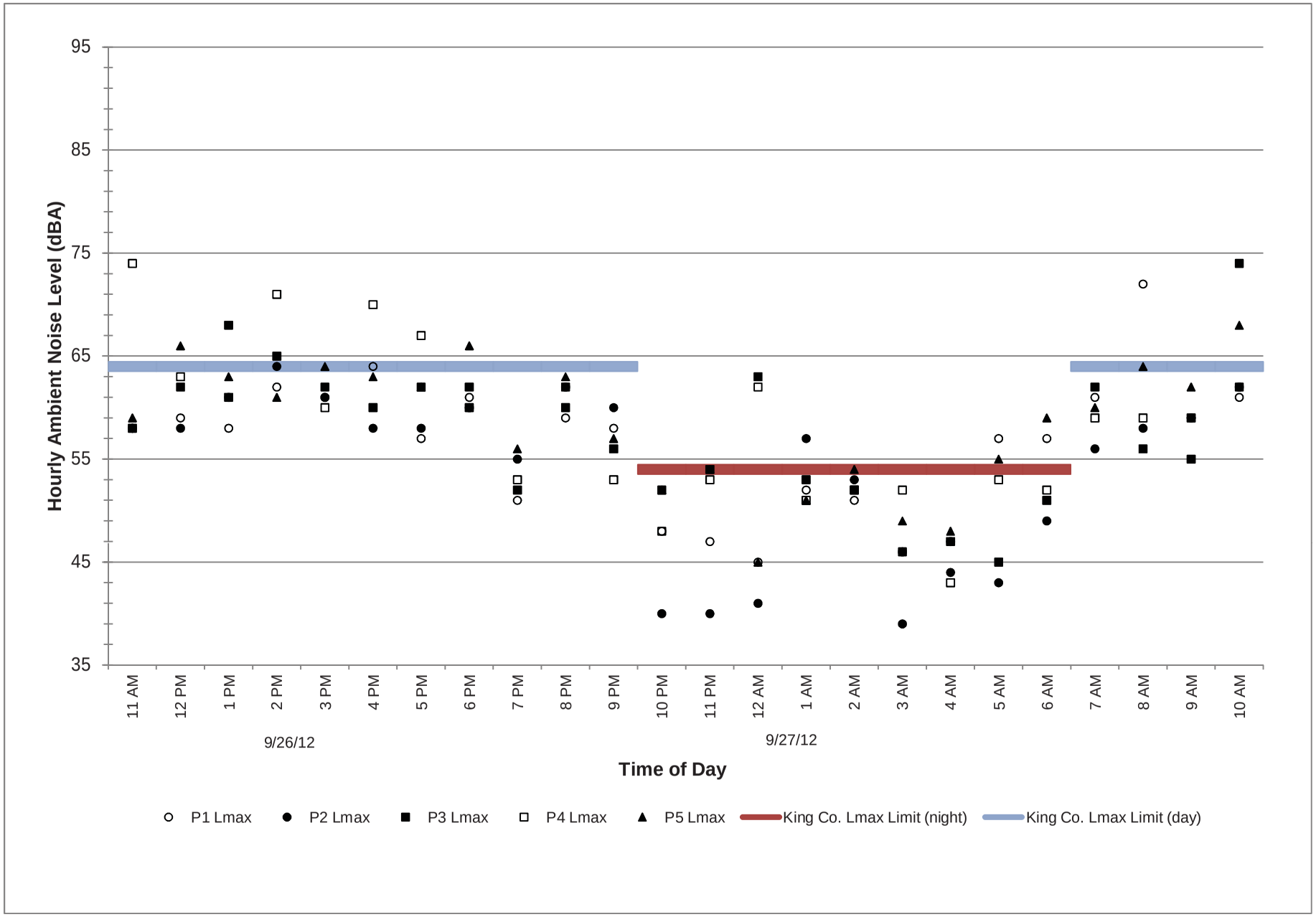


Figure 9b
Corrected Hourly L_{max} Noise Level Data at Perimeter Locations
September 27-September 28, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

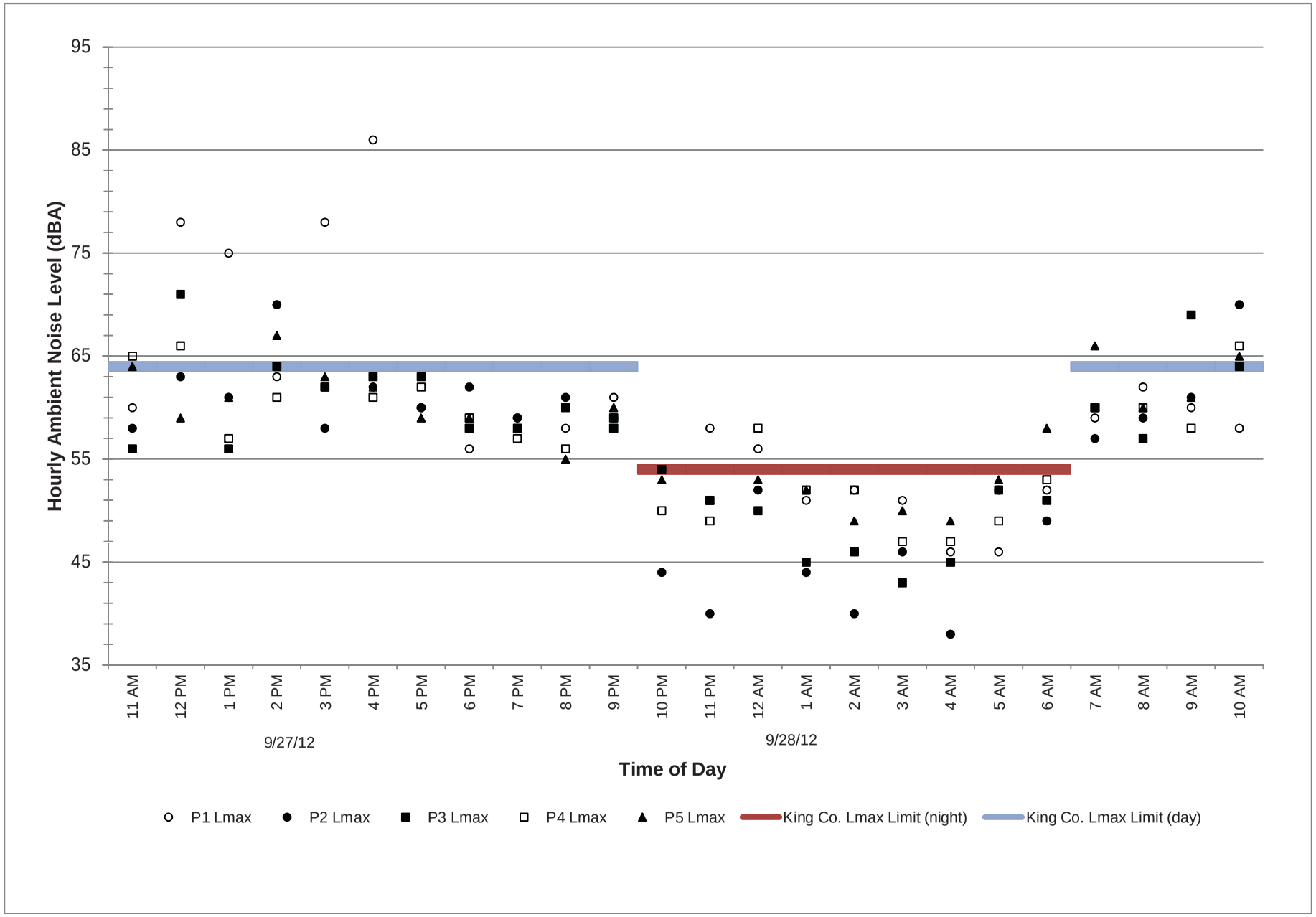


Figure 9c
Corrected Hourly L_{max} Noise Level Data at Perimeter Locations
September 28-September 29, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

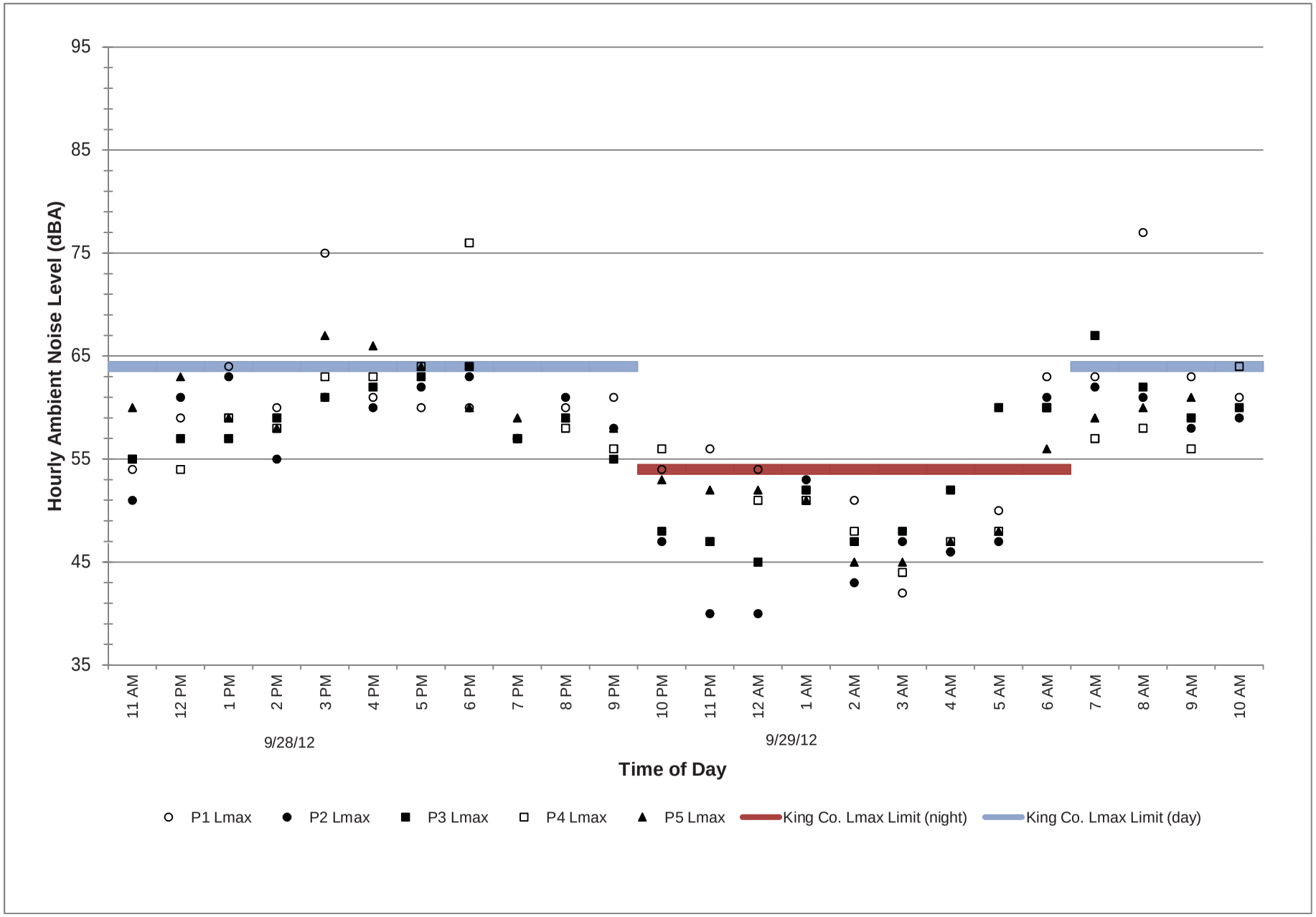


Figure 9d
Corrected Hourly L_{max} Noise Level Data at Perimeter Locations
September 29-September 30, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

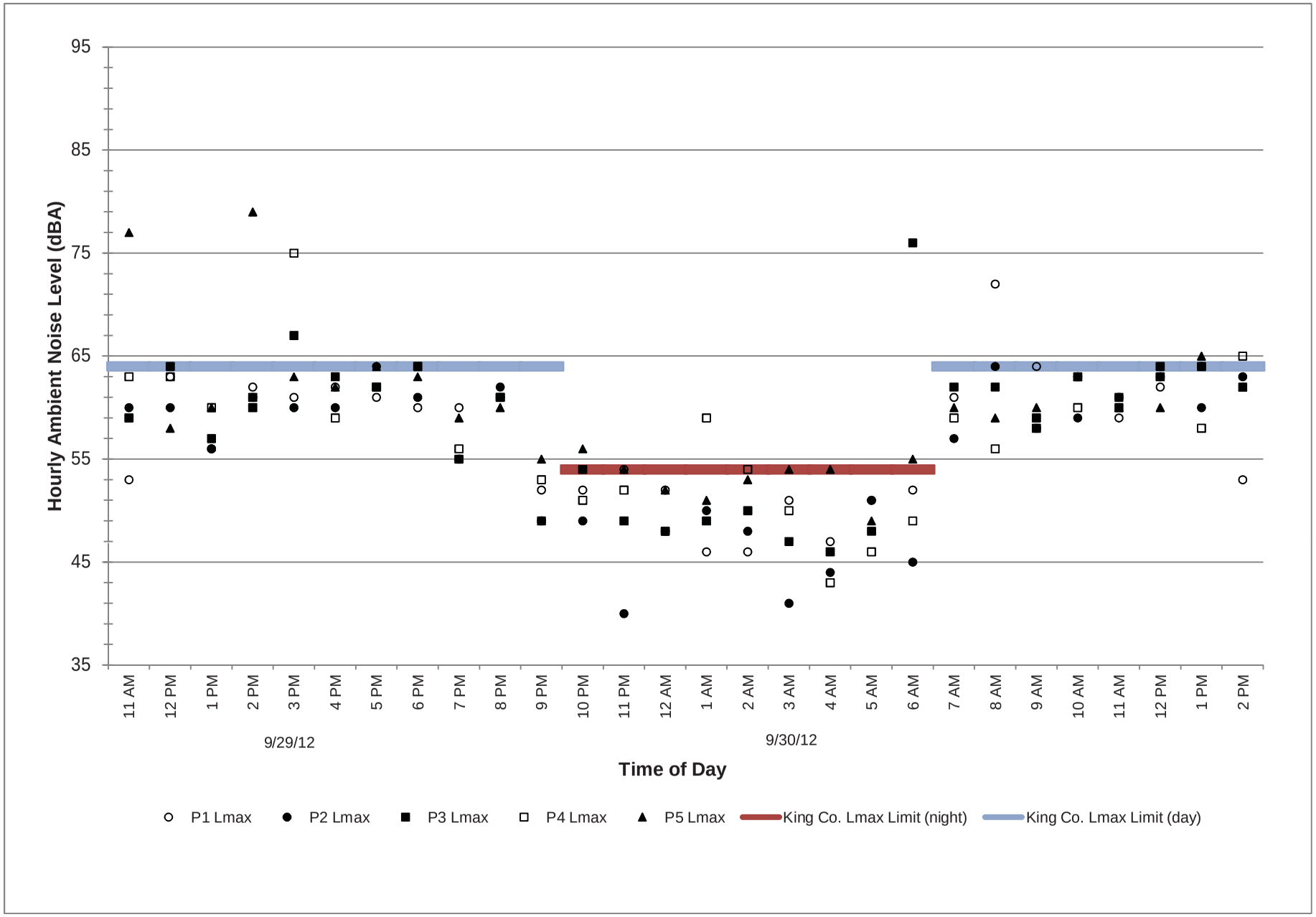


Figure 9e
Corrected Hourly L_{max} Noise Level Data at Perimeter Locations
October 4-October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

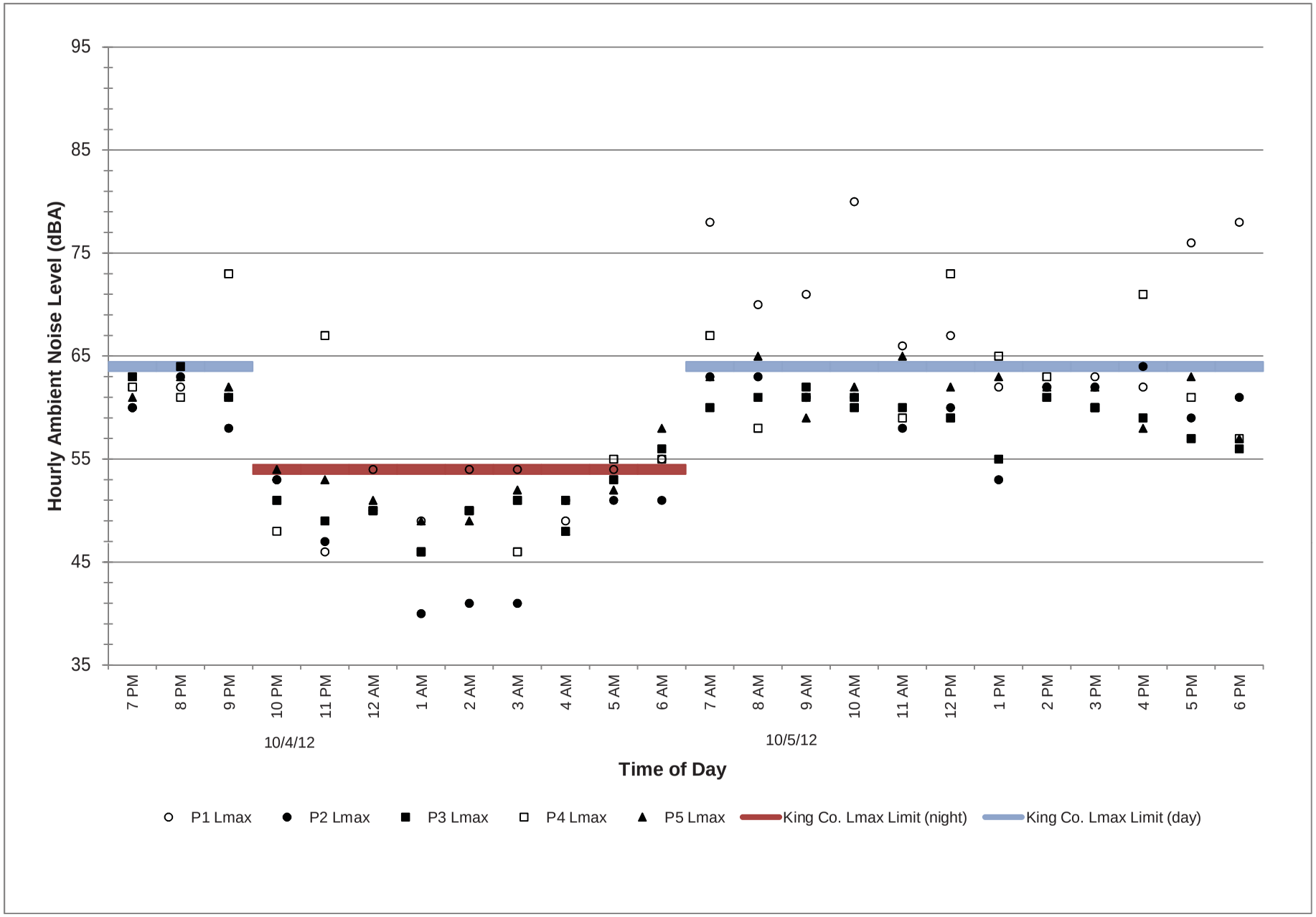


Figure 10a
Detailed Summary of P1 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

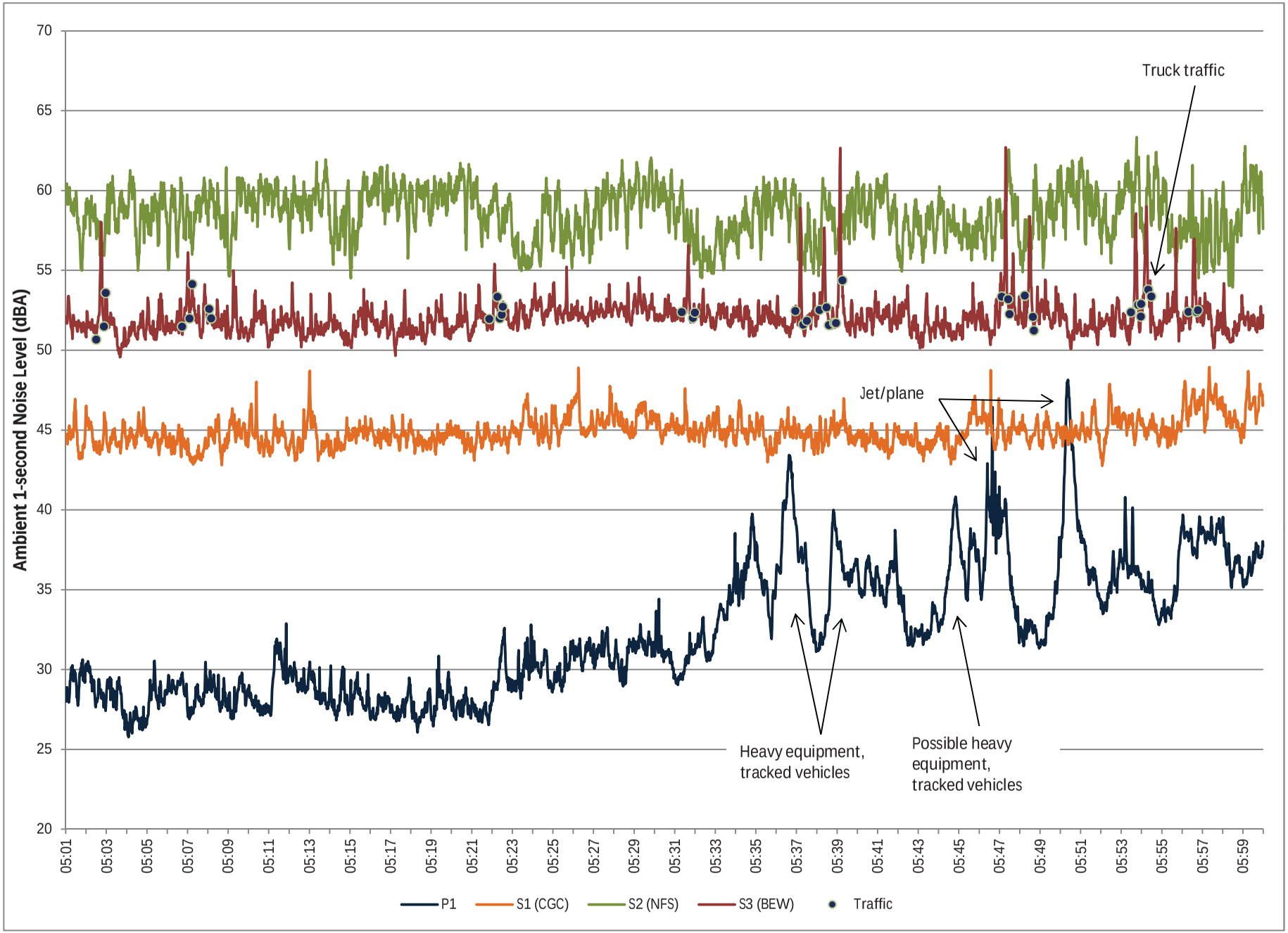


Figure 10b
Detailed Summary of P2 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

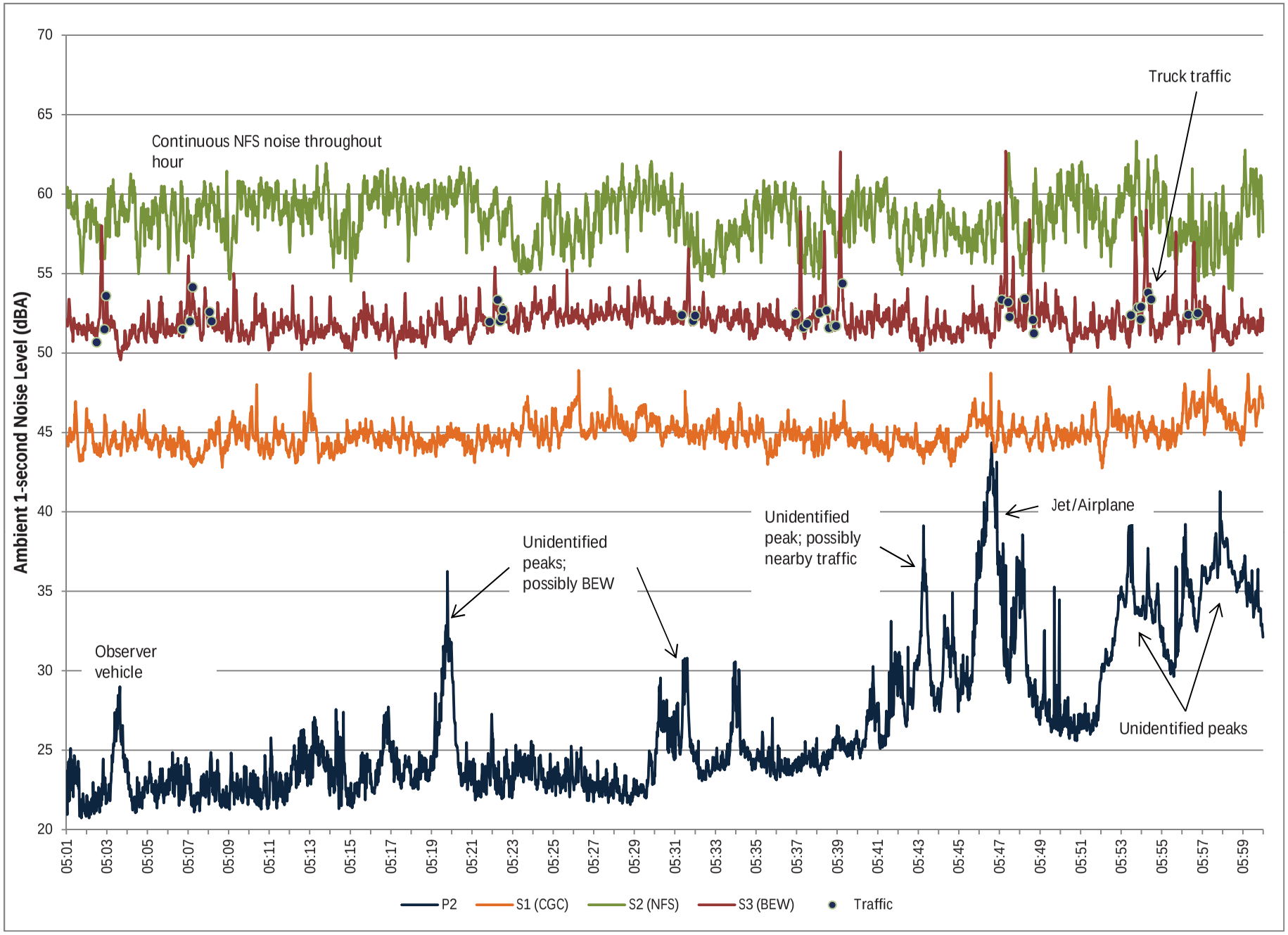


Figure 10c
Detailed Summary of P3 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

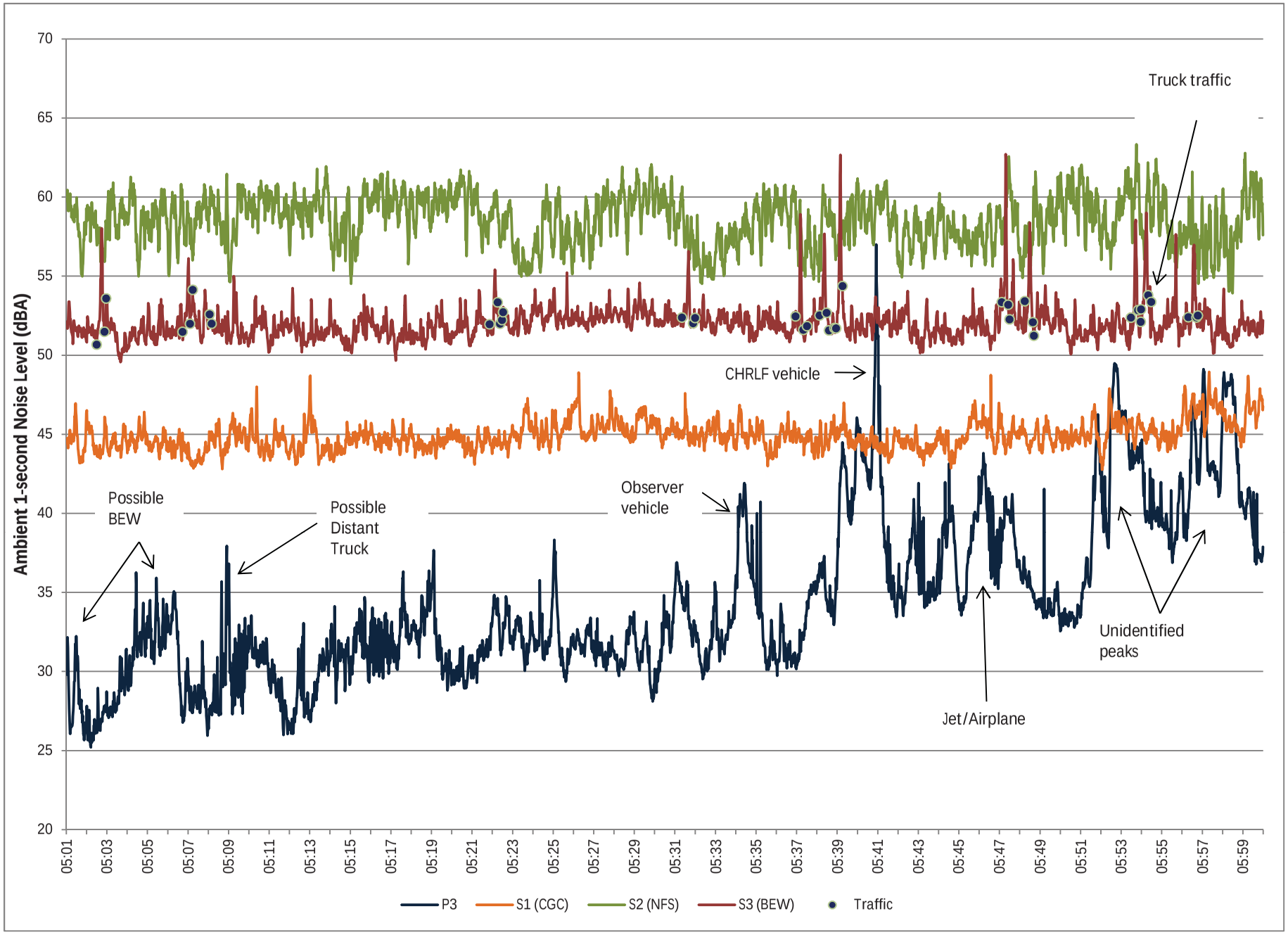


Figure 10d
Detailed Summary of P4 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

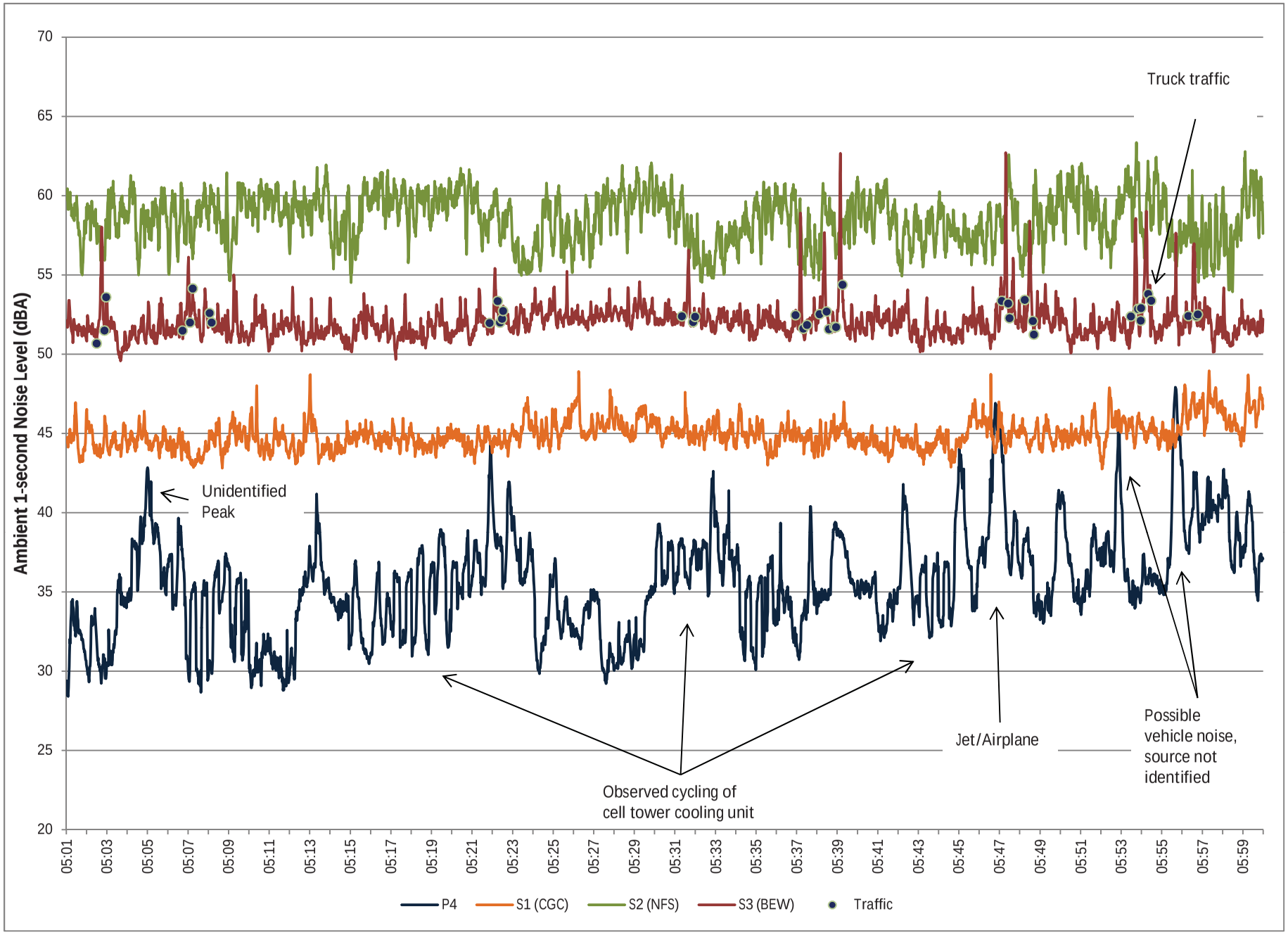


Figure 10e
Detailed Summary of P5 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

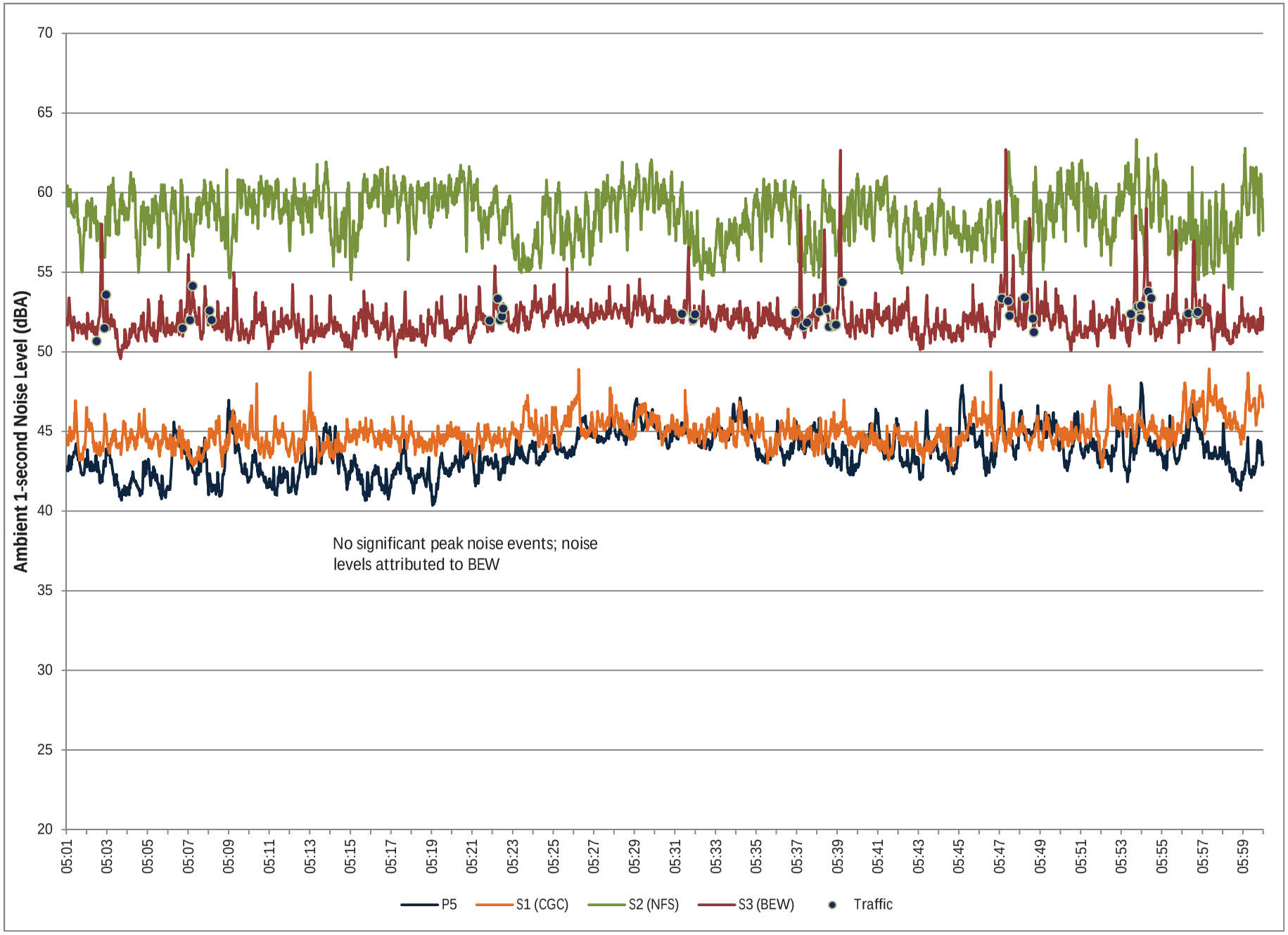


Figure 11a
Detailed Summary of P1 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

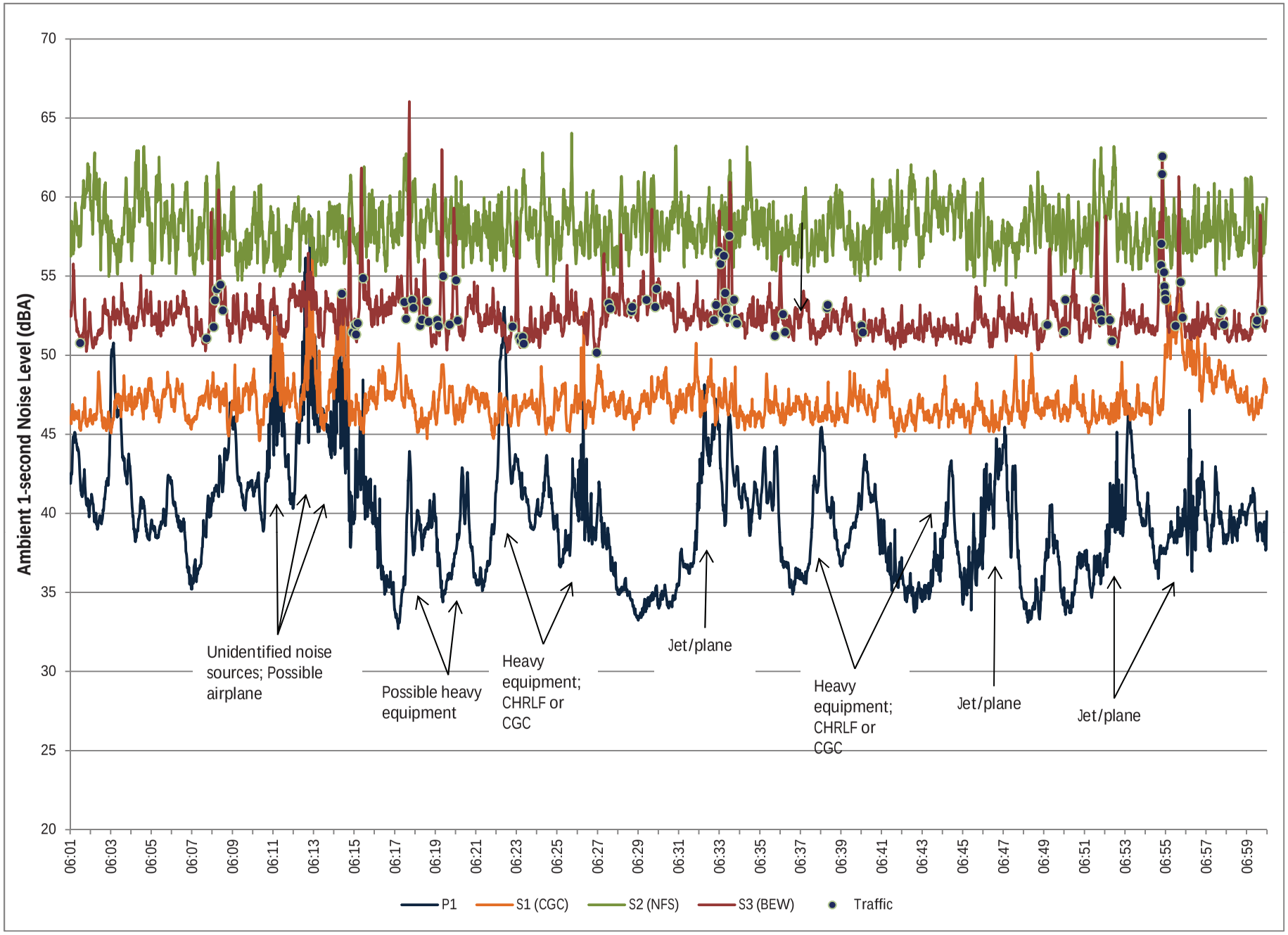


Figure 11b
Detailed Summary of P2 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

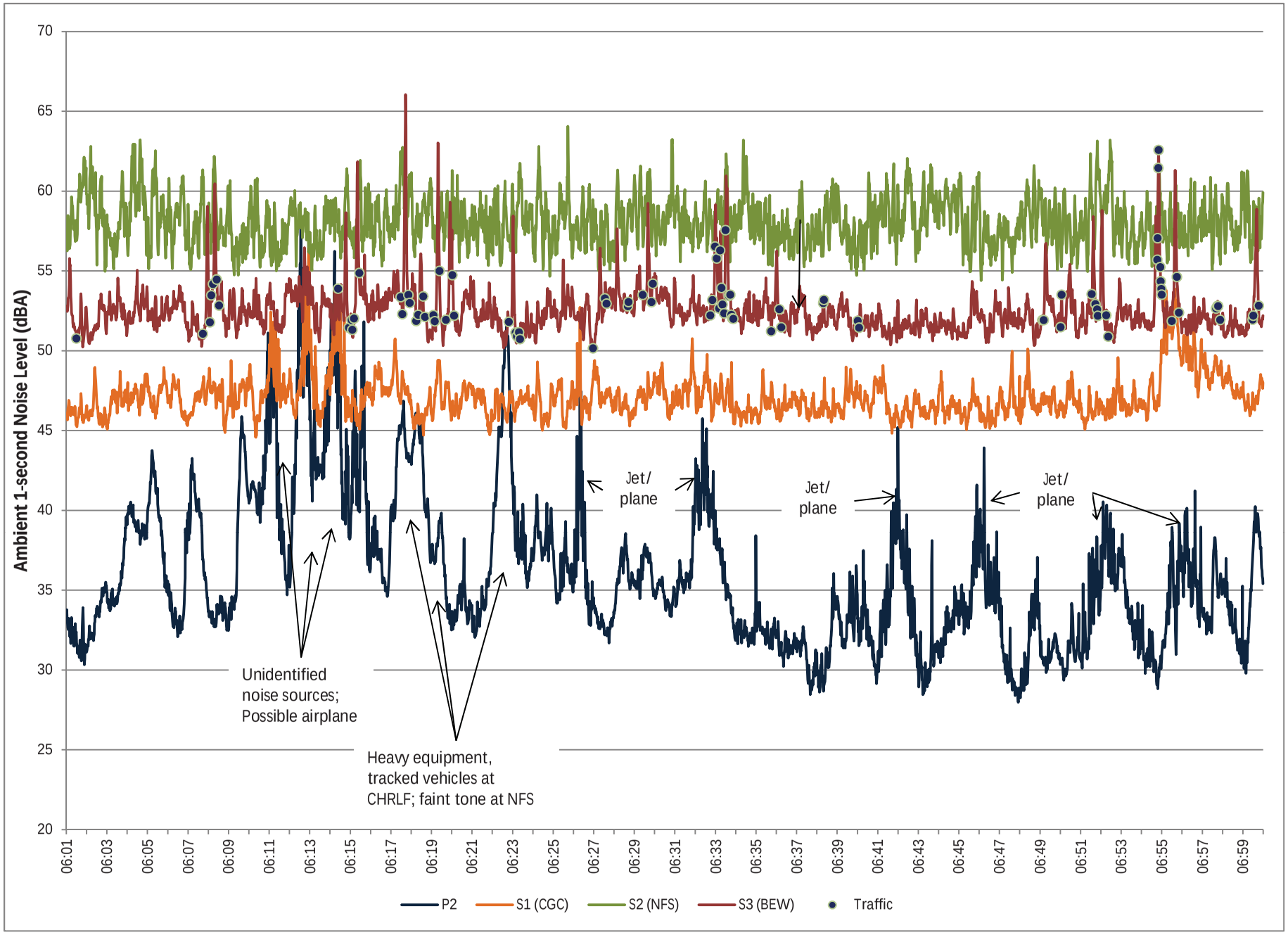


Figure 11c
Detailed Summary of P3 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

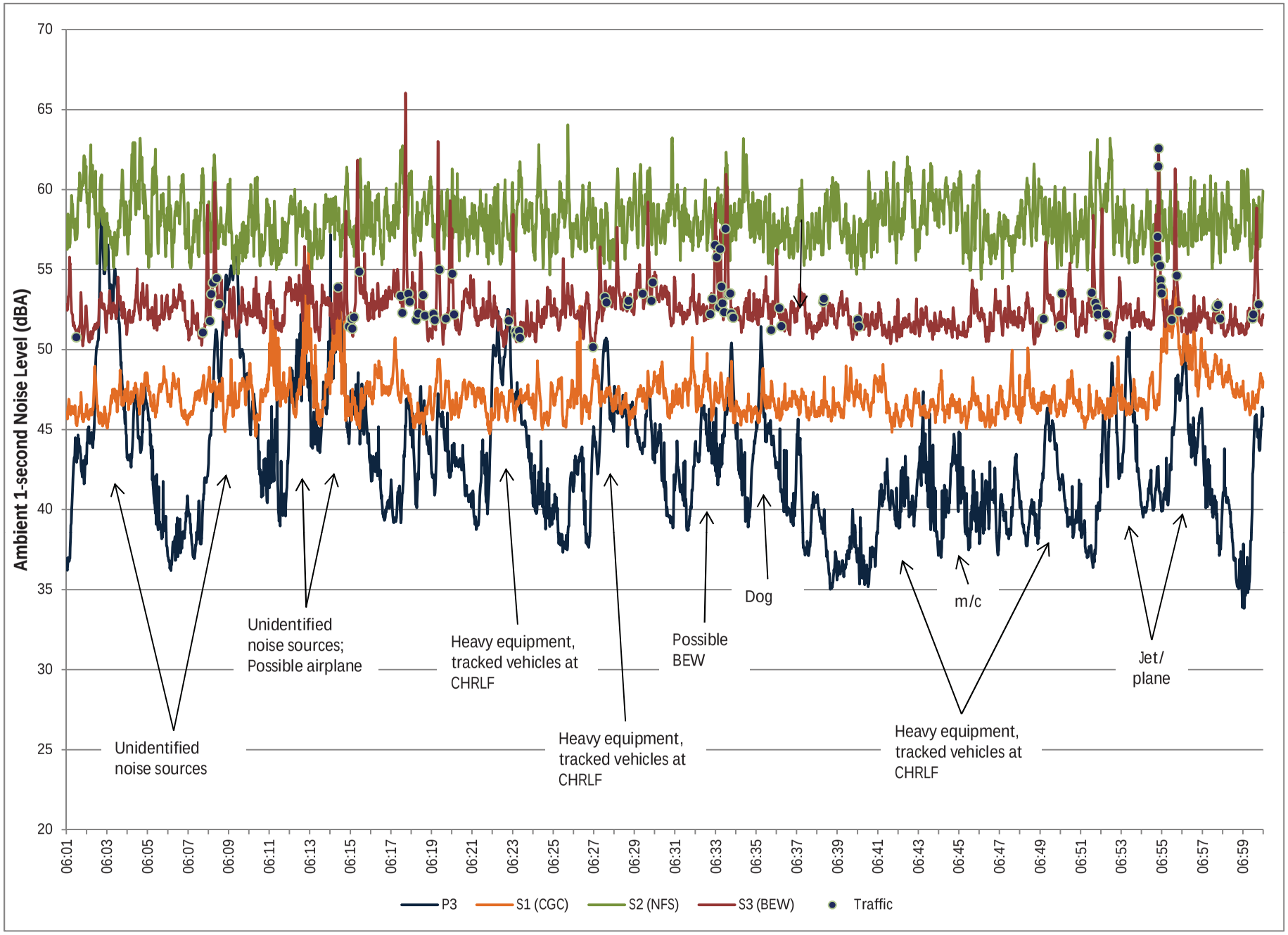


Figure 11d
Detailed Summary of P4 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

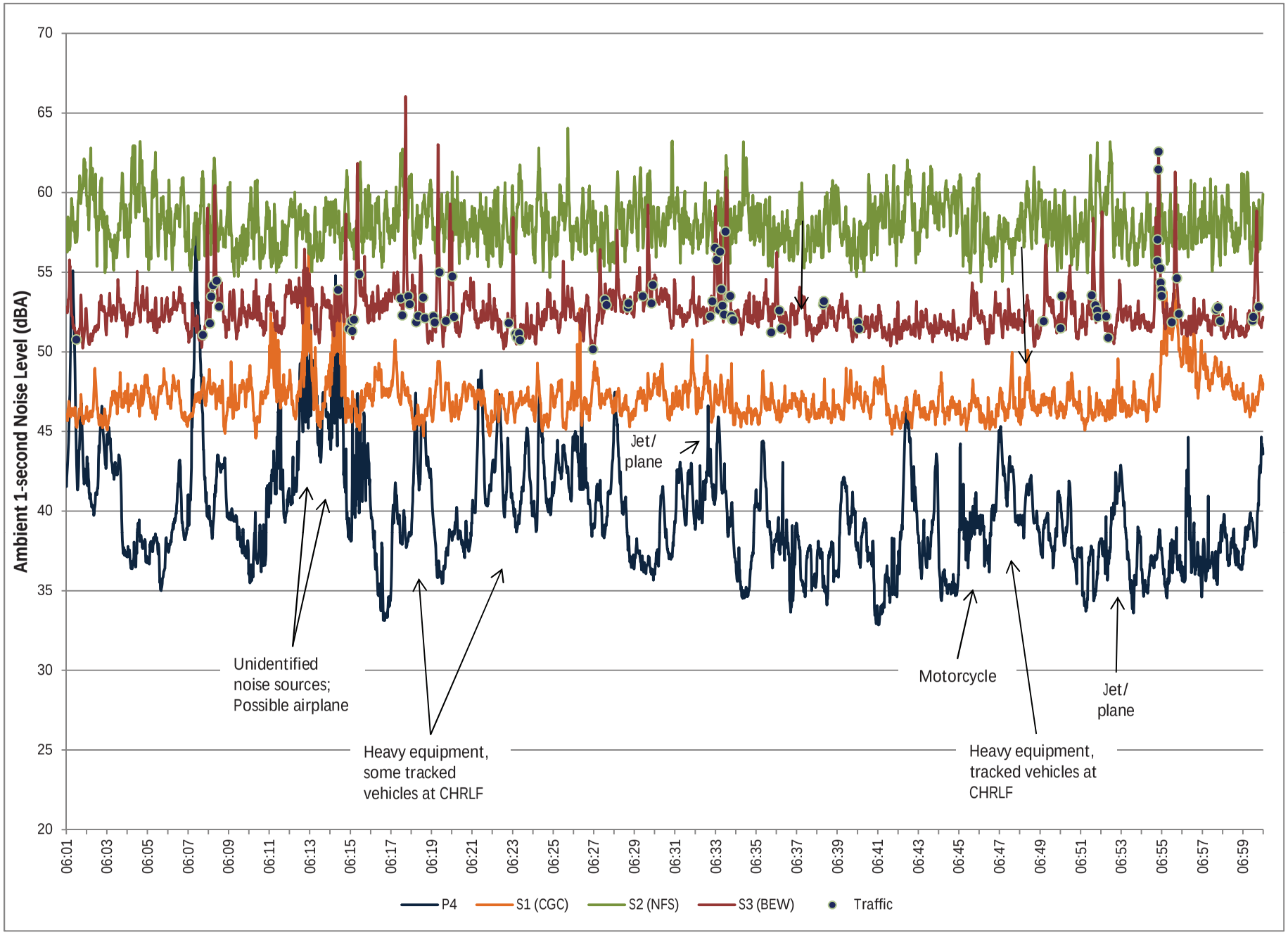


Figure 11e
Detailed Summary of P5 with S1 (CGC), S2 (NFS) and S3 (BEW)
September 29, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

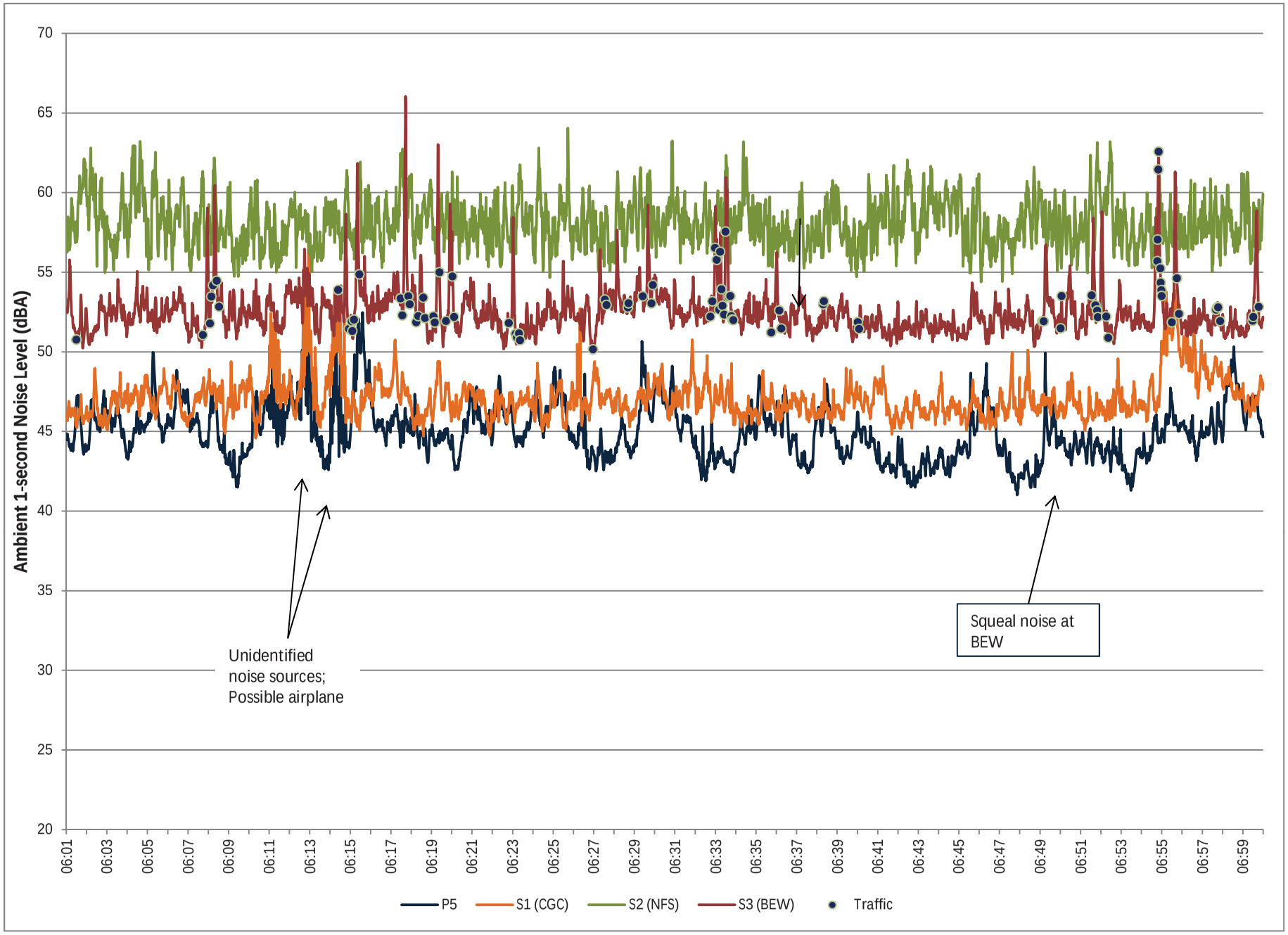


Figure 12a
Detailed Summary of P1 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

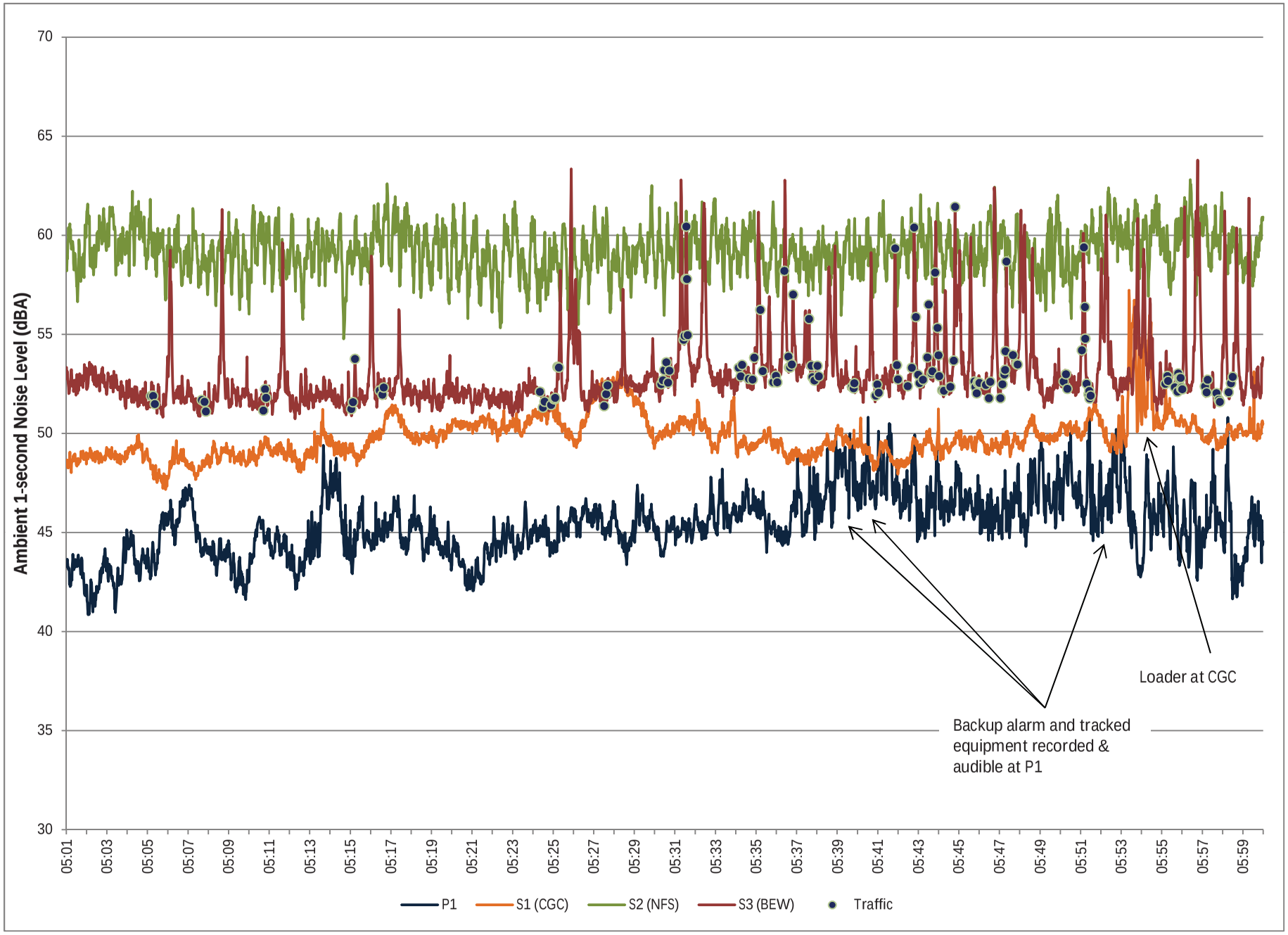


Figure 12b
Detailed Summary of P2 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

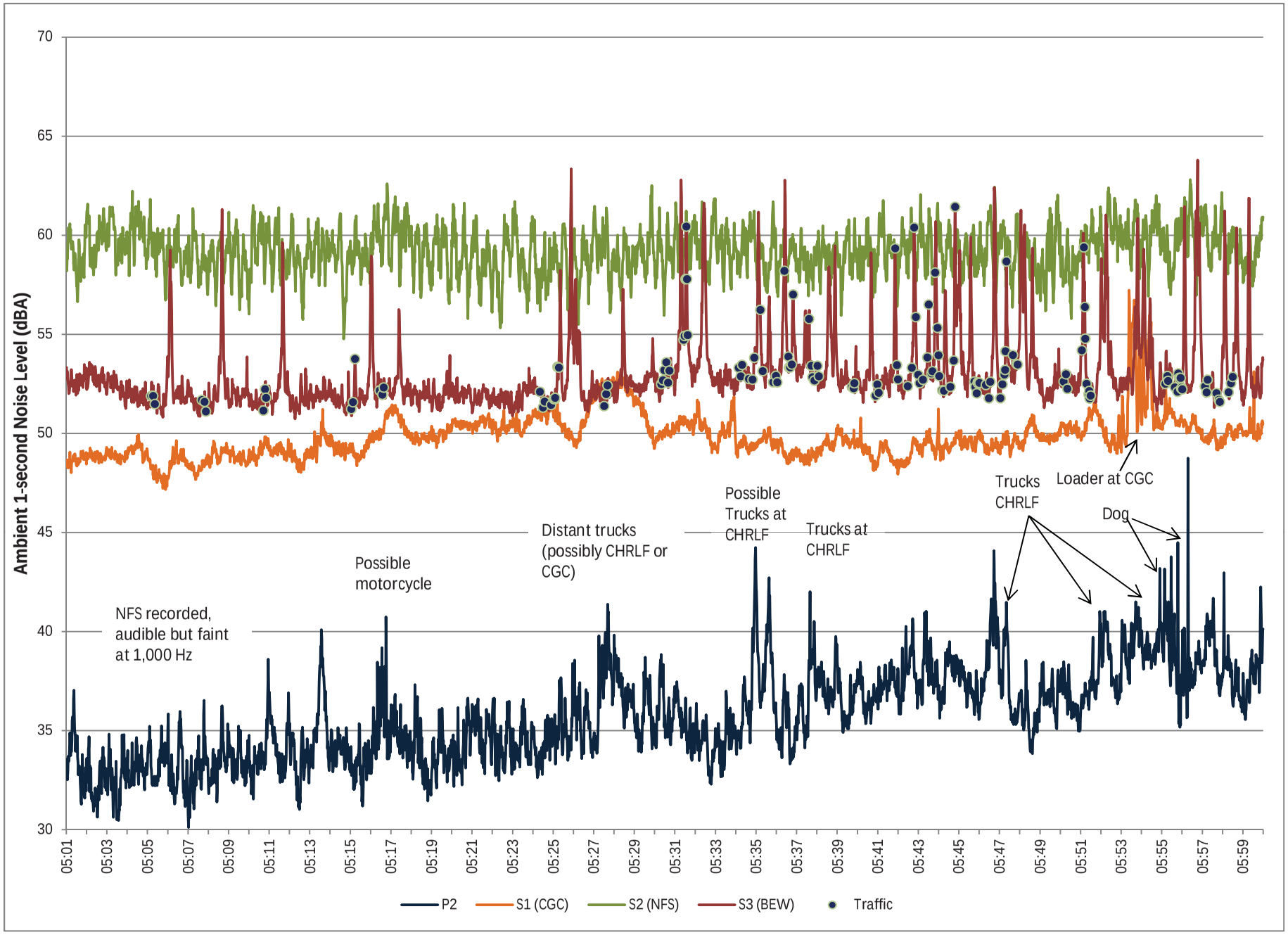


Figure 12c
Detailed Summary of P3 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

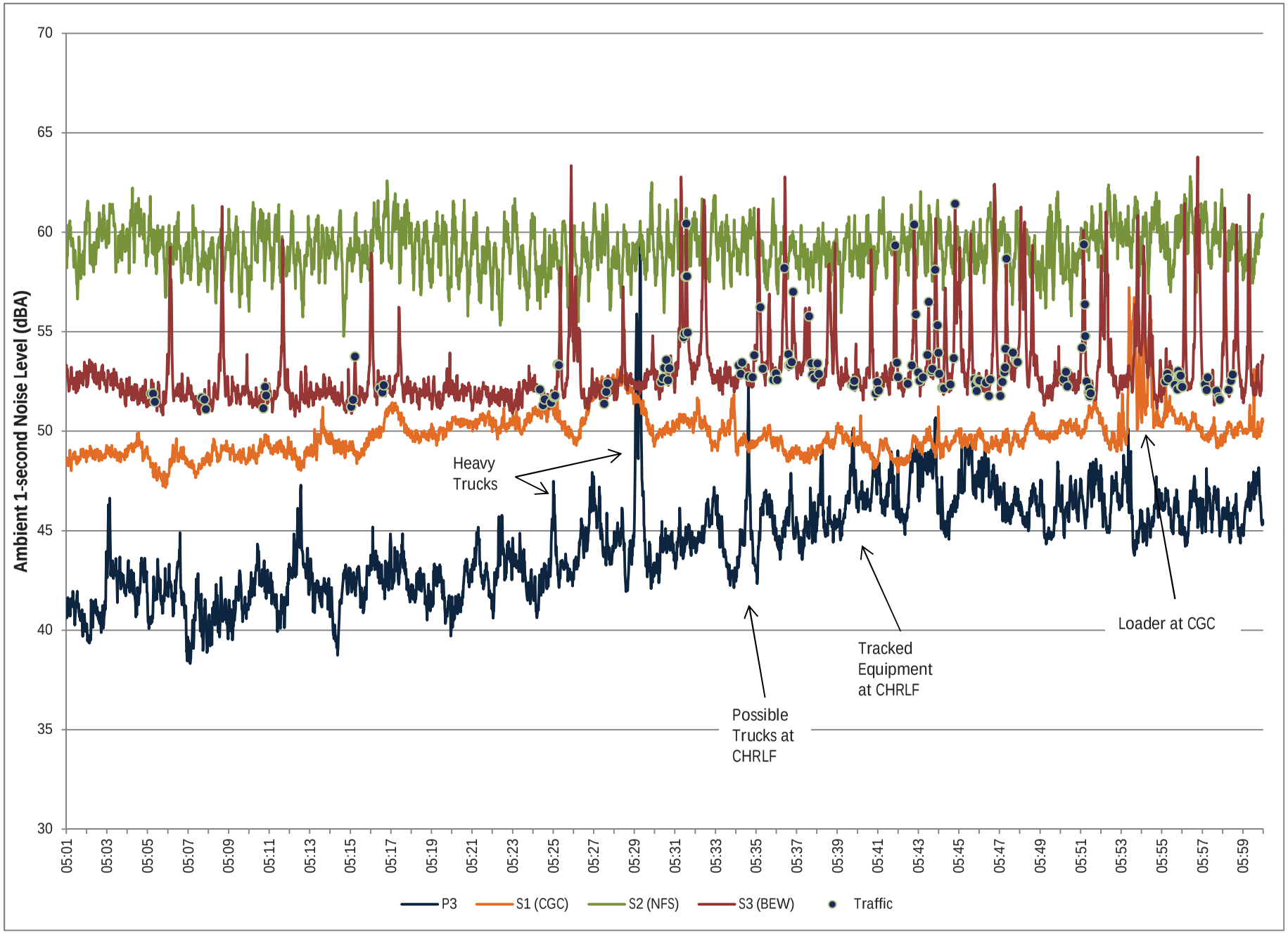


Figure 12d
Detailed Summary of P4 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

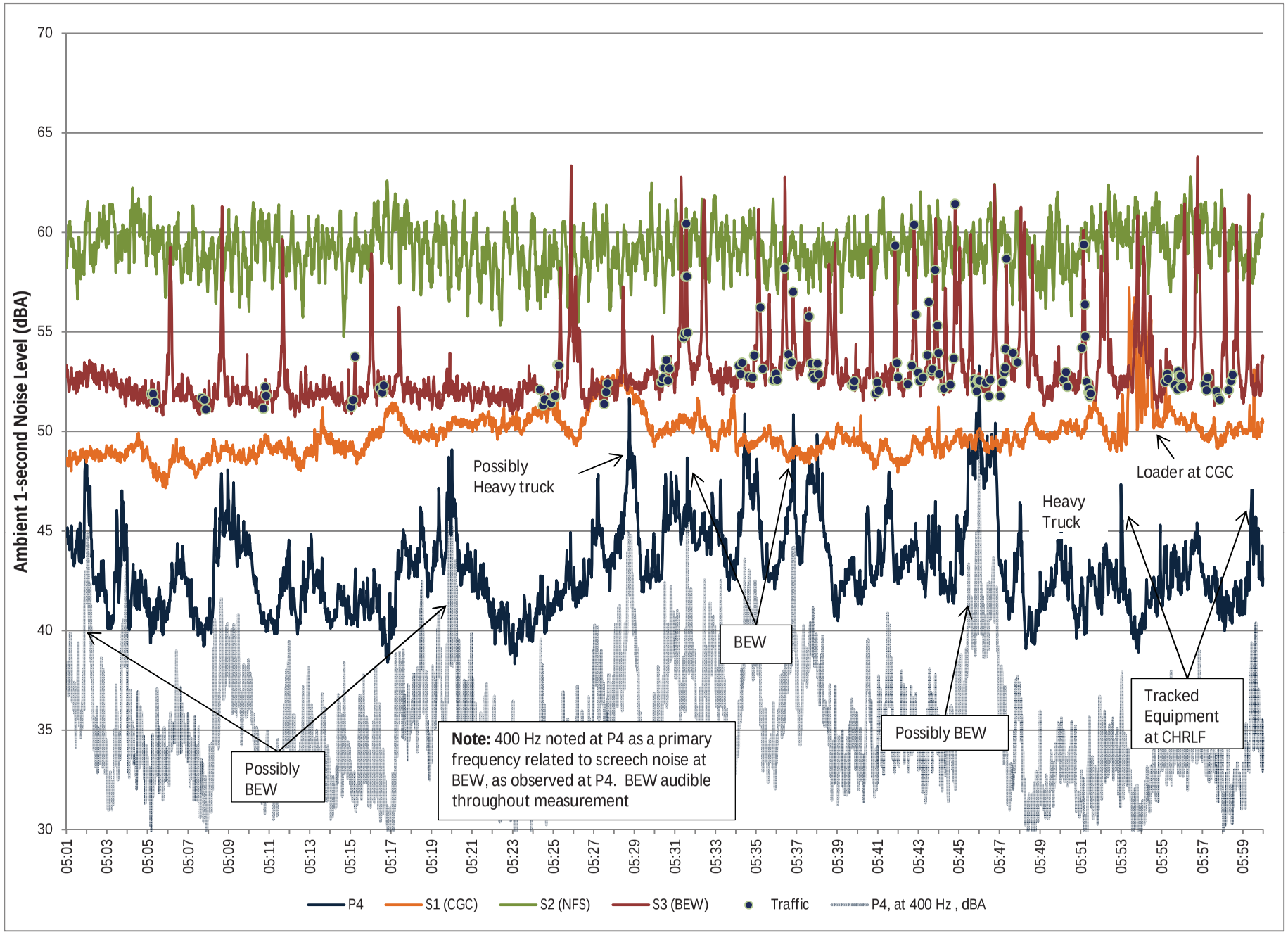


Figure 12e
Detailed Summary of P5 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 5 AM - 6 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

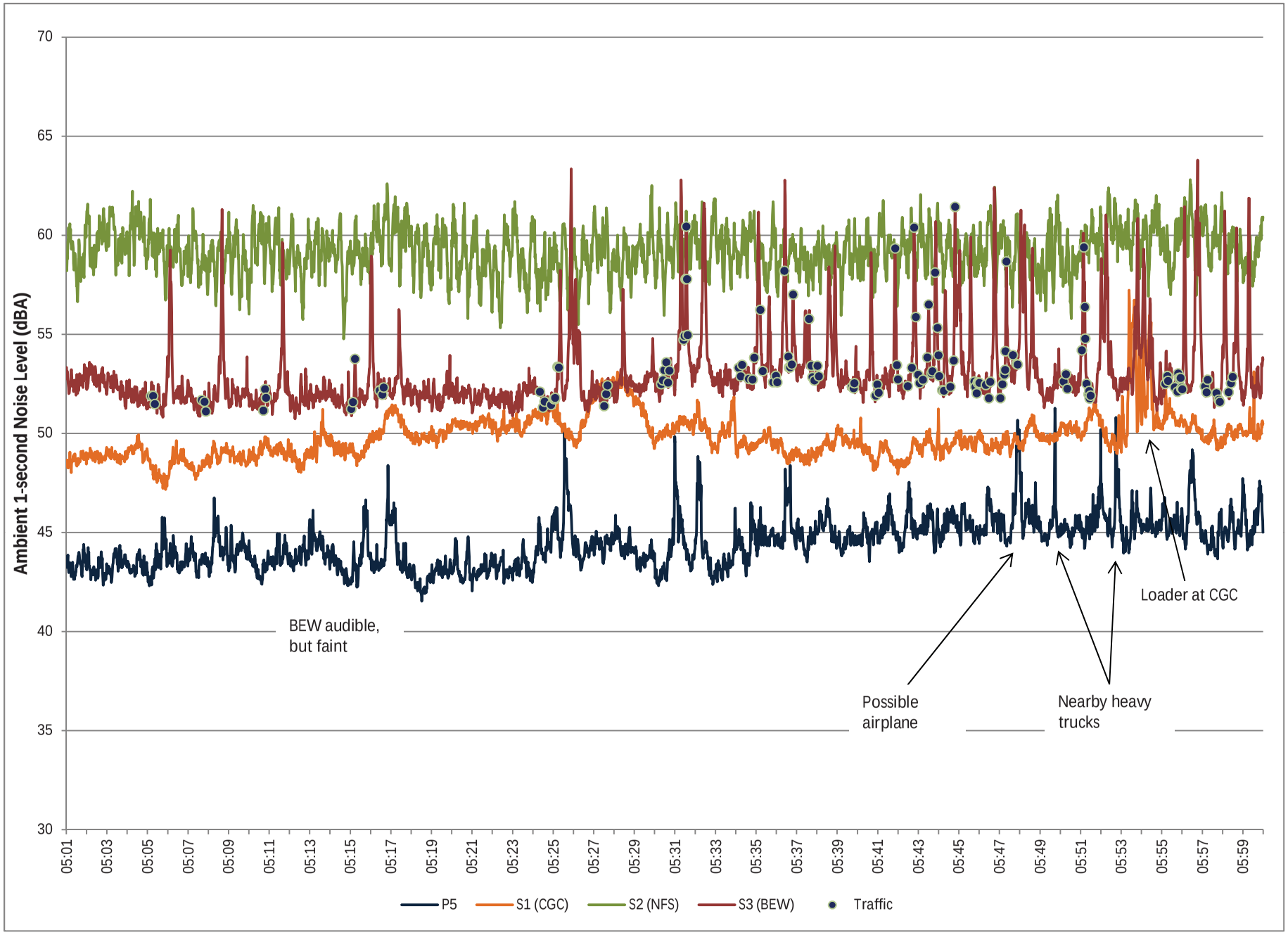


Figure 13a
Detailed Summary of P1 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

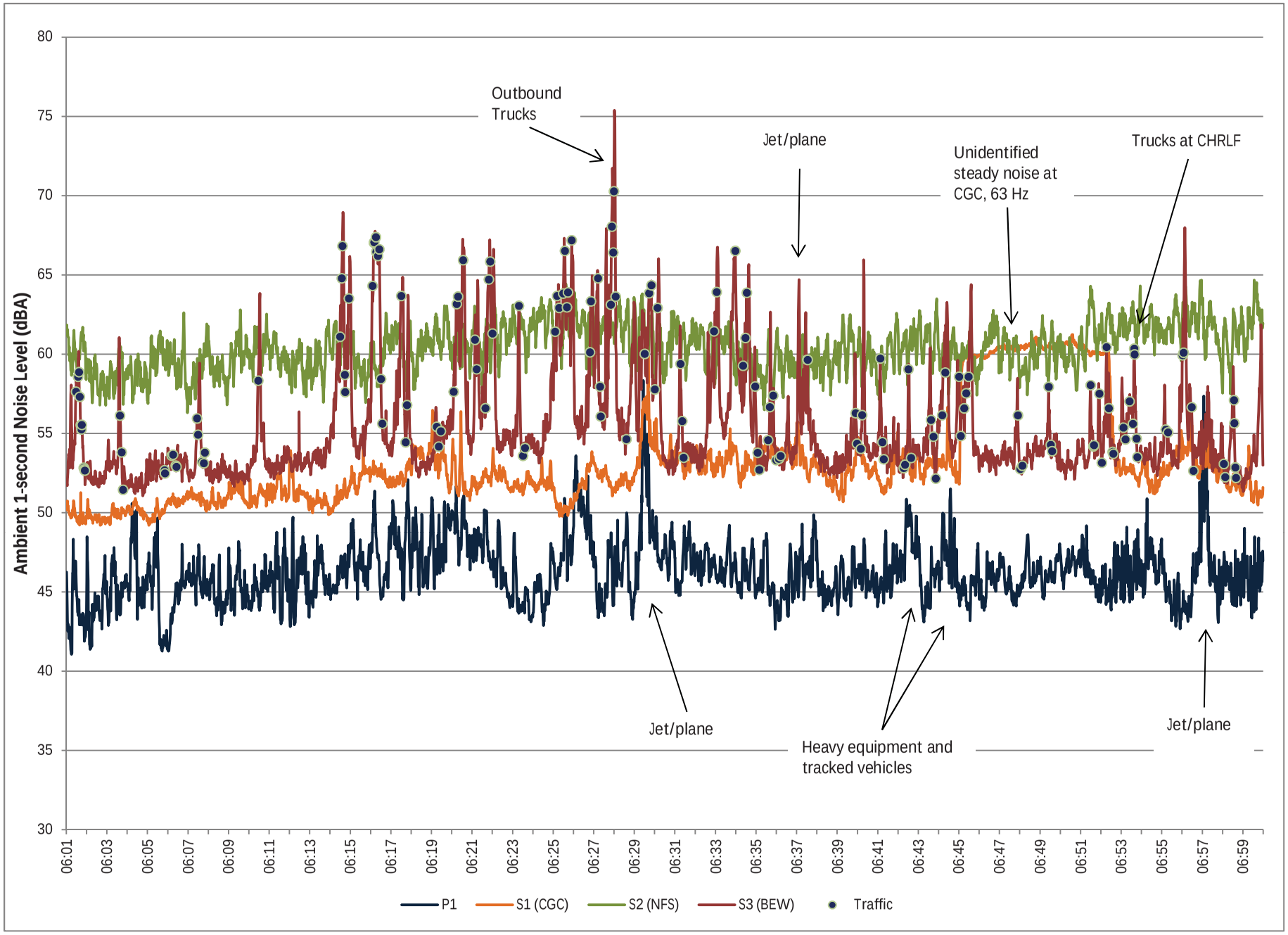


Figure 13b
Detailed Summary of P2 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

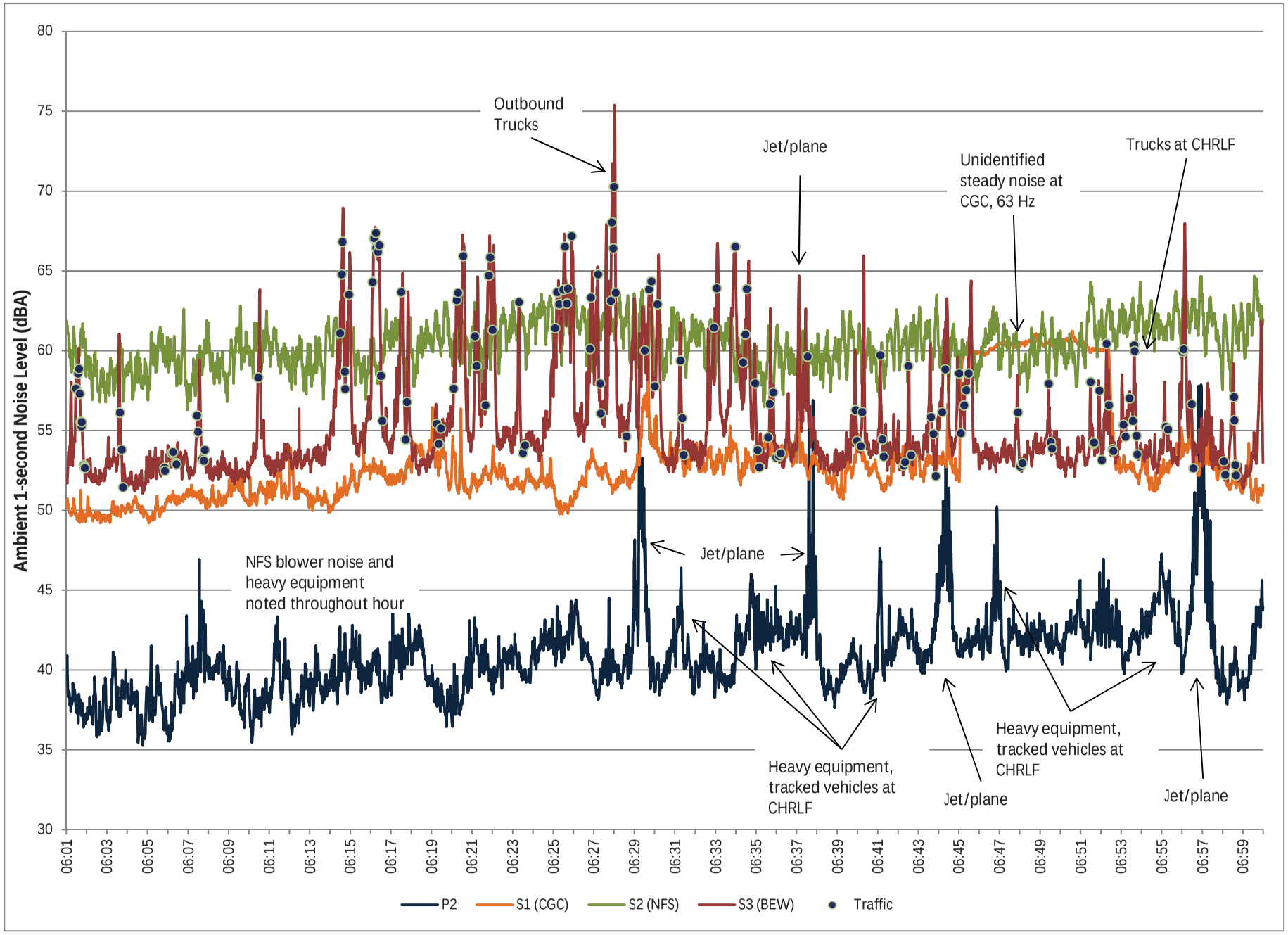


Figure 13c
Detailed Summary of P3 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

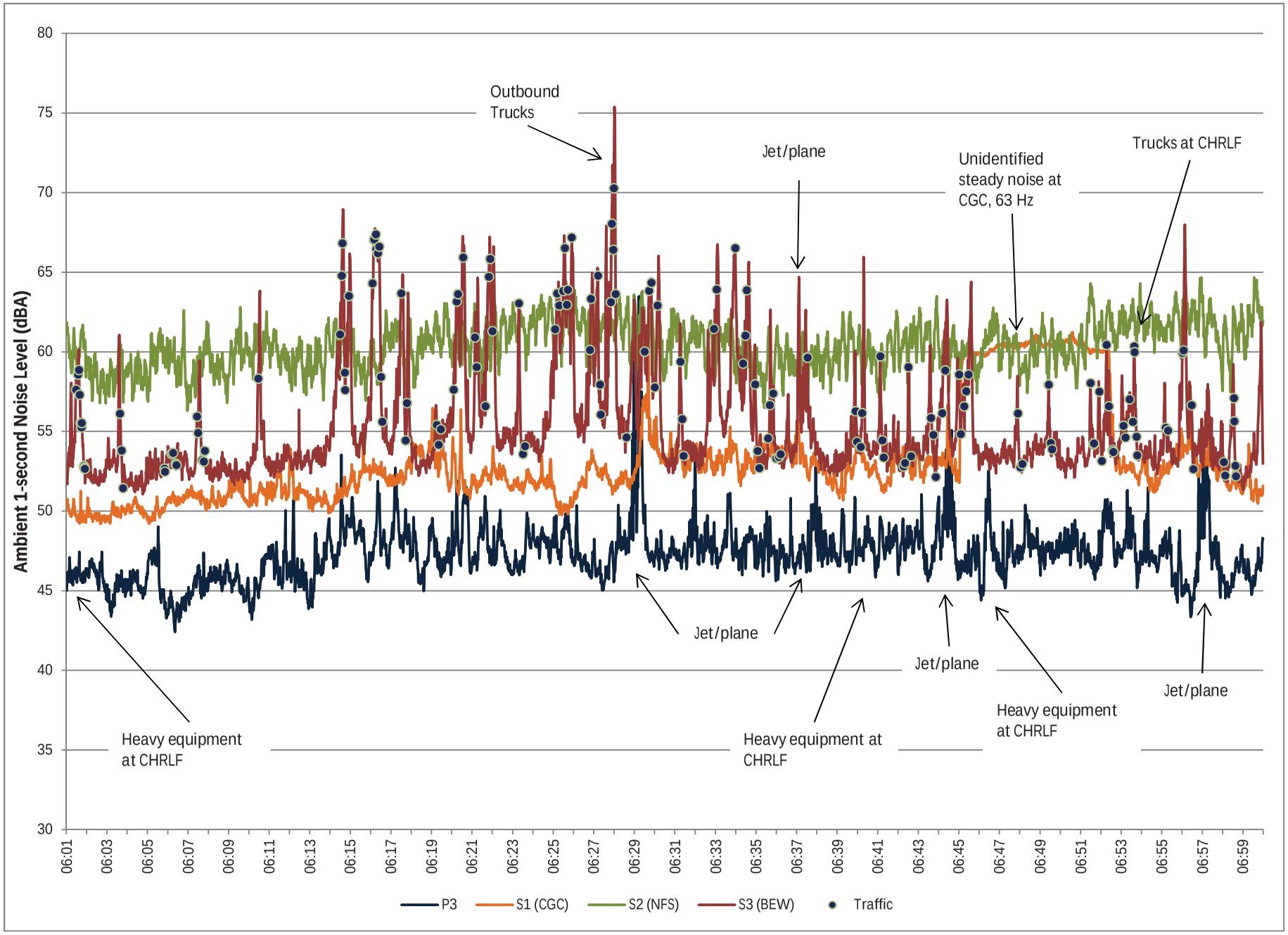


Figure 13d
Detailed Summary of P4 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

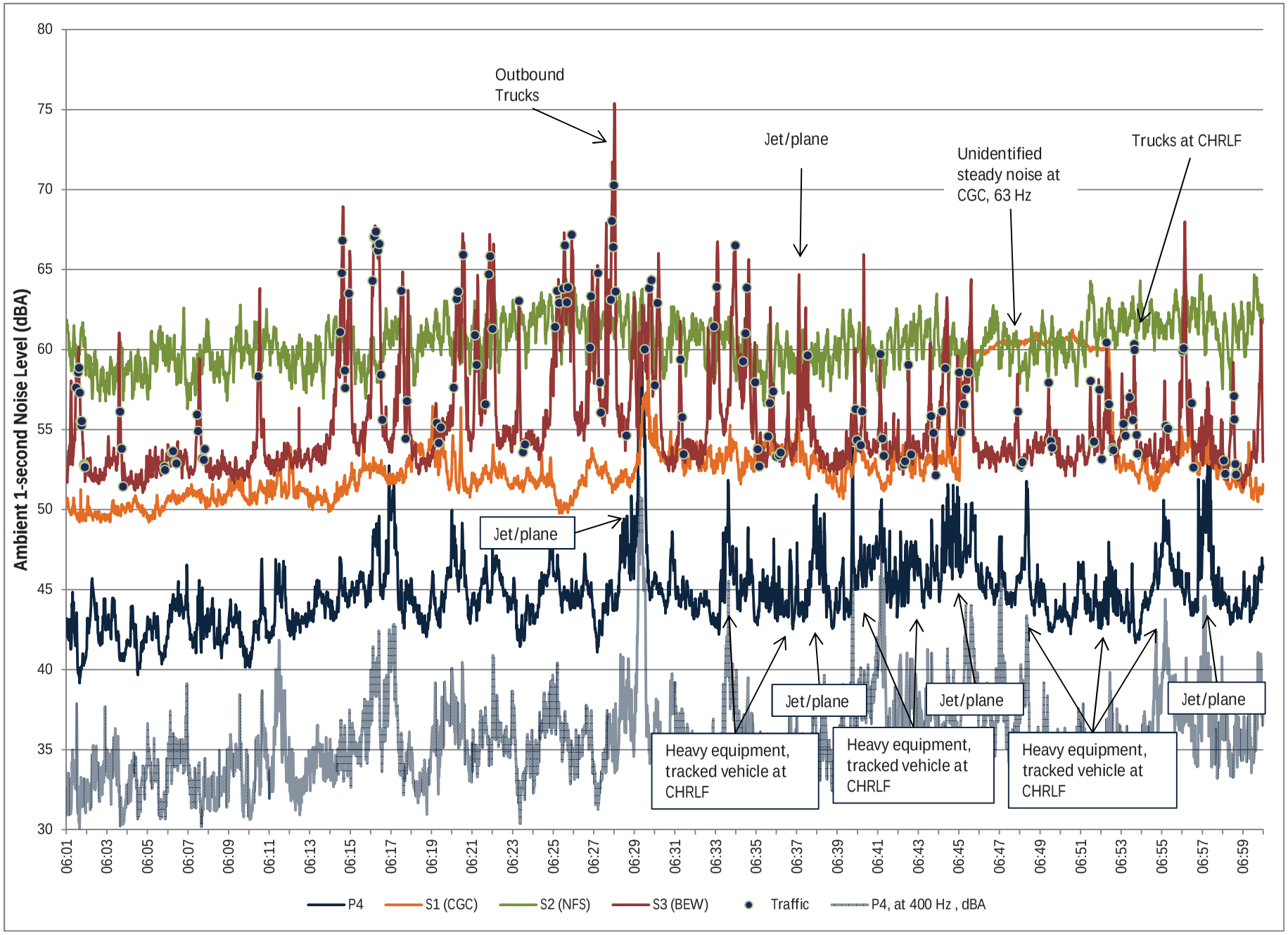


Figure 13e
Detailed Summary of P5 with S1 (CGC), S2 (NFS) and S3 (BEW)
October 5, 2012, 6 AM - 7 AM
Cedar Hills Regional Landfill
Maple Valley, Washington

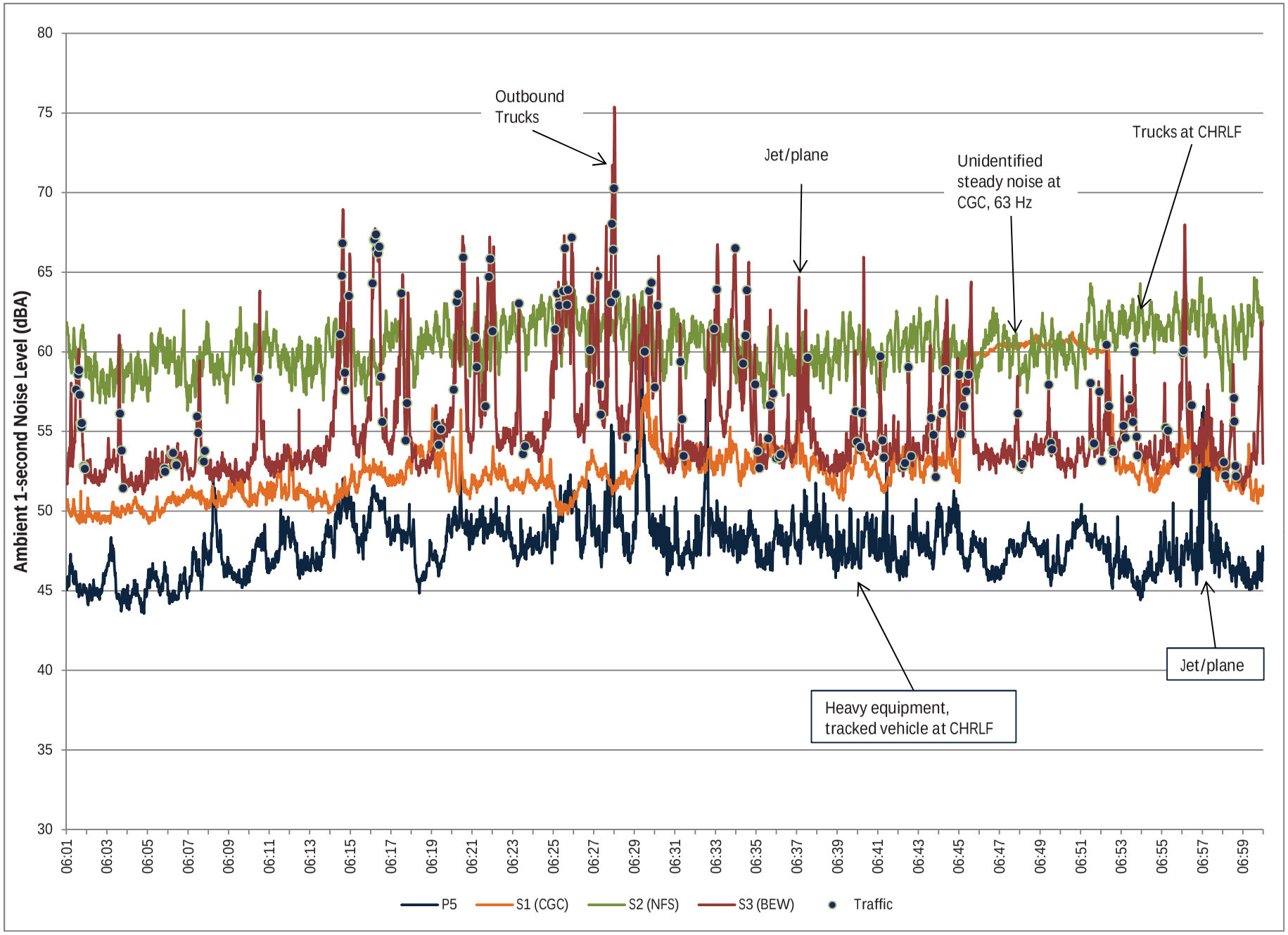


Figure 14
2 AM Comparison of Broadband and Low Hz 1/3 Octave Spectra Data, S3 (BEW) with P1 and P5
October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

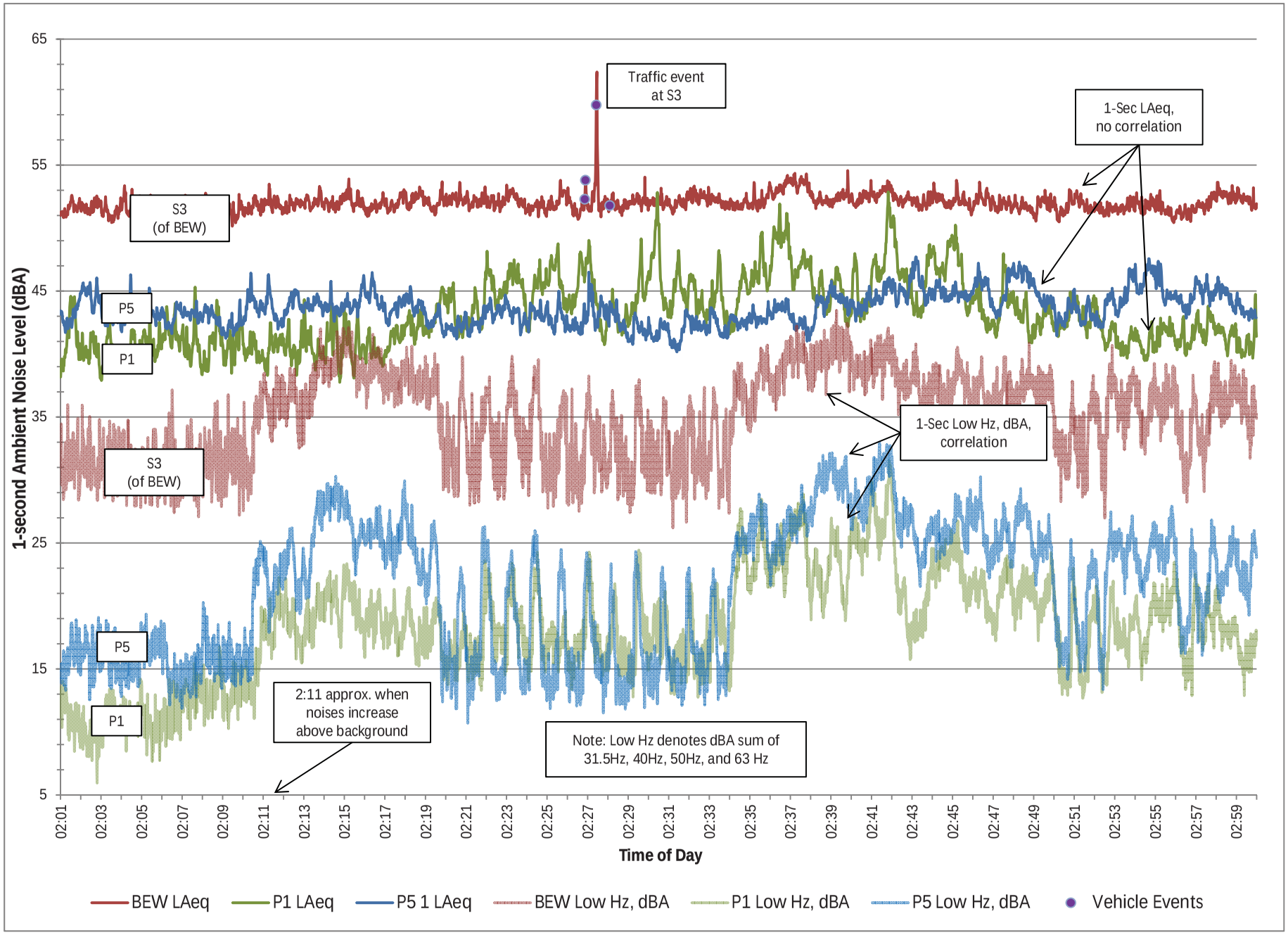


Figure 15
2 AM Overall 1/3 Octave Spectra Data, S2 (NFS) and P2
October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington

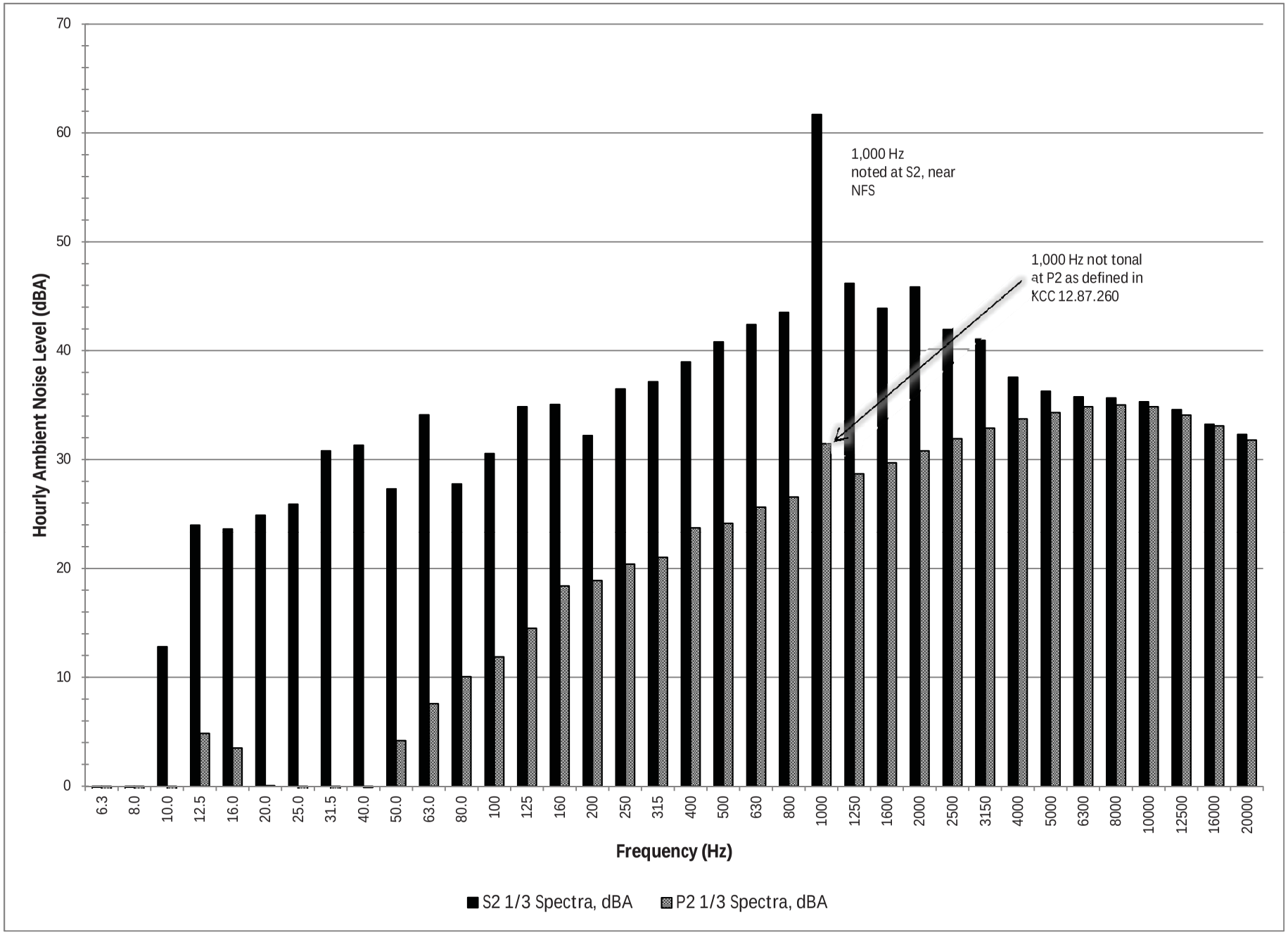
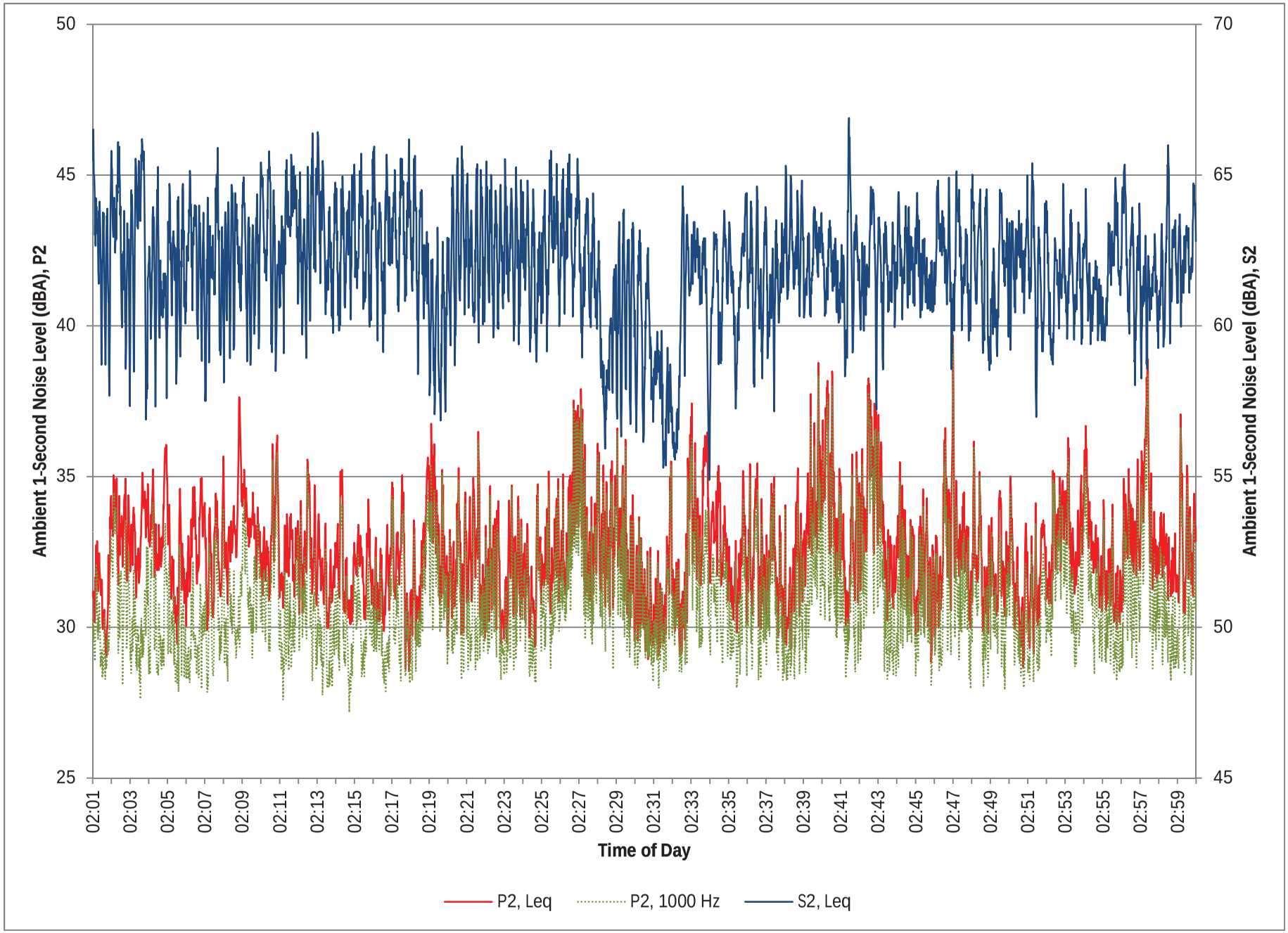


Figure 16
2 AM Comparison of Broadband and 1000 Hz Octave Spectra Data, S2 (NFS) with P2
October 5, 2012
Cedar Hills Regional Landfill
Maple Valley, Washington



APPENDIX A

Observer Notes at Ambient Noise Monitoring Locations

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/25/12	19	23	00	GATE	2 TRUCKS ENTERING TI
"	19	11	10	GATE	FLARE IGNITED - ENDED ~ 19:38:30
"				S3	Parked ~22:13:10
				"	TD 22:15:15
					TI 22:15:50
					22:17:17 Power lines popping overhead
					22:23:00 Depart
"				P4	22:27:30 Parked
					22:29:50 chiller @ cell tower (cycles on/off every 14 sec)
					22:31:10 Arrive
					22:31:47 CD
					22:33:57 Methane Plant valves opening at Plant
					22:34:45 Methane Plant
					22:35:05 " "
					22:35:22 " "
					22:35:42 " "
					22:36:25 Leaving P4
					23:37:00 Begin Departing P4 in vehicle
"				P3	22:43:12 Arrive Parking for P3
					22:46:20 Arrive P3
					- Continuous Highway noise & Methane plant whine
					22:51:20 Depart P3
					22:51:53 Airplane over head → 22:52:47
					22:52:45 Frogs croaking
					22:54:40 Arrive @ vehicle
					22:55:29 Start vehicle, Depart Parking area
					23:02:59 Arrive S2
					- Continuous whine from North Flare machinery

MD

BK

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-25-12					23:05:35 Start vehicle, Depart S3
				P2	23:10:30 Arrive P2 parking spot
					23:13:00 TI / Arrive P2
					23:14:25 Pelican case falling shut (lid)
					- Continuous whine in the distance
					23:17:10 Memory 98% - Pelican lid clasp closing
					23:17:40 Plane overhead / prop
					23:18:17 Plane no longer audible
					23:21:38 Arrive vehicle
					23:22:25 Start vehicle & Depart
					23:26:24 Driving by S2
				P1	23:35:35 Arrive Parking at P1
					23:38:16 Arrive P1
					- Continuous from methane plant
					23:39:14 Road noise from west
					23:39:40 Animal in forest snapping twig
					23:40:41 Methane valve screech from plant
					23:41:10 BD
					23:43:05 Screech from methane plant valve
					:25 " "
					23:43:42 Depart P1
					23:45:58 Start vehicle, Depart P1 Parking
				S1	~~Arrive~~ 23:49:25 Arriving parking S1
					23:56:20 Arrive S1
					- Continuous from ~~methane plant~~ cedar grove
					23:57:10 methane plant screech
					23:58:04 " "
					23:59:54 " "
9/26/12					0:00:40 " "
TR					

BK

Data collected by: Brad Kerr

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-12				S1	0:01:16 Depart S1
					0:04:26 Arrive which, depart parking
					0:10:10 Arrive main gate parking
	0	18	40		Depart main gate parking
	0	21	24	S3	Arrive parking
	0	25	22		Arrive S3
					-Powerlines popping ; Continuous noise from methane plant
	0	27	08		Depart S3
	0	29	18		Arrive parking
	0	30	57		~~Rand~~ Screech from methane plant
	0	33	45		Depart S3 parking
	0	38	30	P4	Arrive P4 Parking
	0	40	26		A/C kicking on/off at cell Tower every ~15 sec
	0	41	05		Arrive P4
	0	42	05		Continuous noise from methane plant
	0	42	58		Frog croaking
	0	45	29		Screech from methane plant ~3 seconds
	0	46	05		Depart P4
	0	47	45		Arrive P4 Parking
	0	48	27		start vehicle, depart P4
	0	53	35	P3	Arrive P3 parking
	0	57	00		Arrive P3 ; still Running
	0	57	43		CD East
					-continuous whine of plant near gate
	0	58	44		Bird
	0	59	23		Frog croaking
	01	02	00		Depart P3
	01	04	20		Arrive at vehicle
	01	04	36		Start vehicle ; Depart P3

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Data collected by: Bal J Kr

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-11	01	12	40	S2	Arrive S2
					-Continuous whine of flare plant & flame at stack
	01	14	14		Drive away
	01	20	00	P2	Arrive at P2 parking
	01	23	56		Arrive at P2
					- Continuous whine in the distance
	01	28	56		depart P2
	01	31	33		Start vehicle; depart P2 parking
	01	35	55	S2	Pass by S2
	01	43	59	P1	Arrive P1 parking
	01	47	04		Arrive P1 (Still Running)
					- continuous whine from methane plant
	01	47	43		screech from methane plant
	01	49	50		snap closed pelican case
	01	50	24		screech from methane plant
	01	51	20		Screech from " "
	01	53	57		Arrive vehicle. depart P1
	01	58	01	S1	Arrive S1 parking
	02	02	35		Arrive S1 (Still Running)
					-Continuous from cedar grove
					-continous from methane plant
	02	03	46		Depart S1
	02	07	01		Arrive S1 parking area; Start vehicle
	02	13	30	Main Parking	Air pressure release from methane Plant
	02	16	58		screech from " "
	02	19	02	S3	Arrive S3 parking
	02	22	17		Arrive S3
					- continuous noise from methane plant
					- Popping from powerlines

BK ↓

Data collected by: B [illegible] J [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-02	02	23	14	S3	Screech from methane plant
	02	24	04		" "
	02	24	15		-Depart S3
	02	26	20		Arrive at vehicle
			35		Start vehicle ; Depart S3
	02	34	09	P4	Arrive P4 Parking
	02	36	30		A/C turns on/off for cell tower ~15 sec intervals
	02	37	06		Arrive P4
	02	37	58		Frog croaks ~4 sec intervals
	~~02~~	~~37~~	~~40~~		- continuous nois in distance from
	02	39	40		Twigs snapping in bushes (some critter, unknown)
	02	42	06		Depart P4
	02	42	20		Start vehicle ; Depart P4 Parking
	02	47	25	P3	Arrive P3 Parking
	02	51	53		Arrive P3
					-Continuous whine in distance from SW/W
	02	52	37		CD
	02	53	13		CD not audible
	02	53	15		CD
	02	54	00		CD not audible
	02	56	53		Depart P3
	02	58	43		Start vehicle ; depart parking
	03	06	45	S2	Arrive at S2
					-continuous whine from flare plant
					- " " roar from flare burning
	03	09	23		Start vehicle, depart
	~~03~~	~~09~~	~~25~~ 031600	P2	Arrive at P2 parking
	03	20	50		Arrive at P2
					-continuous whine in distance

BK

Data collected by: Bud J K

KCSWD CHRLF Perimeter Noise Study

amec

BK

Date	HH	MM	SS	Location	Noise Description
9-26-12	03	25	20		Depart P2
	03	28	08		Start vehicle; Depart Parking Area
	03	34	00		Pass by S2
	03	43	00	P1	Arrive at P1 parking
	03	46	06		Arrive at P1
					- continuous noise in distance to Southeast (Methane Plant)
	03	47	22		Frog croaking
	03	48	20		- screech from methane plant
	03	51	06		Depart P1
	03	53	10		Arrive back at P1 parking
	03	53	43		Start vehicle; depart
	03	57	55	S1	Arrive at S1 parking
	04	01	58		Arrive at S1
					- continuous noise from cedar grove to SE
	04	03	00		- noise from methane plant (screeching)
	04	03	25		Depart S1
	04	06	09		Arrive back at parking
	04	06	29		Start vehicle; depart
	04	15	40	P5	Arrive P5 parking
	04	17	20		Arrive P5
					- Popping of powerlines continuous
	04	17	35		Screeching of methane plant intermittant
					- methane plant noise continuous
	04	20	40		CD Rev for ~2 seconds
	04	21	29		CD
	04	21	40		CD near Cedar Hills Rd
	04	22	20		Depart P5
	04	24	11		Start vehicle; depart P5 parking
	04	28	15	S3	Arrive S3

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

3K

Date	HH	MM	SS	Location	Noise Description
9-26-12	04	33	00	S3	Arrive S3
	04	33	00		Screeching at methane plant
					- continuous noise from methane plant
					- continuous popping of power lines
	04	33	58		Screeching at methane plant ~3 sec
	04	34	24		Depart S3
	04	36	39		Start vehicle; depart S3 parking area
	04	41	15		Arrive P4 parking
	04	48	00	P4	Arrive P4
	04	48	00		- continuous noise from methane plant in distance
	04	49	09		Twigs snap in bushes
	04	52	23		Start vehicle; depart P4
	04	57	42	P3	Arrive P3 parking
	05	00	52		Arrive P3
					- continuous noise to NE possible CD
					- continuous noise to South (methane Plant)
	05	02	12		- periodic falling leaves
	05	02	20		CD to NE
	~~05~~	~~05~~	~~00~~		CD No longer audible
	05	05	00		Depart P3
	05	06	55		Start vehicle; depart P3 parking
	05	15	40	S2	Arrive S2
					- continuous noise from Flare plant
					- ^ " from ~~Flare~~ Flare stack flame
	05	18	03		Start vehicle; depart S2 parking area
	05	23	30		Arrive P2 parking
	05	29	48		Arrive P2
					- continuous whine from methane plant
					- Dew dropping from trees all around area

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-12	05	34	48	P2	Depart P2
	05	36	35		Back at vehicle
	05	36	50		Start vehicle ; depart P2 parking
	05	45	43		Pass by S2
	05	55	00		Meet Anna in Parking lot
	06	04	10	P5	Arrive Parking area
	06	05	47		Arrive P5
					- continuous popping from power lines
					- continuous noise from methane plant
	06	06	15		Screech from methane plant
	06	07	10		C I at road into CHRLF
	06	09	56		Screech from methane Plant
	06	10	17		C
	06	10	47		Depart P5
	06	12	00		Start vehicle
	06	15	42	S3	
	06	20	00		Screech from Methane Plant
	06	21	02		C
	06	23	09		Arrive S3 - T
	06	23	33		- Continuous popping from power lines
	06	27	31		Start vehicle Depart S3
	06	30	51	P4	Arrive at parking lot
	06	32	48		Screech from Methane plant
	06	33	23		Arrive @ P4
	06	33	59		Closed Monitor case Made Clicking Sound
	06	34	34		Screech from Methane plant
	06	35	22		BD
	06	36	01		T
	06	36	43		BD

BK

AS

Data collected by: BK JR

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
9/26/12	06	38	40	P4	Depart P4
	06	39	22		Start vehicle
	06	39	33		Depart P4 lot
	06	42	20	P3	Arrive at Parking area
	06	43	40		BD intermittent
	06	45	36		Arrive at P3
	06	46	20		BD
	06	46	41		CD
	06	48	10		TD
	06	48	53		Person in distance (East) whistling
	06	49	40		BD chirpping
	06	50	38		Depart P3
	06	53	10		Start vehicle
	06	53	21		Depart P3 lot
	06	59	37	S2	Arrive at S2
	07	00	16		Continuous Noise from flare plant
	07	01	12		Start vehicle ; depart S2 parking area
	07	05	27	P2	Arrive at P2 parking area
	07	09	05		Arrive at P2
	07	09	23		BD
	07	10	22		DG in distance to North
	07	11	16		BD
	07	12	59		BD continuous
	07	14	12		Depart P2
	07	17	45		Start vehicle ; depart P2 parking
	07	20	16		Pass S2 in vehicle
	07	25	25	P1	Arrive at P1 Parking area
	07	26	59		BD
	07	28	10		Arrive at P1

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

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AS ↓

Date	HH	MM	SS	Location	Noise Description
9/26/12	07	29	30	P1	KC - continuous
	07	30	26		T@
	07	32	19		BD
	07	33	20		BD
	07	33	28		Depart P1
	07	35	54		Start vehicle; depart P1 parking
	07	38	29	S1	Arrive at S1 parking
	07	41	25		Arrive at S1
	07	41	26		- continuous Noise at CG; Continuous
cont	~~07~~	~~43~~	~~14~~		Noise KC
	07	43	14		Depart S1
	07	44	39		Drilling Noise ? to North
	07	47	08		Start vehicle; depart S1 parking
	07	58	40	P5	Arrive at P5 parking area
	08	00	04		Arrive at P5
cont	~~08~~	~~01~~	~~07~~		- continuous popping from power lines
	08	01	01		CO
	08	01	32		School Bus drive by (west)
	08	02	37		BD
	08	03	20		KC
	08	03	50		CD to West Road
	08	04	27		TD - Horn (beep beep)
	08	04	57		T@
	08	05	12		Depart P5
	08	06	31		Start vehicle; Depart P5 parking
	08	10	18	S3	Arrive at S3 parking area
	08	11	58		T@
	08	12	30		Arrive at S3
					Continuous popping from powerlines

Data collected by: [signature]

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AS ↓

Date	HH	MM	SS	Location	Noise Description
9/26/12	08	13	12	S3	CI ; T@
	08	13	52		Depart S3
	08	15	10		Screaching Noise Methane plant
	08	16	19		Start vehicle ; depart S3
	08	21	30	P4	Arrive Park at P4 parking area
	08	25	46		arrive @ P4
	08	28	17		T@
	~~08~~	~~29~~	~~26~~		BD
	08	29	26		BD
	08	30	50		Depart P4
	08	38	44		Start vechicle depart P4 parking
	08	42	06	P3	Arrive at P3 parking area
	08	45	10		Arrive at P3
	08	45	15		T@ continuous
	08	46	20		KC
	08	47	40		continuous BD chirps
	08	48	20		Frog croking
	08	49	47		Hummering Noise (KC)
	08	50	20		Depart P3
	08	52	25		Start vehicle ; depart P3 parking
	08	58	13	S2	Arrive at S2
					- continuous Noise from flare plant
	08	59	12		- Alarm
	09	00	15		BD
	09	01	10		Start vehicle; depart S2
	09	04	37	P2	Arrive @ P2 parking area
	09	07	55		Arrive at P2
	09	08	33		BD
	09	10	11		CD

Data collected by: [signature]

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AS ↓

Date	HH	MM	SS	Location	Noise Description
4/26/12	09	12	27	P2	PL
	09	12	50		BD
	09	13	04		Depart P2
	09	15	45		Start vehicle ; Depart P2
	09	21	28		Pass S2 in vehicle
	09	27	35	P1	Arrive at P1 parking area
	09	32	18		Arrive at P1
	09	33	12		BD & Frog
	09	33	56		continuous T@
	09	37	23		Depart P1
	09	40	05		Drop Clip board
	09	41	10		Start vehicle ; depart P1
	09	44	14	S1	Arrive at S1 parking area
	09	47	21		arrive at S1
					continuous noise from CG
	09	48	49		Depart S1
	09	50	46		Truck honking
	09	51	32		Start vehicle ; depart S1 parking area
	10	08	19	P5	Arrive at P5 parking area
	10	11	29		Arrive at P5
					- PL
					- continuous popping noise from power lines
	10	12	04		TO
	10	13	43		T@
	10	14	07		Frog
	10	15	37		DG & open Fence lock
	10	15	50		Begin to down load data open box
	10	19	20		Computer turn on downloading data

Data collected by: [signature]

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A5

Date	HH	MM	SS	Location	Noise Description
9/28/12	10	34	40	P5	Recalibration
	10	35	01		lock case back up
	10	35	12		Dog Bark
	10	35	28		Depart P5
	10	38	19		TI
	10	40	29		TO
	10	41	35		BEW screeching
	10	42	09		CD
	10	42	50		CD
	10	43	38		BEW ~~Schoo~~ screeching
	10	43	57		TI
	10	44	58		Start vehicle ; Depart P5
	10	48	05	S3	Arrive at S3
	10	48	50		BEW screeching noise
	~~10~~	~~51~~	~~09~~		Low rumble from Flare continuous (BEW)
	10	51	09		BEW & TI
	10	51	59		CD
	10	52	15		Arrive at S3 - continuous popping at power lines
	10	52	25		BEW screeching
	10	52	59		TO - truck at idle on Road
	10	53	12		TI
	10	53	33		CO
	10	57	00		TO
	10	57	18		TO
	10	59	53		TO & TI
	10	58	36		CO
	10	58	46		BEW screeching
	10	59	04		BEW screeching
	10	59	50		TO

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

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A5

Date	HH	MM	SS	Location	Noise Description
9/26/12	11	00	36	S3	TO
	11	00	59		TO
	11	01	07		TI
	11	02	01		TO
	11	02	47		TO ; TI
	11	04	36		Recalibrate S3
	11	05	05		TI (x2)
	11	06	24		BEW screeching
	11	06	37		CO
	11	07	06		TO
	11	08	15		BEW screeching
	11	09	12		BEW screeching
	11	10	02		TI
	11	10	08		BEW screeching
	11	10	49		TO
	11	11	04		BEW screeching
	11	12	01		TI
	11	12	35		TI
	11	12	58		TI
	11	13	23		TO
	11	13	45		BEW screeching
	11	14	39		BEW screeching
	11	14	48		TO
	11	15	31		BEW screeching
	11	15	55		TI
	11	16	25		TO
	11	17	06		Depart S3
	11	17	19		BEW screeching
	11	18	14		BEW screeching

Data collected by:

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AS

Date	HH	MM	SS	Location	Noise Description
9/26/12	11	19	10	~~S2~~ S3	BEW screeching
	11	19	55		Start vehicle depart S3 parking area
	11	23	59	P4	Arrive at P4 parking area
	11	25	20		Deer
	11	26	02		Arrive at P4
	11	26	29		open case to SLM
	11	26	40		NE ~~C~~ Construction off site (continuous)
	11	29	46		PL
	11	29	59		computer turns on
	11	30	36		PL
	11	32	47		Duck quack
	11	41	55		Recalibrat SLM P4
	11	46	25		Depart P4
	11	48	23		Start vehicle; depart site; King County vehicle at parking location
	11	53	14	P3	Arrive at P3 parking area
	11	55	14		~~PHONE~~ PHONE CALL
	11	56	47		Arrive at P4
	11	57	16		NE people talking construction (continuous)
	11	57	54		BD
	12	03	12		Recalibration P3 SLM
	~~12~~	~~21~~	~~43~~		Downloading data
	12	21	43		· close lid (snap) on SLM Box
	12	22	06		Depart P3
	12	30	27		Start vehicle; depart P3
	12	35	54	S2	Arrive at ~~P3~~ S2
					· continuous noise from flare plant
	12	40	25		Recalibration on S2 SLM
	~~12~~	~~57~~	~~47~~		download data

Data collected by: [signature]

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Date	HH	MM	SS	Location	Noise Description
9/26/12	12	51	47	S2	Start vehicle; depart S2
	12	54	57	P2	Arrive at P2 parking area
	13	01	23		Arrive at P2
	13	01	41		BD
	13	01	55		Begin download
	13	03	36		Recalibration on P2
	13	15	13		Frogs & BD
	13	15	26		lid closing to shut case
	13	15	40		ais ~~PL~~ JT
	13	15	54		Depart P2
	13	16	41		PL
	13	25	00		Start vehicle; depart P2 parking area
	13	29	30		Passed S2 in vehicle, flare motor noise
					Continuous
	13	41	28	P1	Arrive at P1 parking area
	13	45	14		Arrive at P1
	13	46	12		BD
	13	46	12		KC
	13	47	16		JT
	13	48	09		Recalibration on P1
	13	56	15		BD
	13	56	22		KC
	13	57	03		KC
	13	57	57		computer beeping
	13	58	30		Depart P1
	14	01	30		Start vehicle; Depart P1
	14	07	51		Michelle takes over

As

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Date	HH	MM	SS	Location	Noise Description
9/26	14	16	50	S1	ARRIVED @ PARKING LOCATION
	14	21	03	"	ARRIVED @ STATION CD + TD, SOME POSSIB. SOUND FROM LANDFILL
	14	21	30	"	TIM R. EXAMINES UNIT BD
~	14	23	20	"	UNIT OFF - DATA CHECK + RE-CAL
~	14	35	30	"	UNIT ON & WE DEPART BD
~	14	45	50	S3	Parked + approaching station
	14	46	52	S3	BEW PRESSURE VALVE / SCREECH
	14	47	45	"	" " OVERHEAD POWERLINE CRACKLE (AMBIENT)
	14	48	35	"	" " "
~	14	48	37	"	TIM CHECKS UNIT / OPENS CASE
	14	49	13	"	TIM CLOSES CASE
	14	49	26	"	BEW SCREECH
	14	50	08	"	CO
	14	50	55	"	TO
	14	50	?	"	NOTICED PLANE UNTIL ~14:51:00
	14	51	25	"	TO
	14	51	00	"	BEW SCREECH
	14	50	55	"	~~CAR~~ IN CD
	14	53	56	"	BACK IN CAR
~	15	21	48	"	~~HOD~~ HORN ENGAGED WHEN ARRIVED ON SITE
~	15	22	00	P5	TI
	15	23	15	"	EXITED VEHICLE
	15	24	17	"	BEW SCREECH
	15	24	35	"	Some kind of squeek - maybe metal on metal?
	15	25	35	"	CD
	15	25	40	"	PLANE + ~~CP~~ TI → continued until ~15:27:20
	15	27	15	"	~~CP~~ CO
	15	27	30	"	Ret. to vehicle
	15	28	25	"	Entered vehicle

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Date	HH	MM	SS	Location	Noise Description
9/26/12	15	38	30	P4	ARRIVED @ PARKING AREA - parked farther out than intended
	15	42	43	"	PL TED / ARRIVED @ STATION BD + FROGS PL ENDED ~15:44:00
	15	43	55	"	NOTICED POSSIBLE NEIGHBOR'S RADIO IN BKGRD, SOME TALKING? + MUSIC
	15	46	00	"	RADIO ~ E. OF LOCATION + WIND PICKS UP SLIGHTLY
	15	46	50	"	FROG BEGINS, RADIO TURNED OFF?
	15	47	39	"	RETURNING TO VEHICLE
~	15	51	20	"	Back in vehicle
	15	55	48	N/A	Noticed helicopter while heading northbound toward S2
	~~15~~	~~57~~	~~42~~	~~[illegible]~~	
	15	57	42	S2	Pulled up near station - stack burning BD
	15	59	20	"	Start vehicle
	16	03	30	P2	Arrived @ parking location
	16	06	45	"	Arrived @ Station (BD = primary sound source).
	16	07	23	"	T1 ? Distant - Frogs noted
	16	07	53	"	motorcycle outside of facility? + CD/TD
	16	08	52	"	BD
	16	10	28	"	TD or motorcycle? distant or compression brakes?
	16	12	05	"	Departing station
~	16	14	47	"	Back in vehicle
~	16	25	00	P1	Arrived @ parking location
	16	26	18	"	Departed vehicle - hear backup beepers @ CHRLF
	16	28	40	"	Arrived @ station - backup beepers @ CHRLF, BD
	~~16~~	~~29~~	~~58~~		wind in the leaves, CD + TD
	16	29	58	"	Distant plane, some prob. machinery (heavy) @ CHRLF
	16	31	36	"	T1 ? - ended ~ 16:32:27
	16	32	06	"	frog
	16	32	58	"	Small dog barking in distance - prob. to west
	16	33	28	"	~~BD~~ SQUIRREL! - periodic "woo" noise - frogs in bkgrd. + chittering

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Date	HH	MM	SS	Location	Noise Description
9/26/12	16	34	45	P1	T1? OR CD? OR MOTORCYCLE (SQUIRREL CONTINUES)
	16	36	30	"	I Depart ~ can hear JT (ENDS ~ 16:37:58)
~	16	39	00	"	Back in vehicle
~	16	42	00	S1	Parked @ parking location
	16	45	50	"	JT + some banging (on wood? @ CG - BD, frogs + DC/DT
	~~16~~	~~47~~	~~25~~	"	in background. JD ended ~ 16:46:46
	16	47	25	"	Arrived @ station CG in bkgd - machinery +
	~~16~~	~~48~~	~~24~~		clunking sounds.
	16	48	24	"	2 horn honks from CG, some backup
	~~16~~	~~42~~	~~26~~		beepers - distant, prob. from CG
	16	42	26	"	more clunking from CG - frogs in bkg. + PL
	16	50	07	"	Departing from station - more CG clunks.
	16	54	00	"	Back in vehicle
~	16	57	50	N/A	PT OR JT - ended ~ 16:56
	17	18	30	S3	Parked @ parking location
	17	20	11	"	BEW shriek + PT
	17	21	10	"	BEW shriek
	17	21	26	"	T1
	17	21	52	"	Van inbound CHRLF
	17	22	08	"	BEW shriek
	17	22	38	"	Crows → NOTE: Ambient powerline crackle
	17	23	04	"	BEW shriek
	17	23	37	"	Head back to vehicle
	17	24	01	"	BEW shriek
	17	24	40	"	HAWK
	17	24	57	"	BEW shriek + Truck passes by on outer loop of
	~~17~~	~~26~~	~~34~~	JT	landfill
	17	26	34	"	Back in vehicle

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Date	HH	MM	SS	Location	Noise Description
9/26/12	17	30	00	P5	Parked @ location
	17	30	50	"	Hawk
	17	30	52	"	CO + angry bird
	17	32	00	"	Arrived @ station BD, Bew in background, power line crackle
	—			—	
	17	33	13	P5	Truck - unknown if In or outbound - prob. @ BEW
	17	34	32	"	Beep - maybe backup beeper? just once *
~	17	34	40	"	Bang - prob. from adj. residence - like a door slam
	17	36	10	"	Beep/whistle*
	17	37	06	"	T1, possible motorcycle + dog bark by residences to east.
	~~17~~	~~38~~	~~12~~	—	
	17	38	12	"	I return to vehicle
	17	39	44	"	Back in vehicle
	17	26	00	P4	Parked @ location
	17	48	04	"	Arrived @ location BD, cycling AC on cell tower
	~~17~~	~~50~~	~~37~~		Voices of children + adults S. of station in adj. residences ended as I arrived
	17	50	37	"	PT - distant but approaching (ended ~17:52:10)
	17	51	00	"	JT - distant - ended ~17:52:10 also
	17	52	00	"	Frog + another PT? (ended ~17:53:30)
~	17	53	00	"	Another PT, distant, but approaching
	17	53	30	"	child's voice to S. - prob. adj. property
	17	54	24	"	Depart station - can maybe hear ac on something other than cell towers? to S.
	~~17~~	~~56~~	~~25~~	—	
	17	56	25	"	Back in vehicle
	18	00	10	P3	Parked @ location
~	18	01	56	P3	JT
	18	03	20	"	Arrived @ site - can hear flicker pecking tree periodically + distant voices to NE. faint whine from N. stack

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Date	HH	MM	SS	Location	Noise Description
9/26/12	18	04	40	P3	PT, BD, occasional Frog - PT ended ~ 18:06 to
				.	be replaced by distant JT
~	18	07	00	"	Dog barking to NE - maybe 2 dogs - fairly distant
	18	08	15	"	Head back to vehicle
	18	10	32	"	Back in vehicle
	18	15	29	P2	Equipment @ location - typical ambient
					whistle/whine + rumble. BD in background
	~~18~~	~~17~~	~~40~~		
~	18	17	40	"	leave site
	18	21	57	P2	Parked @ location
	18	25	50	"	Arrived @ station distant JT + local BD
~	18	26	10	"	Noticed PT
	18	27	00	"	JT fades into distance as PT approaches
~	18	27	20	"	notice some frogs also
~	18	28	50	"	PT fades out, can hear CD + TD
	18	29	54	"	JT until ~ 18:31:04
	18	31	04	"	Possible brief car alarm to west?
	18	31	45	"	Depart - and another JT passes over
	18	32	50	"	Prev. JT fades out + another fades in until
	~~18~~	~~34~~	~~10~~	"	~ 18:34:00
	18	34	10	"	Distant PT
	18	35	30	"	Back in vehicle
	18	46	30	P1	Parked @ Location
~	18	48	00	"	Dogs barking in distance? - houndog? to west
	~~18~~	~~51~~	~~43~~	"	- also blend PT? or TD
	18	51	43	P1	arrived @ station - possible deer to SE in woods
					frogs - continued periodic dog barking
					also BD, CD + TD
	18	54	53	"	JT
	18	56	10	"	Head back to vehicle

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Date	HH	MM	SS	Location	Noise Description
9/26/12	18	56	18	P1	Back in vehicle
~	19	01	30	S1	Parked @ location.
	19	04	27	"	Noted PT while hiking in
	19	06	21	"	Arrived @ station + ~~bag~~ made noise w/ clipbd.
					Can hear possible heavy machinery @ CG
					Also BD. General ambient sounds are from
					S. + E. - maybe BEW*, in part or ~~DT, DC~~
					CT CT. → yes - some of sound is BEW.
	19	08	45	"	Frogs noted
	19	09	20	"	Departed
~	19	10	48	"	Hear poss. gun shots to w. - distant
	19	13	29	"	Back in vehicle
	19	50	45	P5	Parked @ ~~S~~ location
	19	43	47	"	Arrived @ station to test weather device
	19	55	57	"	opened + tested weather device, closed it again
	19	59	06	"	distant dogs barking, SD, TD, can hear BEW in
	~~19~~				distance, Power line hum + crackle
~	20	01	00	"	PT or ~~P~~ JT
	20	01	58	"	car drove by on road @ entrance
	20	02	35	"	Dog barking in distance again
	20	03	25	"	JT - faded out ~ 20:04:59
	20	05	30	"	Re closed gate @ station
	20	05	53	"	Walked away
	20	27	35	S3	Exited vehicle @ parking lot
	20	30	~~24~~	"	BEW shriek
	30	31	24	"	"
	20	31	53	"	Arrived @ station - overhead power lines snapping
	20	32	16	"	BEW shriek + JT (JT fades out ~ ?
	20	33	11	"	"

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Date	HH	MM	SS	Location	Noise Description
9/26/12	20	33	57	S3	1 walk away
	20	34	08	"	Brew Shriek
	20	35	02	"	
~	20	34	55	"	Noticed car passing on road to W
	~~20~~	~~35~~	~~59~~		+ JT
	20	35	59	"	Brew shriek
	20	36	10	"	Car on Rd to W.
	20	36	53	"	Brew shriek
	20	37	50	"	" + Back in car
	20	45	00	P4	Parked @ location
	~~20~~	~~45~~	~~00~~	~~"~~	
	20	46	-	"	Exited vehicle - heard car? pullup in
	~~20~~	~~48~~	~~10~~	~~"~~	driveway to S.
	20	48	10	"	approached station - ambient sounds include
	~~20~~	~~49~~	~~33~~		AC units on cell tower*, leaves falling +
					small animal just s. of perim. fence +
	20	49	35	"	can hear voices to S. - distant, mice in grass
					+ leaves falling
					* They cycle off + on ~ every 15 sec. ~ 150' W. of
					station
	20	52	20	"	Noticed distant dog barking to N., maybe
					Brew to SW or CD or TD (or all of the above)
	20	54	56	"	Twig dropped + noted TD
	20	55	40	"	Distant voices again to S.
~	20	56	40		overhead - maybe flying squirrels jumping tree to tree
	~~20~~	~~57~~	~~45~~		+ frog
	20	57	45	"	JT (until ~20:59:00
	20	58	00	"	voices + someone opening squeaky window slider to S.
	20	59	35	"	Heading back to vehicle

*cycling stopped @ some point

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Date	HH	MM	SS	Location	Noise Description
9/6/12	~21	01	00	P4	~~Extend~~ Back in vehicle
2	21	08	50	P3	Parked @ location
~	21	11	–	"	Exited vehicle
	21	13	–	"	Arrived @ station - critter in the woods
	21	16	11	"	Checked connections in weather station
				"	Ambient sounds CD + TD - some distant
					barking dogs ~~or coyotes(?)~~
				"	Critter ~ 50 to 100' E. of station
					- low to ground prob. coon or coyote? possum?
					Can hear whine from N. stack
	21	18	–		
				"	I made abrupt noises to scare off critter
					Got a reading on weather station
					- include a temp.
	21	21	45	"	Head back to vehicle
	21	24	20	"	Back in car
~	21	34	30	P2	Parked @ location
~	21	36		"	Exited vehicle
	21	38	50	"	Jt (until ~ 21:40:15)
	21	41	12	"	Arrived @ station - checking weather ~~device~~ device
	21	42	–	"	continued testing weather station
	~~21~~	~~43~~	~~5~~		Ambient sounds = CD, TD, whine from N.
	21	43	56	"	gas station. Small critters + falling leaves
				"	PT (until ~ 21:45:20
	21	46	23	"	motorcycle to S?
	21	46	55	"	~~PT~~ Jt (21:48:15 ended)
	21	48	53	"	TD or motorcycle?
	21	49	–	"	one more attempt to ~~ea~~ address/check weather device
	21	51	30	"	Heading back to vehicle
	21	55	20	"	Back in vehicle

! WX3 works

! WX2 works

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/26/12	22	00	30	S2	Parked @ location
					Typical noise for this station - whine
					of system. Flame burning on small stack
					Large stacks quiet.

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-12	22	38	40	P1	Arrive P1 parking
	22	44	16		Arrive P1
	22	44	28		CD revving
	22	44	56		CD
					- continuous road noise
	22	45	15		Motorcycle Rev
	22	47	00		TD
	22	47	53		Dog barking to ~south
	22	49	20		BEW screech
	22	49	50		leaf falling to ground
	22	50	42		CD siren
	22	50	56		CD siren no longer audible
	22	53	28		Construction vehicle backup indicator
	22	54	12		" "
	22	56	00		CD south
	22	58	47		Bang from Const. vehicle south
	22	59	07		" "
	22	59	19		Depart P1
	23	02	11		Start vehicle; depart P1 parking
	23	06	15	S1	Arrive S1 parking
	23	11	30		~~Arr~~ Arrive S1 · (still Running)
					- CG continuous
	23	12	45		Depart S1
	23	16	07		Start vehicle; depart S1 parking
	22	23	08		Arrive P5 parking
	23	25	12		Arrive P5
					- Powerlines popping continuous
	23	26	10		Screech from BEW
					- BEW continuous

Data collected by: BM JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-26-12	23	27	04	P5	BEW screech
	23	27	40		Frog croaking
	23	28	00		BEW screech
	23	28	15		CD
	23	28	24		CD not audible
	23	28	51		BEW screech
	23	29	00		Plane (Propeller)
	23	29	40		Plane not audible
	23	30	42		BEW screech
	23	31	15		CD
	23	31	37		BEW screech
	23	32	34		BEW screech
	~~23~~	~~33~~	~~26~~		- Plane ~2 sec
	23	33	26		BEW Screech
	23	34	21		" "
	23	35	17		" "
	23	36	09		" "
	23	37	04		" "
	23	38	00		" "
	23	38	55		" "
	23	39	08		Pressure Relief valve at BEW?
	23	39	50		BEW screech
	23	40	08		CD East
	23	40	34		Depart P5
	23	41	48		Arrive vehicle
	23	42	10		Start vehicle
	22	46	01	S3	Arrive S3 parking
	23	53	35		Arrive S3
					- Powerlines popping continuous

Data collected by: BM JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
	23	54	06	S3	BEW Plant pressure valve
	23	54	30		BEW screech
	23	55	17		Depart S3
	23	57	41		Start vehicle ; depart S3 parking
Tue 9-27-11	0	02	05	P4	Arrive P4 parking
	0	03	45		chiller on/off at cell tower
	0	04	15		" "
	0	06	00		Arrive P4 (still Runny) 97% memory remaining
	0	06	21		BEW screech
	0	06	20		- BEW continuous
	0	06	40		CD NE
	0	08	06		Frog croaks ~every 3 seconds
	0	08	12		BEW screech
	0	09	05		" "
	0	10	02		" "
	0	10	57		" "
	0	11	56		" "
	0	12	30		Frog croaking
	0	[illegible]	[illegible]	13:05	chiller @ cell tower on
	0	13	17		" " off
	0	13	35		chiller @ CT on
	0	13	47		" " off
	0	14	25		Bird chirps
	0	14	35		Chiller @ CT on] Every minute
	0	14	45		Chiller @ CT off
	0	15	25		BEW screech
	0	16	10		Frog croak
	0	17	00		Chiller @ CT on
	0	17	11		" " off

Data collected by: BM JKS

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	0	17	58	P4	Chiller CT on
	0	18	09		" " off
	0	18	28		Chiller CT on
	0	18	36		" " off
	0	19	07		BEW Screech
	0	19	22		BEW Valve Release
	0	20	00		BEW Screech
	0	20	58		" "
	0	21	10		Depart PH
	0	23	08		close vehicle Door
	0	23	28		Start vehicle, Depart
	0	28	30	P3	Arrive P3 Parking
	0	32	10		Arrive P3
	0	32	11		CD
	0	33	39		- BEW whine in distance
	0	33	41		CD NE/E
	0	35	45		Dog barking NE/E
	0	36	22		CD
	0	37	20		CD not audible
	0	37	58		Frog croaking
	0	38	47		CD
	0	38	53		Frog not audible
	0	38	59		CD stop
	0	41	32		Dog bark
	0	41	38		CD
	0	42	40		CD stop
	0	42	50		CD
	0	43	50		CD stop
	0	44	19		Frog

Data collected by: Bob J Kr

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/27/12 TUE	00	44	50	P3	Frog still croaking
	00	45	06		Frog stop
	00	45	24		CD East
	00	46	06		CD stop
	00	47	10		Depart P3
	00	49	28		Start vehicle; Depart
	00	58	13	S2	Arrive S2
					- continuous flare plant noise
					- continuous Flare ~~Buzzing~~ burning noise
	01	00	43		start vehicle; depart
	01	05	18	P2	Arrive P2 parking
	01	11	33		Arrive P2 (still Running)
					- continuous whine from BEW
	01	26	33		Depart P2
	01	29	20		Arrive P2 parking
	01	30	00		Start vehicle; depart
	01	38	22	S2	Stop at S2 to check instrument
					- still Running
	01	42	34		Start vehicle
	01	50	09		Arrive P1 parking
	02	06	00		~~Eay~~ Arrive P1
					- coyotes howling east
					- BEW continuous in background
					- Wind picking up a little
					- Leaves falling all around
					- BEW screech every so often
	02	10	00		Coyotes Howling East
	02	16	46		BEW screech ~4 sec
	02	19	17		Coyotes Howling East
	02	20	23		

Data collected by: Bob J K

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	02	23	~~30~~ 34		start vehicle; depart
	02	27	57	S1	Arrive S1 parking area
	02	31	40		Arrive S1
	~~02~~	~~32~~	~~31~~		- continuous noise CG
					- BEW
	02	32	31		~~-~~ BEW screech
	02	32	56		Depart S1
	02	35	59		Start vehicle; depart
	02	44	10	Main Gate	BEW valve Pressure
					- BEW continuous noise
	02	45	15		BEW screech
	02	49	28	P5	Arrive P5 parking
	02	51	55		Arrive P5
					- BEW continuous
					- Powerline popping continuous
	02	52	36		BEW valve screech
	02	53	31		" "
	02	54	26		" "
	02	55	22		" "
	02	56	15		" "
	02	57	11		" "
	02	58	06		" "
	02	58	58		" "
	02	59	11		Pressure screech (diff than above)
	02	59	55		BEW valve screech
	03	00	50		" "
	03	01	45		" "
	03	02	40		" "
	03	03	34		" "

Data collected by: Brk J Kay

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	03	04	30	P5	BEW valve screech
	03	05	24		" "
	03	06	18		" "
	03	06	30		Depart P5
	03	08	17		Start vehicle; Depart P5 parking
	03	12	40	S3	Arrive S3 parking
	03	16	50	S3	Arrive S3 (still Running)
					-BEW
					-Powerlines
	03	18	10		BEW valve screech
	03	18	24		Depart S3
	03	20	45		Arrive back at vehicle
	03	21	08		Start vehicle; depart
	03	27	00	P4	Arrive P4 Parking
	03	29	54		Arrive P4
					- BEW
	03	30	05		BEW valve screech
	03	30	59		" "
	03	31	30		" "
	03	31	50		" "
	03	32	50		" "
	03	33	51		" "
	03	34	38		" "
	03	35	15		Twigs breaking in bushes NW ~50 ft
	03	35	39		BEW screech
	03	35	54		cell tower chiller on
	03	36	22		chiller off (but power buzz) still on
	03	36	39		chiller on
	03	36	51		off (but power buzz on)

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	03	37	35	P4	chiller on
	03	37	48		off (buzz on)
	03	38	07		chiller on
	03	38	17		off (buzz on)
	03	38	35		Chiller on
	03	38	47		off (buzz on)
	03	39	08		chiller on
	03	39	15		off (buzz on)
	03	39	31		chiller on
	03	39	44		off (buzz on)
	03	40	00		chiller on
	03	40	13		off (buzz on)
	03	40	30		Chiller on
	03	40	41		off (buzz on)
	03	40	58		Chiller on
	03	40	03		off (buzz off)
	03	43	35		CD NE
	03	43	49		BEW screech
	03	44	17		Depart P4
	03	45	29		Arrive vehicle - door shuts
	03	45	58		Start vehicle ; depart P4 parking
	03	51	45	P3	Arrive P3 Parking
	03	58	25		Arrive P3
	~~04~~	~~00~~	~~25~~		- Dog bark NE/E
	03	58	55		CD
					- BEW whine in distance
	04	00	25		CD not audible
	04	00	45		CD NE/E
					- Dew dropping from trees

Data collected by: Bu JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	04	02	35	P3	CD not audible
	04	04	19		CD NE
	04	06	32		Dog barking East
	04	09	00		Dog still barking East
	04	09	37		CD NE
	04	12	25		CD NE
	04	13	00		Depart P3
	04	15	08		Arrive vehicle / close door
	04	15	36		start vehicle ; depart
	04	24	22	S2	Arrive S2
	~~04~~	~~26~~	~~38~~		- continuous whine of flare operation
					- continuous flare
	04	26	38		start vehicle ; depart
	04	32	61	P2	Arrive P2 parking
	04	39	05		Arrive P2
					~ Dew falling to ground
					~ leaves falling to ground
					- BEW whine in distance
	04	42	07		Dog barking
	04	54	00		Depart P2
	04	56	50		Arrive vehicle / shut door
	04	57	15		start vehicle
	05	05	58		Pass by S2
	05	13	35	P1	Arrive P1 parking
	05	23	19		Arrive P1 (still Running)
	05	23	151		Siren ESE
					- BEW in distance
					- Dew & leaves falling to ground
	05	25	30		siren not audible
	05	25	19		BEW screech
	05	30	51		" "
	05	31	52		" "
	05	32	50		CD
	05	35	20		BEW screech / Depart P1

Data collected by: B. [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-27-12	05	39	14	P1	Start vehicle ; depart P1
	05	42	58	S1	Arrive S1 parking
	05	48	09		Arrive S1
					- CG
					- BEW w/ screeching intervals
					- Dew / Leaves falling from trees
	05	49	33		Depart S1
	05	52	32		close vehicle door
	05	52	47		Start vehicle ; depart
					BK

Data collected by: BL J K

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
9/27/12	06	18	55	P5	Arrive at P5 Parking area
	06	21	38		Arrive at P5
					- continuous popping from power lines
	06	21	59		BEW Screeching
	06	22	51		BEW Screeching
	06	23	48		BEW Screeching
	06	24	13		CD
	06	24	19		BEW Screeching
	06	24	29		JT
	06	24	42		BEW Screeching
	06	25	16		TD
	06	25	37		BEW Screeching
	06	26	24		CD
	06	26	32		BEW Screeching
	06	26	51		PL
	06	27	27		BEW Screeching
	06	28	22		BEW Screeching
	06	28	31		TC
	06	29	13		BEW Screeching
	06	29	39		TC
	06	30	11		BEW Screeching
	06	30	20		TD
	06	30	42		DOG in Distance
	06	31	05		BEW Screeching
	06	31	47		DOG
	06	32	00		BEW Screeching
	06	32	20		School Bus in Distance
	06	32	55		BW Screeching
	06	33	10		CD

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/27/12	06	33	41	P5	TC
	06	33	50		BW Screeching
	06	34	09		CD
	06	34	29		PL
	06	34	41		CD
	06	34	48		BW screeching
	06	34	56		DG
	06	35	40		BW screeching
	06	35	50		CD
	06	35	57		DG
	06	36	04		School Bus in distance
	06	36	28		DG
	06	36	33		TD
	06	36	42		Depart P5
	06	36	55		DG
	06	38	04		start vehicle ; depart P5
	06	40	43		CI
	06	42	36	S3	Arrive at S3 parking area
	06	43	00		BW screeching
	06	43	53		BW screeching
	06	44	46		TC
	06	45	44		BW screeches
	06	45	59		CI
	06	46	19		CI
	06	46	30		Arrive at S3 - continuous popping from power lines
	06	46	39		BW screeching
	06	46	50		~~CD~~ CI
	06	47	30		BW screeching
	06	48	04		Depart S3

As

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
9/27/12	06	48	26	S3	BW Screeching
	06	48	58		T@
	06	49	12		BW Screeching
	06	49	28		PL
	06	50	24		Start vehicle & depart S3 parking
	06	52	29		T@
	06	55	56	P4	Arrive at P4 parking area
	06	58	34		arrive at P4
	06	58	42		T@
	06	58	56		Frog
	06	59	26		BW
	07	00	19		BW
	07	01	02		T@
	07	01	15		BW
	07	01	28		JT
	07	01	52		BD
	07	02	10		BW
	07	02	24		TD
	07	02	31		T@ beeping
	07	03	21		TD
	07	03	51		TD
	07	04	25		T@ beeping
	07	05	05		T@ beeping
	07	05	23		BD
	07	06	09		T@ beeping
	07	06	20		CD
	07	07	25		BD
	07	07	34		T@ beeping
	07	08	56		BW

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/27/12	07	09	14	P4	TC
	07	10	01		TC beeping
	07	10	24		BW
	07	12	10		BW
	07	12	28		TC
	07	12	55		TC beeping
	07	13	10		Depart P4
	07	14	35		Start vehicle; Depart P4 parking area
	07	21	40	P3	Arrive at P3 parking area
	07	24	41		arrive at P3
	07	25	58		CD
	07	26	53		BD
	07	24	59		continuous CD road noise
	07	28	04		NE - Hammering
	07	28	45		NE - Hammering
	07	29	40		BD
	07	30	51		JT
	07	33	59		NE - Hammer
	07	35	36		CD
	07	37	02		Frog
	07	38	20		CD
	07	38	45		NE - Saw
	07	39	13		NE Saw
	07	39	50		NE Saw
	07	39	59		Depart P3
	07	42	15		Start vehicle; depart P3
	07	49	19	S2	Arrive at S2
					- continuous whine from flare operation
					- continuous flare

As

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/27/12	07	51	36	S2	CD
	07	52	39		Start vehicle; depart S2
	07	58	17	P2	Arrive at P2 parking area
	08	03	01		Arrive at P2
	08	04	29		TC
	08	04	48		JT
	08	06	45		~~CG~~ KC
	08	24	24		CD
	08	09	04		BD
	08	10	11		TC
	08	13	00		PL
	08	15	05		Depart P2
	08	17	25		PL
	08	19	40		Start vehicle; depart ~~S~~ P2
	08	28	22		Drive by S2 in vehicle, continuous
	~~08~~	~~39~~	~~04~~	~~P1~~	noise from flare plant
	08	39	04	P1	Arrive at P1 parking area
	08	43	27		arrive at P1
	08	43	36		BD
	08	44	08		CD
	08	44	27		BD
	08	45	35		TC
	08	45	44		BD
	08	46	12		Vehicle Approaching station area along dirt road
	~~08~~	~~48~~	~~30~~		King County work truck, drives through
	08	48	30		TC
	08	49	30		TC
	08	50	46		TC
	08	53	02		BD

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
9/27/12	08	53	24	P1	T@
	08	54	36		T@
	08	54	46		BD
	08	55	52		T@
	08	56	14		KC Big Boom
	08	57	30		T@
	08	54	05		T@
	08	58	15		Depart P1
	09	01	03		Start vehicle ; depart P1
	09	05	37	S1	Arrive at S1 parking area
	09	08	46		arrive at S1
					- Continuous Noise from CG (Blowing ?)
	09	10	46		T@
	09	10	55		Depart S1
	09	14	08		Start vehicle ; depart S1
	09	22	50	Main Gate	BEW screech
	09	24	24	P5	Arrive at P5 Parking area
	09	24	50		JT
	09	25	36		BEW screech
	09	26	16		CO
	09	26	57		TI
	09	27	43		Arrive at P5
	~~09~~	~~28~~			-continuous popping from power lines
	09	28	20		BEW Screech
	09	28	45		TI
	09	29	18		TI ; BEW screech
	09	29	39		TI
	09	30	12		TO
	09	31	03		BEW screech

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

A5

Date	HH	MM	SS	Location	Noise Description
9/27/12	09	31	58	P5	BEW Screech
	09	32	48		CD
	09	34	00		CD
	09	34	14		BD
	09	34	41		BEW Screech
	09	35	27		CD
	09	35	38		BEW screech
	09	35	50		CD
	09	36	02		TI
	09	36	26		TI
	09	37	21		TO
	09	37	50		TI
	09	38	20		BEW Screech
	09	38	46		CD
	09	39	13		BEW screech
	09	39	56		TI
	09	41	05		CD
	09	41	47		KC
	09	42	00		BEW screech
	09	42	15		DG
	09	42	40		Depart P5
	09	43	12		TI
	09	44	30		Start vehicle; depart P5
	09	44	58		TI
	09	47	50	S3	Arrive at S3 parking area
	09	48	24		BEW screech
	09	49	17		BEW screech
	09	50	12		BEW Screech
	09	51	08		BEW Screech

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/27/12	09	51	22	S3	TI
	09	51	42		Arrive at S3 - continuous popping from power line
	09	51	54		CI
	09	52	02		BEW screech
	09	52	38		CI
	09	52	57		BEW Screech
	09	53	50		BEW screech
	09	54	12		Depart S3
	09	54	48		BEW screech and T@
	09	55	18		CI
	09	55	30		CI
	09	55	42		BEW screech
	09	56	11		T@
	09	56	18		TO
	09	56	36		BEW screech
	09	58	30		BEW screech
	09	59	21		BEW screech
	10	00	20		BEW Screech
	10	00	46		Start vehicle depart S3 parking area
	10	05	58	P4	- Arrive at P4 parking
	~~10~~	0-			- PL
					- continuous NE motor sound (generator ?)
	10	09	10		Air unit turn on
	10	09	56		Arrive at P4
	10	10	07		Frogs
	10	12	00		PL
	10	15	56		JT
	10	17	29		Frog
	10	18	05		CD

45

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

A5

Date	HH	MM	SS	Location	Noise Description
09/27/12	10	19	50	P4	NE Motor Noise Stops
	10	20	02		- AC unit turns on
					T@
	10	20	28		AC unit turns on + off
	10	21	34		~~leave~~ Depart P4
	10	22	10		Start vehicle, depart P4 parking area
	10	53	50		Arrived at ~~P3~~ parking area.
	10	58	36	P3	JT
	11	04	04		Arrive at P3
	11	05	33		PL
	11	08	33		NE construction
	11	12	46		Depart ~~P3~~ P3
	11	15	24		Start vehicle, depart P3
	11	19	24		Drove by S2 w/ vehicle
	11	24	44		Arrive at S2
	11	36	07	S2	- continuous whine from Flare plant
	~~11~~	~~37~~	~~20~~		- continuous flare
	~~11~~	~~37~~	~~20~~		TQ
	11	37	20		CQ
	11	38	32		Recalibration on S2 SLM
	11	45	20		Start vehicle, depart S2
	11	59	16		Arrive at P2 parking area
	12	04	32	P2	JT
	12	06	11		Arrive at P2
	12	08	65		Recalibration on P2 SLM
	12	11	00		Closing of SLM case
	12	22	38		JT
	12	22	50		JT
	12	25	11		JT
	12	28	26		

Data collected by:

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A5

Date	HH	MM	SS	Location	Noise Description
9/27/12	12	29	33	P2	JT
	12	31	00		JT
	12	32	50		Arrive back at P2 for weather data
	12	35	40		PL
	12	38	40		~~JT~~ PL; leave P2
	12	41	51		PL
	12	44	37		Start vehicle; depart P2
	12	49	02		Drive by S2 in vehicle
	13	00	34	P1	Arrive at P1 parking area
	13	02	57		JT
	13	04	20		KC
	13	05	28		Arrive at P1
	13	05	58		PL
	13	08	05		PL
	13	08	45		Loud BOOM KC
	13	09	37		BD
	13	10	19		KC Boom noise
	13	10	53		JT
	13	10	58		BD
	13	13	05		BD
	13	14	08		TC
	13	15	16		depart P1
	13	19	32		Start vehicle; depart P1
	13	23	39	S1	Arrive at S1 parking areas
	13	27	52		Arrive at S1
	13	28	07		CG - trucks
	13	29	13		CG
	13	30	00		Buzz (alarm) at CG
	13	30	18		Depart S1

Data collected by: [illegible]

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Date	HH	MM	SS	Location	Noise Description
9/27/12	13	35	06	~~P~~ S1	Started vehicle; depart S1 S-Z
	13	43	40	S3	Arrive at S3 parking area
	13	~~44~~	~~44~~		BEW screech
	13	58	36		BEW screech
	13	59	12		Start vehicle depart S3

A5

9/27/12

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/27/12	14	14	19	P5	Arrived to download unit -
	14	31	39	"	Returned in vehicle to pick up Tim
	14	45	50	"	Locked gate - conversation w/adj neighbor
	14	53	00	"	Motor cycle went down deadend rd. + left ~~14:44:53~~ 14:54:00
	14	53	30	—	can see stack flare @ main plant
~	15	01	00	P1	Parked @ location from
~	15	03	15	"	Noticed PT fading out ~ 1505:30
	15	05	10	"	Tim + I arrive @ station to check SLM + weather device
	15	28	30	"	Re-started SLM
~	15	40	—	S1	Closed door of vehicle + headed in
	15	43	34	"	To? - whining sound - poss. transmission? - or heavy equip.*
	15	44	35	"	Arrived @ station - ambient sounds = CG - backup beepers TD, CD, JT (started ~ arrival time). mild breeze, BD.
	~~15~~	~~45~~	~~40~~		
	15	45	40	"	Backup beeper to S.
	~~15~~	~~46~~	~~20~~		*
	15	46	20	"	* again - Ti? - looks like onsite large yellow dump truck
	15	47	04	"	Dump truck hatch banging? - confirmed - truck seems to drives in circles, possibly.
	15	47	34	"	"
	15	47	50	"	Tim approaches to check SLM.
	15	48	20	"	Horn, followed by backup beeper + crows
~	16	03	—	"	RESTARTED SLM ⇒ dump truck making rounds
	16	04	10		s.o.j instrument, BD, + distant JT
					⇒ Departed site
~	16	08	30	"	Back in vehicle
	16	19	—	P4	Arrived @ parking location
~	16	21	30	"	Arrived @ station - periodic voices to S., motorcycles
					BD, PT, leaves falling, NE? to E. ⇒ AC on ~~radio~~ cell tower running constantly
	16	23	10	"	Raven

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/27/12	16	23	30	P4	approached SLM to download.
~	16	41	23	"	Restarted unit
	16	43	36	"	Back in vehicle
~	16	47	35	P3	Parked @ Location
	16	50	30	"	Arrived @ station to download + check
					weather device, BD - Radio + some kind
					of machinery sounds to NE
					Machinery off ~ 16:51:28, leaves falling
					(Radio playing Rolling Stones) Distant frogs
					Radio tapered off ~ 16:52
~	16	52	30	"	JT noticed
	16	53	38	"	Noticed 2nd JT + Radio again
~	16	53	55	"	Tim opened SLM case
~	17	15	20	"	SLM ON - case closed + departing
	17	17	22	"	~~PT~~ PT noticed - fades out ~17:18:28, BD also
	17	19	18	"	Back in vehicle
~	17	39	48	P2	Parked @ location - can hear JT, BD
	17	45	07	"	Noticed PT - Frogs + BD
	17	46	35	"	First PT faded out + another fading in? or
					maybe large distant Truck?
	15	47	54	"	Arrive @ station - PT fading local birds
	17	48	30		- can hear another PT - ~~maybe 2? of PT~~ + JT
				"	PT + JT fade out ~ 17:50:00 to be replaced
					by motorcycle to East - fad out ~17:50:30
	12	50	42	"	Another JT + a frog + a flicker - JT faded ~ 17:52:25
	17	52	50	"	To? maybe TD or CD
	17	54	15	"	JT - fades out ~ 17:55:34
~	17	54	57	"	Flicker "chucking"
	17	55	35	"	~~another JT fades in~~ Another JT fades in - fades out ~17:56:58

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/27/12	17	57	14	P2	me shuffling papers on clip bd.
	17	57	46	"	CD or TD, continuing BD
	17	58	16	"	I start to test weather station
	17	58	30	"	I notice PT
	18	01	37	"	I complete change of battery on weather station + notice possible CD? - Also BD + frogs
	~~18~~	~~02~~	~~28~~	~~"~~	
	18	02	28	"	Ravens + frogs - Actually frog-like noises
	18	02	45		are ravens croaking, possibly
	18	03	50	"	JT + I begin to depart
	18	07	43	"	Back in vehicle
	18	13	50	S2	Arrived @ location, parked - noted typical
					whine of North Flare stack station
					Flare stack is burning. BD.
	18	16	19	"	Prepare to drive away
	18	31	54	P1	Parked @ location - can hear JT in distance - fades ~18:35
	18	33	37	"	motorcycles tow.
	18	34	57	"	PT in distance, BD & motorcycles very distant
	~~18~~	~~37~~	~~00~~	~~"~~	Also CD or TD - sounds like Hwy traffic tow.
	18	37	06	"	JT.
	18	37	30	"	Arrive @ station - can hear leaves falling, BD
	18	38	45	"	two JT
	18	39	33		motorcycle in distance again
					JT ~~plus~~ fades
	18	40	28	"	Crows
~	18	40	55	"	TD
	18	41	34	"	Crow
~	18	42	00	"	Distant motorcycle again ~18:45
	18	43	07	"	JT fades in** + I head back to vehicle ** fades out
	18	43	24	"	Motorcycle

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/27/12	18	45	46	P1	another ~~JT or~~ dist. traffic noise
	18	46	40	"	Back in vehicle, PT noted
	18	51	20	S1	Parked @ location
~	18	53	–	"	Noted PT (may be two?)
	18	59	00	S1	arrived @ station, noted BD, mechanical
					sound from ~~BD~~ CG to north - kind of a whirr/hum
	18	59	57	"	Possible PT or motorcycle
	19	00	14	"	CG Back up beeper
	19	00	46	"	Motorcycle to west again + PT
	19	02	00	"	Frog? ~~2 of them~~ - actually 3!
					prob. w/in 20 or 30' of sample - stopped ~1903:00
	19	03	20	"	Motorcycle again in W.
	19	04	00	"	I head back to vehicle
	19	05	07	"	I notice PT
	19	06	00	"	Can hear yellow dumptruck whining again to N
					OR Ti?
~	19	06	30	"	I notice PT
~	19	08	30	"	Back in vehicle
	19	15	40	P5	Parked @ site
	19	17	02	"	Car passes by on rd heading S.
	19	17	38	"	BD, CD or RTD or other vehicle, crackling power lines - large (@ station.
	19	18	13	"	Bew shriek
	19	18	54	"	" + notice JT or PT - ~~multi~~ multiple indist.
	19	19	58	"	Bew shriek + PT
	19	20	50	"	critter walking in woods tos - prob. deer
~	19	21	–	"	~~Car~~ CO
	19	21	44	"	Car drives S. on road
	19	22	14	"	CD
	19	23	22	"	2nd critter S. ~~of~~ of station

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Date	HH	MM	SS	Location	Noise Description
9/22/12	19	24	02	P5	car passes to S. on rd
~	19	24	30	"	Dog barks in dist. to N.
	19	25	24	"	BEW shriek + can hear ~~JET~~ JT in dist
					dog continues barking until ~ 1926
~	19	26	20	"	BEW shriek (note: critters to N. Prob. deer)
	19	27	11	"	BEW shriek
	19	28	00	"	I head back to vehicle
	19	28	04	"	BEW shriek
	19	59	~	S3	~~over~~ Parked @ location
	20	00	52	"	Possible JT until ~ 2000 250
	20	01	21	"	BEW Shriek
	20	01	25	"	TI
	20	02	15	"	BEW shriek
	20	03	08	"	BEW shriek + I arrive @ station
					maybe PT in distance. Typical BEW roar
	20	04	02	"	BEW shriek - also overhead line crackle
	20	04	28	"	some kind of hiss? maybe ~~car~~ brakes on truck?
	20	04	58	"	BEW shriek
	20	05	01	"	car passing on rd to E.
	20	05	30	"	I head back to vehicle
	20	05	51	"	BEW shriek
	20	06	44	"	BEW shriek
~	20	08	–	"	Back in vehicle
	20	11	55	P4	I park @ location
	20	13	00	"	BEW shriek
	20	13	55	"	BEW shriek - can hear quiet AC @ cell tower
	20	14	48	"	BEW shriek + I arrive @ station

Data collected by:

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Date	HH	MM	SS	Location	Noise Description	
9/27/12	20	15	42	P4	Twigs/leaves falling + BEW shriek	
	20	16	13	"	clicks + clacks in woods to S. - possible critter outside fence	
	20	16	38	"	BEW shriek	
	20	17	29	"	" + noticed JT - faded ~	
~	20	18	10	"	AC cycles on @ celltower + voices to S.	
	20	18	23	"	BEW shriek	
	20	18	55	"	AC cycles on again* + another voice to S.	
	20	19	16	"	BEW shriek	
	20	19	53	"	voices - kids? to S.	
	20	20	12	"	BEW shriek	*continues on ~ 15sec. cycle.
	20	21	05	"	" (critter)	
	20	21	20	"	Something in woods by celltower S. of fenceline - also hear frog E. of station	
	20	21	00	"	BEW shriek	
	20	22	37	"	voice to S.	
	20	23	09	"	maybe JT - distant? on Ti	
	20	23	35	"	motorcycle in distance or CT	
	20	23	49	"	BEW shriek + PT	
	20	24	10	"	I head back to ~~car~~ vehicle	
	20	25	43	"	Back in vehicle	
	20	30	41	P3	Parked @ location	
	20	34	45	"	I arrive @ station - can hear distant traffic	
~	20	35	28	"	sounds from freeway to N. (maybe I-90?)	
					→ owl? Dog? in distance falling leaves, frogs,	
					noticed JT ~ fades ~ 20:37 - to be replaced by PT	
	20	36	11	"	Distant dogs	
	20	37	38	"	motorcycle? to W. (on car)	
	20	38	55	"	motorcycle rev or large truck to NW fades ~ 20:39	

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Date	HH	MM	SS	Location	Noise Description
9/27/12	20	39	43	+ P3	1 change sheets on clipbd.
	20	40	15	"	CD
	~20	41	30	"	CD or motorcycle
	20	42	19	"	CD or motorcycle
	~20	42	30	"	Frog
	20	42	58	"	CD or motorcycle - faintly notice N. Flare stack in bkgrd. - whine
	20	43	56	"	JT or PT? distant
	20	44	20	"	1 Rtn to vehicle
	20	46	28	"	Back in vehicle
	20	55	35	P2	Parked @ Location - can hear JT
	12	00	15	"	Arrive @ station - can hear whine of N. Flare stack - JT is gone. Very distant traffic noise? maybe freeway, frogs, leaves falling.
	21	02	40	P2	JT - distant → maybe hearing the slow, quiet, and steady rain of caterpillar droppings?
					- JT. Fade 2:10:50 - replaced by
	21	05	36	"	Loud car + maybe PT
	21	06	21	"	continued CD
	21	08	21	"	more CD/motorcycle?
	21	08	42	"	Dog barking
	21	09	08	"	Loud, distant CD OR TD.
	21	09	48	"	PT
	21	10	10	"	1 head back to vehicle
	21	13	06	"	Back in vehicle

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Date	HH	MM	SS	Location	Noise Description
9/27/12	21	17	22	~~P1~~ S2	Parked @ location - typical whine of
					~~[illegible]~~ machinery - flare stack burning
	21	20	20	"	I leave site
	21	27	35	P1	Parked @ location - noted deer nearby
					→ can hear BEW in distance
	21	28	52	"	Possible jet - confirmed JT
	21	30	20	"	Loud car or CCr in dist. to S.
	21	32	41	"	Arrived @ station - BEW to SE, possibly
					CCr to S., leaves falling, deer in
					woods near by (most likely)
	21	34	[illegible]	"	Backup beepers? @ CCr?
	21	36	20	"	Notice PT fades in + out
	21	36	27	"	Some kind of distant truck horn?
	21	39	07	"	JT fades in - fades out ~ 21:40:00
	21	40	55	"	Big leaf maple leaf fell
	21	41	50	"	PT - fades out ~ 21:43:00 - replaced by JT?
	21	42	00	"	I head back to vehicle.
	21	44	42	"	Back in vehicle
	21	48	07	S1	Parked @ site
	21	50	03	"	Motorcycle to SW?
	21	50	44	"	Again - some noise from BEW
	21	53	43	"	Arrived @ station - Loud mech. whine prob.
	21	54	45		from CCr → not sure what it is - sounds ~~[illegible]~~
					constant / hydraulic?
				→ "	→ PT?
	21	55	15	"	Dist. dog bark to NW.
	21	55	40	"	Dist chunk to S. - prob. CCr
	21	56	18	"	Frogs near station
	21	56	45	"	I head back to vehicle
	22	00	13	"	Back in vehicle

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9-27-12	22	00			Shift change BJK now on site
	22	26	01	P5	Arrive P5 parking
	22	28	23		Arrive P5
					- BEW continuous
					- Powerlines continuous
	22	28	57		BEW screech ~3 sec each
	22	29	22		Equipment squeaking at CHRLF
	22	30	17		BE screech
	22	30	56		CD East
	22	31	13		BE screech
	22	31	40		CD East
	22	32	08		BE screech
	22	33	12		CD ; BE screech
	22	33	57		BE screech
	22	34	30		BE pressure release valve? (not screech)
	22	34	53		BE screech
	22	35	48		BE screech
	22	36	43		" "
	22	37	39		" "
	22	37	40		Flare at BE (sounds like a Jet, but flame is visible)
	22	38	32		BE screech
	22	38	56		BE pressure valve
	22	39	28		BE screech
	22	40	29		" "
					- Plane East (Jet)
	22	41	20		BE screech
	22	42	00		Plane not audible
	22	42	30		BE screech
	22	43	09		" "

BK ↓

Data collected by: BL JK

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BK ↓

Date	HH	MM	SS	Location	Noise Description
9-27-12	22	43	25		BK shuffling papers
					- helicopter East
	22	44	28		motorcycle East
	22	44	40		CD East
	22	45	00		BE screech
	22	45	15		Depart P5
	22	46	22		vehicle Door chime
	22	46	33		vehicle Door shut
	22	47	13		Start vehicle
	22	52	05	S3	Arrive S3 Parking (stomp feet, scare deer away)
	22	55	20		BE continuous Arrive S3
					Powerlines pop
	22	56	53		BE screech
	22	57	15		Depart S3
	22	58	25		Rock hitting water to scare deer away from vehicle
	22	59	55		Start vehicle
	23	04	20	P4	Arrive P4 Parking
	23	05	26		open car door: chime
	23	07	02		~~Arrive~~ Arrive P4
	23	07	35		~~Ala~~ chiller @ CT on
	23	08	00		" " off
	23	08	20		on
	23	08	32		off
	23	08	49		on
					BE continuous in distance
	23	09	05		chiller CT off
	23	09	19		" " on
	23	09	34		" " off
	23	09	47		Dog barking East

Data collected by: BK JK

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BK ↓

Date	HH	MM	SS	Location	Noise Description
9/27/12	23	10	22	P4	chiller CT on
TR	23	10	37		" " off
	23	10	52		" " on
	23	11	07		" " off
					Plane in distance North
	23	11	27		chiller CT on
	23	11	39		" " off
	23	11	58		" " on
	23	12	14		" " off
	23	13	02		" " on
	23	13	10		" " off
	23	13	30		BE screech ~ 3 xx each
	23	14	06		" "
	23	14	41		BE valve
	23	15	21		BE screech
	23	15	35		BE valve
	23	15	39		Plane East
	23	16	15		BE screech
	23	17	08		Depart
	23	18	00		Car door chime
	23	19	01		start vehicle
	23	20	28	P3	Arrive P3 parking
	23	29	30		Arrive P3
					- Plane overhead
	23	30	56		Plane not audible
	23	30	58		CD NE/East
	23	31	18		Fog
	23	31	28		Plane (Jet)
					BE whine in distance

Data collected by: [illegible] JM

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3K

Date	HH	MM	SS	Location	Noise Description
9/27/12	23	32	44	P3	BK shuffling papers
TR	23	32	59		Plane not audible
	23	33	22		CD East
	23	34	08		Twiss snapping west
	23	34	49		CD East
	23	35	24		CD East
	23	36	30		Frog East
	23	37	14		CD East
	23	37	57		CD East
	23	38	36		CD East
	23	39	19		Frog
	23	40	01		Depart P3
	23	42	25		Door chime; shut door
	23	42	52		Start vehicle
	23	50	48	S2	Arrive S2
					- Flare Roar continuous
					- Equipment whine near large stacks (pulsing noise)
	23	53	55		Start vehicle
	23	59	30	P2	Arrive P2 parking
9-28-12	0	04	12		Arrive P2
					- BEW whine in distance
					- Leaves dropping periodically
	0	07	42		CD N/NE
	0	10	58		leaves hitting ground
	0	13	15		Twig snap under foot
	0	14	00		Depart P2
	0	18	20		Start vehicle
	0	27	16	S2	Pass by S2
	0	34	15	P1	Arrive P1 parking

Data collected by: BK J K

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BK ↓

Date	HH	MM	SS	Location	Noise Description
9/28/12	0	36	19	P1	Birds
TR	0	36	23		Arrive P1
					-BE in distance
	0	37	06		BE screech
	0	37	40		Plane overhead (Jet)
	0	37	56		BE screech
	0	38	52		" "
	0	38	54		BE valve
	0	38	59		Plane not audible
	0	39	48		BE screech
	0	40	42		" "
	0	40	44		Plane (Jet)
	0	41	39		BE screech
	0	42	34		" "
	0	43	29		Plane not audible
	0	44	25		BE screech
	0	46	15		" "
	0	46	46		Depart P1
	0	47	12		BE screech
	0	55	45		Start vehicle
	01	00	45	S1	Arrive S1 Parking
	01	04	30		Arrive S1
					CG continuous
	01	04	51		BE screech
	01	05	31		" "
	01	06	20		Depart S1
	01	09	07		door chime; close door
	01	09	45		start vehicle
	01	17	26	P5	Arrive P5 Parking

Data collected by: Bk J K

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BK ↓

Date	HH	MM	SS	Location	Noise Description
9-28-12	01	19	47	P5	Door chime; shut door
	01	21	25		Arrive P5
					BEW continuous
					Powerlines pop continuous
	01	22	00		BEW screech
	01	22	56		" "
	01	23	51		" "
	01	24	35		BE Valve
	01	24	47		BE screech
	01	25	43		BE screech
	01	26	35		" "
	01	27	31		" "
	01	28	29		" "
	01	28	59		BE valve
	01	29	24		BE screech
	01	30	15		" "
	01	31	13		" "
	01	32	07		" "
	01	33	03		" "
	01	33	57		" "
	01	34	35		BE valve
	01	34	52		BE screech
	01	35	48		" "
	01	36	41		" "
	01	36	50		Depart P5
	01	38	07		Door chime of vehicle
	01	38	16		Close Door of vehicle
	01	38	53		Start vehicle
	01	43	18	S3	Arrive S3

Data collected by: BK J Kp

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
1-28-12	01	49	40	S3	Door chime
	01	50	30		BE screech
	01	51	20		" "
	01	52	20		" "
	01	53	24		Arrive S3
					- BE
					- Powerlines
	01	54	07		BE screech
	01	54	35		BE pressure valve Hiss
	01	54	47		Plane
	01	55	03		BE screech
	01	55	18		Depart S3
	01	57	35		Door chime vehicle
	01	57	44		Door shut vehicle
	01	58	22		start vehicle : depart
	02	06	03	P4	Arrive P4 parking
	02	07	03		Door chime / shut door
	02	07	37		chiller CT on
	02	07	48		" " off
	02	07	52		BE screech
	02	09	31		Arrive P4
					BE continuous
	02	09	43		chiller CT on
	02	09	55		" " off
	02	10	02		Frog
	02	10	36		BE screech
	02	11	15		chiller CT on
	02	11	30		off
	02	11	46		chiller CT on

BK ↓

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	02	12	52	P4	Chiller in off mode
	02	14	19		BE screech
	02	15	42		BE Screech
	02	16	10		" "
	02	17	01		BE Screech
	02	18	50		" "
	02	19	20		BE pressure valve
	02	19	45		BE screech
	02	20	00		chiller CT on
	02	20	15		" " off
	02	20	34		chiller CT on
	02	20	49		" " off
	02	21	08		" " on
	02	21	20		" " off
	02	21	37		BE screech
	02	21	37		chiller CT on
	02	21	51		" " off
	02	22	07		chiller CT on
	02	22	22		" " off
	02	22	31		BE screech
	02	22	41		chiller CT on
	02	22	54		" " off
	02	23	10		chiller CT on
	02	23	24		" " off ; BE screech
	02	23	40		" " on
	02	23	55		" " off
	02	23	59		Depart P4
	02	25	21		start vehicle: depart P4
	02	30	58		Arrive P3 parking

OK

Data collected by: BMJ

KCSWD CHRLF Perimeter Noise Study

amec

BK ↓

Date	HH	MM	SS	Location	Noise Description
9-28-12	02	37	45	P3	Door chime; shut door
	02	40	05		Arrive P3
	02	40	43		CD NE/E
					BE whine in distance
	02	41	26		CD south?
	02	41	42		CD E
	02	41	56		BE screech
	02	42	30		Frog
	02	43	44		BE screech
	02	44	29		CD NE
	02	44	37		BE screech
	02	45	32		" "
					- Leaves falling periodically
	02	46	30		CD E/NE
	02	47	22		BE screech
	02	47	35		CD E/NE
	02	47	56		Depart P3
	02	50	06		Door chime; shut door
	02	50	47		start vehicle
	02	58	15	S2	Arrive S2
					- Continuous pulsing whine from tank area
					- Continuous roar of flare stack, north side
	03	02	35		start vehicle
	03	06	40	P2	Arrive P2 parking
	03	12	17		Arrive P2
					BEW whine in distance
					- Leaves falling periodically
	03	17	25		CD East
	03	17	40		Dog East very distant

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	03	18	17	P2	BK shuffling papers
	03	19	35		Depart P3
	03	22	15		Door chime / shut door
	03	22	39		Start vehicle
	03	27	38	S2	Pass by S2
	03	35	25	P1	Arrive P1 parking
	03	38	52		BE screech
	03	41	38		" "
	03	42	10		BE valve
	03	42	34		BE screech
	03				BE continuous in the distance ; leaves falling periodically
	03	43	05		BE valve
	03	43	30		BE screech
	03	44	23		" "
	03	45	20		" "
	03	45	45		Depart P1
	03	47	53		Door chime / shut door
	03	48	09		Start vehicle
	03	52	08	S1	Arrive S1 parking
	03	56	05		Arrive S1
					- Frogs croaking x2
					- CB continuous ; BEW faint in distance
	03	56	40		1 frog stops
	03	57	16		BEW screech
					- leaves fall periodically
	03	58	11		BE screech
	03	58	22		Depart S1
	04	01	25		Door chime ; shut door
	04	01	56		Start vehicle

BK

Data collected by: Bul J K

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9-28-12	04	12	50		Arrive P5 parking
	4	13	46		Door chime / Door shut
	04	16	10		Arrive P5
					BE continuous
					Powerlines pop continuous
	04	16	31		BE screech
	04	17	26		" "
	04	18	21		" "
	04	19	48		Powerlines humming
	04	19	16		BE screech
	04	19	56		squeal noise from BE area
	04	20	17		BE screech
	04	21	08		" "
	04	22	04		" "
	04	23	02		" "
	04	23	20		CI
	04	24	20		Threw rock into forest to scare deer away
	04	24	41		BE valve hiss
	04	24	52		BE screech
	04	25	48		" "
	04	26	16		Plane (prop) South
	04	26	39		Plane not audible ; BE screech
	04	27	33		BE screech
	04	27	44		BE valve hiss
	04	28	18		Powerlines humming / popping louder
	04	28	30		BE Screech
	04	28	57		BE valve screech
	04	29	28		BE valve screech
	04	29	40		CI

BK

Data collected by: Bob J Kempe

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	04	29	55		BK shuffling papers
	04	30	21		BE screech
	04	31	16		" "
	04	31	26		Depart P5
	04	32	55		Door chime / shut door
	04	33	29		Start vehicle
	04	37	15	S3	Arrive S3 parkin
	04	37	53		Door chime / open door
	04	38	38		BE screech
	04	40	29		BE screech ; Arrive S3
	04	40	45		CI
	04	41	23		BE screech
	04	41	41		valve open - hiss ?
					-BE continuous
					- Powerlines pop continuous
	04	42	19		BE screech
	04	42	30		Plane (Jet) south
	04	43	14		BE screech
	04	43	30		Plane not audible
	04	43	45		Depart S3
	04	45	45		Door chime / shut door
	04	46	02		BE screech
	04	46	28		Start vehicle
	04	50	35		Arrive P4 Parkin
	04	51	36		Door chime
	04	53	05		Arrive P4
					-Frog croaking
	04	53	45		chiller CT power on ; humming
	04	54	21		BE screech

BK ↓

Data collected by: BK / K

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amec

BK ↓

Date	HH	MM	SS	Location	Noise Description
9-28-12	04	54	35	P4	BK shuffling papers
	04				chiller CT on
	04	55	14		BE screech
	04	55	48		chiller CT vibration noise
	04	56	00		chiller CT on
	04	56	15		" " off
	04	56	35		" " on
	04	56	48		" " off
					BE continuous in distance
	04	57	04		chiller CT on
	04	57	19		chiller CT off
	04	57	35		" " on
	04	57	53		" " off
	04	58	41		" " on
	04	58	56		" " off
	04	59	09		BE screech
	04	59	11		Chiller CT on
	04	59	28		" " off
	04	59	35		Depart P4
	05	01	00		Door chime / shut door
	05	02	00		start vehicle
	05	06	05	P3	Arrive P3 parking
	05	07	12		Door shut / chime
	05	10	46		Arrive P3
					- Frog croaking
					- BE continuous
	05	11	19		CD East
	04	12	23		Frog farther away
	05	12	35		Leaf dropping

Data collected by: BL JT

KCSWD CHRLF Perimeter Noise Study

amec

BK ↓

Date	HH	MM	SS	Location	Noise Description
9-28-12	05	13	00	P3	BK shuffle paper
	05	13	10		CD East ; Frog NW of station
					- Leaves dropping periodically
	05	14	28		- Frog ; Plane (prop)
	05	15	45		Plane not audible
	05	16	40		CD East (seems to be continuous road noise)
	05	20	10		Depart P3
	05	22	25		Door chime
	05	23	36		Door chime
	05	24	05		Start vehicle
	05	32	23	S2	Arrive S2
					- Pulsing hum from tank area (continuous)
					- Flare flame roaring
	05	35	21		Start vehicle
	05	40	05	P2	Arrive P2 parking
	05	40	54		Door chime / shut door
	05	44	37		Arrive P2
					- BE in distance (whine noise)
					- Frog croaking
					- Leaves periodically falling
	05	46	00		CD west?
	05	49	25		CD NW / N?
	05	50	30		Depart P2
	05	53	08		Door chime / shut door
	05	53	58		Start vehicle
	05	56	34		Drive by S2
	06	00	00		Shift change

Data collected by: BA JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	06	14	29	P1	Arrive at P1 parking area
	06	18	24		Arrive at P1
	~~06~~	~~19~~	~~00~~		- continuous humming noise
	06	19	00		BEW screech
	06	19	22		CD
	06	20	17		CG
	06	21	50		TC Beeping
	06	22	00		JT
	06	22	33		BEW Screech
	06	23	14		TC Beeping
	06	24	23		BEW screech
	06	25	17		BEW Screech
	06	26	14		BEW Screech
	06	28	01		BEW screech
	06	29	00		TC
	06	29	55		TC
	06	31	22		CG Boom noise
	06	32	21		JT
	06	33	10		TC
	06	33	19		~~TC~~ Depart P1
	06	35	13		Start vehicle; depart P1 parking area
	06	45	14	S1	Arrive at S1 parking area
	06	47	24		Arrive at S1
	~~06~~	~~48~~	~~17~~		- continuous noise (humming) from CG
	06	48	17		TC
	06	48	50		TC
	06	49	02		CG
	06	49	18		Depart S1
	06	51	13		Start vehicle; depart S1

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Data collected by:

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amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	07	04	01	P5	Arrive at P5 parking area
	07	06	45		Arrive at P5 - continuous popping from power lines
	07	07	25		BEW screech
	07	07	40		PL
	07	07	46		CI
	07	08	20		BEW screech
	07	08	57		BEW screech
	07	09	10		CI
	07	09	17		BEW screech
	07	10	09		TC
	07	10	11		BEW screech
	07	11	11		BEW screech
	07	12	01		BEW screech
	07	12	34		TI
	07	13	30		PL
	07	13	51		BEW screech
	07	14	00		TD
	07	14	10		CI
	07	14	33		CO
	07	14	46		BEW screech
	07	14	53		~~[illegible]~~ TD drive by on 227th St.
	07	15	40		DG & BEW screech
	07	15	56		CI
	07	16	03		DG
	07	16	35		DG & BEW screech
	07	16	47		DG & TO
	07	17	18		DG
	07	17	30		BEW screech
	07	18	28		CO & BEW screech

AS

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
09/28/12	07	18	45	P5	CI
	07	19	12		TI & PL
	07	19	20		BEW Screech
	07	19	27		TI
	07	19	41		CD on 227th st.
	07	19	55		Depart ~~St~~ P5
	07	20	04		CD on 227th st.
	07	20	45		TI
	07	21	00		TO
	07	21	45		Start vehicle depart P5
	07	22	10		CI
	07	25	58	S3	Arrive at S3 parking area
	07	27	35		BEW Screech
	07	28	11		TO
	07	28	29		BEW screech
	07	28	51		TI
	07	29	20		Arrive at S3 - Continuous popping from power lines
	07	29	56		BEW screech
	07	30	18		BEW Screech
	07	31	04		TI
	07	31	37		Depart S3
	07	31	49		CI & PL
	07	32	09		BEW Screech
	07	33	05		BEW Screech
	07	33	45		TO
	07	33	58		BEW Screech
	07	37	10		Start vehicle & depart S3
	07	43	07	P4	Arrive at P4 Parking area
	07	45	49		Air ~~AC~~ unit turns on & off. Runs for ~ 15 secs.

AS

Data collected by: [signature]

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amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	07	46	20	P4	AGR unit turns on & off ~15 secs
	07	46	55		" " "
	07	47	10		PL
	07	47	18		Arrive at P4
	~~07~~	~~48~~	~~08~~		- construction Noise - NE Continuous
	07	48	08		CD
	07	48	59		TD
	07	50	50		CD
	07	51	31		JT
	07	53	50		starting to rain (medium pour)
	07	57	20		PL
	07	59	35		PL
	08	02	10		Depart P4
	08	04	01		Start vehicle; depart P4 parking area
	08	10	46	P3	Arrive at P3 Parking area
	~~08~~	~~14~~	~~25~~		- Still raining (light pour)
	08	14	25		Arrive at P3
	08	15	18		JT
	08	17	45		JT
	08	18	06		CD
	08	19	09		CD
	08	20	23		CD
	08	21	57		TD
	08	23	53		TD Beeping
	08	27	10		CD
	08	27	46		JT
	08	29	28		CD - Horn
	08	30	03		BD
	08	30	12		Depart P3

A5

Data collected by: [signature]

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Date	HH	MM	SS	Location	Noise Description
9/28/12	08	~~35~~ 32	13	P3	Start vehicle; depart P3
	08	39	58	S2	Arrive at S2
					- continuous whine from flare station
					- continuous roaring from flare
	08	42	22		- Start vehicle; depart S2
	09	04	03	P2	- Arrive @ P2 parking area (Not Running)
	~~09~~	~~07~~	~~52~~		- JT
	09	07	52		PL
	09	09	40		Arrive at P2 - continuous roaring ~~from~~ KC
	09	09	51		JT
	09	11	12		NE - Hammering
	09	12	19		CD
	09	16	07		CD
	09	16	40		PL
	09	18	28		PL
	09	19	20		CD
	09	22	06		CD
	09	22	12		BD
	09	22	36		PL
	09	24	45		Depart P2
	09	27	17		Start vehicle Depart P2
	09	35	06		Drive by S2 in vehicle
	09	44	39	P1	Arrive at P1 parking area
	09	45	38		KC; Dumping?
	09	46	19		KC TC (Dumping?)
	09	47	18		TC
	09	47	55		Arrive at P1
	09	48	05		CD
	09	48	53		PL

As

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
09/28/12	09	49	35	P1	T@
	09	49	46		CD
	09	50	00		BD
	09	50	44		KC - Drilling Noise (Hammering?)
	09	51	12		NE - air spirts blasting ~10 sec.
	09	53	04		T@
	09	54	02		BD
	09	54	26		KC - Drilling Noise (Hammering?)
	09	55	24		JT
	09	56	35		PL
	09	57	56		KC Boom from truck bed
	09	58	24		T@
	09	59	47		PL
	10	00	16		Frog
	10	01	26		T@ Beeping
	10	01	54		Boom - KC
	10	02	06		Depart P1
	10	05	02		Start vehicle; depart P1 parking area
	10	11	43	S1	Arrive at S1 Parking area
	10	14	33		CG
	10	16	40		Arrive at S1
					- continuous humming Noise @ CG
	10	17	22		Trucks beeping at CG
	10	18	05		Trucks at CG
	~~10~~				- Machinery At CG
	10	19	17		Depart S1
	10	19	33		PL
					- Beeping alarm at CG
	10	~~23~~ 23	25		Start vehicle; depart S1

AS

Data collected by: [signature]

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Date	HH	MM	SS	Location	Noise Description
9/28/12	10	27	05	Near retention ponds	Helicopter flying over circling around
	10	33	50	P5	Arrive @ P1 Parking Area
	10	52	40		Arrive at P5 - continuous popping from powerlines
	10	52	51		TI
	10	53	29		TO
	10	53	37		TI
	10	53	53		JI
	10	54	24		BEW screeching
	10	54	49		PL
	10	55	18		BEW Screeching
	10	55	44		TO
	10	55	55		TO
	10	56	10		TO
	10	56	31		BEW Screeching
	10	56	43		TO
	10	57	08		BEW screeching
	10	57	20		TO
	10	57	29		TO
	10	58	01		BEW screeching
	10	58	57		BEW Screeching
	10	59	08		CO
	10	59	51		BEW Screeches
	11	00	05		JT
	11	00	11		TO
	11	00	20		TO
	11	00	38		TO
	11	00	50		BEW screech
	11	01	43		BEW Screech
	11	02	39		BEW Screech

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Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/28/12	11	03	07	P5	PL
	11	03	33		BEW Screech
	11	04	17		TO
	11	04	27		BEW. Screech
	11	04	32		CO
	11	04	43		CD on 227th St.
	11	04	57		TO
	11	05	04		TO
	11	05	22		BEW Screech
	11	06	17		BEW screech
	11	07	02		TI
	11	07	39		Depart P5
	11	08	10		TI
	11	09	03		TI
	11	13	29		Start vehicle, depart P5
	11	16	44	S3	Arrive at S3 Parking area
	11	18	12		BEW Screech
	11	18	38		TI
	11	19	05		BEW screech
	11	19	34		TI
	11	19	55		Arrive at S3
	11	20	03		BEW Screech
	11	20	15		TO, Beeping
	11	20	55		BEW Screech
	11	21	55		BEW Screech
	11	22	26		TI & TO
	11	22	42		Depart & BEW screech
	11	22	53		TO
	11	23	06		TO

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Date	HH	MM	SS	Location	Noise Description
9/28/12	11	24	36	S3	BEW screech
	11	25	34		BEW screech
	11	26	27		BEW screech
	11	26	41		Start vehicle; depart S3 parking
	11	31	45	P4	Arrive at P4 parking area
	11	34	47		Arrive at P4
	11	35	49		BD
	11	36	10		open SLM case
	11	36	43		close case to SLM
	11	37	28		Person ~~Scre~~ yelling
	11	38	12		BD
	11	39	56		~~TD~~ TD
	11	40	12		Air unit turns on ~ 20 sec. continuous
	11	40	36		NE - construction - continuous
	11	42	48		NE - talking - conversation
	11	42	58		JT
	11	47	17		JT
	11	49	20		Depart P4
	11	51	23		Start vehicle; depart ~~S~~ P4
	12	00	49	P3	Arrive at P3 parking area
	12	03	24		Arrive at P3
	12	07	24		JT
	12	13	26		PL
	12	15	54		PL
	12	18	03		Depart from P3
	12	20	56		Start vehicle, depart P3 parking area
	12	28	35	S2	Arrive at S2
					- Continuous whine from flare station
					- Continuous Roar from ~~flar~~ flame

As

Data collected by: [signature]

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Date	HH	MM	SS	Location	Noise Description
9/28/12	12	32	49	S2	TC Drives by
	12	33	23		Start vehicle; depart S2
	12	38	25	P2	Arrive at P2 Parking area
	12	41	58		Arrive at P2
	12	46	53		JT
	12	49	42		JT
	12	54	21		PL
	12	54	50		TD
	12	55	15		Depart from P2
	12	59	03		Start vehicle; depart P2
	13	04	59		Drive By S2 on vehicle
	13	11	46	P1	Arrive at P1 parking
	13	15	22		Arrive at P1
	13	15	32		TC Beeping
	13	15	57		PL
	13	16	53		TC
	13	18	08		KC
	13	18	14		TC Beeping
	13	18	52		JT
	13	19	09		TC
	13	20	30		TC
	13	21	18		JT
	13	21	56		BD
	13	22	57		TC
	13	23	33		TC Beeping
	13	24	26		Truck bed (Boom)
	13	24	40		TC Beeping
	13	26	06		JT
	13	26	37		TC

As

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As

Date	HH	MM	SS	Location	Noise Description
9/28/12	13	28	42	P1	T@
	13	29	08		Truck horn
	13	30	22		Boom - Truck bed ?
	13	30	36		T@
	13	30	46		Depart P1
	13	35	47		Start vehicle ; depart P1
	13	39	13	S1	Arrive at S1 parking area
	13	42	26		JT
	13	44	19		Arrive at S1
					- continuous humming noise from CG
	~~13~~	~~44~~	~~45~~		- T@ CG - Beeping
	13	44	45		JT
	13	44	54		Truck Beeping @ CG
	13	45	29		Truck dumping @ CG
	13	46	02		Truck Beeping @ CG
	13	46	18		Truck Beeping @ CG
	13	46	35		" " "
	13	46	54		" " "
	13	47	07		" " "
	13	47	13		Depart S1
	13	50	47		Start vehicle ; depart S1
	13	57	51	at Main Gate	BEM screech
	13	58	54		BEM screech

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	14	06	00	Arrive S3 BEW	
		09	32	BEW screeching →	
		10	22	" →	
		10	37	Truck leaving →	
		11	30	~~Truck~~	Truck to cedar grove or construction S. of Power lines
		12	12		Truck arriv. CHRLF
		13	14		BEW screech
		14	08		" car
		14	26		~~Truck~~ leaving
		14	50		Truck leaving - idling outside till 15:42
		16	14		PL, car leaving
		17	13		Truck arr construct entrance S. of Power lines
		17	36		Truck leaving
		19	19		car arr.
		19	48		BEW screech
		24	32		Horn @ CHRLF (Truck)
		24	55		Truck arr construct entrance.
		26	40		van arr
		26	55		Truck leaves
		28	44		Truck leaves construct. entrance
	14	37	26	Leaving S3	
	14	40	36	Arrive P5 @ GP45	
		42	43		Truck arr CHRLF (or construct gate) - can't see
		44	32		BEW screech, then hammering in entrance vicinity 2-3 strikes.
		45	29		car arrive CHRLF
		46	03		Truck leaves CHRLF (or construct gate)
		47	08		car, then truck leave
		47	24		Truck arrives
	15	07	45		closed gate, set now

Data collected by: J Reinhart

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	15	08	20	P5 @ GP45	CAT ON 227TH (inbound)
	15	09	04		TRUCK ATT
		09	53		plane, truck leaving, birds
		10	21		plane, continued
		11	20		CAT on 227TH (inbound)
		12	07		TRUCK ATT CHRLF
		12	30		" "
		12	56		CAT ON 227TH (inbound)
		18	01		TRUCK ATT 3X + 1 PICKUP
		19	58		CAT ON 227TH (IN)
		23	28		Tech @ site (rattled fence)
		24	56		TRUCK ATT CHRLF
		25	28		leaving site
		25	43		car departing on 227TH (outbound)
	15	34	30	ATT P1 @ GP35	
		35	14		Plane
		44	05		Landfill ops - Pounding 2X, then creaky door
		45	01		Neighbor Hammering; again @ :26
		45	55		Hammering (then crow)
		46	26		crow, neighbor car horn (TOOT)
		46	44		crow intermittent
		47	01		neighbor sounds like hoisting something (metal lever stopping)
		47	57		crow
		48	12		Landfill ops truck, neighbor, Landfill truck
	16	09	50		plane (some technician noises from PC!)
	16	12	41		Tech leaving w/ frog noise
	16	29	50	ATT P2 vicinity	park, or other engine
	16	39	30	@ monitor	can hear generator from offsite to west.
	16	40	20		plane, siren in Dx @ 40:48
	16	56	10		plane

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	16	56	59	P2	Plane, cont. can still hear Generator to west
		57	36		Plane
		59	13		Frog, Plane, Jet in DX
	17	01	30		Frog, Generator still in background: ended @ 5:02:02
		05	44		Hammer strikes to w., sounds like moving aluminum ladder
		08	44		Plane (and Frog)
		09	53		Generator again. Might be a pressure washer.
		11	53		Plane
		20	09		leaving site. can hear generator *
		24	28		start vehicle, leave site.
	17	35	42	Arr P3	Park vehicle.
		41	29	Arr @ monitor P3	The Beatles, and other classic Rock from Tree farm
		42	50		Plane
		57	35		Frogs, Technician coughing, Plane, tech
	18	00	30		Tech leaving, Plane
	18	04	50		start vehicle
	18	09	22	Arr P4	
	18	13	28	Arr @ monitor	Plane
	18	18	23		Plane, cell tower A/C
	18	19	22		Plane, cell tower A/C
		20	56		People @ Live-in center shouting outside
		22	17		" "
		23	39		" "
		23	54		" "
		27	28		Birds - starlings, crow
		28	10		cell tower A/C
		32	14		Raven, And cell tower A/C intermittently
		34	20		Jet, People shouting @ Live-in center
		36	17		Jet, And plane

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

1209 2745.LDO Failed Download cause E
2801.LDO

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	18	36	55	P4	Jet, cont.
		38	04		plane
		39	25		car in DX, children @ Live-in center
		44	49		Kids @ Live-in center
		46	42		Jet, and cell tower A/C
		47	34		Tech leaving
		30	16		start vehicle, drive on.
	18	55	20	Arrive S2 @ NFS	
	19	57	10		Finished retrieving data & reformat flashcard.
		57	40		Jet, steady NFS ~~Blo~~ Blower noise entire time @ NFS.
		54	21		start vehicle, leave site
	20	02		Arrive S1 @ GP29	park vehicle
20	20	07	01	Arr @ monitor	Heavy eqpt operating @ Cedar Grove compost
	20	13	15		" " " "
		13	51		Jet over eqpt. noise
		19	34		still heavy eqpt @ Cedar Grove
		24	12		Horn on vehicle @ CGC
		25	49		Heavy eqpt @ CGC
		30	53		plane over eqpt noise
		34	30		Jet over " "
		39	24		start car, leave site
		44	13	Arrive @ P1	park car
		45	20		plane over cedar grove compost eqpt.
		47	42	Arr @ monitor	clearly hear cedar grove compost eqpt.
		48	41		Horn equipment @ CGC
		50	23		Technician clicking pelican case latches
		55	34		can hear BEW,
		56	44		start car, leave site
	21	02		@ S2 -	checked meter. Blower noise main sound
					Faint candlestick flare whir

Data collected by: J Reinhard

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9 ~~12~~/28/12	21	07	57	Leave S2	
	21	12	50	Arr P2	Park
		14	44		Car in distance
		17	46	@ Monitor	Faintly hear NFS Blowers
		18	47		" " " , Distant traffic
		21	13		" " " Coyote or Dog in DX, yipping
		23	02		" " " , Distant traffic
		23	27		Leaving monitor
		27	26		Start car, leave area.
		32	21		Passing NFS on far side of facility
		38	19	Park @ P3 Parking spot.	
		42	09	Arr @ Monitor	Can faintly hear NFS Blowers
		43	08		Frog
		43	25		Plane 11:44:40, then distant traffic
		45	16		Frog, Distant traffic
		45	56		Screech like brakes in distance (2X)
		46	34		Distant traffic
		46	59		Plane, briefly, then again
		47	46		Jet
		48	15		Leaving monitor
		49	02		Plane
		51	36		Start vehicle leave area
				Done.	

Data collected by: L Neihart

KCSWD CHRLF Perimeter Noise Study

amec

BK ↓

Date	HH	MM	SS	Location	Noise Description
9-28-12	22	00		Main Gate	Shift Change BK on
	22	12	10	P5	Arrive P5 parking
	22	12	19		TF
	22	13	08		Door chime
	22	14	30		Arrive P5
	22	14	40		BE screech
					- Powerline hum continuous
					- BE Plant continuous
	22	15	35		BE screech
	22	16	23		CD SW
	22	17	46		CD on road near P5 parking
	22	18	19		BE screech
	22	19	14		" "
	22	20	29		" " ; CD
	22	21	07		" "
	22	21	46		CD
	22	21	56		Plane (prop)
	22	22	03		BE screech
	22	22	59		BE screech
	22	23	33		CD
	22	23	55		Plane not audible
	22	24	50		BE screech
	22	25	46		BE screech
	22	26	30		CD
	22	26	42		BE screech ; Plane (Jet) north → East to west
	22	27	38		CD Road near P5 parking
	22	28	23		Plane not audible
	22	28	35		BE screech
	22	28	50		CD

Data collected by: BK J K

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-11	22	29	08	P5	BK shuffling papers
	22	29	35		BE screech
	22	29	50		Depart P5
	22	30	59		Door chime / shut door
	22	39	41		start vehicle
	22	35	39	S3	Arrive S3
	22	36	10		BE screech
	22	36	31		Door chime
	22	38	53		Arrive S3 ; BE screech
					- BE continuous
					- Powerlines popping continuous
	22	39	46		Frog ; BE screech
	22	40	02		BE valve (Roaring noise)
	22	40	30		Pressure Hiss BE
	22	40	43		BE screech
	22	41	15		CD in gravel
	22	41	39		BE screech
	22	42	05		Depart S3
	22	45	00		Chat with KC Sheriff (was called about being at P5) by neighbors
	22	45	45		Door chime
	22	46	43		start vehicle
	22	50	33	P4	Arrive P4 parking
	22	51	17		Door chime
	22	53	13		Arrive P4
	22	53	36		- chiller CT on
	22	53	51		off
	22	54	10		" " on
					BE continuous in distance
	22	54	30		chiller on

BK ↓

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	22	57	00	P4	Chiller off mode ; Frog croaking
	22	57	54		CD south
	22	58	29		BE screech
	22	58	42		BE valve
	22	59	25		BE screech
	23	00	05		CD
	23	00	19		BE screech
	23	01	06		chiller enters on mode (humming)
	23	01	31		chiller Fan low mode?
	23	01	58		CD south
	23	02	11		BE screech
	23	03	07		" "
	23	03	43		chiller louder Hum
	23	03	54		chiller ↺ on
	23	04	12		" " off
	23	04	31		" " on
	23	04	50		" " off
	23	04	59		BE screech
	23	05	45		chiller ↺ on
	23	05	59		" " off
	23	06	16		" " on
	23	06	34		" " off
	23	06	47		Depart P4
	23	07	34		Door chime
	23	07	54		start vehicle
	23	11	53	P3	Arrive P3 Parking
	23	13	05		Door chime / shut door
	23	17	33		Plane overhead (Prop) : Arrive P3
					Flare plant whine in distance

BK ↓

Data collected by: BM JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	23	18	25	P3	BK shuffle papers
	23	18	40		Prop plane ; CD S/SE?
	23	20	21		" " not audible ; Plane (jet) to south
	23	20	50		Plane (Jet) not audible
	23	20	57		BE screech in distance
	23	23	10		Frog
	23	23	21		Bird chirp
	23	23	37		BE screech ; plane (prop) south
	23	23	17		Plane (prop) not audible ; Plane (jet) overhead
	23	25	30		Plane (Jet) not audible
	23	25	47		Plane (prop)
	23	26	59		" " not audible
	23	27	10		Depart P3
	23	29	16		Door chime / shut door
	23	30	40		Start vehicle
	23	38	30	S2	Arrive S2
					Flare plant continuous whine near tanks
					Flare continuous roar of combustion at flame
	23	45	19		Start vehicle
	23	50	12	P2	Arrive P2 Parking
	23	51	20		Door chime / shut door
	23	55	58		Arrive P2 ; CD NE/N
					- Flare plant whine continuous in distance
	23	56	45		CD
	23	57	25		Frog croaking west 50-75' away
	23	58	30		CD
	23	59	31		BE screech in distance
	23	59	50		Motorcycle Rer NE
9/29/12 TPL	0	01	40		Plane (Jet) overhead

BK

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-25-12	0	02	30	P2	BK shuffling papers
	0	02	48		Plane (Jet) overhead
TR	0	03	25		Frog croaking
	0	03	40		Twigs snap SE
	0	04	05		Depart P2
	0	06	38		Door chime / shut door
	0	11	18		start vehicle
	0	17	35	S2	Pass S2
	0	25	14	P1	Arrive P1 Plane (Jet) overhead
	0	28	16		Door chime / shut door
	0	31	16		Arrive P1
	0	31	28		BE screech
					- BE in distance or CG (South southeast)
	0	32	24		BE screech
	0	33	20		" "
	0	34	12		" "
	0	34	20		CD SE
	0	35	10		BE screech
	0	36	05		" "
	0	37	02		" "
	0	37	56		" "
	0	38	53		" "
	0	39	20		Throw rock to scare deer off
	0	39	45		Depart P1
	0	41	58		Door chime / shut door
	0	45	01		start vehicle
	0	49	53	S1	Arrive S1
	0	51	11		Door chime / shut door
	0	54	23		Arrive S1

BK

Data collected by: BA JT

KCSWD CHRLF Perimeter Noise Study

amec

BK

Date	HH	MM	SS	Location	Noise Description
9-28-12				S1	- CG continuous
9					- BE plant continuous
TR	0	55	37		BE screech
	0	58	20		BE screech ; Depart S1
	1	00	45		Door chime / shut door
	1	01	33		Start vehicle
	01	13	25	P5	Arrive P5 Parking
	01	17	00		Arrive P5
					- BE continuous in distance
					- Powerlines
	01	17	42		BE screech
	01	18	38		" "
	01	19	17		BE pressure hiss
	01	19	33		BE screech
	01	20	27		" " ; Frog
	01	21	23		" "
	01	22	19		" "
	01	23	16		" "
	01	24	11		" "
	01	25	06		" "
	01	25	59		" "
	01	26	58		" "
	01	27	53		" "
	01	28	20		CD on Road near Parking for P5
	01	28	49		BE screech
	01	29	18		BE valve
	01	29	44		BE screech
	01	30	38		" "
	01	31	33		" "

Data collected by: Bd JKemp

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9-28-12	01	31	45	P5	BK shuffle papers
9	01	32	30		BE valve
7	01	32	50		Depart P5 ; Deer jumping into road (walking)
	01	34	48		Door shut
	01	35	24		start vehicle
	01	39	50	S3	Arrive S3 Parking
	01	40	50		BE screech
	01	50	48		Door chime / shut door
	01	53	30		Arrive S3
					BE continuous
	01	53	47		BE screech
					Power lines continuous pop
	01	54	42		BE screech
	01	55	36		BE valve ; BE screech
	01	56	33		BE screech
	01	57	29		" "
	01	57	40		Depart S3
	01	59	44		Door chime / shut door
	02	00	19		BE Screech
	02	00	30		Start vehicle
	02	05	15		Arrive P4 Parking
	02	06	19		Chiller CT on
	02	06	37		" " off
	02	07	38		Door chime / shut door
	02	08	00		Chiller CT on
	02	08	19		" " off
	02	08	35		" " on
	02	08	56		" " off
	02	10	05		Arrive P4

BK ↓

Data collected by: BL JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12 TC	02	10	20		Frog croak ; BK shuffle papers
	02	10	47		CD NE/E
	02	11	05		wind picking up ; leaves hitting ground
	02	12	30		Coyotes howling
	02	13	22		chiller ~~on~~ CT on mode
					- BE in the distance (whine)
					- Frog croaking
	02	15	58		chiller on hum
	02	16	09		Chiller CT on
	02	16	27		" " off
	02	17	24		" " on ; Arrive vehicle / Door chime
	02	17	57		" " on
	02	18	28		" " off
	02	~~19~~	~~48~~ 09		" " on
	02	19	19		" " off
	02	19	38		" " on
	02	19	52		" " off
	02	20	13		" " on
	02	20	31		" " off
	02	20	43		" " on
	02	20	59		" " off
	02	21	23		Start vehicle / chime
	02	27	50		Arrive P3
					- Leaves falling all around (a bit windy <5 knots)
					- Flare plant whine to west continuous ; Frog croaking
	02	32	07		CD NE
	02	35	31		wind blowing leaves
	02	36	12		" "
	02	38	45		Depart P3

BK ↓

Data collected by: BL J K

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-28-12	02	40	10	P3	Door chime / shut door
9	02	41	09		Start vehicle / shut door
TK	02	50	48	S2	Arrive S2
					- Flare plant continuous whine
					- Flare flame ~~constn~~ combustion roar
	02	54	23		Start vehicle
	03	00	45	P2	Arrive P2 parking
	03	01	50		Door chime / shut door
	03	03	32		Door chime / shut door
	03	06	49		Door chime / shut door
	03	09	53		Arrive P2
					- Flare plant whine in distance
					- leaves fall periodically
	03	15	50		Depart P2
	03	17	35		Plane overhead (prop)
	03	18	26		Door chime / shut door
	03	19	39		Start vehicle
	03	28	46	S2	Pass S2
	03	37	06	P1	Arrive P1 parking
	03	39	20		Door chime / shut door
	03	42	04	P1	Arrive P1
	03	42	12		BE screech or valve
					- BE continuous
					- wind and leaves dropping
	03	42	51		wind blowing
	03	44	42		BE screech
	03	45	39		" "
	03	46	12		CD NE ?
	03	47	32		BE screech

BK

Data collected by: BK (TOC 10/17/12)

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-29-12	03	47	51	P1	BK shuffle paper
	03	48	29		BE screech
	03	49	19		" "
	03	52	37		Depart P1
	03	53	02		Door chime
	03	54	27		start vehicle
	04	05	40	S1	Arrive S1 Parking
	04	08	50		Door chime / Shut door
	04	12	02		Arrive S1
					- CG continuous
					- BE distant noise
					- Leaves fall periodically (slight wind)
	04	13	37		BE value (faint)
	04	13	56		wind in trees
	04	14	13		BE screech
	04	14	30		Depart S1
	04	16	45		Door chime / Shut door
	04	17	23		start vehicle
	04	26	10	P5	Arrive P5 Parking (Slight Rain mist, w/ light wind)
					- BE continuous in distance
					- Powerlines continuous pop
	04	29	50		Arrive P5 ; BE screech
	04	30	46		BE screech
	04	31	43		" "
	04	32	28		" "
	04	32	50		Frog croaking NW/N
	04	33	34		BE screech
	04	33	57		Plane (prop) NW to E direction
	04	34	33		BE screech

BK ↓

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

BK

Date	HH	MM	SS	Location	Noise Description
9-29-~~30~~ 12 TR	04	34	56	PS	BK shuffle paper
	04	35	24		BE screech
	04	36	17		" "
	04	36	48		CD S/SE
	04	37	14		BE screech
	04	38	07		" "
	04	39	02		" "
	04	39	16		BE valve Hiss
	04	39	58		BE screech
	04	40	53		" "
	04	41	50		wind gust
	04	42	44		BE screech
	04	43	39		" "
	04	44	34		" "
	04	44	55		wind gust ; depart PS
	04	45	32		BE screech
	04	46	16		Shut vehicle door
	04	46	29		BE screech
	04	46	55		start vehicle
	04	50	16	S3	Arrive S3 Parking
	04	51	00		BE screech
	04	52	04		Door chime / shut door
	04	54	56		Arrive S3
					BE ; Powerlines
	04	55	37		BE screech
	04	55	43		Bird or ~~BE~~ Plant squealing ?
	04	56	31		BE screech
	04	57	26		" "
	04	58	21		" "

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-29-12	04	58	31	S3	BK shuffle paper
	04	59	15	↓	BE screech ; Frog croaking
	04	59	30		Depart S3
	05	01	25		Door chime / shut door
	05	02	04		BE screech
	05	02	22		Start vehicle
	05	11	54	P2 P4 TR →	Arrive P2 P4 Parking
	05	12	40	↓ 12/7/12 ↘	Door chime / shut door
	05	14	05		Arrive P2 P4
					- Flare Plant whine in distance
					- chiller fan running
	05	14	41		BE screech
					- wind blowin
	05	14	58		chiller fan off (slight hum now) ; Frog croaking x2 west
	05	16	58		Chiller fan idle
	05	17	07		BE screech
	05	17	11		chiller CT fan on
	05	17	29		" " off
	05	17	46		" " on
	05	18	04		" " off (idle)
	05	18	19		" " on
	05	18	38		" " off
	05	18	54		" " on
	05	19	10		" " off
	05	19	27		" " on
	05	19	44		" " off
	05	20	00		" " on
	05	20	16		" " off
	05	20	32		" " on

Note: chiller @ Cell Tower is @ P4, NOT P2. Tired observer error. TR 12/7/12

BK ↓

Data collected by: BL JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-24	05	20	51	P24 TR 12/7/12	chiller CT off
	05	21	08	↓	" " on
	05	21	26		" " off ; wind gust
	05	21	43		" " on
	05	21	59		" " off
	05	22	15		" " on
	05	22	32		" " off
	05	22	50		" " on
	05	22	57		" " off (off mode)
	05	25	25		wind gust
	05	26	21		Depart P24 TR 12/7/12
	05	26	37		wind gust
	05	27	32		Door chime / shut door ; Frogs croaking
	05	28	15		start vehicle / chime
	05	33	58	P3	Arrive P3 Parking
	05	35	00		Door chime / shut door
	05	36	06		wind gust
	05	37			- leaves dropping sporadically
	05	37	58		Arrive P3
	05	38	12		~~BE~~ Flare plant whine continuous
	05	39	02		BE screech
	05	41	16		vehicle up road near station up → Right
	05	44	39		wind gust
	05	46	17		Depart P3
	05	46	35		Plan (prop) overhead
	05	48	10		Door chime / shut door ; wind gust
	05	48	12		start vehicle / depart
	05	55	05	S2	Arrive S2
					- Flare plant whine ; Flare flame combustion (continuous)
					- wind blowing
					Depart / start vehicle

0557 S2

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
4/29/12	06	25	41		Drive by S2 in vehicle
	06	34	03	P2	Arrive at P2 parking
	06	37	12		CD
	06	38	02		TT
	06	38	26		CD
	06	38	35		Arrive @ P2
	06	39	17		JT
	06	41	26		JT
	06	42	05		PL
	06	43	39		CD
	06	47	38		JT
	06	49	35		Depart P2
	06	52	09		JT
	06	56	12		Start vehicle ; Depart P2
	07	02	06		Drive by S2 in vehicle
	07	07	08	P1	Arrive at P1 Parking area
	07	10	02		CD
	07	10	32		KC - TC ~~cont~~
	07	11	02		Arrive at P1 continuous humming (idle?) of trucks
	07	11	16		TC Beeping
	07	12	42		TC
	07	13	08		TC Beeping
	07	13	55		JT
	07	15	48		JT
	07	16	01		TC Beeping
	07	17	28		TC
	07	19	24		CD
	07	19	55		TC Beeping
	07	20	40		JT

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	07	22	01	P1	T@ - KC (plowing?)
	07	22	37		T@
	07	23	19		T@ - ? KC grinding?
	07	24	40		KC ? T@
	07	25	04		JT
	07	25	40		KC - grinding ?
	07	25	53		PL
	07	26	13		KC grinding
	07	24	44		JT
	07	27	50		KC - grinding
	07	28	00		Depart P1
	07	31	09		Start vehicle; depart P1
	07	34	45	S1	Arrive at S1 parking area
	07	36	03		JT
	07	39	40		Arrive at S1
					- continuous - humming sound from CHRLF (T@)?
					- KC
	07	40	50		CG
	07	41	47		CG Truck Beeping
	07	42	10		CG operations
	07	43	01		Depart S1
	07	46	22		Start vehicle; depart S1
	07	53	59	P5	Arrive at P5 parking area
	07	55	27		- Arrive at P5
					- continuous popping from power lines
					- WG
	07	56	56		CD
	07	57	50		BEW screech
	07	57	56		WG

AS

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	07	58	15	P5	WG
	07	58	30		PL
	07	59	34		JT
	08	01	33		WG
	08	02	21		BEW Screech
	08	02	53		~~cont~~ Construction on 228th St continuous
	08	04	21		CD on ~~228th~~ 227th st.
	08	04	44		WG
	08	05	10		Depart P5
	08	05	11		BEW screech
	08	06	57		Start vehicle; depart P5
	08	12	46	S3	Arrive at S3 parking area
	08	13	52		BEW screech
	08	15	48		JT
	08	14	58		Arrive at S3; BEW screech
	~~08~~	~~17~~	~~55~~		- continuous popping from power lines
	08	17	55		BEW screech
	08	18	49		BEW screech
	08	19	04		PL
	08	19	46		BEW screech
	08	20	40		BEW screech
	08	20	00		Depart S3
	08	21	35		BEW screech
	08	22	30		BEW Screech
	08	24	00		Start vehicle; depart S3
	08	29	03	P4	Arrive at P4 Parking area
	08	29	54		JT
	08	31	05		Arrive at P4
					- continuous - air unit turns on & runs for ~15 secs.

AS

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

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As

Date	HH	MM	SS	Location	Noise Description
9/29/12	08	32	59	P4	JT
	08	36	42		CD
	08	37	55		CD
	08	39	17		NE - Hammering
	08	39	27		CD
	08	40	25		TO Beeping (possible construction in front of entrance)
	08	44	16		PL
	08	44	16		CD
	08	45	24		Depart P4
	08	48	07		Start vehicle, depart P4
	08	50	34		Arrive at P3 parking area
	08	53	34	P3	Arrive at P3
	08	56	41		CD
	08	57	48		WG 9 mph
	08	59	03		CD
	08	59	39		WG 4 mph
	09	01	25		Trees creaking from wind
	09	02	20		WG 5 mph
	09	04	20		NE - Talking
	09	04	55		WG
	09	05	11		Depart P3
	09	06	24		Start vehicle, depart P3
	09	08	33		Arrive at S2
	09	12	35	S2	- continuous whine from flare station
					- continuous roar from flame
					Depart S2
	09	14	15		Arrive at P2 parking
	09	17	27	P2	Arrive at P2
	09	20	08		

Data collected by: [illegible]

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
09/29/12	09	22	20	P2	JT
	09	25	04		CD
	09	25	34		JT
	09	24	14		WG 6mph - rattles leaves
	09	31	29		CD
	09	34	21		JT
	09	35	00		Depart P2
	09	37	18		Start vehicle ; depart P2
	09	40	52		Drive by S2 in vehicle
	09	47	30	P1	Arrive at P1 Parking
	09	50	05		Arrive at P1
	09	51	57		JT
	09	52	55		CD
	09	53	59		~~JT~~ PL
	09	54	55		Start vehicle depart P1
	10	16	08	P5	Arrive at P5 Parking
	10	17	10		Arrive at P5 open gate
	10	20	44		Lock gate - continuous grinding noise
					- continuous popping from power lines.
					- Continuous construction on road in ~~to~~ leading
					to main gate of Landfill
	10	20	29		- NE yelling (talking), hammering
	10	23	11		DG
	10	24	14		CD on 227th st.
	10	26	47		Start vehicle; depart P5
	10	30	58	S3	Arrive at S3
	10	31	32		BEN screech
	10	32	22		BEN screech
	10	33	37		TI

As

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9/28/12	10	33	47	S3	TO
	10	34	09		PL
	10	34	38		arrive at S3 - continuous construction on road leading into landfill - continuous popping from power lines
	~~10~~	~~34~~			
	10	35	27		CI
	10	35	53		BEW screech
	10	36	15		CI
	10	36	57		BEW screech
	10	37	34		Depart S3
	10	37	51		BEW screech
	10	40	13		Start vehicle. depart S3 parking
	10	44	03	P4	Arrive at P4 parking area
	11	01	39		arrive at P4
	11	01	49		JT
	11	03	50		CD
	11	05	19		TD
					- Air unit ~~to~~ fan turns on ~ 1550c then turns off. continuously happens
	11	13	59		JT
	11	22	04		PL
	11	26	23		PL
	11	32	53		Start vehicle ; depart P4
	11	37	40	P3	Arrive at P3 Parking area
	11	38	14		JT
	11	39	23		Arrive at P3
	11	41	00		JT
	11	42	46		PL
	11	46	33		JT
	11	48	09		PL

AS

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9/29/12	11	48	53	P3	JT
	11	54	26		Depart P3
	11	57	51		Start vehicle ; depart P3
	12	03	28	S2	- Arrive at S2
					- continuous whine from Flare ~~Station~~ Station
					- Continuous Roar from flame
	12	05	07		~~P3~~ JT
	12	08	39		T@ Drive by flame
	12	08	53		Start vehicle ; depart S2
	12	13	09	P2	Arrive at P2 parking area
	12	18	01		Arrive at P2
	12	18	52		JT
	12	20	11		PL
	12	23	35		JT
	12	26	50		Tree creaking
	12	27	09		PL
	12	29	16		CD
	12	32	29		JT
	12	33	58		Depart P2
	12	38	08		Start vehicle ; depart P2
	12	43	55		Drive by S2 in vehicle
	12	50	13	P1	Arrive at P1 Parking area
	12	53	27		Arrive at P1
	12	53	34		JT
	12	55	12		JT
	12	58	40		T@ Beeping
	13	02	21		JT
	13	02	54		T@
	13	09	52		Depart P1

As

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/29/12	13	13	25	P1	Start vehicle ; depart P1
	13	17	02	S1	Arrive at S1 parking
	13	20	42		Arrive at S1
	13	21	14		Boom KC
	13	21	57		CG Track beeping - continuous humming
	~~13~~	~~25~~	~~36~~		Noise @ CG
	13	25	36		PL
	13	26	07		Depart S1
	13	30	21		Start vehicle ; depart S1

As

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
9/29/12	13	43	58	S3 @ BEW	TRUCK DEPARTING CHRLF GATE — BEW DOWNWIND BACKYARD
		44	55		" " " "
		45	50		CAT ARRIVES " "
		46	29		FRONT end Loader leaves CHRLF GATE
		48	35		STREET sweeper leaves " "
		50	58		CAT leaves + Bird nearby
		51	33		~~TRUCK~~ Front-end Loader RETURNS TO CHRLF
		57	37		START vehicle, leave S3
	14	02		P5 @ GP45	ARRIVE P5
		08	50		TRUCK ARRIVING CHRLF
		09	22		BEW screech
		09	45		Plane (FAINTLY over BEW)
		10	38		PLANE louder one
		12	40		DOG INTERMITTENT BARKING
		16	48		BEW screech
		18	44		DOG BARKING
		19	34		Plane
		19	55		TRUCK ARRIVE CHRLF
		21	11		DOG BARKING
		25	40		" "
		29	40		TRUCK ARR
		30	00		tech leaving
		32	35		CAT started
	14	39	14	ARRIVE P4 @ CT1	PARK CAR
		41	44		ARRIVE @ MONITOR
		46	42		Plane + Birds
		50	44		Plane + Jet
		52	30		Neighbor - METAL RATTLING
		53	11		cell TOWER A/C + Neighbor RATTLING

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	14	55	01	@ P4@CT1	Bird
	15	01	28		Neighbor engine - driven something (Backhoe?) - Downhill to East
		02	16		" " + plane
		04	08		Truck @ passage point
		05	42		Jet
		12	48		Truck leaving passage point
	15	13	15		Neighbor engine eqpt.
	15	14	17		Tech leaving site
	15	16	37		Start vehicle, leave area
	15	21	12	Arrive @ P3	Park vehicle
	15	24	27	At monitor	Jet
		27	56		Tractor @ tree farm
		33	52		Plane
		36	19		Kids @ tree farm
		38	12		Plane
		39	28		Helicopter
		46	35		Tech leaving, and Jet
		47	42		Start ~~[illegible]~~ site

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	16	11	30	S2	Parked@location - noted typical
	16	12	20	"	whine of N. flare station
					Tim approaches instrument to service it
	16	14	58	"	Restarted instrument to check function
	16	24	24	"	Repacked case + refld to vehicle
	16	25	09	"	Back in vehicle
	16	30	10	P2	~~Arrive @ site~~ Parked @ site
	16	31	55	"	Notice faint PT in dist.
	16	33	45	"	Approach instrument for examination, BD,
					still PT in bkgnd.
	16	40	55	"	JT fading into dist, BD, CD+TD
	16	41	20	"	PT fading in, occasional breeze stirring leaves
	16	42	29	"	Tree creaking in the breeze
	16	"	42	"	"
	16	"	48	"	" Also JT in dist fading out
	16	"	57	"	"
	16	43	30	"	"
	16	43	32	"	"
	16	43	43	"	"
	16	43	54	"	"
	16	44	08	"	Robin nearby
	16	44	21	"	Dist. dog barking to E.
	16	44	54	"	Poss. motorcycle to E.
	16	45	10	"	Tree creaking in breeze
	16	45	18	"	"
	16	45	45	"	"
	16	46	01	"	"
	16	46	03	"	"
~	16	46	10	"	"

Data collected by: MD (TR 10/17/12)

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	16	46	20	P2	Tree creaking + JT fading in
	16	46	34	"	" , maybe frog.
	16	47	10	"	Notice dist. motorcycle again
	16	47	50	"	motorcycle ongoing + I change data sheets on clipboard.
	16	48	15	"	Tree creak + misc. sounds from mot + Tim
	16	48	38	"	" "
	16	48	50	"	motorcycle again + robin
~	16	49	20	"	Breeze picks up again
	16	50	56	"	Tree creak
	16	50	01	"	"
	16	50	02	"	"
	16	50	23	"	We ~~pack up to leave~~ shuffle equipment + download weatherstation
	16	51	30	"	CD noted, or dist. JT
	16	52	30	"	unplug weatherstation
	16	52	55	"	Packing tags
	16	54	18	"	Dist PT fade in
	16	56	32	"	Back in vehicle
	17	06	45	P1	Parked @ location
	17	09	08	"	motorcycle to W.
	17	09	32	"	PT in dist
	17	09	43	"	Raven
	17	09	55	"	Tim arrives @ station + I notice helicopter
	17	39	21	"	Turned unit on + start ease - currently downloading weather info - voices in distance to W. Mild breeze
	~~17~~				
	17	40	32	"	Preparing to depart
	17	41	55	"	motorcycle to W.
~	17	44	00	"	Back in vehicle
	17	44	50	S1	parked @ location

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	17	50	27	S1	Tim approached station to download
~	18	11	20	"	Re-started unit + walking away,
					BD + crows, CG Bkgrd noise,
					mild breeze.
	18	21	26	"	Notice distant JT
	18	13	32	"	Motorcycle on trail just w. of fence line
	18	14	03	"	@ noticed PT, JT continues.
	18	45	02	P5	Parked @ location
~	18	46	50	"	PT
	18	47	58	"	BEW shriek
	18	48	34	"	I arrive @ station - BD, powerline crackle
~	18	49	00	"	BEW shriek
	18	49	10	"	distant dog barking
	18	49	28	"	Car passes on road to w. - ambient BEW noise
	18	49	58	"	BEW shriek
	18	50	37	"	Maybe distant PT?, noted Crows
	18	50	53	"	BEW shriek
	18	51	49	"	"
	18	52	45	"	" - robins nearby
	18	53	40	"	"
	18	54	37	"	"
	18	55	32	"	"
	18	56	18	"	Dog barking to E.
	18	56	28	"	BEW shriek
	18	56	40	"	Dog
	18	57	22	"	BEW shriek
	18	58	06	"	PT
	18	58	45	"	I get to vehicle.
	19	00	00	"	Back in vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/28/12	19	03	58	S 3	Parked @ location
	19	04	49	"	BEW shriek
	19	05	44	"	"
~	19	07	35	"	"
	19	00	00	"	Car passes on rd to E.
	19	08	31	"	BEW shriek
	19	09	17	"	"
	"	"	25	"	"
	19	10	21	"	" arrive @ station - overhead powerline crackle
	19	11	16	"	"
	19	12	12	"	BEW shriek
	19	13	00	"	I head back to vehicle
	"	"	08	"	BEW shriek
	19	14	04	"	"
	19	15	35	"	Back in vehicle
~	19	19	45	P4	Parked @ location
	19	21	38	"	Dist. motorcycle?
	19	22	28	"	Dist. dog bark
	19	22	50	"	I arrive @ station + hear voices to E. + dist. motorcycle. Periodic distant BEW shriek, leaves falling, slight breeze,
	19	24	14		
				"	AC @ cell tower kicks on
	19	24	4	"	Neighbor laughing to E - ongoing, periodic
	19	25	04	"	AC kicks on again - prob - cycling
	19	26	37	"	~~19 26 37~~ small critters in bush
~	19	26	53	"	Neighbor laughs
	19	27	14	"	"
	19	27	26	"	"

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	19	27	48	P4	JT + I change data sheet
	19	28	45	"	I rearrange clipbd.
	19	29	30	"	dist. PT or motorcycle, JT fades in/out ~ 19:31:49
	19	29	50	"	Neighbor laughs, I note frogs nearby
	19	30	56	"	" " , loud speaking
	19	32	15	"	TD or CD noted
	19	32	30	"	I head back to vehicle
	19	34	49	"	Back in vehicle
~	19	38	50	P3	Parked @ location - can hear N. flare stack station to W., dogs barking to NE. Small critters in woods or leaf fall
					~~PT or~~ JT ~ 19:44:50 fades out
	19	42	46	"	
	19	43	38	"	Arrived @ station TD or CD (prob. I-90)
	19	44	22	"	Dog barks @ tree farm (prob.) to NE - ongoing until ~ 19:48
	19	47	35	"	Distant JT
	19	48	40	"	frogs
	19	50	30	"	Dog barks again - ongoing
	19	51	52	"	Distant PT - fades in - Lost ~ 19:53:40
	19	53	25	"	I head back to vehicle
	19	54	45	"	Distant JT
	19	55	55	"	Back in vehicle
~	20	04	00	P2	~~Arrived~~ Parked @ location
~	20	04	50	"	Noticed distant engine sounds - possibly on I 90.
	20	05	51	"	Loud branch crack in woods distant N. Can hear leaves falling, ~~PT~~ TD, CD - North.
~	20	10	00	"	Arrived @ station ambient bkgd. sounds of CD, TD, small critters in shrubs, things falling out of trees (tiny), leaf fall, dist. dog barking, slight breeze

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/29/12	~~11~~	~~3~~		P7	
TR	20	11	38	P2	PT distant
~	20	12	–	"	changed paperwork to ~ 20:13:00
	20	14	30	"	JT ~~or PT~~ distant, fading in
	20	16	29	"	Another JT (distant) or CD
	20	19	15	"	Frog (note - dog is still barking)
				"	Note: steady rain of small, falling debris
					may be pine needles.
	20	20	35	"	head back to vehicle.
~	20	23	20	"	Back in car
~	20	27	00	S2	Parked @ station - flare stack burning
~	20	29	00	"	~~Possible~~ PT noted fading in
	20	30	12	"	Another PT noted after prev. one faded out
	20	31	35	"	PT #2 faded out
	20	32	00	"	I drive away
~	20	39	00	P1	Parked @ location - can hear B&W to E.
	20	43	35	"	critters in woods, dog barking to W.
					Arrived @ station - mild breeze picks
					up - leaves rustle, ambient CD or TD?
	20	45	00	"	Distant PT ~~or JT~~
~	20	48		"	Breeze picks up notice maybe another PT
	20	49	17	"	CD?
	20	49	54	"	maybe motorcycle or CD - again @
					20:50:17 to West.
	20	50	53	"	Motorcycle revs again
	20	53	09	"	PT ? very distant or motorcycle - JT fades in
	20	~~55~~ 54	08		(very distant) - may be 2 JTs
				"	
~	20	56		"	Back in vehicle - PT fades in

Data collected by: MD (TR 10/17/12)

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
~~305~~	20	59	35	S1	Parked @ location + accidentally
9/29/12					pressed alarm button on
					vehicle key fob. :)
				S1	Can hear CC to s.
	21	03	19	"	JT ~~or PT~~
	21	07	11	"	Arrive @ Station - CC seems loud -
					maybe some heavy equipment going?
					Can occasionally hear BEW shriek
					in bkgrd - mostly CC though. - Some
					small critters in bushes (can hear
					leaf rustle + high-pitched squeeks).
	21	10	15	"	I depart
~	21	13	35	"	Back in vehicle
~	21	28	00		Parked @ location - breezy @ this site
	21	30	17	"	Arrived @ station + check wind speed
					to hear PT (dist.) + people talking ~~along~~ to
					East/North - Neighbors (Breeze ~5-6 mph peak
~	21	33	00	"	I locked gate - leaves rustling in
					trees - BEW audible to W.
	21	35	11	"	BEW shriek + stack flare or JT?
	21	36	05	"	BEW shriek - neighbors' voices
	21	36	45	"	Noted possible PT? or BEW?
	21	36	59	"	BEW shriek
	21	37	55	"	"
	21	38	50	"	"
	21	39	19	"	BEW hiss
	21	39	45	"	BEW shriek
	21	40	55	"	I return to vehicle
	21	41	30	"	Back in vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9-29-12	22	00	00	Gate	Shift Change BK on
	22	09	50		Arrive S3 Parking
	22	13	09		Arrive S3
					Powerlines ; BE continuous ; wind
	22	13	35		BE screech
	22	14	14		Motorcycle NE
	22	14	28		BE screech
	22	15	01		wind gust / leaves in trees blowing
	22	15	22		BE screech ; JT
	22	16	12		BE Pressure valve
	22	16	23		wind gust
	22	16	40		Depart S3
	22	18	36		Shut door
	22	20	35		start vehicle
	22	25	03		Arrive P4 Parking
	22	26	39		Door chime / shut door
	22	28	00		Chiller power hum
	22	28	12		" " on
	22	28	29		" " off
	22	28	48		" " on
					BE in distance
	22	29	02		chiller CT Power off
	22	29	18		CD ; " " on
	22	29	40		off
	22	29	49		" " on
	22	30	03		Frog
	22	30	06		chiller CT off
	22	30	23		" " on
	22	30	40		" " off

BK ↓

Data collected by: Brad J Kempson

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9-29-12	22	30	53	P4	chiller CT on
	22	31	08		chiller CT off
	22	31	25		" " on
	22	31	37		" " off
	22	31	57		" " on
	22	32	10		" " off
	22	32	24		" " on
	22	32	39		" " off
	22	32	46		me leaf under foot
	22	32	57		chiller CT on
	22	33	09		" " off
	22	33	27		" " on
	22	33	34		" " off mode ; wind gust
	22	34	30		wind gust
					-Leaves blowing and falling from trees constently
	22	36	10		JT
	22	36	20		Dogs East
	22	37	42		wind gust
	22	37	58		JT ; wind gust
	22	38	36		wind gust
	22	38	50		JT
	22	39	40		Depart P4
	22	40	28		Door Chime / Shut door
	22	41	39		Start vehicle
	22	47	11	P3	Arrive P3 Parking
	22	50	05		Arrive P3 Avg wind 1mph
	22	50	53		Frog
	22	51	10		CD N/NE
					BE or flare plant in distance

Data collected by: BW JK

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9-29-12	22	51	50	P3	~~mea~~ shuffling papers
	~~22~~	~~52~~	~~55~~	~~mc~~	wind blowing leaves periodically / leaves dropping
	22	52	55		JT N/NE
	~~22~~	54	07		wind gust
	22	55	20		CD
	22	55	25		Frog x2 SE and SW/W
	22	57	37		Frog
	22	58	02		CD NE direction
	22	59	19		CD NE
	23	01	05		CD ; Depart P3
	23	03	23		Door chime / shut door
	23	04	13		start vehicle
	23	13	30	S2	Arrive S2
					Flare Plant whine near tanks
					Roar of flare flame
	23	14	18		JT
	23	17	33		Start vehicle
	23	23	30	P2	Arrive P2 Parking
	23	26	42		Arrive P2
	23	27	56		CD
					- whine of flare plant in distance
	23	29	22		CD NE
					- wind blowing leaves slightly
	23	30	46		CD NE
	~~23~~	~~31~~	~~58~~		Leaves falling periodically
	23	31	58		JT
	23	32	40		Helicopter overhead
	23	34	04		" " gone ; Prop plane
	23	35	02		Plane gone ; Shuffle papers

BK ↓

Data collected by: Bal J

KCSWD CHRLF Perimeter Noise Study

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BR ↓

Date	HH	MM	SS	Location	Noise Description
9-29-12	23	38	03	P2	Depart P2
	23	40	06		Arrive vehicle / shut door
	23	40	35		start vehicle
	23	47	29	S2	Pass S2
	23	55	49	P1	Arrive P1 parking
	23	58	58		shut door
	23	59	20		BE screech
					BE continuous in distance
					Arrive P1
9/30/12 TR	0	00	16		- wind blowing leaves slightly
					- leaves fall periodically
	0	05	58		wind gust
	0	09	20		BE screech
	0	09	36		wind gust
	0	10	58		Plane prop west
	0	12	03		wind gust ; depart P1
	0	13	45		Door chime / shut door
	0	14	57		start vehicle
	0	20	32	S1	Arrive S1 parking
	0	25	47		Door chime / shut door
	0	28	08		ST
	0	28	20		Arrive S1
					CG continuous
					BE slightly audible in the distance
					Leaves falling periodically all around
	0	30	49		Depart S1
	0	33	18		Door chime / shut
	0	33	35		start vehicle
	0	43	05		Arrive P5 parking

Data collected by: BR JTT

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BK

Date	HH	MM	SS	Location	Noise Description
9-30-12	0	43	15	P5	Eating food in vehicle
	0	55	06		Shut door
	0	56	15		Arrive P5
					Powerlines ; BE continuous
	0	56	48		BE screech ; car horn (East)
	0	57	20		CD
	0	57	41		BE screech
	0	58	34		" "
					wind blowing periodically
	0	59	29		BE screech
	01	00	20		" "
	01	01	13		" "
	01	01	44		Plane (prop)
	01	02	06		BE screech
	01	02	39		wind gust
	01	03	20		Plane (prop)
	01	03	54		BE screech
	01	04	46		" "
	01	05	10		wind gust
	01	05	40		BE screech
	01	07	20		me walking around looking at wind gauge
	01	07	29		BE screech
	01	08	02		Gun shot
	01	08	20		BE screech
	01	09	11		" " ; valve Releasing pressure?
	01	10	06		BE screech
	01	10	58		" "
	01	11	53		BE screech
	01	12	10		Depart P5

Data collected by: [illegible]

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BK

Date	HH	MM	SS	Location	Noise Description
9-30-12	01	13	24	P5	shut vehicle door
	01	14	31		start vehicle
	01	18	50	S3	Arrive S3 Parking
	01	22	17		Arrive S3
	01	22	30		BE screech
					BE and powerlines pop (continuous)
	01	23	23		BE screech
	01	24	17		" "
	01	25	11		" "
	01	26	05		" "
	01	26	18		BE Pressure Hiss
	01	26	40		Depart S3
	01	28	38		Shut vehicle Door
	01	29	18		start vehicle
	01	33	48	P4	Arrive P4 Parking
	01	34	50		Door chime / shut door
	01	35	20		wind gust ; leaves blowing
	01	35	34		chiller CT off
	01	35	50		chiller CT on
	01	36	06		" " off ; JT N/NE → off mode
					Leaves periodically fall to ground
	01	38	03		CD East? ; wind gust
					~~BE whine~~ BK or Flare whine in distance (continuous)
	01	38	58		wind gusting
	01	42	09		Dog barking in distance NE?
	01	43	02		chiller on mode (rattling compressor noise)
	01	43	15		" " on
	01	43	33		" " off

Data collected by: BA J [illegible]

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BK

Date	HH	MM	SS	Location	Noise Description
9-30-12	01	43	49	P4	chiller on CT
	01	43	57		" " off CT
	01	44	14		chiller on CT
	01	44	28		" " off CT ; Frog
	01	44	43		chiller on CT
	01	44	55		" " off
	01	45	12		" " on
	01	45	30		Depart P4 area go to near vehicle
	01	46	20		Chiller off
	01	46	40		" " on
	01	47	00		" " off
	01	47	09		" " on
	01	47	24		" " off
	01	47	37		" " on
	01	47	53		" " off
	01	48	07		" " on
	01	48	20		" " off mode
	01	48	56		Door chime / shut door
	01	49	27		start vehicle
	01	54	40	P3	~~arr~~ Arrive P3 Parking
	01	55	41		Door chime/ shut door
	01	56	30		wind gust
	01	57	46		Arrive P3
					Flare Plant whine is distance (west)
					leaves blowing in wind periodically
	01	58	25		CD NE?
	01	59	15		CD N?
	01	59	55		wind gust ; leaves blowing
	02	00	38		wind gust ; leaves blowing

Data collected by: B [illegible] J [illegible]

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Date	HH	MM	SS	Location	Noise Description
9-30-12	02	01	18	P3	Shuffling papers
	02	02	08		CD N
	02	03	16		CD NE/N
	02	04	55		wind gust ; CD N
	02	06	27		wind gust / leaves
	02	07	13		Depart P3
	02	09	21		Door Chime / Shut door
	02	10	18		Start vehicle
	02	11	26	near P3	Accidentally hit horn for less than 1 sec
	02	19	43	S2	Arrive S2
					- Flare Plant whine continuous, near tanks
					- Flare flame roar continuous
	02	23	56		start vehicle
	02	30	13	P2	Arrive P2 parking
	02	31	29		Door chime / shut door
	02	32	50		Door Chime / shut door
	02	35	04		Door chime / shut door
	02	37	52		Arrive P2
					- Flare whine in distance
					- leaves falling periodically
	02	43	57		CD SW?
	02	46	05		Depart P2
	02	48	16		Door chime / shut door
	02	48	48		start vehicle
	02	56	03	S2	Pass S2
	03	05	28	P1	Arrive P1 Parking
	03	09	23		BE screech
	03	13	03		Door chime ; Scare deer down road
	03	15	40		Arrive P1

Data collected by: [illegible] J [illegible]

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Date	HH	MM	SS	Location	Noise Description
9-30-12	03	15	58	P1	Shuffle papers
					- BE continuous in distance
					- Leaves falling periodically
	03	16	46		- Deer in forest SE 50-100'
	03	17	20		motorcycle
	03	17	47		Frog croaking SE ~75'
	03	18	10		Deer in forest
	03	18	48		Motorcycle (west)
	03	19	22		BE screech or valve? ; Frog croaking
	03	19	40		motorcycle
	03	19	55		" "
	03	21	10		Deer in forest (Bushes, twigs)
	03	21	36		" "
	03	22	04		Bird(s)
	03	23	00		me walking (scare deer)
	03	24	10		BE screech
	03	24	27		Deer in forest
	03	24	37		Motorcycle
	03	25	05		Depart P1
	03	26	50		Door chime
	03	26	59		shut door
	03	27	33		Start vehicle
	03	32	19	S1	Arrive S1
	03	33	57		BE screech
	03	37	34		BE screech
	03	37	46		Door chime / shut door
	03	38	10		JT
	03	40	45		Arrive S1
					- CG continuous

BK ↓

Data collected by: B. [illegible] JK [illegible]

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Date	HH	MM	SS	Location	Noise Description
9-30-12	03	41	28	S1	leaves fall periodically
	03	41	58		BE screech or valve? in distance
	03	42	30		Depart S1
	03	44	34		Door chime / shut door
	03	46	48		start vehicle
	03	58	30	P5	Arrive P5 Parking
	03	58	47		BE Screech
	04	01	16		JT South
	04	01	25		BE screech
	04	02	19		" "
	04	02	46		Arrive P5
	04	03	11		BE Screech
					- Powerlines popping and BE continuous
	04	04	06		BE Screech
	04	04	58		" "
	04	05	52		BE screech
	04	06	45		" "
	04	08	31		" " ; low rumble (maybe a jet?)
	04	09	18		BE valve hiss
	04	09	25		BE screech
	04	10	17		" "
	04	11	12		" "
	04	12	04		" "
	04	12	40		Frog went 30'
	04	12	57		BE Screech
	04	13	49		" "
	04	14	44		" "
	04	15	39		" "
	04	16	30		" "

BK

Data collected by: [illegible]

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Date	HH	MM	SS	Location	Noise Description
9-30-12	04	16	45	P5	shuffle papers
	04	17	11		Depart P5
	04	18	48		Shut door to vehicle
	04	19	25		Start vehicle
	04	23	45	S3	Arrive S3 parking
	04	28	36		Arrive S3
					- Powerlines popping and BE continuous
	04	28	54		BE screech
	04	29	18		BE valve hiss
	04	29	47		BE screech
	04	30	10		Bird (s)
	04	30	41		BE screech
	04	31	23		BE Hiss
	04	31	33		BE screech
	04	32	26		" "
	04	33	19		" "
	04	33	30		Depart S3
	04	35	29		close door to vehicle
	04	36	17		Start vehicle
	04	41	26		Arrive P4 Parking
	04	~~44~~	~~00~~ 43	28	Door chime / Shut door
	04	44	00		BE screech
					- BE continuous in distance
	04	45	10		BE screech
	04	45	55		BE valve ; Frog West
	04	47	34		BE screech
	04	48	26		" "
	04	49	15		CD west
	04	49	25		BE Sscreech

Data collected by: Bd J K

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Date	HH	MM	SS	Location	Noise Description
9-30-12	04	50	13	P4	BE screech
	04	51	07		" "
	04	51	24		BE valve roar
	04	52	00		BE screech
	~~04~~	~~52~~	~~54~~		- wind blowing leaves periodically
	04	52	54		BE screech
	04	53	20		Door chime (shut door
	04	53	48		BE screech
	04	54	39		" "
	04	55	32		" "
	04	58	16		start vehicle
	05	04	16	P3	Arrive P3
	05	06	35		Door chime
	05	07	40		Coyotes west
					- Flare plant whine west continuous
					- Leaves dropping and wind (slight) - periodic
	05	10	43		BE screech
	05	10	50		CD NE
	05	13	32		CD N/E
	05	15	37		Door chime (shut door
	05	16	49		start vehicle
	05	25	04	S2	Arrive S2
					- Flare plant whine
					- Roar of flare flame
	05	29	04		start vehicle
	04	36	02	P2	Arrive P2 Parking
	04	38	33		Door chime / shut door
	04	40	50		Arrive P2
					- Flare station in distance continuous

Data collected by: BK (TPL 10/17/12)

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Date	HH	MM	SS	Location	Noise Description
9-30-12	05	39	58	P2	JT
					-Trees dropping leaves periodically
	05	43	20		CD N2?
	05	45	23		wind gust (slight)
	05	48	15		Depart P2 ; wind gust (slight)
	05	50	45		Door chime / Shut door
	05	51	11		Start vehicle
	05	55	03	S2	Pass by S2
	18	00	00		shift change
					BK

BK

Data collected by: [illegible] J [illegible]

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Date	HH	MM	SS	Location	Noise Description
9/30/12	06	24	30	P1	Arrive at P1 Parking area
	06	25	27		CD
	06	26	42		CD
	06	29	22		TD
	06	30	32		PL or JT
	06	33	22		JT
	06	33	18		JT
	06	39	34		Depart P1
	06	41	08		Start vehicle ; depart P1
	06	45	50	S1	Arrive at S1 parking
	06	48	11		Arrive at S1
					- continious humming noise from CG
	06	49	37		BEW ? Slight roaring sound
	06	50	57		TC
	06	51	22		BEW or KC grinding NOISE ~~or~~ ?
	06	52	06		" " "
	06	52	16		Depart S1
	06	52	49		Start vehicle ; depart S1
	07	03	55		Arrive at S1 parking area
	07	05	15		Arrive at S1
					- Continuous popping from Powerlines.
	07	06	24		BEW screech
	07	06	50		TC Beeping
	07	07	20		BEW screech
	07	08	14		BEW screech
	07	09	37		TC
	07	09	50		TO
	07	10	59		CD on 227th St.
	07	16	26		TO

As

Data collected by: [signature]

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AS

Date	HH	MM	SS	Location	Noise Description
9/30/12	07	17	00	P5	TO
	07	17	09		BEW screech
	07	17	19		JT
	07	18	07		BEW Screech
	07	18	55		BEW Screech
	07	19	10		JT
	07	20	33		JT
	07	20	40		Depart P5
	07	20	57		TC Beeping
	07	21	37		Start vehicle; depart P5
	07	27	02	S3	Arrive at S1 Parking
	07	28	45		BEW screech
	07	28	56		Arrive at S1
	07	29	15		CC
	07	29	38		BEW screech
	07	32	18		BEW Screech
	07	32	28		Depart S1
	07	33	13		BEW screech
	07	33	35		PL
	07	34	37		Start vehicle; depart S1
	07	41	14	P4	Arrive at P4 parking
	07	42	45		TC? TI?
	07	43	40		TD
	07	44	32		JT
	07	44	03		DG
	07	46	58		JT
	07	48	33		JT
	07	50	20		TD
	07	50	38		TD Beeping

Data collected by:

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Date	HH	MM	SS	Location	Noise Description
09/30/12	07	52	26	P4	JT
	07	54	17		PL
	07	57	59		Depart P4
	07	59	57		Start vehicle ; depart P4
	08	06	27	P3	Arrive at P3
	08	07	15		CD
	08	09	51		JT
	08	12	59		JT
	08	14	17		PL
	08	16	49		JT
	08	19	52		JT
	08	22	03		JT
	08	22	08		Depart P3
	08	24	02		Start ; vehicle ; depart P3
	08	33	54	S2	Arrive at S2
	08				- Continuous whine from flare station
					- Continuous Roar from flame
					Start vehicle ; depart S2
	08	37	28	P2	Arrive at P2 Parking area
	08	43	04		JT
	08	44	52		JT
	08	47	19		Arrive at P2
	08	48	45		JT
	08	48	54		Yelling at land fill ?
	08	50	34		JT
	08	52	08		JT
	08	53	10		CD
	08	55	03		JT
	08	55	53		CD
	08	57	52		

As

Data collected by:

KCSWD CHRLF Perimeter Noise Study

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A5

Date	HH	MM	SS	Location	Noise Description
09/30/12	08	59	20	P2	PL
	09	03	58		Depart P2
	09	08	11		Start vehicle ; depart P2 parking
	09	13	49		Drive by S2 in vehicle
	09	20	31	P1	Arrive at P1
	09	21	27		PL
	09	24	00		Arrive at P1
	09	25	27		BD
	09	26	13		KC grinding NOISE
	09	26	31		TC : grinding
	09	27	10		KC grinding NOISE
	09	27	20		PL
	09	28	52		DG
	09	31	00		JT
	09	31	47		JT
	09	33	20		JT
	09	36	40		CD
	09	34	45		Depart P1
	09	40	40		Start vehicle ; depart P1
	09	47	38	S1	Arrive at S1 parking area
	09	53	54		- Arrive at S1
					- PL
	09	54	57		- PL
					- Continuous humming noise from CG
	09	56	55		Depart S1
	10	03	16		Start vehicle ; depart site
	10	23	18	P5	Arrive at P5 parking
	10	25	12		Arrive at P5
	~~10~~	~~2~~			Continuous popping from electrical wires

Data collected by:

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9/30/12	10	26	55	P5	BEW Screech
	10	27	17		TO
	10	27	48		CD
	10	28	03		PL
	10	28	40		BEW screech
	10	29	21		BEW screech
	10	30	26		BEW Screech
	10	31	12		TI
	10	32	12		BEW Screech
	10	33	07		BEW screech
	10	33	45		CD on 227th st
	10	33	57		BEW screech
	10	34	52		BEW screech
	10	35	49		BEW Screech
	10	36	37		BEW screech
	10	37	27		BEW screech
	10	38	26		JT
	10	40	03		JT
	10	41	54		BEW Screech
	10	42	53		BEW Screech
	10	43	01		depart P5
	10	44	34		start car ; depart P5
	10	45	21		
	10	50	58	S1	Arrive: Park at S1
	10	53	59		Arrive at S1 - Continuous popping from power lines
	10	54	04		BEW Screech
	10	54	54		BEW screech
	10	55	19		TO
	10	55	48		BEW Screech

As

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

AS

Date	HH	MM	SS	Location	Noise Description
9/30/12	10	56	36	S1	T@
	10	56	40		BEW screech
	10	56	47		TO
	10	56	57		Depart S1
	10	57	19		JT
	10	57	55		TI
	10	58	26		BEW Screech
	10	58	41		TI
	10	59	18		BEW screech
	10	59	46		start vehicle ; depart S1
	11	05	37	P4	Arrive at P4 parking area
	11	10	42		Arrive at P4
	~~11~~	~~13~~	~~2~~		- continuous construction going on by NE
	11	13	28		JT
	11	15	00		Air unit fan turns on ~ 20 sec.
					- continuous ↗ every 20 secs
	11	17	43		PL
	11	22	40		JT
	11	25	22		PL
	11	26	41		PL
	11	26	50		Depart P4
	11	28	04		Start vehicle ; depart P4 parking
	11	33	39	P3	Arrive at P3 parking area
	11	36	25		Arrive at P3
	11	36	54		CD
	11	37	29		NE Talking
	11	37	54		Diesel Truck TD
	11	38	18		JT
	11	39	41		Motor running NE continuous

Data collected by:

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
9/30/12	11	40	20	~~P1~~ P3	JT
	11	42	00		JT
	11	43	00		Yelling/Talking NE
	11	44	01		JT
	11	49	03		CD
	11	50	34		Yelling NE
	11	51	08		Depart P3
	11	54	59		Started vehicle; depart P3

AS

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/30/12	12	10		Arrive P2, park	Park car
9/30/12	12	22	16	Arr @ monitor	Jet
	12	27	23		Plane, Birds
	12	28	41		Jet, motorcycles in DX (possibly small Hydros)
		30	03		Jet
		32	13		Flicker
		32	41		Jet
		34	54		motorcycles (Hydros) racing in DX
		36	57		Frogs, Birds, plane
		39	28		wind in trees, Jet
		41	30		Jet, plane
		44	24		leaving monitor
		48	05		start vehicle, leave site.
	12	53	10	Arrive S2, park	File error on SLM -- no data able to retrieve. Reformat drive on unit.
	13	09	24		plane.
		11	18		Technician, covering unit to keep cool.
		12	54		start vehicle
	13	20	30	Arrive P1, park	crows
		24	21	Arr @ monitor	plane
		29	13		plane, wind in trees
		31	04		wind in trees
		32	59		Jet
		35	30		plane
		38	23		crows, plane
		44	36		Mc or OPV, briefly in DX.
		46	02		Jet, + wind in trees + flicker
		50	20		Jet, plane (after tech noises on dry leaves)
		51	50		Tech leaving
	14	00		Leaving site.	

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
9/30/12	14	10		arrive S1	park car
	14	12	18		plane.
		13	57		jet, wind in trees, plane
		15	54		plane
		16	57	arr @ monitor	

Data collected by: L Reinhard

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/4/12	19	20	34	Arrive @ P5	Parking
	19	30	00		BEW — occasional wind in trees
	19	31	57		Jet
		32	18		BEW (to Jet)
		33	02		BEW
		33	35		Car on 227th inbound to passage point area
		36	40		Jet
		38	41		MC in distance
		38	53		Car inbound on 227th.
		42	46		Car leaving CHRLF (CO)
		44	19		Car leaving 227th.
		45	28	→ Car inbound	Backup alarm CHRLF
		47	30	Leave P5	Start vehicle
		48	00		
	19	58	20	Arrive @ P1 parking	Park car
	20	00	00	Walk to P1	Can hear BEW over wind in trees, but not much @ wx station elevation
		02	48		Hat monitor leaves under foot.
	20	04	55		Can hear BEW drone
		05	18		Car in distance
		07	17		BEW screech
		08	10		Car in distance — BEW sets noise floor
		09	19		MC in distance
		09	46		Jet (far off)
		10	38		Car in distance
		11	16		Jet
		12	26		Still Jet
		14	01	Start car, leave P1	
		19	40	Arrive @ S1 parking	Park. Can hear BEW drone
		21	55		

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/4/12	20	24	18	@ S1	some Backup Alarm @ cedar Grove compo ST
		25	39	@ monitor	Frontend loader sound @ CGC
		27	35		Jet.
		28	57		conveyor sounds operational @ CGC, sets noise floor
		29	59		Loader ops ongoing @ CGC
		30	19	leave	leave S1 foot falls
		31	08		Plane
		32	34		Plane
		35	00	@ car	start car
	20	41	00	passing S2	NFS Blowers steady
		46	30	park @ P2	Jet parking car
		47	10		
		48	57		can hear cars in distance
		50	55	@ P2 monitor	can hear NFS Blowers - noise floor. ~~cars~~
		52	16		tech clicking case. cars in DX (128th ?)
		52	30	leaving monitor	CD (128th or Max Valley Road or TSS-Hobart?)
		58	25		~~start car~~ Plane
		59	16	leaving P2 parking	start car
	21	09	10	passing NFS (E. side)	Blowers steady.
	21	11	13	park @ P3 parking	much less wind now than when first set up
		12	14		Plane + Jet
		14	38	@ P3	Dogs barking to North, cars on Distant Road (CG?)
		17	25		Motorcycle - cedar Grove Rd, Dog
		~~18~~	~~41~~	19:04	Tech leaving site
	21	27	20	leaving P3 parking	start car
	21	33	05	park @ P4	~~Plane~~. Jet.
		34	01		A/C on cell tower bldg. ~ 5 seconds cycles on/off
		35	52	@ P4	Plane.
		36	37		Tech latches on case. Plane, car in distance

Data collected by: Z Reinhard

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/4/12	21	37	40	P4	MC in DX
		38	41	walking back by CT1	Jet, cell tower Alt
		44	18		CD car on cedar grove or Issy-Ito
	21	46	00	START car leave P4	vehicle
	21	56	50	Arr P5 parking	car heat BEW
		59	09	@ P5	BEW Flare
	22	00	40		Tech latching case
		01	36	Techs leaving P5	car ON 227 inboard,
	22	02	19		Jet
	22	03	40	Leaving P5	start car
	22	12	40	Arrive @ P1 parking	BEW in background
	22	13	56		Jet
	22	17	03	Arrive P1	BEW in background
	22	22	16		Jet
	22	22	49	Techs leaving P1	car on
	22	30	26	Passing S2	Blowers, checked S2 mover.
	22	33	08	@NFS - idling vehicle.	
	22	40	06	Arrive P2 parking	
	22	44	25	Approach P2	
	22	46	40	" "	CD and Blower in distance.
	22	49	00	Techs at P2	Blower in distance
	22	51	20		NFS Blowers / Frog
	22	54	55	Techs leaving P2	start car / Techs talking
	22	59	51	Passing East side NFS	
	23	06	30	Tech Arrive P3 Parking	NFS Blowers
	23	10	55	Tech Arrive P3	CD Blowers in distance.
	23	14	00		Jet
	23	16	05	Techs leave P3 parking	
	23	20	10	Techs Arrive P4	

Data collected by: [signature]

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/4/12 TR	23	24	06	Techs Arrive P4	Dogs barking, CD Blowers in distance
	23	26	00		Cell Tower AC
	23	27	45	Techs Leaving P4	
	23	43	30	CJ Arrive P5 parking	
	23	46	00	CJ Arrive P5	Overhead electrical, BEW
	23	51	00	CJ leave P5	
	23	59	40	CJ Arrive S1 Parking	BEW in distance
10/5/12 TR	0	07	40	CJ Arrive P1 Parking	
	0	13	59	Arrive P1	BEW in distance
	0	19	26	Leave P1 Parking	
	0	32	56	Drive Past NFS	
	~~0~~	~~41~~	~~50~~	~~Arrive P2 Parking~~	
	0	49	20	Arrive P2 Parking	
	0	53	30	Arrive P2	Dog Barking, BEW in background
	0	58	20	Leave P2 Parking	
	1	04	30	Drive Past NFS	
	1	12	50	Arrive P3 Parking	
	1	17	20	Arrive P3	BEW in distance, Car in distance
	1	23	00	Leave P3 Parking	
	1	28	10	Park @ P4	
	1	32	23	Arrive P4	Dogs barking, ~~BEW~~ cell tower AC
	1	34	50	P4	Cell tower AC, Frogs
	1	36	38	Leave P4 parking	
	1	43	05	Park @ P5	
	1	45	27	Arrive P5	Overhead electrical, BEW
	1	47	00	P5	Wind in trees
	1	47	56	P5	Dog barking
	1	50	00	Leave P5 Parking	
	1	57	15	Park @ P1	

Data collected by: Chris Jeffers

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
10/5/12	2	04	12	P1	BEW in distance
	2	11	27	Leave P1	
	2	22	07	Drive past NFS	
	2	27	49	Arrive P2 parking	
	2	30	42	Arrive P2	BEW in distance, dogs barking in distance
	2	38	50	Leave P2	
	2	42	40	Drive past NFS	
	2	48	50	Arrive @ P3 parking	
	2	52	42	Arrive @ P3	BEW in distance, owl and dog barking in distance
	2	57	00	Leave P3	
	3	01	31	Park @ P4	
	3	07	52	Arrive @ P4	Jet, Cell Tower AC, BEW in distance
	3	08	54		Car in distance
	3	11	15	Leave P4	
	3	17	22	Arrive P5 parking	
	3	20	36	Arrive P5	Bew, overhead electrical
	3	25	40	Leave P5	
	3	31	54	Arrive P1 parking	
	3	34	01	Park @ P1 parking.	
	3	36	18	Arrive P1	BEW, deer in trees
	3	40	57	Leave P1	
	3	47	20	Drive past NFS	
	3	51	23	Arrive P2 parking	
	3	54	10	Arrive P2	BEW in distance
	3	58	20	Leave P2	
	4	01	30	Drive past NFS	
	4	07	54	Arrive P3 Parking	
	4	11	16	Arrive P3	BEW, dogs barking in distance
	4	14	10	Leave P3	

Data collected by: Chuck Jeffers

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
10/5/12	4	17	19	Arrive P4 Parking	
	4	22	17	Arrive P4	Cell tower AC, BEW
	4	25	24	Drive away	
	4	31	25	Arrive P5 Parking	
	4	36	29	Arrive P5	overhead electrical, BEW
	4	39	34		Truck/Car in distance
	4	42	25	Leave P5	
	4	50	02	Arrive P1 Parking	
	4	52	29	Arrive P1	BEW, deer in bushes
	4	55	00	Leave P1	
	5	01	30	Drive past NFS	
	5	06	09	Arrive P2 Parking	
	5	08	46	Arrive P2	BEW, cars in distance
	5	11	12	Leave P2	
	5	15	35	Drive by NFS	
	5	22	50	Arrive @ P3 Parking	
	5	25	50	Arrive @ P3	Car/Trucks in distance, BEW
	5	28	07		Motorcycle in distance
	5	29	42	Leave P3	
	5	33	46	Arrive P4 Parking	
	5	36	09	Arrive P4	BEW, Truck/car noise in distance
	5	40	00	Leave P4	
	5	46	13	Arrive P5 Parking	
	5	48	52	Arrive @ P5	Trucks/cars. BEW
	5	52	19	Leave P5	

Chris Jeffers

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	6	11	36	S1	Parked @ location - can hear heavy equip. @ CHRLF - probably a dozer. occasional backup beepers
	6	16	45	"	Arrived @ station can hear conveyors @ CG
~	6	15	57	"	Heard car horn to E.
	6	17	35	"	Noticed JT fading in possible audible BEW in blight.
	6	18	59	"	Truck whine @ CG
	6	19	45	"	Rtn. to vehicle
	6	21	42	"	Possible JT - distant - may be CHRLF
					Back in vehicle
~	6	23	40	"	Parked @ location - hearing heavy equip.
~	6	27	00	P1	@ CHRLF (still dozers) + back up beepers/alarms
	6	28	58	"	Notice JT - distant
	6	31	03	"	Arrive @ station notice another JT
	6	31	49	"	can hear dozer tracks
	6	32	04	"	Possible T1?
	6	32	22	"	JT - distant can hear CG in dist. to S. I think
	6	33	39	"	Possible T1
	6	34	45	"	"
	6	35	00	"	Noted JT - distant, fading in
	6	35	26	"	" another dist. JT, fading in
	6	36	31	"	Possible T1
	6	37	07	"	PT dist - possible critter in woods
	6	37	15	"	Same kind of 'chunk'. @ CHRLF
	6	38	45	"	BD "peep" in woods
	6	39	00	"	slight breeze moves leaves
	6	39	43	"	Possible T1
	6	40	21	"	"
	6	40	32	"	dist. dog barking

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	6	41	00	P1	I head back to vehicle
	6	41	25	"	T1 ? - maybe Truck passing to E. in CHRLF
	6	42	14	"	Noticed JT ?
	6	43	25	"	PT ~~or JT~~ fading in
~	6	44	00	"	Back in vehicle
	6	49	29	~> P1	TO from dump pit
	6	51	45	S2	Flare stack burning, station pump whine
					notice PT in distance, BD walking up
					as I park @ station.
	6	52	59	"	BD close by
~	6	54	00	"	I depart
~	6	56	57	~~P2~~ P2	I notice JT OR ~~@~~ PT
~	6	58	00	"	~~leaving~~ @ I park @ location - Robins are
					loud, PT distant, can hear heavy
					machinery @ CHRLF
	6	59	28	"	Possible ~~=~~ PT, distant
	7	01	35	"	T1 ?
	7	01	59	"	Birds + chipmunk
	7	02	42	"	JT
	7	04	31	"	I arrive @ station - birds birds birds
	7	04	58	"	T1 ? + whine from N. flare stack
	7	05	58	"	JT ? - distant + truck shifting gears in CHRLF
	7	06	28	"	I notice PT + very distant rooster
	7	08	03	"	crow
	7	08	50	"	JT distant
	7	09	22	"	Brake pulse/squeek CHRLF from equip - JT fades in louder
	7	09	30	"	more BD nearby
	7	10	38	"	PT fades in
	7	11	36	"	motorcycle in dist.

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	7	12	16	P2	Crow, dog barking in distance, chipmunk,
	~~7~~	~~13~~	~~23~~	~~"~~	PT in distance
	7	13	23	"	JT - distant
	7	13	46	"	Truck somewhere in CHRLF
	7	14	15	"	I return to vehicle
	7	14	34	"	I notice JT - dist.
	7	14	58	"	I notice PT - dist.
					Back in vehicle
~	7	17	25	"	Parked @ location, notice JT, BD
	7	25	19	P3	Notice JT again - prob. another one
	7	27	14	"	+ some bulldozer noise from CHRLF
					+ distant dog bark (lots of BD)
	7	28	35	"	→ another JT, backing beepers + dozer
					I arrive @ station - a lot of sounds in background
	7	29	38	"	possible TI, PT, motorcycle, breeze picking up
					stirrs leaves - maybe CD or TD hard to tell
					BD waking up
	7	31	19	"	I notice JT fading in
	7	31	35	"	'clunk' @ CHRLF - maybe dump truck hatch?
	7	32	08	"	TI?, BD chirps near station
	7	32	40	"	PT in distance + backup beeper
	7	33	08	"	PT Louder now
	7	33	56	"	distant JT?
	7	34	35	"	JT increases
	7	35	28	"	I notice PT & maybe another JT
	7	37	02	"	breeze picks up a bit, still hear JT (maybe 2)
	7	37	36	"	maybe distant PT?
	7	38	49	"	Some kind of vehicle activity @ CHRLF
	7	39	11	"	"clunk" @ CHRLF followed by backing beeper + another JT

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	7	40	09	P3	TD? to North? - maybe motorcycle or
					car - passes @ 7:40:41 - ah - it's a
					CHRLF truck - went by on road just
					N. of station heading west in N.
	7	41	34	"	I return to vehicle.
	7	43	15	"	I hear dist. PT
	7	44	00	"	Back in vehicle
~	7	44	30	"	Ti?
~	7	47	50	P4	I park @ location
	7	48	10	"	Ti to W. - can hear BEW whine, BD
	7	49	17	"	Notice JT - dist, possible PT dist.
	7	51	28	"	I arrive @ station - leaves rustling in
					breeze. Dist. JT. Can hear BEW whine, TD, CD,
					crows + BD, heavy equip @ CHRLF
	7	52	34	"	Backup alarm @ CHRLF + disturbance in
					shrubs just N. of station - prob. birds.
					BD very close to station on road
	7	53	58	"	Dist. JT + crows nearby
	7	54	46	"	JT noise fades in ~~louder~~
	7	55	38	"	Another JT fades in @ previous JT fades out
~	7	55	50	"	AC on cell tower turns on
	7	56	21	"	Squirrel scolds ~~[illegible]~~ hawk in tree nearby (bew! bew!)
					other birds start to join in
	7	58	12	"	AC turns off
~	7	58	47	"	Ti + bull dozer activity @ CHRLF
	7	59	19	"	Back up beeper @ facility just S. of station?
	7	59	38	"	" + some thunks - maybe trash pickup?
	7	59	55	"	"
	8	00	20	"	Ti?

Data collected by:

KCSWD CHRLF Perimeter Noise Study

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Date	HH	MM	SS	Location	Noise Description
10/5/12	8	00	37	P4	Thumps + beeper
	8	00	55	"	"
	8	01	09	"	Truck pulls away from facility to S.?
	8	01	38	"	I head back to vehicle
	8	03	00	"	Back in vehicle
~	8	05	30	"	I noticed school bus just outside of fence line @ Facility S. of station
~	8	07	00	→ S3	I park @ location - can hear BEW, dozers + backing beepers, misc. heavy machinery
	8	09	20	"	Car passes on RD TO E.
	8	10	25	"	I notice dirt bike sound / moped? weed-whacher to N. - prob. @ facility S. of P4
	8	10	55	"	I notice PT on JT.
	8	11	35	"	BEW hiss
	8	12	20	"	Breeze picking up - I hear JT or PT dist.?
	8	13	25	"	TO, I arrive @ station - power line cracks? BEW hiss
	8	13	37	"	TO (small)
	8	13	39	"	Ti (small)
	8	14	05	"	Backing beeper
	8	14	07	"	TO, BD (crows)
	8	14	40	"	Ti
	8	14	56	"	I sneeze b
	8	15	13	"	BEW hiss / shriek
	8	15	47	"	I hear truck @ weigh station?
	8	16	04	"	back up beepers
	8	16	20	"	I ret. to vehicle, BEW shriek.
~	8	19	30	"	Car passes on rd to E., I notice PT - I'm at vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	8	21	20	S3	- dist. PT on JT
	8	23	58	P5	I park @ location
	8	24	07	P5	School bus passes on rd to w. - overhead
					powerline crackle + JT, distant
	8	24	50	"	TO
	8	25	30	"	Ti
	8	26	42	"	Arrive @ location, can hear backup beepers -
					PT (dist) and JT (dist.). BEW shriek - distant
	8	27	50	"	TD, weed whacker (to north).
	8	28	53	"	School bus passes on rd to w. - brake noise @
					~ 8:29:15 - squeak.
	8	29	27	"	TO
	8	29	52	"	crows
	8	30	37	"	Possible TD to S.
	8	31	17	"	Breeze picking up a bit - leaves stir
	8	31	53	"	TD - approaching on entry road?
	8	33	25	"	TD? maybe @ CC?
	8	34	00	"	notice PT - dist.
	8	34	12	"	TO
	8	34	15	"	notice some dist. thunking
	8	34	45	"	TO
	8	35	12	"	BEW shriek?
	8	35	38	"	TO (van)
	8	35	48	"	Outbound car, Ti approaching from S.
	8	36	31	"	Ti visible on rd., (head back to vehicle
	8	37	32	"	looks like two Ti
					car enters facility
	8	37	38	"	van passes on rd to w.
~	8	38	30	"	Back in vehicle
~	8:39				Noted 3 TO on way back to CHRLF

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12 N	9	10	20	S1	I park @ location, hear BD, heavy equip @ CHRLF
	9	11	55	"	Shot? @ CHRLF (For bird control?)
	9	14	15	"	Raven
					Note: as I approach station, CC is dominant sound - seems louder than usual - heavy vibration (constant) - plus other equip
	9	17	30	"	vibration generating device quiets down somewhat - is it a vac. truck? soil compactor? - I think it's a vac truck. (visually looks like one in approx. source location).
	9	19	14	"	- I arrive @ station BD vac. truck idling
	9	20	15	"	I notice JT or PT - possibly? hard to discern over other sounds.
	9	20	57	"	PT
	9	21	45	"	I walk past station + return to vehicle
	9	22	30	"	~~I walk~~ I notice PT
	9	23	02	"	Large vehicle (prob. dump truck) @ CC - I note TI to CC possibly?
	9	26	51	"	Back in vehicle
	9	29	56	P1	Parked @ location
	9	30	12	"	Clunk from CHRLF - heavy machinery-related
	9	32	58	"	I arrive @ station BD, heavy equip @ CHRLF (dozers).
	9	33	26	"	Truck passing? (inside CHRLF) Breeze rustles leaves
	9	34	21	"	Noticed PT(?)
	9	35	24	"	Crow vocalizes while flying over
	9	36	09	"	Truck in CHRLF?
	9	37	02	"	PT? - may be CHRLF truck?
	9	38	20	"	Truck passes by in CHRLF? dozer tracks rattle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	9	41	05	P1	continued ambient machinery sounds from
					garbage pit area CHRLF
	9	41	34	"	"clunk" of dump truck or other vehicle
	9	41	55	"	I sneezed.
	9	42	21	"	T1 ? or PT?
	9	42	34	"	"clunk" from CHRLF vehicle
	9	43	15	"	I head back to vehicle
	9	45	25	"	Back in vehicle
	9	51	13	S2	I park @ location, notice PT, BD, whine of
					station pumps - site staff in driveway nearby,
					gets into vehicle ~9:51:45
	9	52	14	"	CHRLF truck drives past station
	9	53	12	"	Distant PT
~	9	53	50	"	I drive away
	9	58	30	P2	Parked @ site - can hear BD, whine of N. flare
					stack, dist JT fading out
	10	01	03	"	Notice PT - dist.
	10	02	07	"	TD
	10	03	12	"	JT (dist) or PT
	10	04	02	"	PT
	10	04	28	"	I arrive @ station
	10	05	16	"	PT - another one
	10	05	52	"	I notice TD or CD to North?
	10	07	17	"	PT - another one, possible JT also (dist).
	10	09	03	"	Truck in CHRLF perimeter
	10	09	55	"	TD (possibly in CHRLF?)
	10	09	50	"	PT or TD
	10	12	58	"	JT DIST - angry Jaybird keeps squeaking
	10	14	12	"	TD - maybe w/in CHRLF - det gets louder

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	10	15	15	P2	I depart for vehicle
	10	16	01	"	JT
	10	17	22	"	JT louder - maybe another one
	10	18	34	"	Back in vehicle
	10	27	20	P3	Parked @ location TD + TC → Prob. I-90 + ~~BD~~, BD
	10	30	28	"	2 deer observed checking out the station - so I approached they left
	10	31	50	"	I arrive @ station - hear maybe voices to NE
	10	32	17	"	TD - maybe inside CHRLF
	10	33	17	"	motorcycle in dist - voices @ property to NE
~	10	34	00	"	TD to W.
	10	34	30	"	'hoot' → voices to NE + some kind of banging, dull, metallic sound
	10	35	10	"	Prob. PT (dist.).
	10	35	48	"	TD - maybe to E?
	10	36	04	"	PT
	10	36	33	"	Saw or grinder? @ property to NE - continued children's voices.
	10	37	34	"	saw/grinder again
	10	37	49	"	motorcycle to E? - children's voices increase somewhat
	10	38	40	"	CD or TD?
	10	38	54	"	saw/grinder again - louder - still, voices
	10	39	17	"	motorcycle in distance, voices continue - some yelling/screaming (play - I hope).
	10	40	10	"	PT (distant) fades in
	10	40	56	"	Dog bark distant ~ voices continue
	10	41	30	"	I depart for vehicle
	10	43	15	"	I notice PT
	10	43	56	"	Back in vehicle, notice JT

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	10	47	30	P4	Parked @ location - can hear crows
	10	49	03	"	See vehicle parked @ cell tower *
					JT - distant
	10	50	26	"	I arrive @ site - crows nearby + BD
					* 2 people working (Earth corps vehicle)
					AC cycles off + on @ cell tower - workers talk to each other near cell tower
	10	51	35	"	I notice PT fading in
	10	53	47	"	Truck nearby to S. - pulls in to facility
					some backup beeper + braking sounds
				"	Not sure what is going on - some clunks + clinks
					to S. w/ voices
	10	55	02	"	I think another diesel truck pulls in to
					facility S. of fenceline
	10	55	40	"	Dog bark + TD or CD
	10	56	15	"	Dog bark continues
	10	56	35	"	AC kicks on @ cell tower - starts to cycle
	10	57	07	"	PT? - distant
	10	58	19	"	Notice JT (dist.) fading in
	10	59	52	"	Raven croaks once
	11	00	20	"	I return to vehicle - voices again
	11	01	02	"	I notice JT (Dist)
~	11	02	10	"	Horn honk to S.
	11	03	05	"	Back in vehicle
~	11	08	30	* S3	Parked @ location - hear very dist. JT.
	11	09	33	"	car approaches + passes to E. of CHRLF fence
	11	11	00	"	TI ?
~	11	12	12	"	TO? - lots of clunking
	11	12	4	"	TO
	11	13	01		TO

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12 ~	11	13	20	S3	Car drives in to CHRLF
					TO
~	11	13	40	"	TO – I arrive @ station – BD, power line
	11	14	16	"	crackle – some kind of distant squeak – either machinery
	11	14	37	"	I notice JT fading in
					maybe starlings?
	11	15	37	"	TI – breeze picking up
					dist. seagulls
	11	16	31	"	Frog.
	11	17	00	"	I return to vehicle as TO
					They're on the powerline stanchions
~	11	17	20	"	Another clunky TO
	11	17	51	"	TI
	11	19	16	"	Back in vehicle, hear TI
					dogs barking in dist
~	11	21	00	"	TI
~	11	21	58	P5	I park @ location
	11	22	22	"	PSE vehicle pulls away from fenced
					area to S. on W. side of St.
	11	22	53	"	TO → Bew is pretty quiet today
	11	24	15	"	TO, poss. TI also (~11:24:50) incoming
					Note: breezy @ this location – hear powerline buzz
	11	25	17	"	TO, note distant JT (?)
	11	25	50	"	Arrive @ station to check wind spd ~5-6 mph max.
~	11	27	20	"	I lock gate – note dog barking to NE
			31	"	chunk in distance to S.
	11	27	55	"	TI
	11	29	06	"	Possible deer in woods to S.
	11	29	53	"	TI?
	11	30	20	"	Notice distant PT
	11	30	35	"	Vehicle on driveway passing S. to N. – E. of station
	11	31	09	"	Another PT

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
~~10~~ 10/5/12 ~	11	31	00	P5	I change paperwork
	11	32	30	"	notice JT fading in
	11	32	56	"	Dog bark to E.
	11	33	07	"	TD
	11	33	29	"	Dog barking - continues periodic
	11	33	40	"	car enters CHRLF - BD on fence @ station
	11	34	40	"	chirping
					Ti
	11	34	45	"	car passes on RD. to W.
	11	35	11	"	Car on gravel road E. of station
	11	35	37	"	Breeze picks up some more
	11	36	07	"	I depart for vehicle
	11	36	57	"	Ti + dog barking
	11	37	17	"	van passes on rd to W.
	11	37	52	"	Back in vehicle
~	11	38		"	TD
~	11	56	00	S1	I parked @ location - A vehicle is located just inside SW loop rd.
~	11	55	-	"	Track hoe on flatbed on W. part of loop
					1 ton truck Hydro seeder on 1 ton truck
					Digging up gas line in low spot ~ ~~200~~ 375'
					N. of station
					Working w/ Williams Pipeline crew.
	12	06	37	"	I arrive @ station - vac. truck still humming away @ CC. - loud. Breeze is blowing pineneedles out of trees, but it's pretty calm on the ground
	12	08	44	"	~~Vac truck~~ Possi truck passes @ CC
	12	08	58	"	vac truck gets a bit quieter
	12	09	40	"	I head back to vehicle
	12	10	25	"	I notice JT fading in

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	12	13	47	S1	I'm back in vehicle
~	12	23	30	"	I notice PT
	12	26	40	P1	I parked @ location - can hear heavy equip. to E. @ CHRLF - dist. JT?
	12	27	24	"	"Bang" @ CHRLF
	12	28	40	"	Truck goes by inside CHRLF
	12	30	31	"	Dogs bark to W.
	12		43	"	" → continues periodically
	12	31	09	"	I notice JT → replaces dog barking
	12	31	32	"	I notice Ravens as I approach station to check weather/wind (10 min Avg = 1)
	12	32	52	"	Another JT? - wind shakes leaves
	12	33	21	"	Heavy equip. on truck whine to E. @ CHRLF
~	12	34		"	Raven croaks nearby - honks as well
	12	35	12	"	Another JT fading in - dist
	12	35	32	"	Dist. PT
	12	36	40	"	JT more audible
	12	36	56	"	Hawk trill
	12	37	21	"	Truck inside CHRLF or motorcycle?
	12	38	05	"	" " " whines + JT becomes more audible
	12	38	39	"	PT, comp. brakes, or dist. motorcycle
	12	39	02	"	Truck inside CHRLF - loud + makes scraping noise like it's dragging something plastic.
	12	40	02	"	~~JT or~~ PT Distant + truck whine inside CHRLF
	12	40	56	"	Clunk @ CHRLF - heavy equip.
	12	41	35	"	I ret. to vehic.
~	12	41	50	"	Truck drives by in CHRLF
	12	44	35	"	Back in vehic. - comp. brakes or motorcycle to E.

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	12	50	50	S2	I park @ station - can hear PT in distance -
					fading in. Whine of N. flare stack station.
					Not sure if flare stack is burning. BD.
	~~12~~	~~52~~	~~15~~	"	~~Noticed possible distant JT.~~
	12	53	15	"	I drive away
~	12	57	00	P2	I park + notice JT, BD, North flare stack whine
	13	00	34	"	I notice JT fading in
	13	01	21	"	I arrive @ station - wind is moving leaves.
	13	01	50	"	Possible CD to NE? or just wind in trees
	13	02	45	"	PT
	13	04	22	"	Wind gust as PT fades out - another fades in
	13	05	55	"	~~PT or CD?~~ to North - ~~maybe~~ JT fades in
~	13	06	45	"	Raven croaks PT (distant) fades in
	13	07	26	"	vehicle passes on E. side of station? distant
	13	08	56	"	Vehicle in CHRLF? N. end.
	13	08	30	"	PT (dist.) fades in - pine needles dropping everywhere
	13	10	02	"	Tree creaks rythmically near station - ravens croak
	13	10	53	"	+ honk
				"	Dist. PT fades in and JT also
	13	11	20	"	I head back to vehicle
	13	14	10	"	Back in vehicle
	13	15	30	"	Low-flying PT or helicopter
~	13	23	10	P3	Parked @ location Noted BD, wind in
					the trees.
	13	24	26	"	TD or motorcycle - not sure where
	13	27	05	"	Arrive @ station to check wind - Avg. spd = 2mph - gusts
					Still kids outdoors - voices to NE. may be motorcycle to NE
					periodically - hard to tell even leaves moving

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
5/10/12	13	29	50	P3	JT fades in
	13	31	02	"	motorcycle to NE
TH 10/17/12	13	31	34	"	"
	13	32	00	"	I notice a JT - dist., maybe also a PT
	13	34	20	"	Noticed distant PT
	13	35	33	"	Larger wind gust, possible PT or JT
	13	36	20	"	Possible motorcycle to NE
	13	37	50	"	Truck w/ trailer moving around in NE adj. property
	13	37	25	"	I return to vehicle
	13	40	20	"	Back in vehicle
	13	45	30	P4	Parked @ location - Earth corps van still parked @ cell tower fence - prob. a survey crew.
	13	46	51	"	Distant PT AC on @ cell tower
	13	48	34	"	I arrive @ station, PT fades in, BD
	13	49	45	"	JT fades in as PT fades out (very distant)
	13	50	14	"	Heard survey crew maybe set a stake?
	13	50	45	"	Voices to S. → Dist. PT leaves moving in wind gusts.
	13	51	04	"	Motorcycle? to E.
	13	51	21	"	JT fades in
	13	52	07	"	Distant PT
	13	53	30	"	Voices at facility to S., dist. JT fades in some clanking - maybe survey crew?
	13	54	40	"	Car passes on rd to E., I shuffle loudly by accident
	13	55	55	"	Distant dogs barking to N.E.
	13	56	45	"	Distant JT or PT
	13	58	00	"	I head back to vehicle.
	13	59	35	"	Back in vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	14	06	25	S3	Parked @ location - observed person using weed whacker @ greenhouse - like location S. of P4 ~ 14:05
	14	09	45	"	I arrive @ station - still hear starlings on power lines - crackling lines also Bew is quieter than usual - does it have to do w/ gas line work @ S1?
	14	10	28	"	TO Still ambient whirr + rumble of Bew, just not the usual shrieks
	14	11	48	"	I notice a woodpecker in clearing on tree nearby
	14	12	11	"	TO - breeze picks up.
	14	12	30	"	PT (dist.)
	14	12	45	"	I head back to vehicle
	14	13	49	"	Car goes by on rd to E.
	14	14	33 + 35	"	Someone @ site dumpsters flips dumpster lids open
~	14	15	50	"	Back in vehicle
~	14	17	00	main gate	- as I prepared to exit, I think I saw the vac trucks from Clr enter CHRLF - looks like it belongs to the County
~	14	19	58	P5	I parked @ location - power line crackle
	14	21	50	"	I approach station - T1 can hear motor of tractor - maybe Some sort @ hear by neighbor's property to NE
	14	22	40	"	I unlock gate to check wind spd (avg 5mph - gusts to 8)
~	14	23	45	"	I notice JT + lock gate
	14	24	37	"	PT + notice maybe a chainsaw in use to S. - maybe a dirt bike? → periodic, ongoing
	14	26	26	"	T1 → loud, increasingly
	14	26	55	"	PT fades in

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	14	27	36	P5	I Fumble w/ data sheets
					I notice some sawdust mixed w/ birdseed
					(corn, sunflower seeds) on ground ~
				"	Hadn't noticed that before → ~ 25' SW of station
	14	29	05	"	T1
	14	29	15	"	PT
	14	30	34	"	T1 - distant, increasing
	14	31	30	"	I refit to vehicle
	14	31	45	"	I notice JT
	14	32	54	"	~~[illegible]~~ Back in vehicle - noted
					several cars + trucks leaving CHRLF (END OF SHIFT?)
~	14	34	00	"	NOTED PT
~	14	37	38	main gate	Noted JT OR BEW flare? - I think it is BEW (rumbling)
	14	38	45	"	BEW shriek
					Note: pretty sure I saw track hoe from
					gasline crew leaving on truck + trailer
~	14	44	45	S1	parked @ location, I think I hear PT (dist.) and
					heavy machinery @ CHRLF PIT.
	14	52	05	"	APPROACH STATION - can hear backup beepers
					@ CCR, gasline work crew + vac truck are gone
					periodic dump truck whine @ CCR
					BEW whine in bkgd. BD, trees rustling in
					wind.
~	14	53	50	"	Possible JT (distant)
	14	54	45	"	I rustle paperwork
	14	55	10	"	I depart - note heavy equip. from CHRLF
					in distance
	14	55	59	"	Raven + PT
	14	59	35	"	Back in vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/2010					
~	15	03	10	P1	JT noted - Parked @ location
					can hear dozers + heavy equip. @ CHRLF pit
					breeze shakes leaves, BD
	15	05	20	"	Possible TO to E.
			35	"	Noted JT
	15	07	47	"	Arrived @ station - I think I hear a neighbor
					hitting metal on metal ('ping' sound) to W.
	15	08	30	"	PT - distant
	15	09	13	"	Possible TO to E. + ravens croaking
	15	09	52	"	"
	15	10	47	"	3 consecutive "clunks" from CHRLF + I noted PT
	15	11	30	"	Neighbor hitting metal again. Pounding spikes?
					forging?
	15	12	05	"	TO? to E.
	15	12	48	"	TO or T1 to E.
	15	14	03	"	" ?
	15	15	43	"	Noticed JT
	15	17	07	"	TO or T1 to E.
	15	17	40	"	I return to vehicle, note possible PT?
	15	19	13	"	TO or T1 to E?
	15	20	15	"	Back in vehicle
	15	27	50	S2	Parked @ location - Typical whine from
	15	29	15	"	flare stack equipment, breezy
					I depart
	15	33	30	P2	parked @ site - distant JT or PT, BD, wind in leaves
	15	36	05	"	JT
	15	37	15	"	another distant JT
	15	38	37	"	I arrive @ station, note PT (distant)

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	15	39	19	~~Change Paper~~ P2	change paper - note TD or CD
					Can hear whine of N. flare stack
~	15	40	50	"	~~Car or truck passing~~ wind in trees
					- Some tree squeaks.
	15	42	-	"	I shuffle papers
	15	43	30	"	vehicle passes on rd to E. - truck on main
					loop? maybe water truck?
~	15	44	10	"	Tree creaks in wind
	15	44	55	"	Noted dist. JT
	15	45	20	"	Tree creaks
	15	47	09	"	"
	15	47	35	"	Hear truck or other vehicle to E. (distant)
	15	48	50	"	Head back to vehicle
	15	49	56	"	motorcycle?
	15	50	50	"	Squirrel is angry, JT distant
	15	52	45	"	back in vehicle

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/5/12	16	15	08	S3 [161508]	BEW screech + rumble alternating.
	16	24	55	Arrive P3 parking	park vehicle. wind in trees
		25	40		plane
		37	31	AT P3	CD general cars/traffic
		38	18		plane
		39	32		another plane.
		41	09		~~BEW~~ DISTANT TRAFFIC (155-170?)
		44	55		crow, occasionally last minute - single calls.
		46	09		plane
		48	45		operations sounds from tree farm direction.
		49	33		tractor @ tree farm - revving motor, end @ 4:50:23
		50	47		tech leaving site.
		52	10		tree farm banging metal. (1 - strike)
		54	40		jet
	17	04			start vehicle - leave
	17	17	02	Arrive P4 parking	
	17	20	17		plane
		24	48		CD - motorcycle
		29	02	AT monitor P4	voices @ passage point
		29	32		plane some wind occasionally in trees
		34	01		B/U alarm @ passage point
		34	25		plane cell tower A/C cycle on
		37	21		cell power A/C cycles off
		40	38		motorcycle
	17	41	18	leaving site P4	start vehicle
	17	53	44	Arrive P1 parking	
	17	57	10	@ P1	contractor pickup arriving, drives by monitor.
		59	34		plane
	18	02			contractor pickup goes other way
	1805	10			crow. can hear BEW @ noise floor.
	1809	50			BEW screech
	10	05			" "

Data collected by:

KCSWD CHRLF Perimeter Noise Study

amec

Date	HH	MM	SS	Location	Noise Description
10/04/12	18	10	49	@P1, cont.	BEW, Plane (BEW relatively steady).
	18	11	55		BEW screech
		16	35		Dog Bark 2-3x in distance
		20	12		Jet
		21	15		ORV or Dirt Bike to SW
		25	27	leave P1	Start vehicle
	18	34	05	arr @ P5 Parking	
		37	12	@P5	BEW steady noise background
		37	55		Car leaving CHRLF
		40	30		CO, then TI
		41	30		Jet
		42	50		Dog 3x in distance
		43	20		Plane
		45	03		Jet
		47	04		Dog occas. in distance
	18	48	40	leave P5	Start car
	18	55	56	Drive by S2	Blowers running

some wind in trees occasional but winds drumming from afternoon

Data collected by: J Armbrust

APPENDIX B

Cedar Hills Regional Landfill Wind Data

APPENDIX B

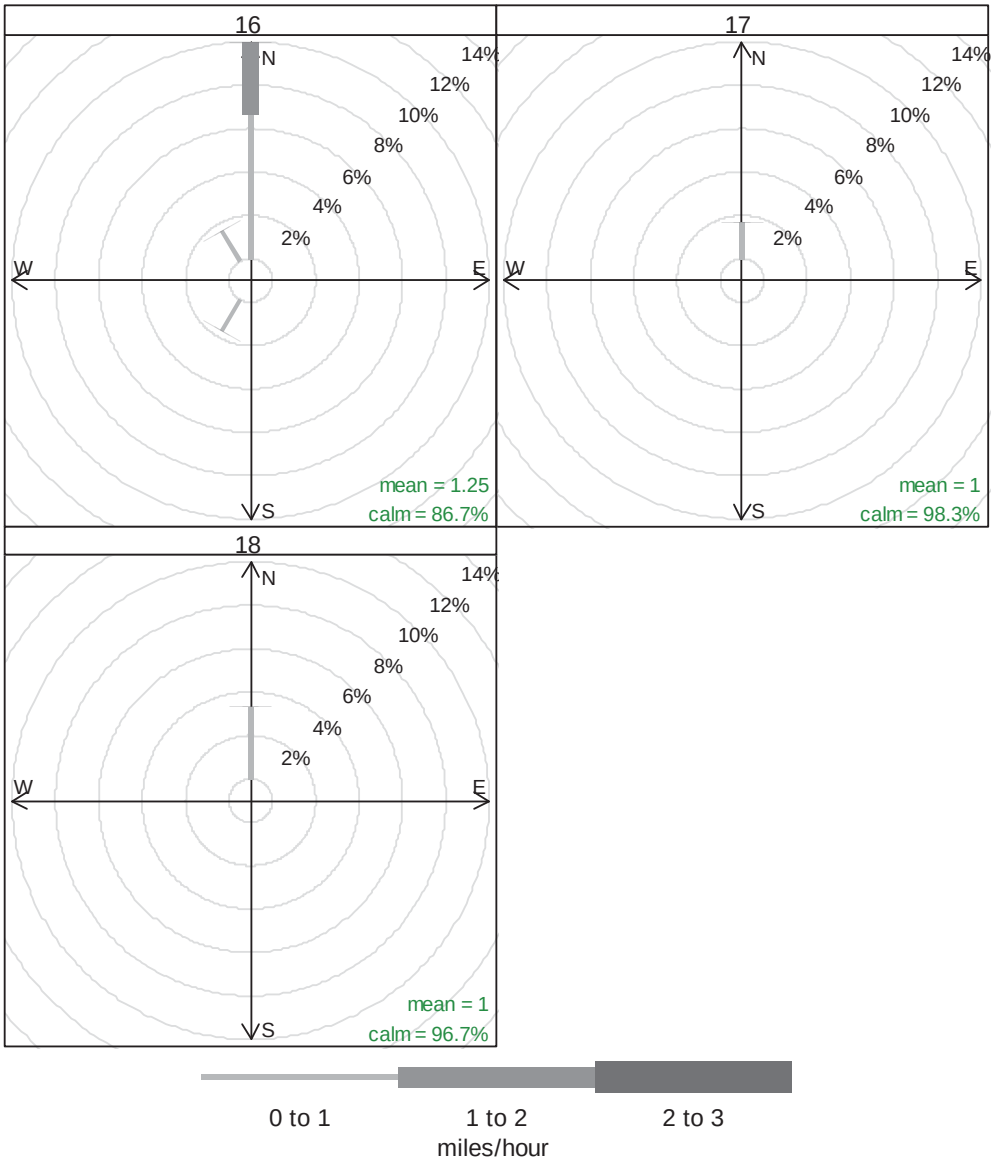
Wind Speed and Direction Data at Cedar Hills Regional Landfill

Maple Valley, Washington

1-Minute Average Wind Speed Data Collected by AMEC

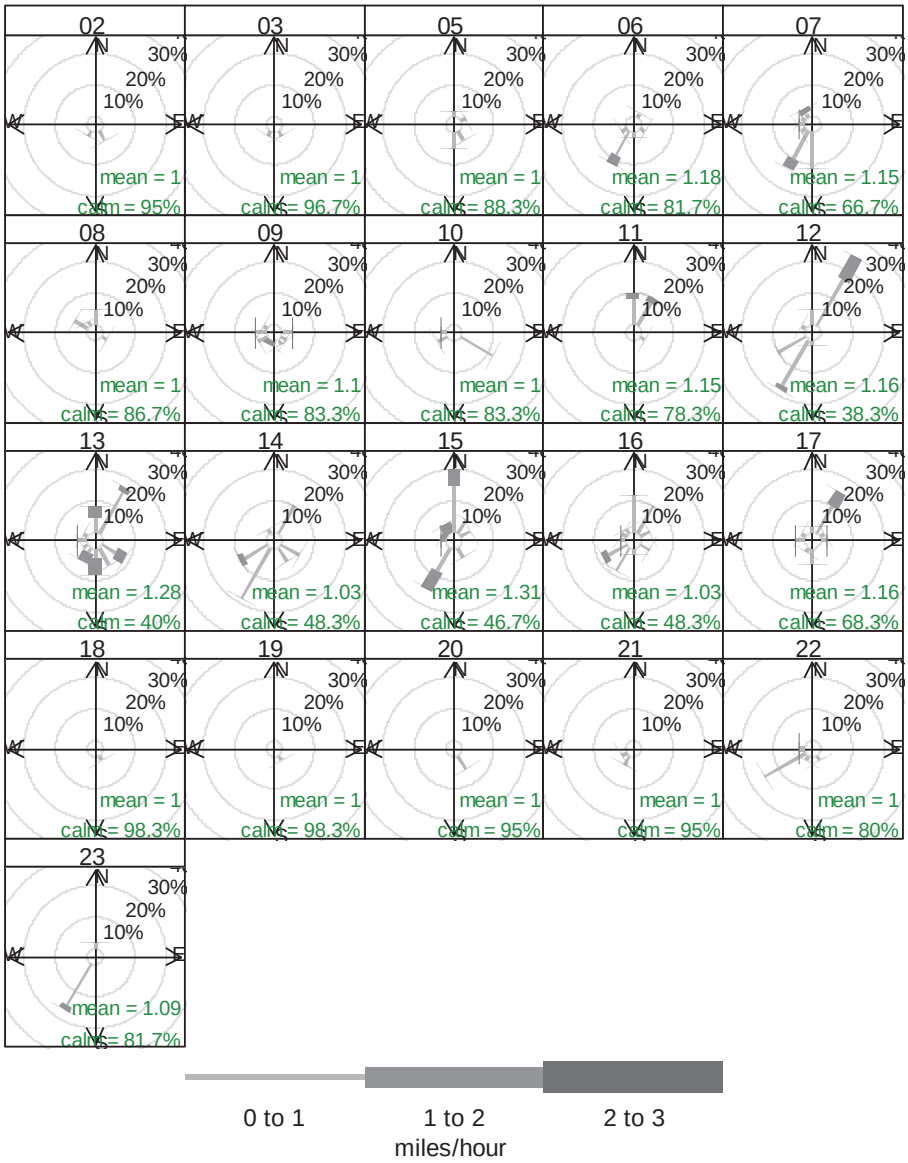
The following wind roses depict 1-minute average wind speed and direction data measured by temporary portable weather stations established at monitoring sites P1, P2, P3, and P5. Technical difficulties precluded continuous data recording from 11:00 AM September 26, 2012, until the afternoon of September 28, 2012, then 1-minute averages were recorded starting at approximately 15:20 at P1, 16:40 at P2, 17:40 at P3, and 14:40 at P5. For the remainder of the perimeter noise monitoring (through the afternoon of October 5), hourly wind roses of these 1-minute averages are depicted below. A wind rose is presented for each hour with 1-minute average wind speeds above zero miles per hour; if there is no wind rose for an hour, the hour was calm, with no measurable wind (above 1 mile per hour) lasting for more than one minute.

Friday, September 28, 2012, Site P1



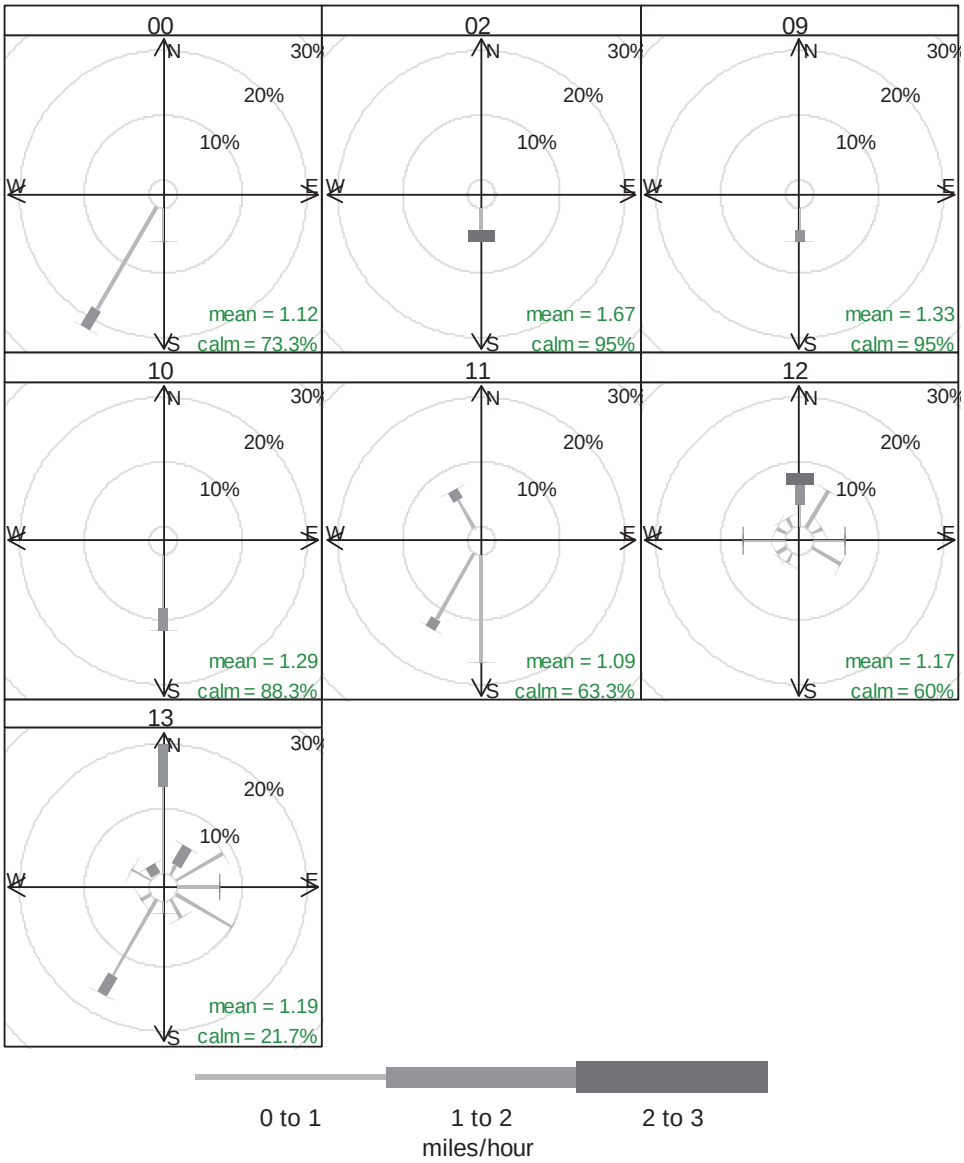
Frequency of counts by wind direction (%)

Saturday, September 29, 2012, Site P1



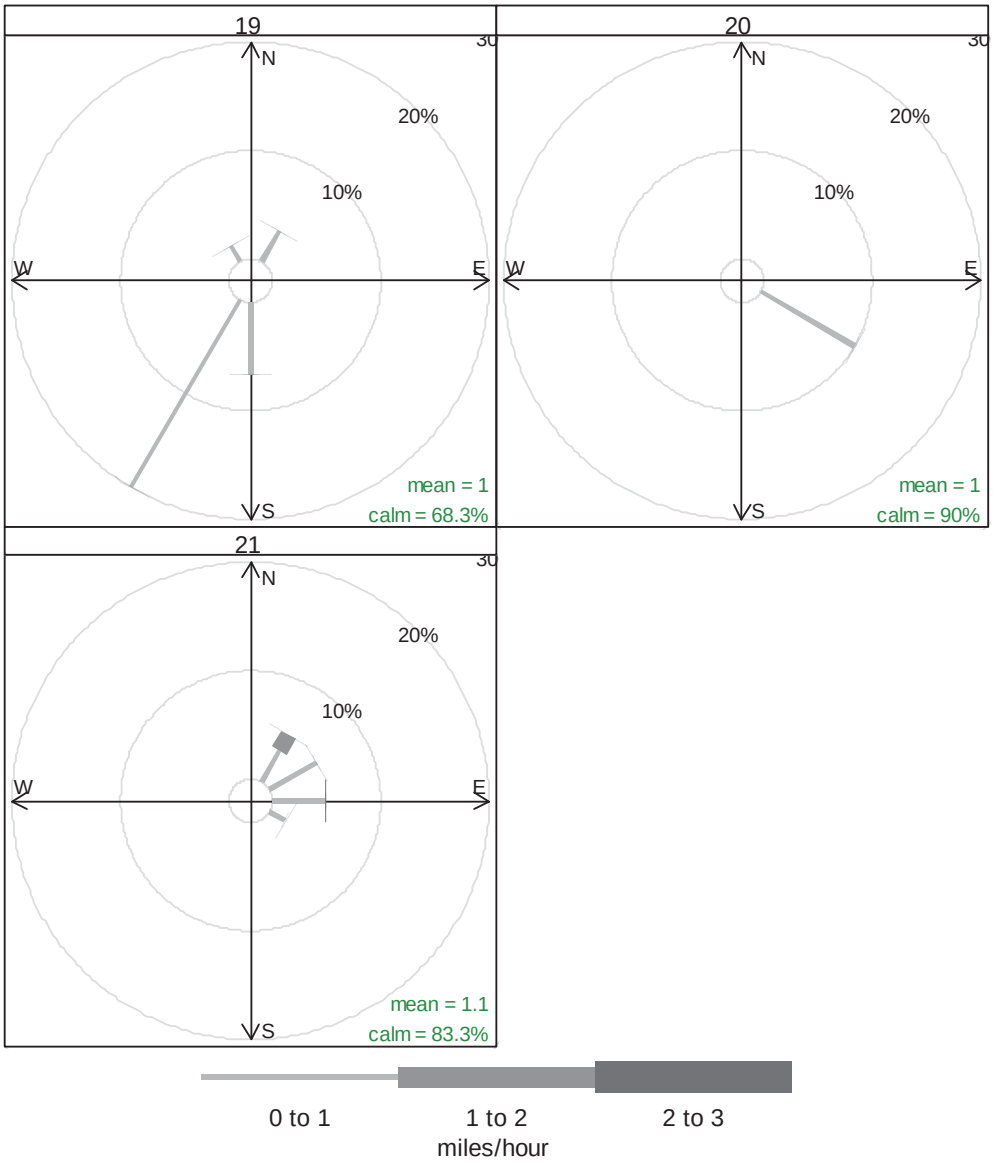
Frequency of counts by wind direction (%)

Sunday, September 30, 2012, Site P1



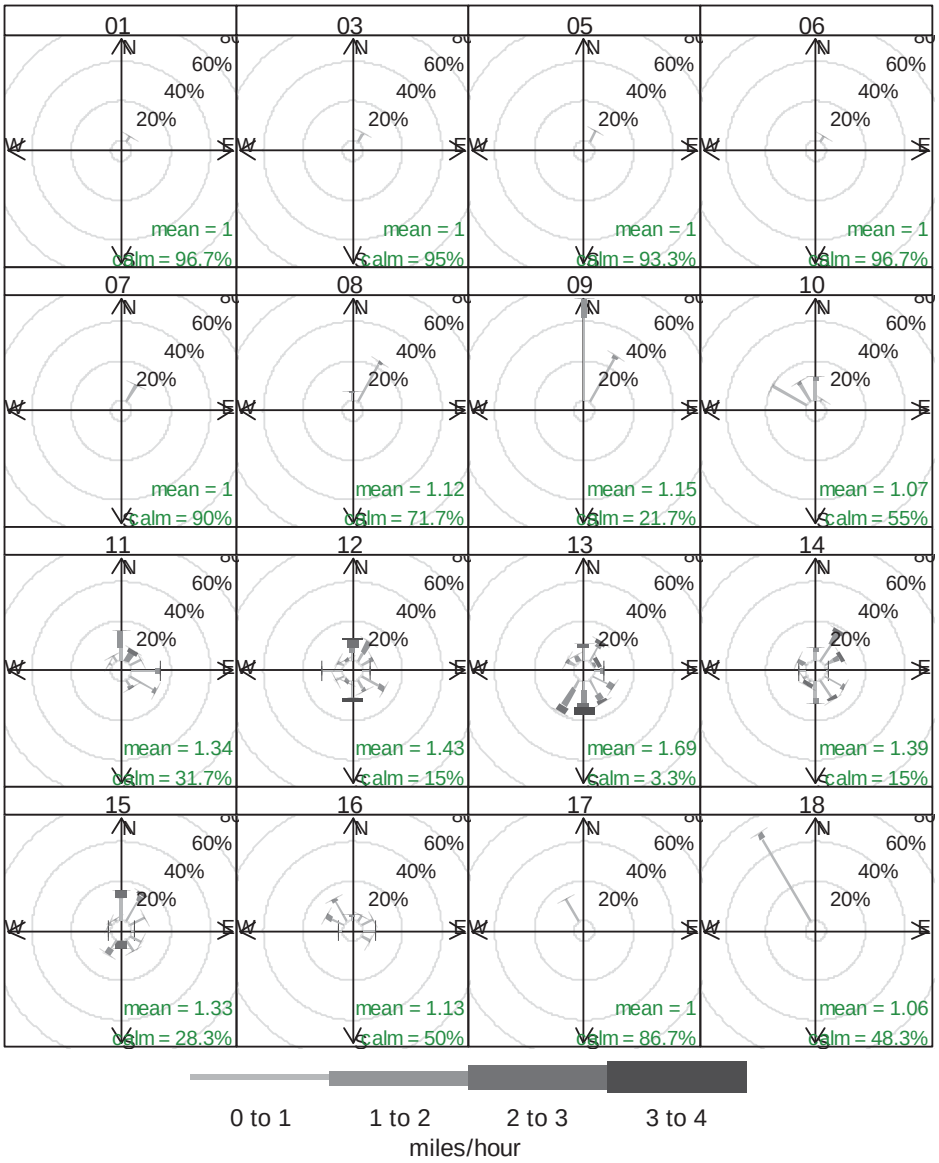
Frequency of counts by wind direction (%)

Thursday, October 4, 2012, Site P1



Frequency of counts by wind direction (%)

Friday, October 5, 2012, Site P1

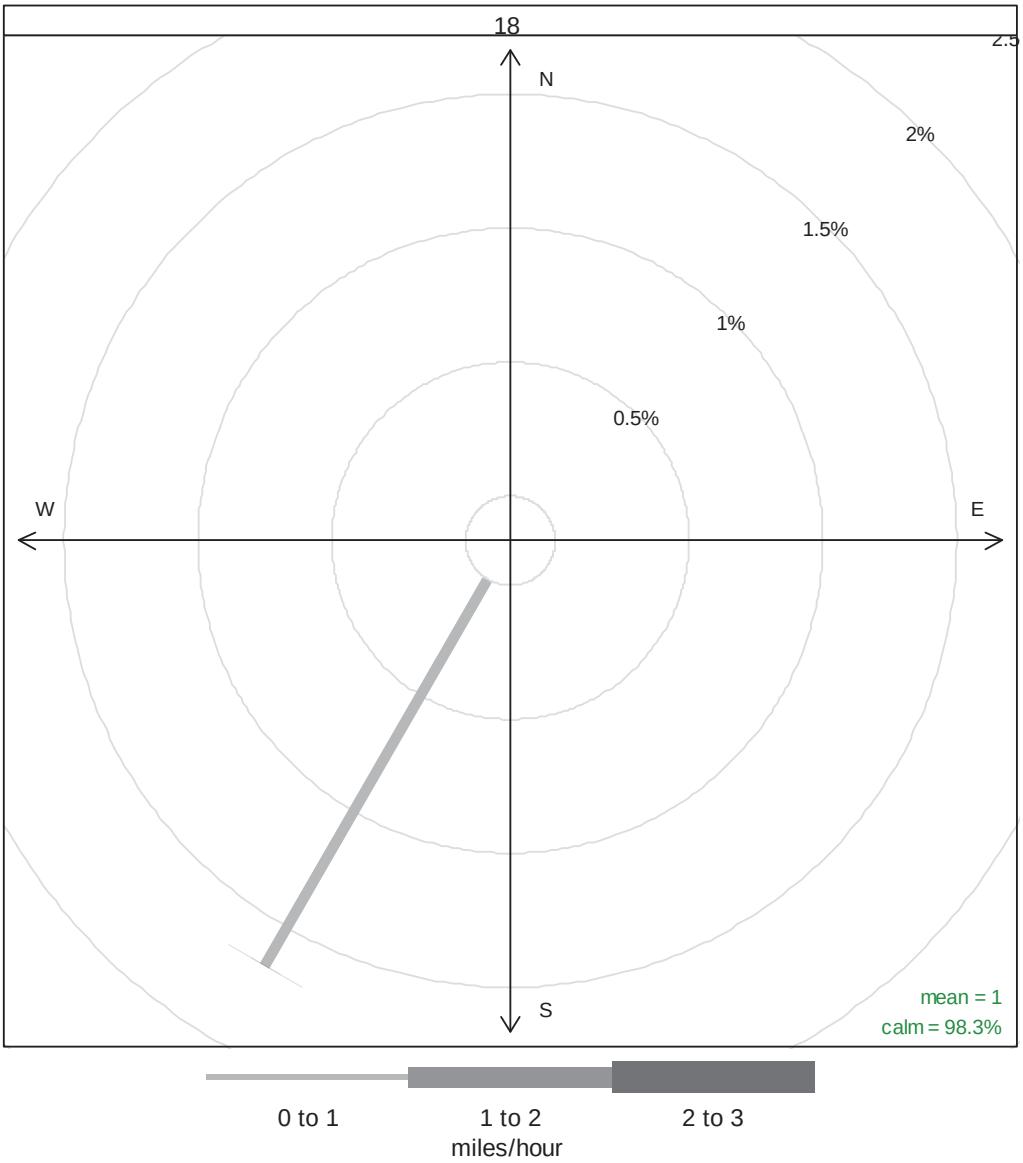


0 to 1 1 to 2 2 to 3 3 to 4

miles/hour

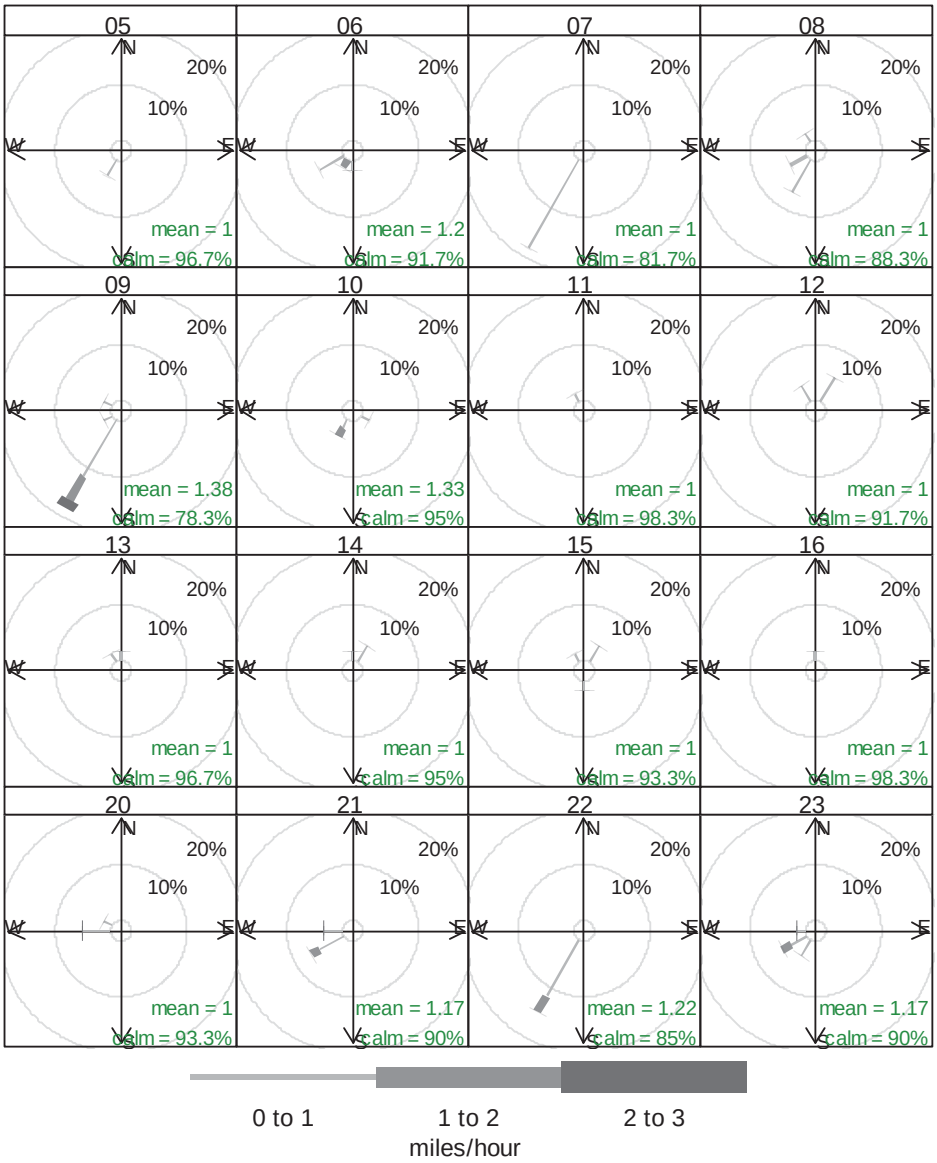
Frequency of counts by wind direction (%)

Thursday, September 27, 2012, Site P2



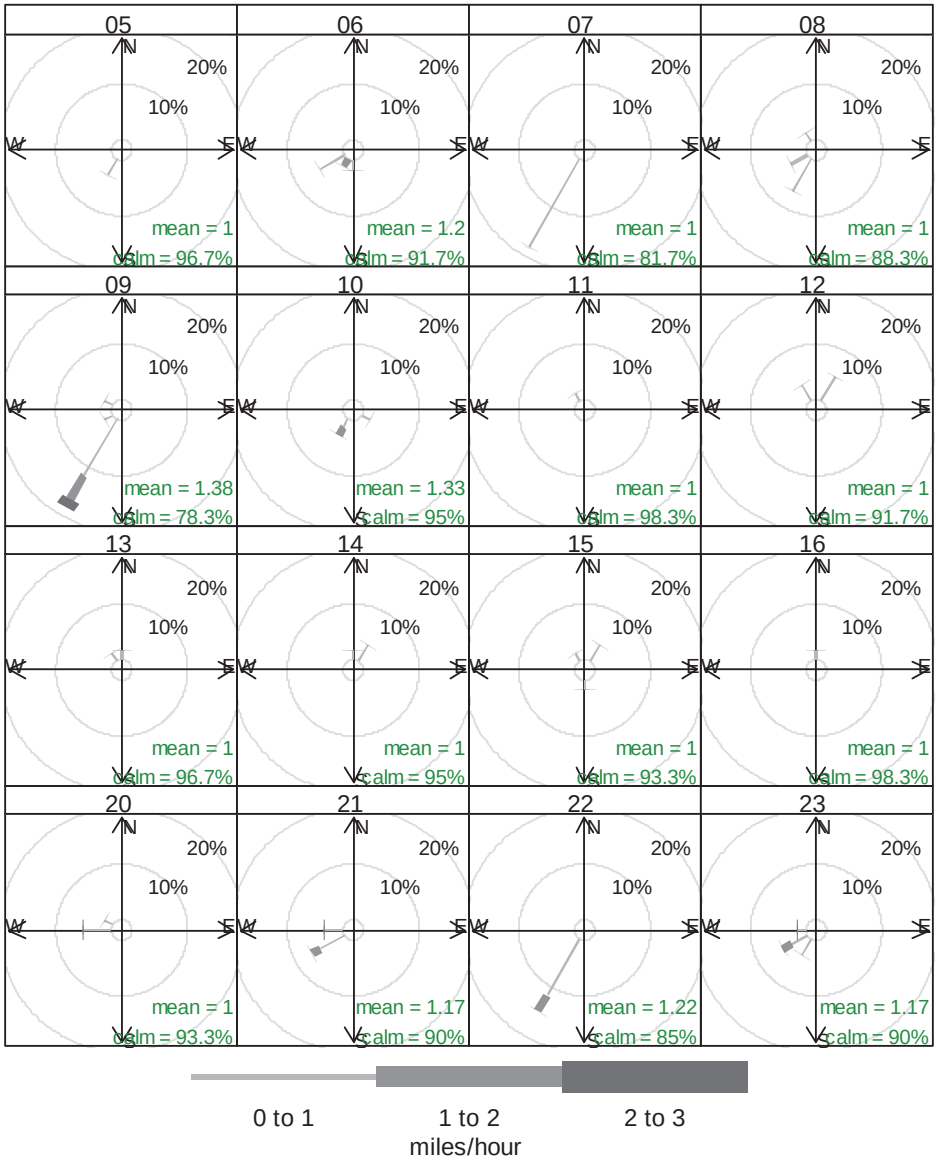
Frequency of counts by wind direction (%)

Saturday, September 29, 2012, Site P2



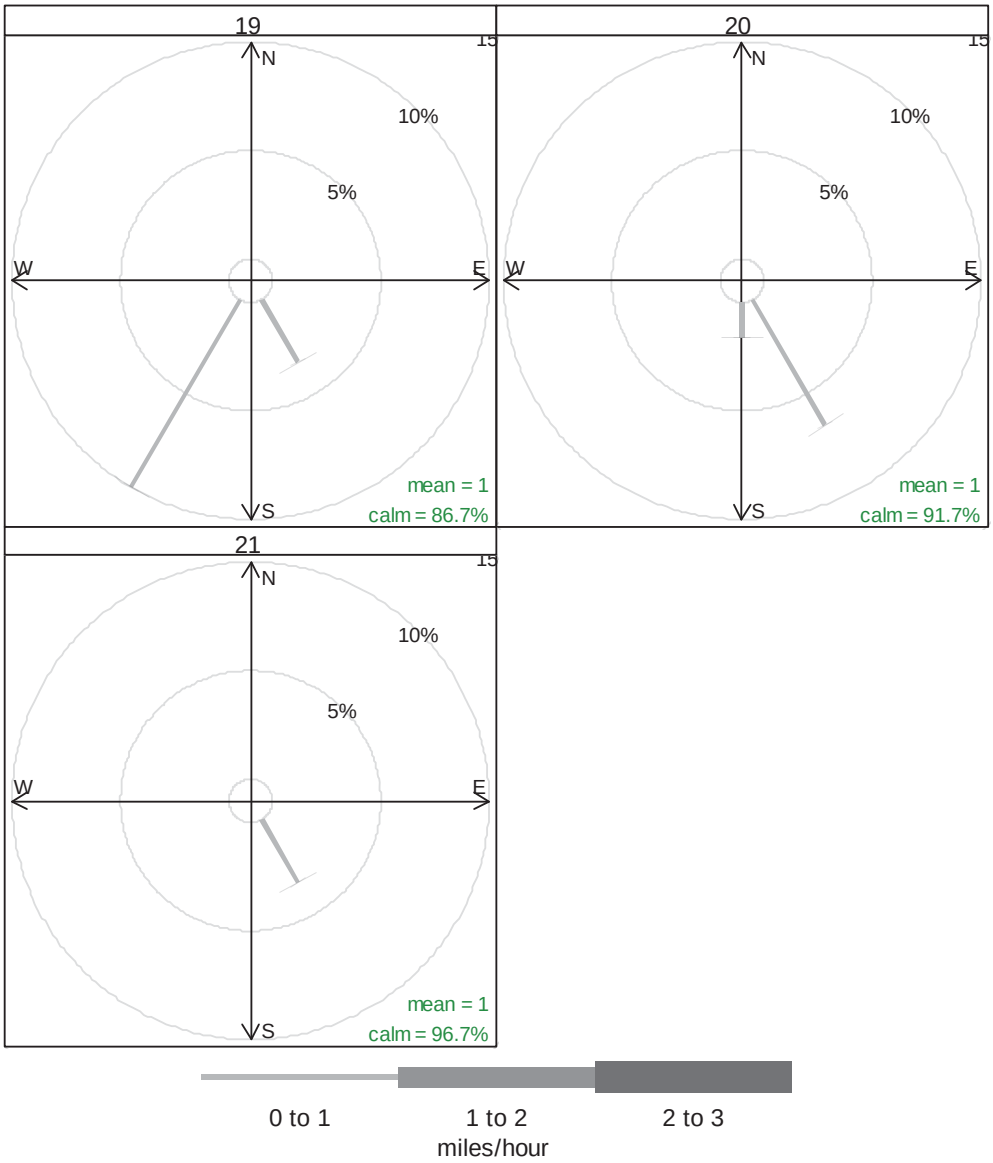
Frequency of counts by wind direction (%)

Sunday, September 30, 2012, Site P2



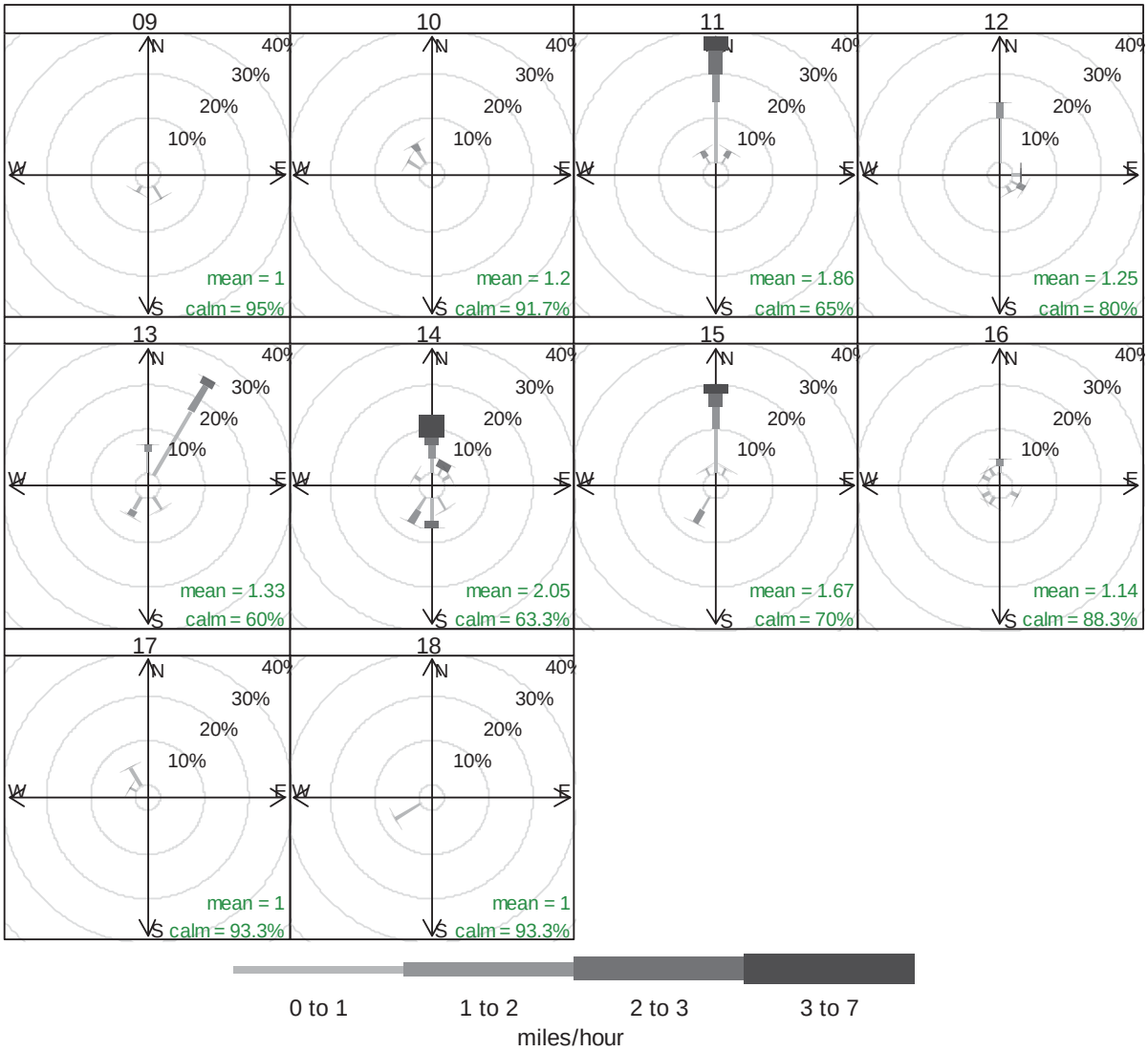
Frequency of counts by wind direction (%)

Thursday, October 4, 2012, Site P2



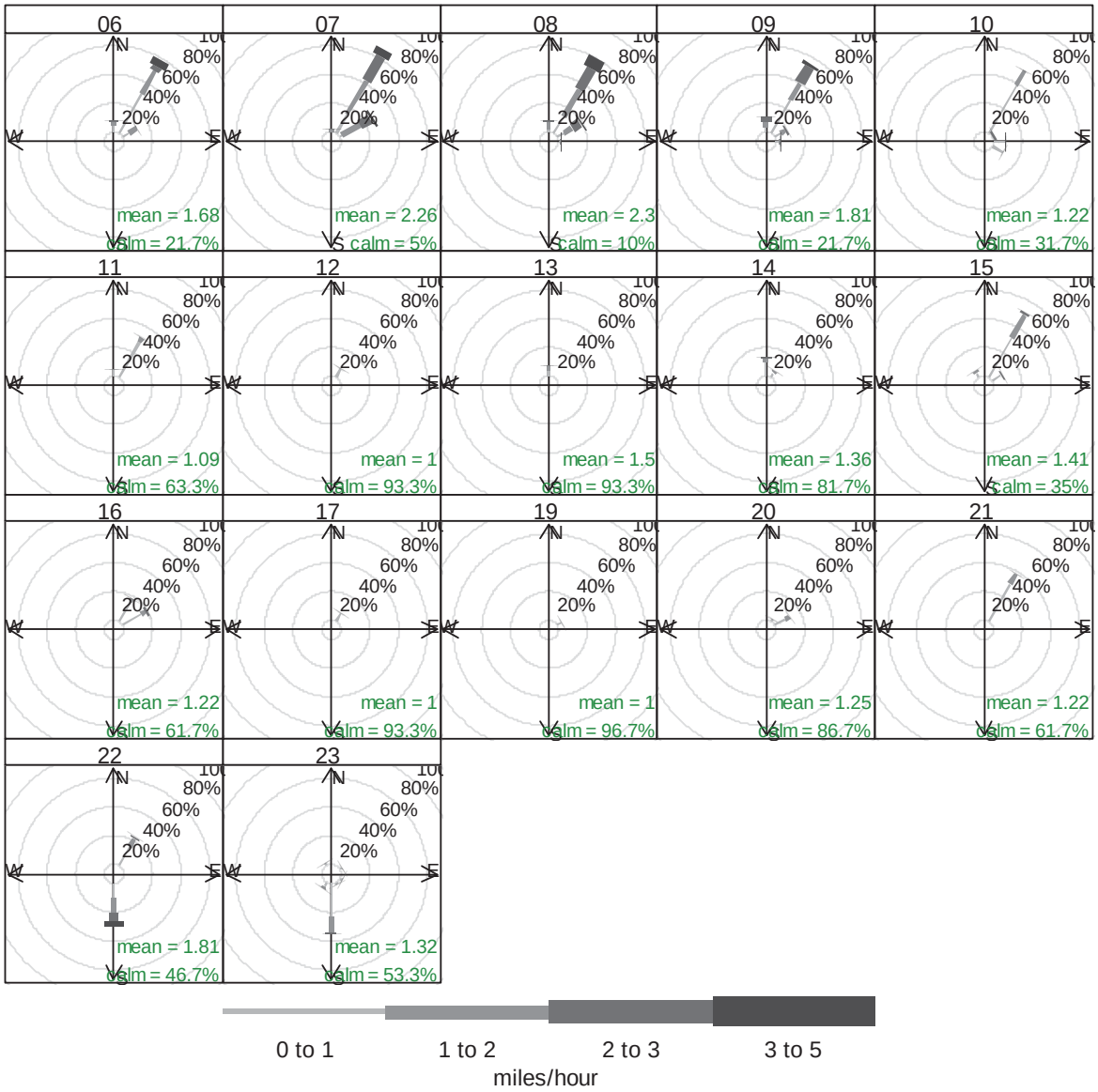
Frequency of counts by wind direction (%)

Friday, October 5, 2012, Site P2



Frequency of counts by wind direction (%)

Saturday, September 29, 2012, Site P3

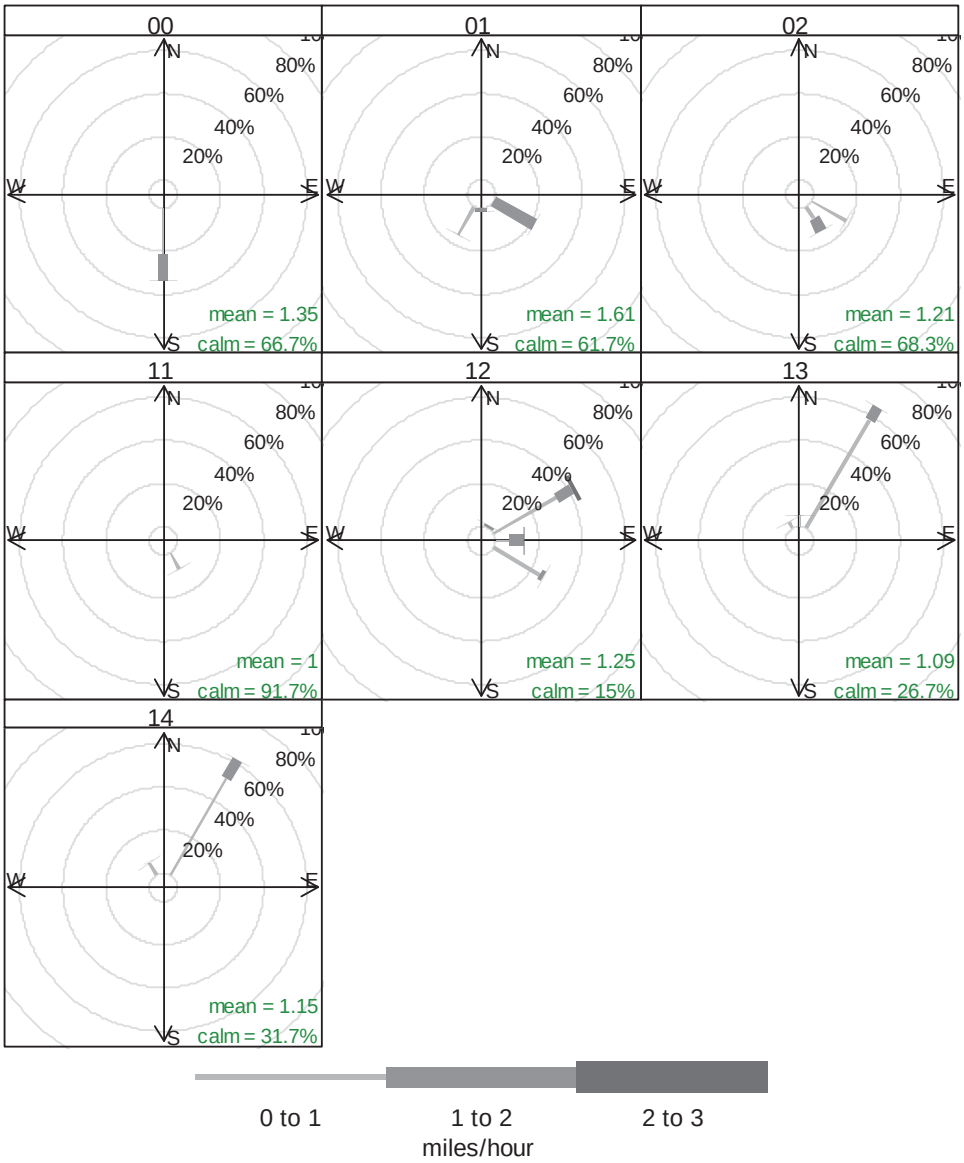


0 to 1 | 1 to 2 | 2 to 3 | 3 to 5

miles/hour

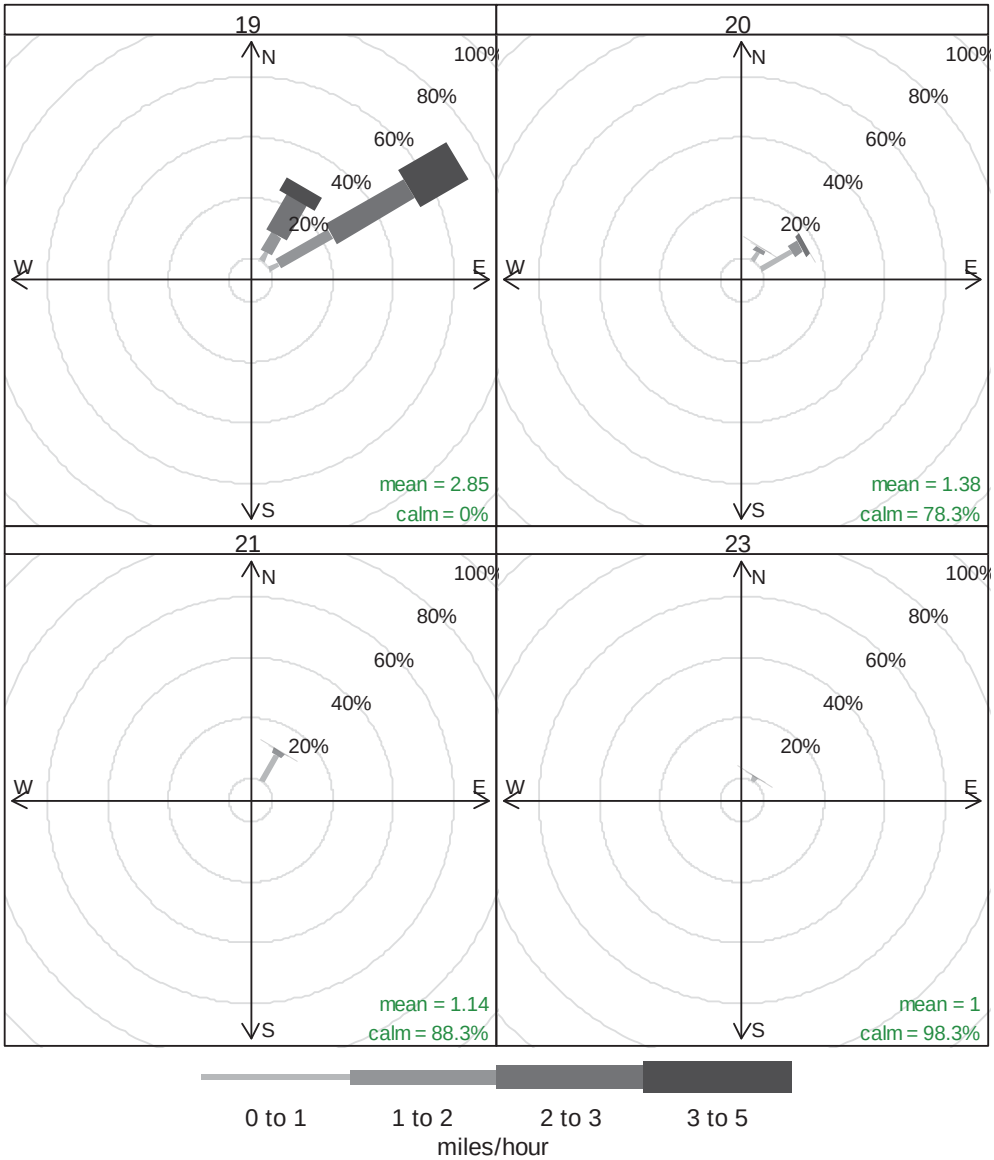
Frequency of counts by wind direction (%)

Sunday, September 29, 2012, Site P3



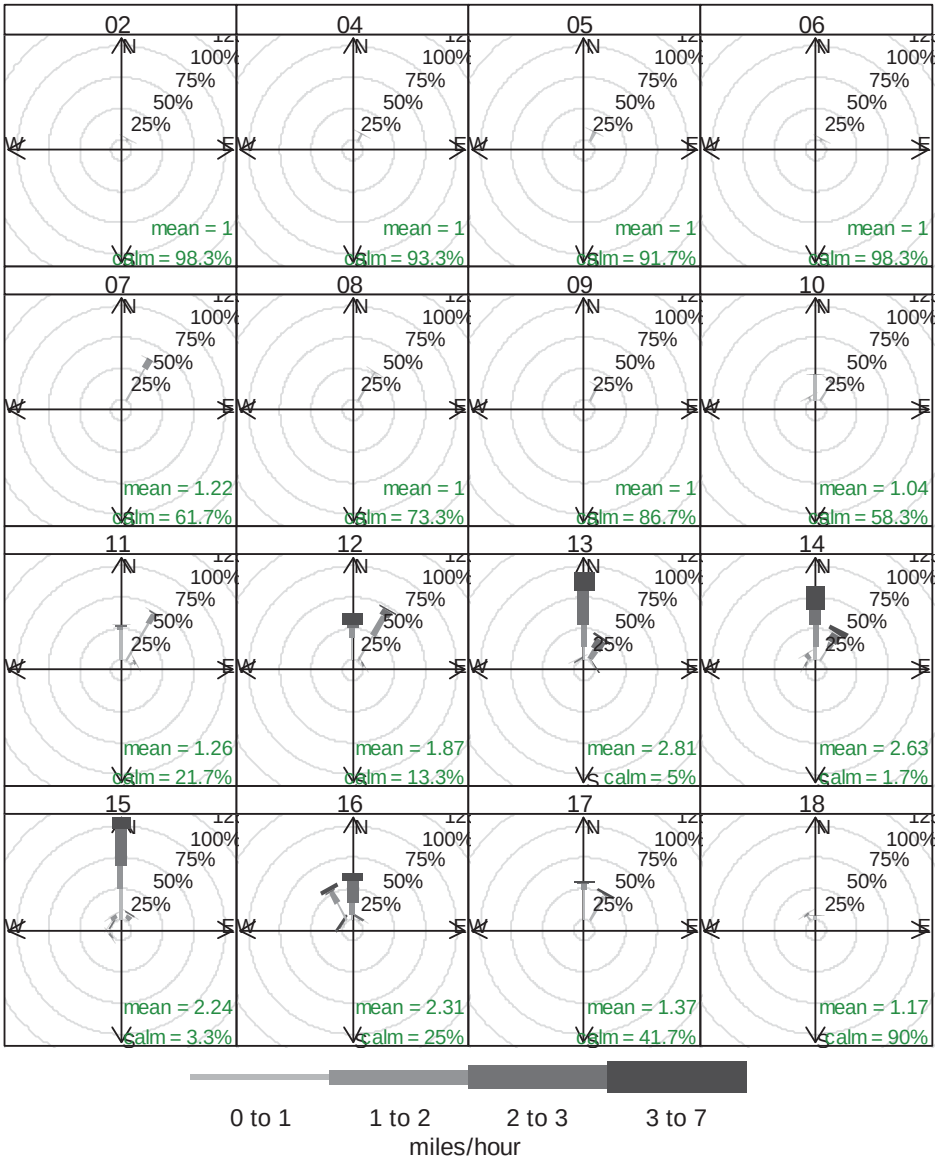
Frequency of counts by wind direction (%)

Thursday, October 4, 2012, Site P3



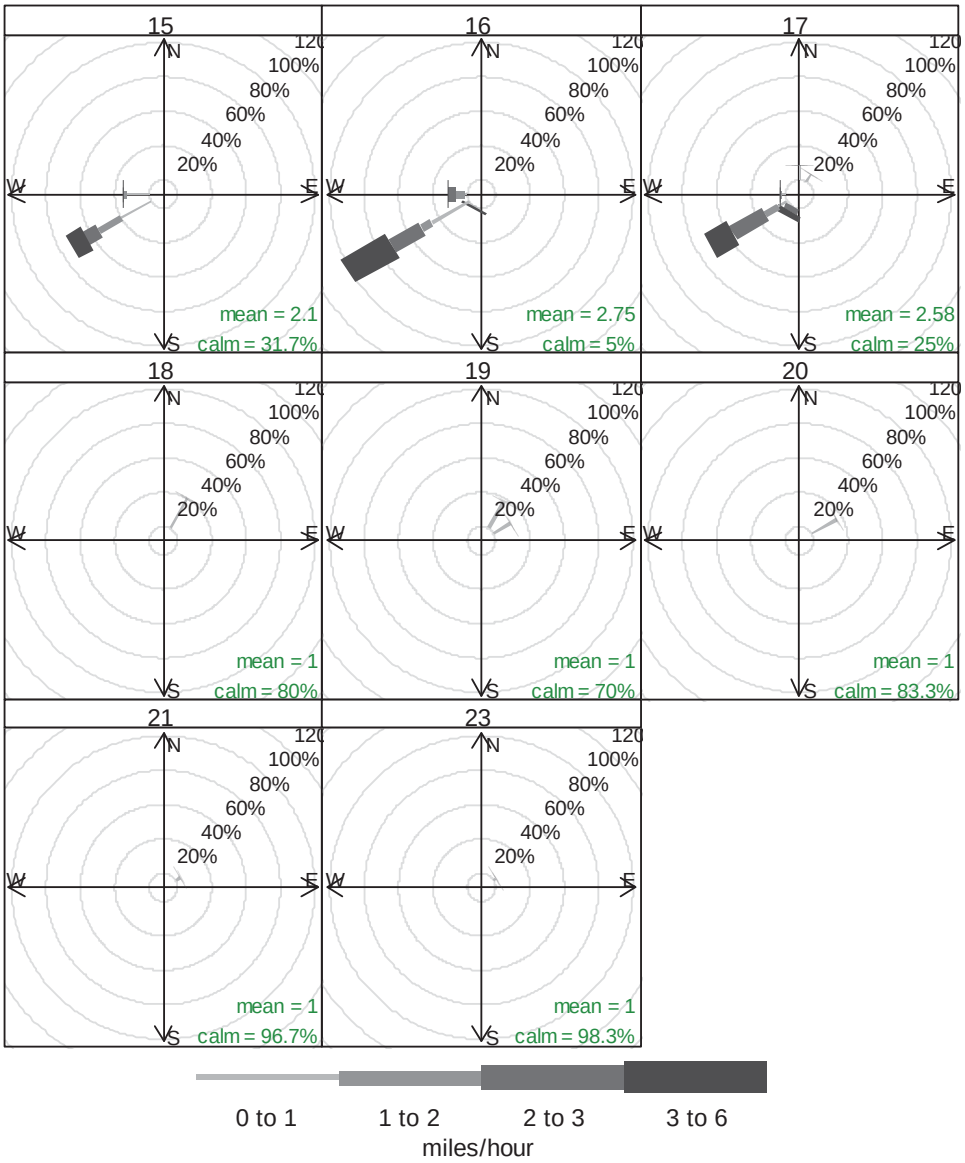
Frequency of counts by wind direction (%)

Friday, October 4, 2012, Site P3



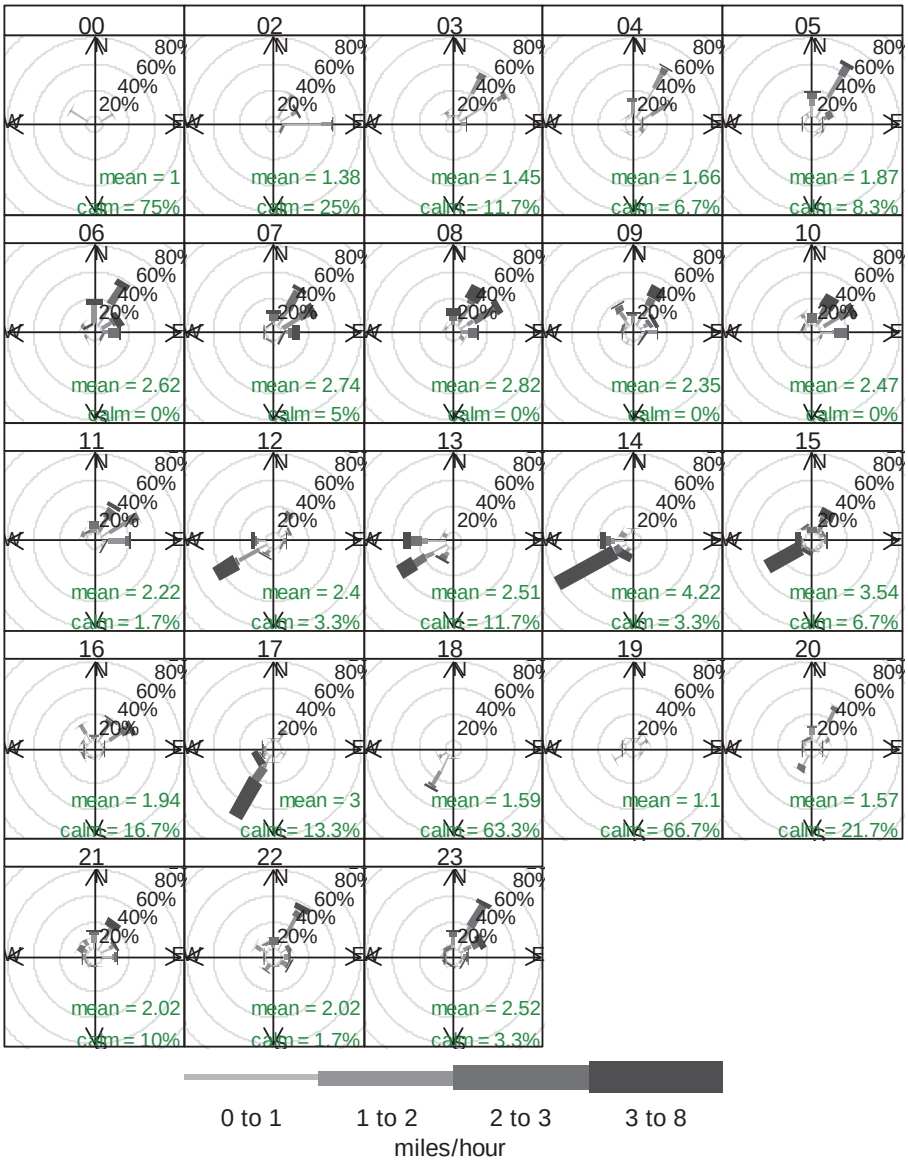
Frequency of counts by wind direction (%)

Thursday, September 28, 2012, Site P5



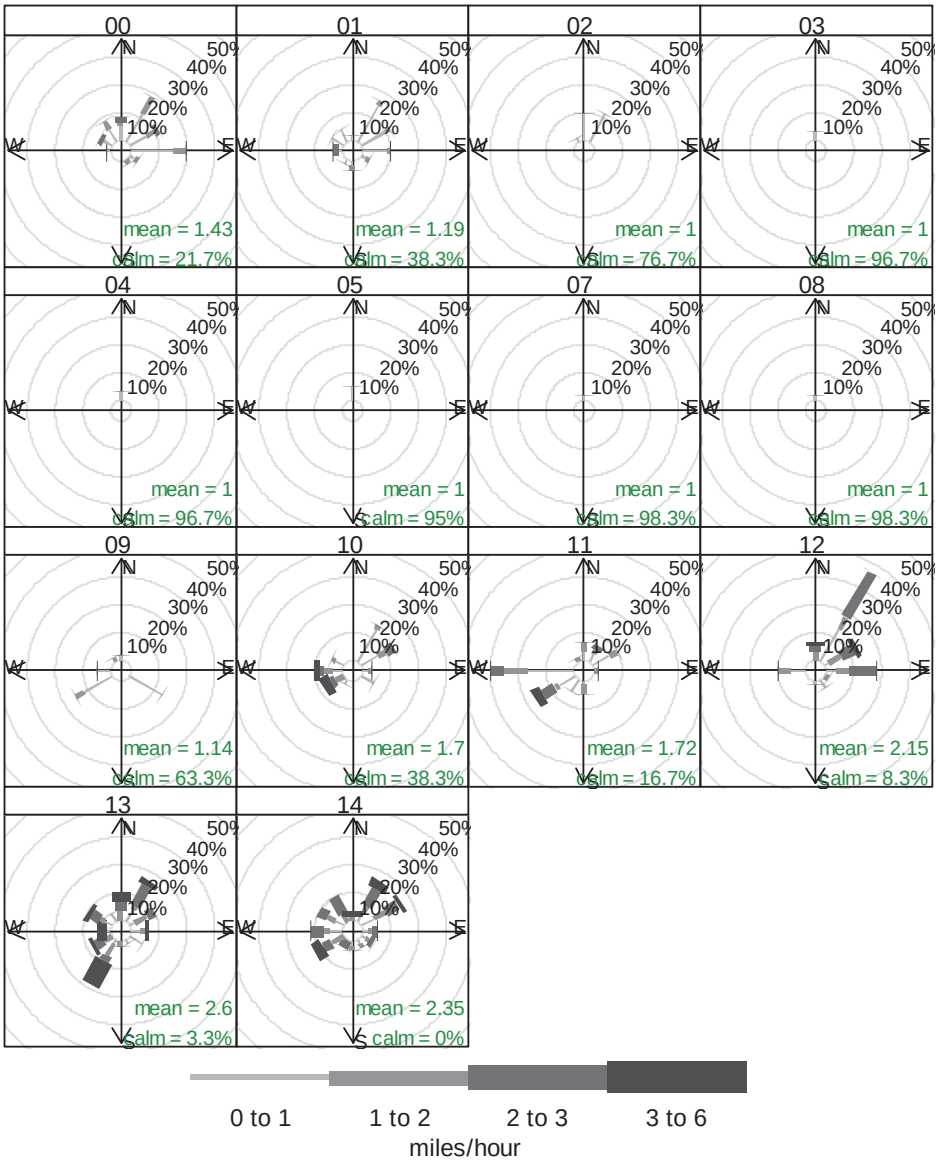
Frequency of counts by wind direction (%)

Friday, September 29, 2012, Site P5



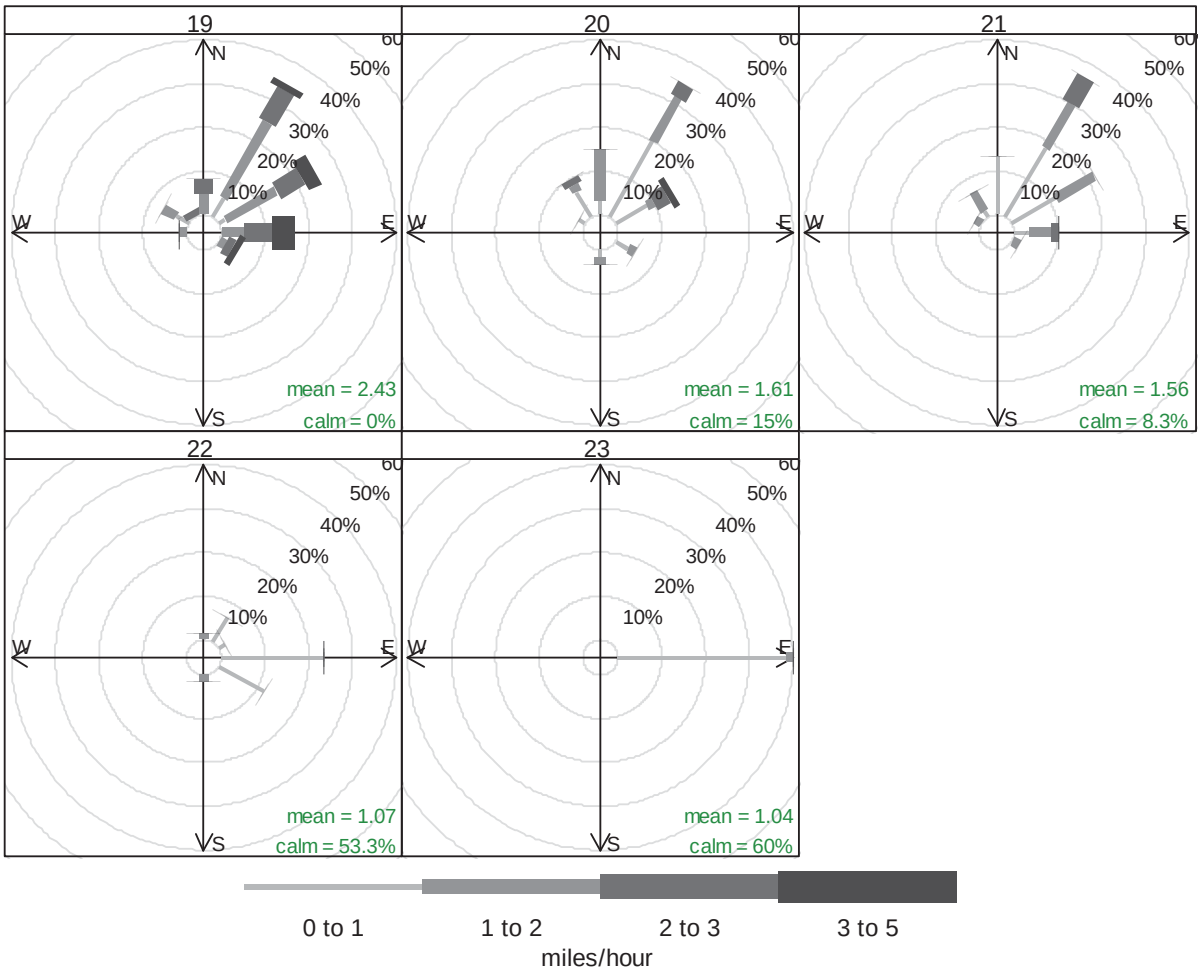
Frequency of counts by wind direction (%)

Saturday, September 30, 2012, Site P5



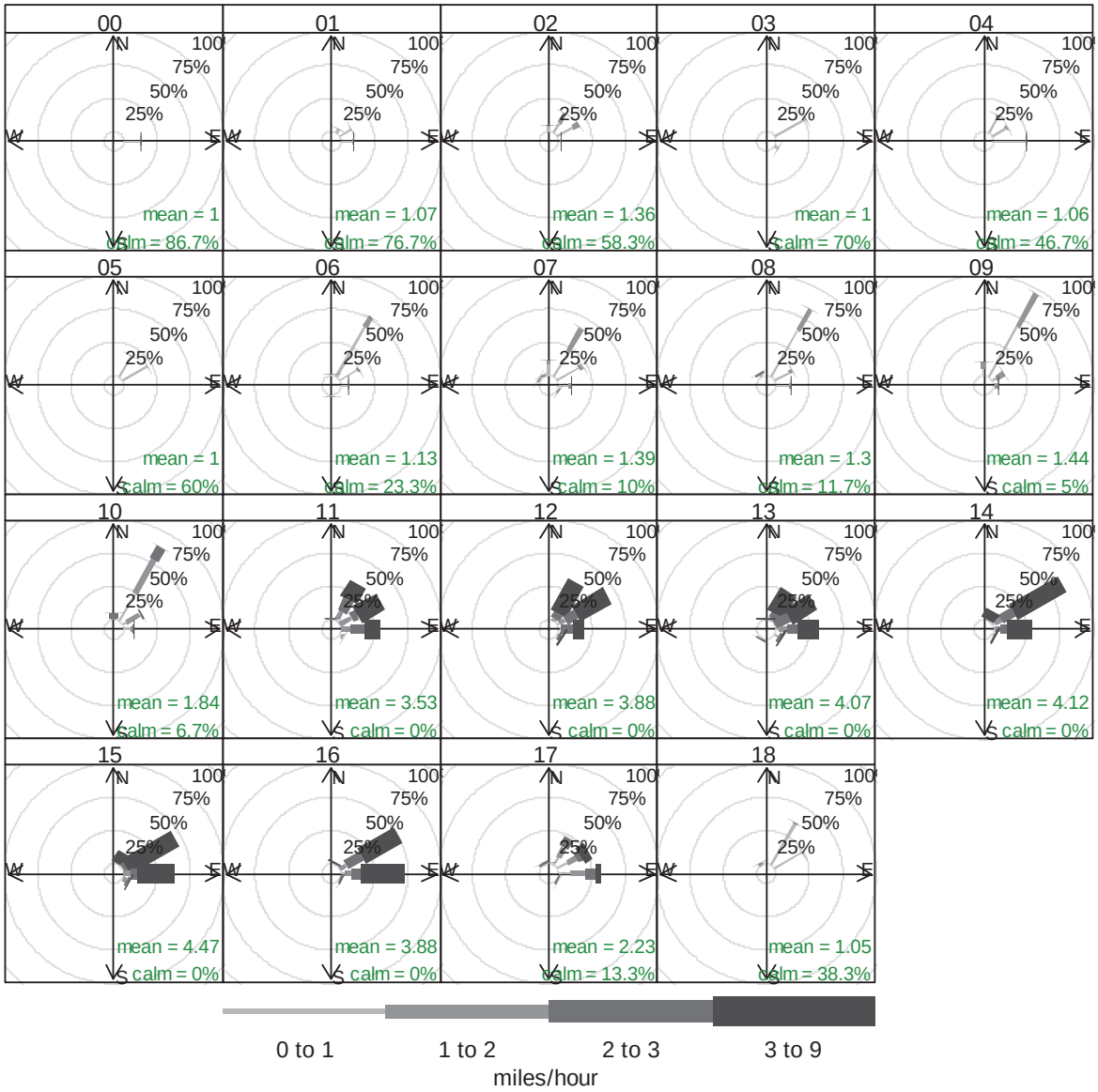
Frequency of counts by wind direction (%)

Thursday, October 4, 2012, Site P5



Frequency of counts by wind direction (%)

Friday, October 5, 2012, Site P5



Frequency of counts by wind direction (%)

1-Hour Average Wind Data Collected by King County

The following data summarizes 1-hour average wind speed and direction at the 10-meter meteorological station at Cedar Hills Regional Landfill, measured by a permanent weather station established on the central hill of the landfill.

1-Hour Average Wind Speeds at Central Landfill Hill
(in miles per hour)

	Hour Ending																							
DAY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
9/26/12	0.8	0.5	0.5	2.8	3.4	2.0	2.0	1.0	2.6	2.2	2.5	4.4	4.5	5.8	5.1	5.5	5.9	5.1	5.2	3.5	3.3	4.3	4.0	3.0
9/27/12	4.5	4.7	3.4	5.1	3.3	2.7	2.0	1.9	1.1	2.0	2.6	3.8	4.0	4.8	5.4	4.2	3.2	2.9	3.3	3.0	2.9	2.6	1.2	1.8
9/28/12	1.1	1.8	1.2	1.1	0.9	1.8	3.4	5.4	3.7	2.7	2.9	3.5	4.5	4.2	4.4	5.1	3.3	4.7	4.5	4.2	3.3	5.5	4.3	5.1
9/29/12	2.0	4.1	6.9	9.0	9.9	11.9	12.9	13.3	11.9	7.8	6.7	4.6	4.6	6.5	8.6	7.4	9.8	7.2	6.2	8.2	8.2	7.2	8.9	8.6
9/30/12	11.6	3.4	2.2	3.4	3.0	4.2	3.1	1.1	2.3	2.7	3.4	6.2	10.6	9.8	9.1	7.8	6.5	5.7	7.5	8.4	10.4	6.1	4.4	1.6
10/4/12	12.7	11.1	10.9	7.8	10.4	11.8	8.5	8.8	6.8	8.8	11.3	12.6	15.1	16.4	16.2	16.2	13.4	13.5	12.4	9.6	9.6	5.0	5.5	6.0
10/5/12	6.0	6.7	6.7	7.1	6.9	7.4	8.1	7.1	6.7	6.5	8.4	9.8	14.9	10.6	11.4	11.7	8.5	8.1	6.3	6.1	4.5	6.9	6.5	5.7

1-Hour Average Wind Directions at Central Landfill Hill
(in clockwise degrees from north)

	Hour Ending																							
DAY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
9/26/12	186	276	355	25	38	1	333	263	285	50	31	316	294	267	280	310	308	347	28	38	40	35	30	42
9/27/12	54	21	8	37	23	49	67	284	75	7	34	23	299	312	280	281	350	297	57	70	30	37	43	158
9/28/12	90	144	81	98	221	155	179	142	305	218	199	123	209	254	263	279	341	28	32	60	70	141	144	192
9/29/12	167	59	40	30	24	32	33	28	19	29	42	307	295	304	357	0	328	327	10	41	35	48	32	26
9/30/12	29	42	46	40	21	35	46	75	3	60	358	358	30	30	4	356	335	342	11	15	24	29	41	14
10/4/12	25	23	20	32	15	19	29	31	33	27	25	23	19	19	18	10	19	28	34	41	37	30	24	17
10/5/12	23	25	25	23	27	23	26	30	44	49	50	69	69	94	96	85	30	26	33	63	64	79	74	73