



## **Ambient Sound Level Survey Report**

Center Monitoring Point  
MCC 3-66 Pad Adams County, CO

Prepared for:

GMT Exploration  
1560 Broadway #2000  
Denver, CO 80202

Prepared by:

Urban Solution Group, LLC  
4230 Elati Street Suite 200  
Denver, CO 80216

September 24<sup>th</sup>, 2018

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**Date:** September 17<sup>th</sup>, 2017  
**To:** GMT Exploration  
**ATTN:** Hans Schuster & Phil Wood

**From:** Heidi Gill  
**Phone:** (925) 683-5529  
**Email:** Heidi.Gill@urbansolutiongroup.com

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Hans & Phil,

Please see the attached Ambient Report for the Center of Pad Monitoring Point for the MCC 3-66 Pad.

### Executive Summary

Urban Solution Group, LLC prepared this report to document background ambient sound levels at the proposed MCC 3-66 Pad in Adams County, Colorado. The intent was to assess existing noise levels prior to GMT Exploration’s proposed operations in the area.

The data collection period was from September 1<sup>st</sup>, 2018 to September 4<sup>th</sup>, 2018. **Table 1** shows the dB(A) and dB(C) scale averages for the three-day monitoring period.

**Table 1: Overall Study Averages**

Description	LAeq (dB)	LCeq (dB)	Wind Speed (mph)
Average	61.51	68.23	1.94

### Regulation and Noise Standard Summary

This report utilizes the Colorado Oil and Gas Conservation Commission (COGCC) Section 802 “Noise Abatement” requirements and guidelines for reasonable noise control for oil and gas development as of September 30, 2014.

Section 802.b of the Regulation states:

The type of land use of the surrounding area shall be determined by the Director in consultation with the Local Governmental Designee taking into consideration any applicable zoning or other local land use designation. In the hours between 7:00 a.m. and the next 7:00 the noise levels permitted above may be increased ten (10) dB(A) for a period not to exceed fifteen (15) minutes in any one (1) hour period. The allowable noise level for periodic, impulsive or shrill noises is reduced by five (5) dB (A) from the levels shown.

- (1) Except as required pursuant to Rule 604.c.(2)A., operations involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones.
- (2) In remote locations, where there is no reasonably proximate occupied structure or Designated Outside Activity Area, the light industrial standard may be applicable.

- (3) Pursuant to Commission inspection or upon receiving a complaint from a nearby property owner or local governmental designee regarding noise related to oil and gas operations, the Commission shall conduct an onsite investigation and take sound measurements as prescribed herein.

Noise limits are provided in **Table 2**.

**Table 2: COGCC Land Use Zone and Designated Limits for Oil and Gas Operations**

ZONE	7:00 a.m. – 7:00 p.m.	7:00 p.m. – 7:00 a.m.
Residential	55 dB(A)	50 dB(A)
Commercial	60 dB(A)	55 dB(A)
Light industrial	70 dB(A)	65 dB(A)
Industrial	80 dB(A)	75 dB(A)

Section 802.c outlines the guidance for noise level measurements, equipment and conditions:

- (1) Sound levels shall be measured at a distance of three hundred and fifty (350) feet from the noise source. At the request of the complainant, the sound level shall also be measured at a point beyond three hundred fifty (350) feet that the complainant believes is more representative of the noise impact. If an oil and gas well site, production facility, or gas facility is installed closer than three hundred fifty (350) feet from an existing occupied structure, sound levels shall be measured at a point twenty-five (25) feet from the structure towards the noise source. Noise levels from oil and gas facilities located on surface property owned, leased, or otherwise controlled by the operator shall be measured at three hundred and fifty (350) feet or at the property line, whichever is greater.

In situations where measurement of noise levels at three hundred and fifty (350) feet is impractical or unrepresentative due to topography, the measurement may be taken at a lesser distance and extrapolated to a 350- foot equivalent using the following formula:

$$dBA_{Distance\ 2} = dBA_{Distance\ 1} - 20 \log_{10} \left( \frac{Distance\ 2}{Distance\ 1} \right)$$

- (2) Sound level meters shall be equipped with wind screens, and readings shall be taken when the wind velocity at the time and place of measurement is not more than five (5) miles per hour.
- (3) Sound level measurements shall be taken four (4) feet above ground level.
- (4) Sound levels shall be determined by averaging minute-by-minute measurements made over a minimum fifteen (15) minute sample duration if practicable. The sample shall be taken under conditions that are representative of the noise experienced by the complainant (e.g., at night, morning, evening, or during special weather conditions).

Specific to ambient noise, section 802.c.(5) states:

In all sound level measurements, the existing ambient noise level from all other sources in the encompassing environment at the time and place of such sound level measurement shall be considered to determine the contribution to the sound level by the oil and gas operation(s).

### Location Information and Meter Placement

**Proposed Site:** MCC 3-66 Pad

**Monitoring Point Location:** 39°45'38.43"N, 104°43'2.88"W

The proposed MCC 3-66 Pad is located north of East 26<sup>th</sup> Avenue and west of E-470 (Toll road). The sound meter was deployed approximately 500 feet east from the proposed site where 72 hours of monitoring data was collected. E-470, the closest road, is a paved highway with high volumes of traffic and is approximately 175 feet west of the measuring point. The speed limit for vehicles on the portion of E-470 near the site was 75 mph during the study. East 26<sup>th</sup> Avenue is located approximately 2,000 feet south, and Green Valley Ranch neighborhood is 1.2 miles northeast from the monitoring location.

There are a couple structures near the site. From the monitoring point, the closest residential structure was approximately 2,300 feet to the southeast. The next closest structure is approximately 2,500 feet to the south. The closest town (Watkins) was approximately 6 miles to the southeast. The monitor was placed in an open area with no significant changes in elevation and no major obstructions. **Figure 1** shows the monitoring point in relation to the proposed pad. Photos of each monitoring location can be found in **Appendix 1**.

While on site, the only distinct noise was from road traffic. Denver International Airport was about 6 miles northeast of the area, and several aircraft could be seen while on location. The noise from the aircraft could not be clearly heard over the sound of road traffic. Air traffic likely has a more overt impact on sound levels during times of low road traffic. Wind data was measured for the area using a weather station located about 1.1 miles northwest of the monitoring point. The coordinates for the weather station were approximately 39°46'8.67"N, 104°44'3.86"W.



*Figure 1: Ariel View of Monitoring Point in relation to MCC 3-66 Pad*

### Sound Level Meter Specifications

A Brüel & Kjær Type 2250, 4th generation, hand-held analyzer (S/N 3008277) with transducer (S/N 3003332) measured sound levels at the monitoring location. **Attachment 2** lists the manufacturer's specification for this meter. The software modules in the Type 2250 allows for real-time frequency analysis, analysis of time histories for broadband parameters and spectra, and documentation of measurements through recording of measured sound. The 2250 sound level meter continuously sampled sound levels logging the specified data every minute; therefore, each one-hour period provided 60 readings.

Prior to beginning the monitoring, the 2250 meter was calibrated using a Brüel & Kjær Type 4231 Acoustical Calibrator (S/N: 3006472). The calibrator emits a reference sound pressure level of 94 dB. The calibrator attaches to the transducer to verify the meter accurately measures the reference sound level. Full manufacturer calibration documentation is available upon request.

After monitoring, the data collected by the 2250 sound level meter was downloaded to a computer using Brüel & Kjær BZ-5503 Utility Software for Hand-held Analyzers Version

3.11.0.389. The manufacturer’s software coupled with Excel spreadsheets was used to summarize the data.

### Ambient Monitoring Data and Results

Background ambient sound level survey data was collected from approximately 12:00 a.m. on Saturday, September 1<sup>st</sup>, 2018 to 12:00 a.m. on Tuesday, September 4<sup>th</sup>, 2018. **Table 3** summarizes the logarithmic averages of the study.

**Table 3: Daily and Overall Sound Level Averages (dBA and dBC)**

Description	LAeq (dB)	LCeq (dB)	Wind Speed (mph)
Saturday, September 1 <sup>st</sup> , 2018	61.80	68.26	2.04
Sunday, September 2 <sup>nd</sup> , 2018	60.83	68.29	2.01
Monday, September 3 <sup>rd</sup> , 2018	61.84	68.13	1.78
<b>Average</b>	<b>61.51</b>	<b>68.23</b>	<b>1.94</b>

**Appendix 3** contains the hourly average summary table and charts obtained from the background ambient evaluation.

Common sounds for the MCC 3-66 site primarily included road traffic. The sounds are characteristic of a residential area. The overall study averages are comparable to sound levels during a normal conversation. The maximum study LAeq at the monitoring location was 72.2 dBA which occurred on Sunday, September 2<sup>nd</sup>, 2018 at approximately 1:51 a.m. The maximum study C-weighted sound level recorded at the monitoring location was 82.9 dBC and occurred on Saturday, September 1<sup>st</sup>, 2018 at approximately 3:52 p.m.

### Notations

The services provided for this project were performed in accordance with generally accepted profession consulting services. No warranty, expressed or implied, is made or intended by rendition for these consulting services or by furnishing oral or written reports of the findings made. Urban Solution Group, LLC subcontracts various vendors for different areas of mitigation assessment, analysis, data collection and mitigation equipment rental or manufacturing. Urban Solution Group, LLC contracted Principle Environmental, LLC for the data collection and initial analysis of this location. The content of this report contains information and analysis from both parties. This report was generated for the exclusive use by GMT Exploration.

## Appendix 1 – Photo Log

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**Photo 1:** View of Monitoring Location looking north



**Photo 2:** View of Monitoring Location looking east



Photo 3: View of Monitoring Location looking south



Photo 4: View of Monitoring Location looking west



## Appendix 2 – Manufacturer’s Specification

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## PRODUCT DATA

Hand-held Analyzer — Type 2250, with Sound Level Meter Software BZ-7222, Frequency Analysis Software BZ-7223, Logging Software BZ-7224, Enhanced Logging Software BZ-7225 and Sound Recording Option BZ-7226

*Type 2250 is the innovative, 4th generation, hand-held analyzer from Brüel & Kjær. The design philosophy is based on extensive research which concluded that the instrument should be **easy** and **safe** to use, while at the same time incorporating **clever** features. Type 2250 has been awarded several prizes for its combination of excellent ergonomics and attractive design.*

*Type 2250 can host a number of software modules, including frequency analysis, logging (profiling) and recording of the measured signal. These are available separately at any time – or you can order a fully pre-configured instrument from the factory.*

*The combination of software modules and innovative hardware makes the instrument into a dedicated solution for performing high-precision measurement tasks, in environmental, occupational and industrial application areas. As a result, you get the functionality you need now, plus the option of opening up for more functionality later – and your investment is securely protected.*



### Uses and Features

#### USES

- Environmental noise assessment and monitoring
- Occupational noise evaluation
- Selection of hearing protection
- Noise reduction
- Product quality control
- Class 1 sound measurements to the latest international standards
- Real-time analysis of sound in 1/1- and 1/3-octave bands
- Analysis of time histories for broadband parameters and spectra (Logging)
- Documentation of measurements using text and voice annotations
- Documentation of measurements through recording of measured sound

#### FEATURES

- Large, high-resolution, touch-sensitive colour screen
- Data storage on plug-in memory-cards
- Standard USB (On-the-Go) computer interface
- Dynamic range in excess of 120 dB
- 3 Hz – 20 kHz broadband linear frequency range
- Real-time frequency analysis in 1/1- or 1/3-octave bands
- Broadband and spectral data can be logged to obtain a time history for later analysis
- Sound recording of measured signal during all or parts of a measurement
- Personal measurement, display and job setup
- PC software included for setup, archiving, export and reporting
- Automatic detection of, and correction for, windscreen
- Robust and environmentally protected (IP44)

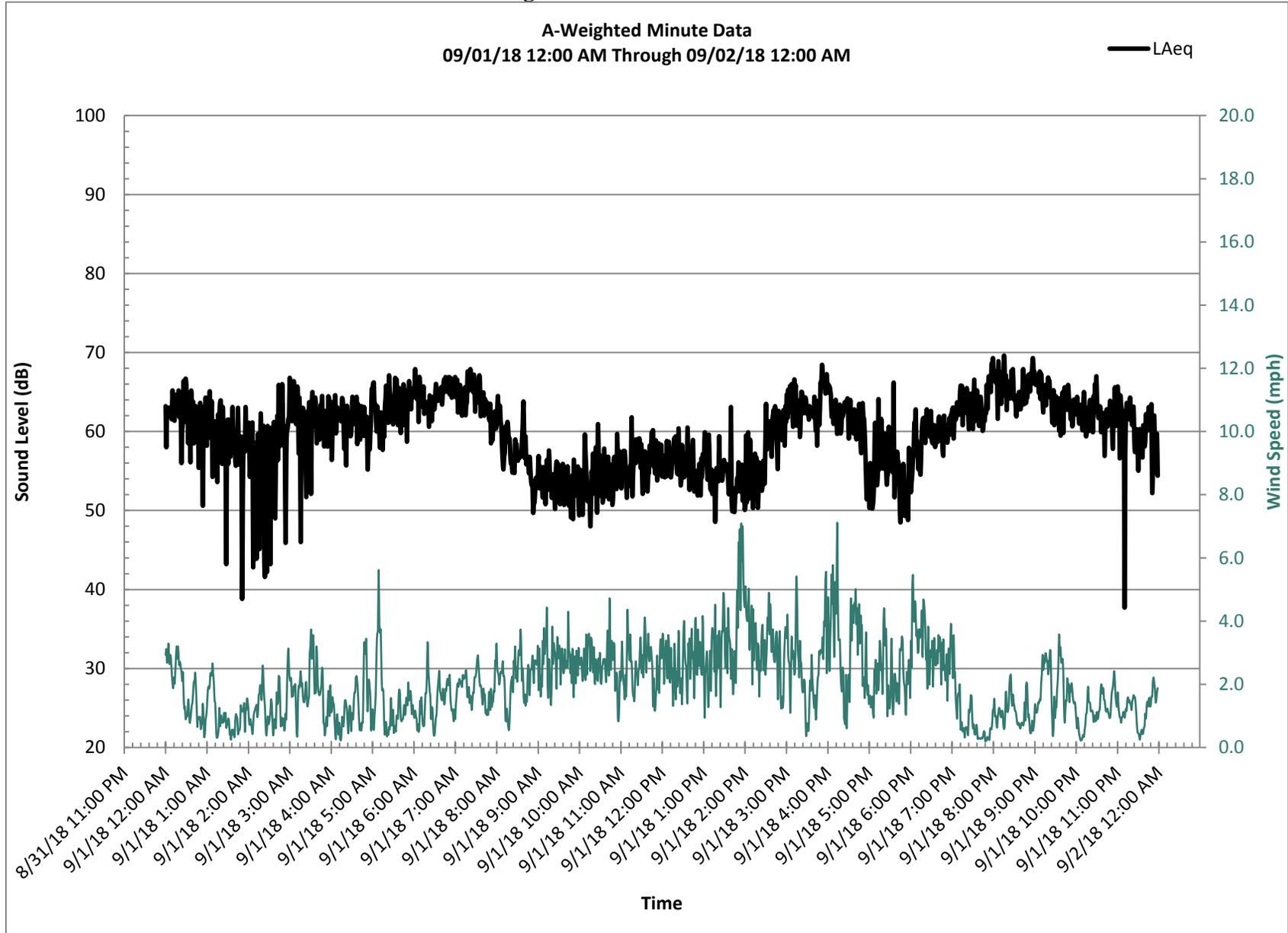
## Appendix 3 – Monitoring Location Summary Data and Charts

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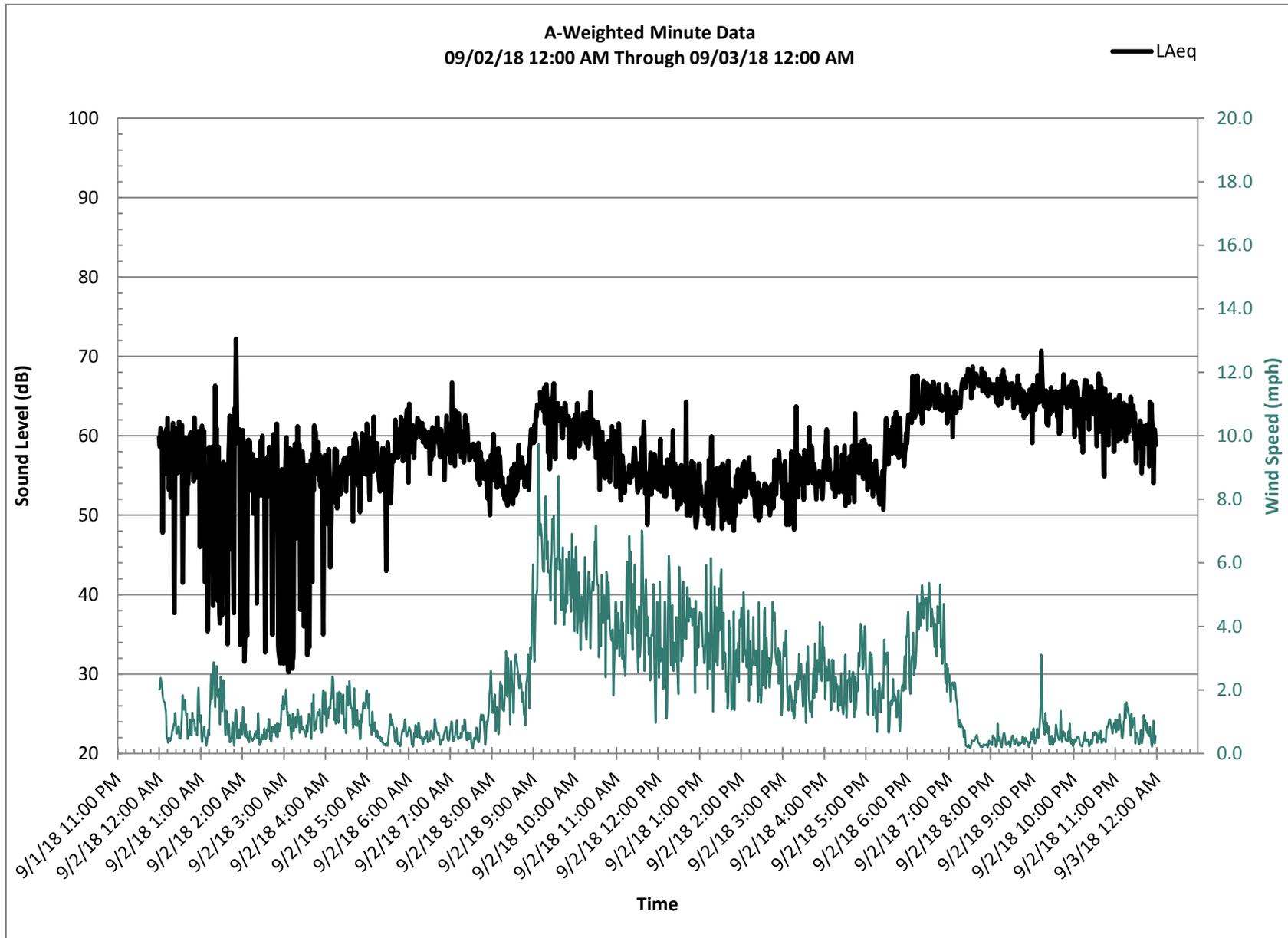
**Table 4: Ambient Sound Level Survey and Report - MCC 3-66 Pad, Center MP**

<b>Timestamp</b>	<b>LAeq (dBA)</b>	<b>LCeq (dBC)</b>	<b>Timestamp</b>	<b>LAeq (dBA)</b>	<b>LCeq (dBC)</b>
9/1/18 12:00 AM	62.68	65.49	9/2/18 12:00 PM	55.17	68.42
9/1/18 1:00 AM	60.06	63.34	9/2/18 1:00 PM	53.60	68.68
9/1/18 2:00 AM	58.81	64.58	9/2/18 2:00 PM	53.91	66.96
9/1/18 3:00 AM	62.35	65.75	9/2/18 3:00 PM	55.38	68.10
9/1/18 4:00 AM	61.59	64.16	9/2/18 4:00 PM	56.48	67.80
9/1/18 5:00 AM	63.65	66.97	9/2/18 5:00 PM	57.89	66.03
9/1/18 6:00 AM	64.85	67.63	9/2/18 6:00 PM	64.56	72.97
9/1/18 7:00 AM	64.50	68.46	9/2/18 7:00 PM	66.18	69.32
9/1/18 8:00 AM	58.56	67.92	9/2/18 8:00 PM	65.53	69.58
9/1/18 9:00 AM	53.76	67.35	9/2/18 9:00 PM	65.05	68.59
9/1/18 10:00 AM	54.89	68.55	9/2/18 10:00 PM	64.21	67.87
9/1/18 11:00 AM	56.85	68.01	9/2/18 11:00 PM	61.77	66.29
9/1/18 12:00 PM	56.21	67.89	9/3/18 12:00 AM	58.43	62.97
9/1/18 1:00 PM	55.27	70.94	9/3/18 1:00 AM	56.51	63.02
9/1/18 2:00 PM	58.88	70.09	9/3/18 2:00 AM	53.66	60.39
9/1/18 3:00 PM	64.18	72.82	9/3/18 3:00 AM	54.82	59.67
9/1/18 4:00 PM	62.14	69.86	9/3/18 4:00 AM	59.52	63.97
9/1/18 5:00 PM	56.87	68.48	9/3/18 5:00 AM	61.65	64.47
9/1/18 6:00 PM	59.77	69.78	9/3/18 6:00 AM	62.28	65.76
9/1/18 7:00 PM	63.74	67.44	9/3/18 7:00 AM	62.55	66.54
9/1/18 8:00 PM	66.14	69.78	9/3/18 8:00 AM	57.45	66.66
9/1/18 9:00 PM	64.53	68.23	9/3/18 9:00 AM	55.77	66.54
9/1/18 10:00 PM	62.50	66.42	9/3/18 10:00 AM	57.88	68.69
9/1/18 11:00 PM	61.16	64.26	9/3/18 11:00 AM	59.75	67.91
9/2/18 12:00 AM	58.27	61.85	9/3/18 12:00 PM	62.36	70.96
9/2/18 1:00 AM	59.33	63.04	9/3/18 1:00 PM	60.18	70.03
9/2/18 2:00 AM	55.50	58.82	9/3/18 2:00 PM	63.12	69.98
9/2/18 3:00 AM	55.25	60.10	9/3/18 3:00 PM	61.07	70.37
9/2/18 4:00 AM	56.20	60.35	9/3/18 4:00 PM	59.62	67.89
9/2/18 5:00 AM	58.41	62.62	9/3/18 5:00 PM	62.83	69.66
9/2/18 6:00 AM	59.87	63.93	9/3/18 6:00 PM	64.09	69.41
9/2/18 7:00 AM	59.05	64.94	9/3/18 7:00 PM	66.76	72.28
9/2/18 8:00 AM	55.92	65.71	9/3/18 8:00 PM	65.66	70.45
9/2/18 9:00 AM	62.92	75.17	9/3/18 9:00 PM	64.79	69.64
9/2/18 10:00 AM	60.20	71.26	9/3/18 10:00 PM	63.57	67.65
9/2/18 11:00 AM	56.32	68.65	9/3/18 11:00 PM	61.46	65.00

Chart 1: A-Weighted sound levels with minute resolution



**Chart 2: A-Weighted sound levels with minute resolution**



**Chart 3: A-Weighted sound levels with minute resolution**

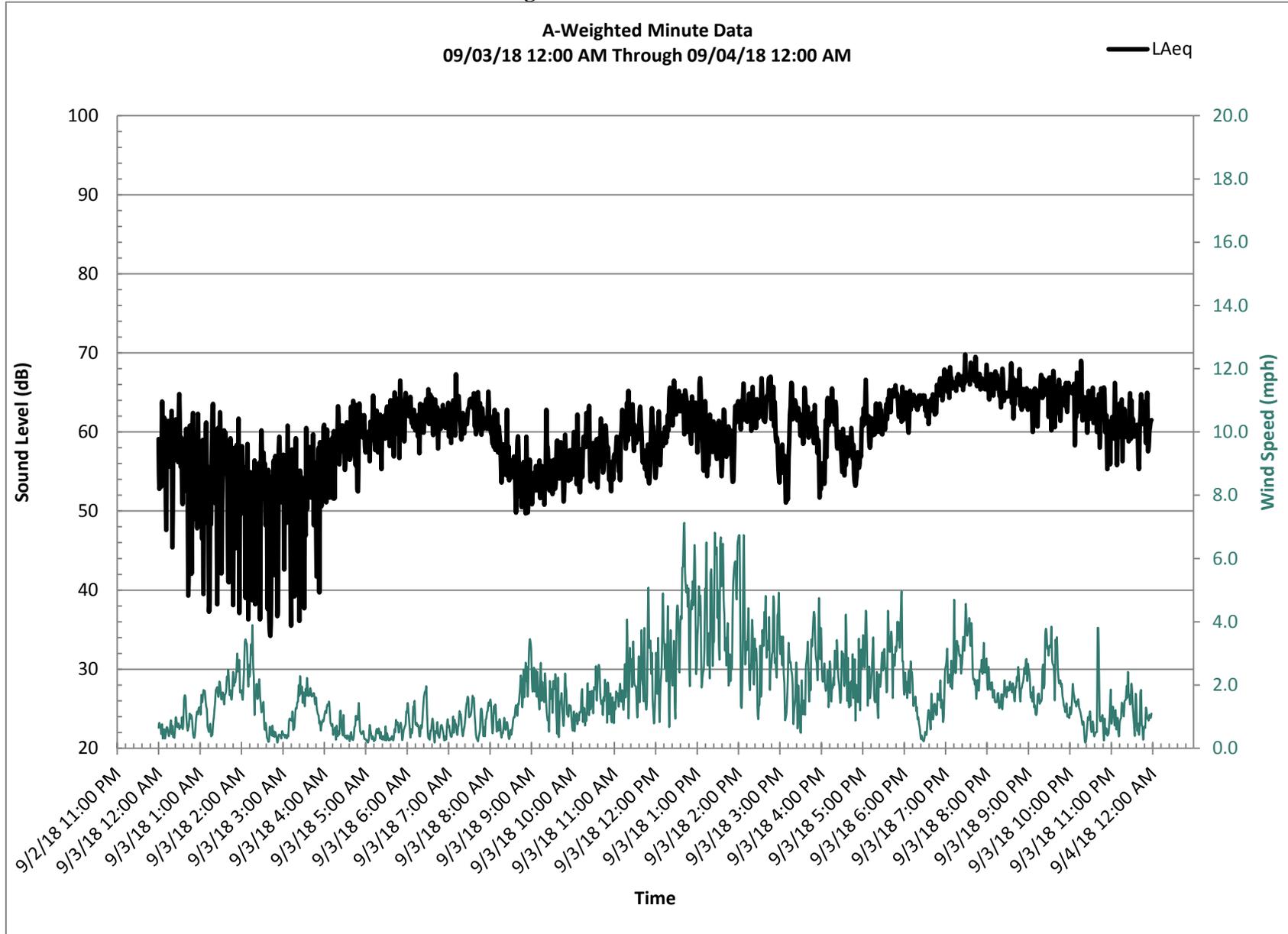


Chart 4: C-Weighted sound levels with minute resolution

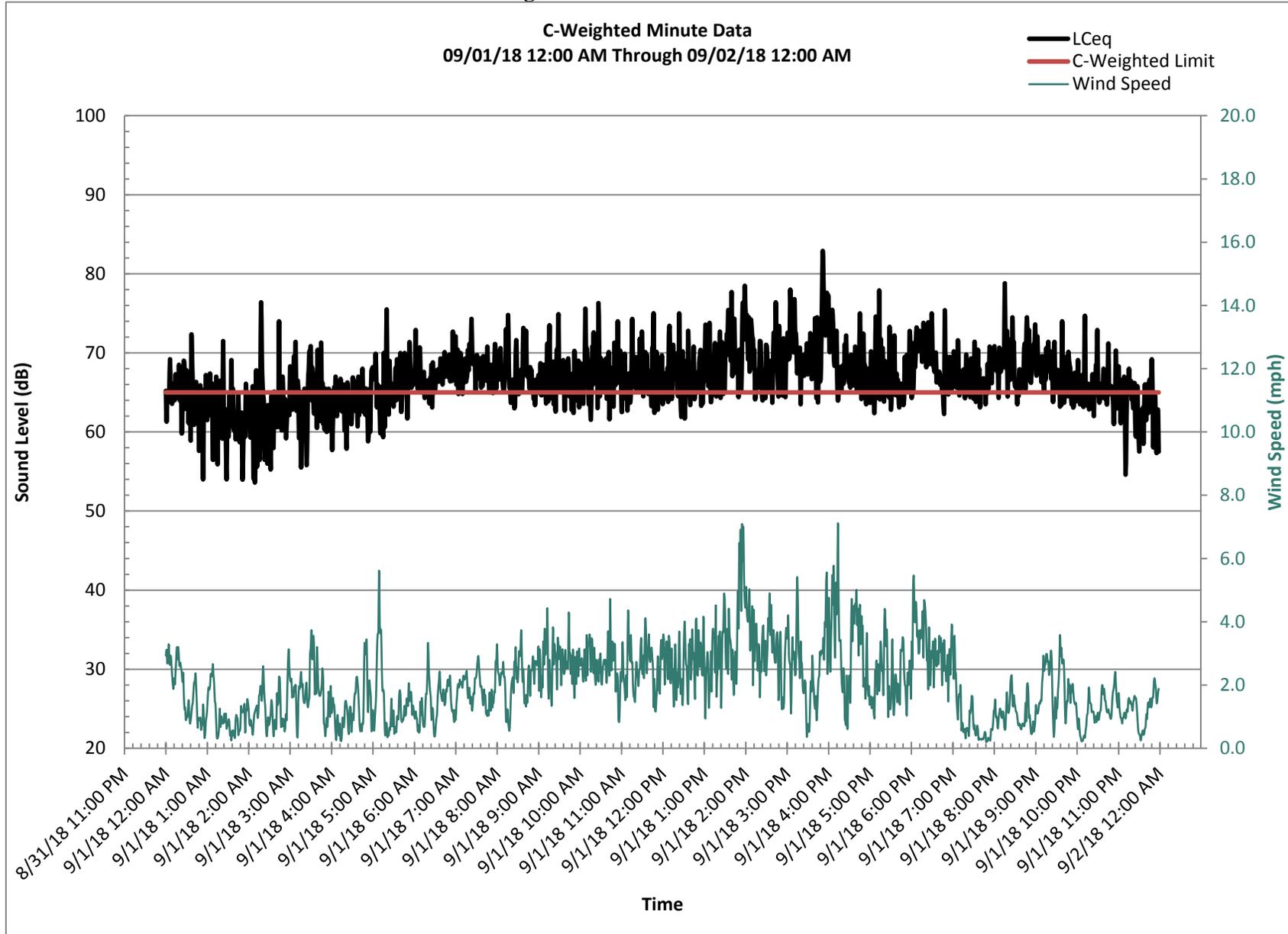
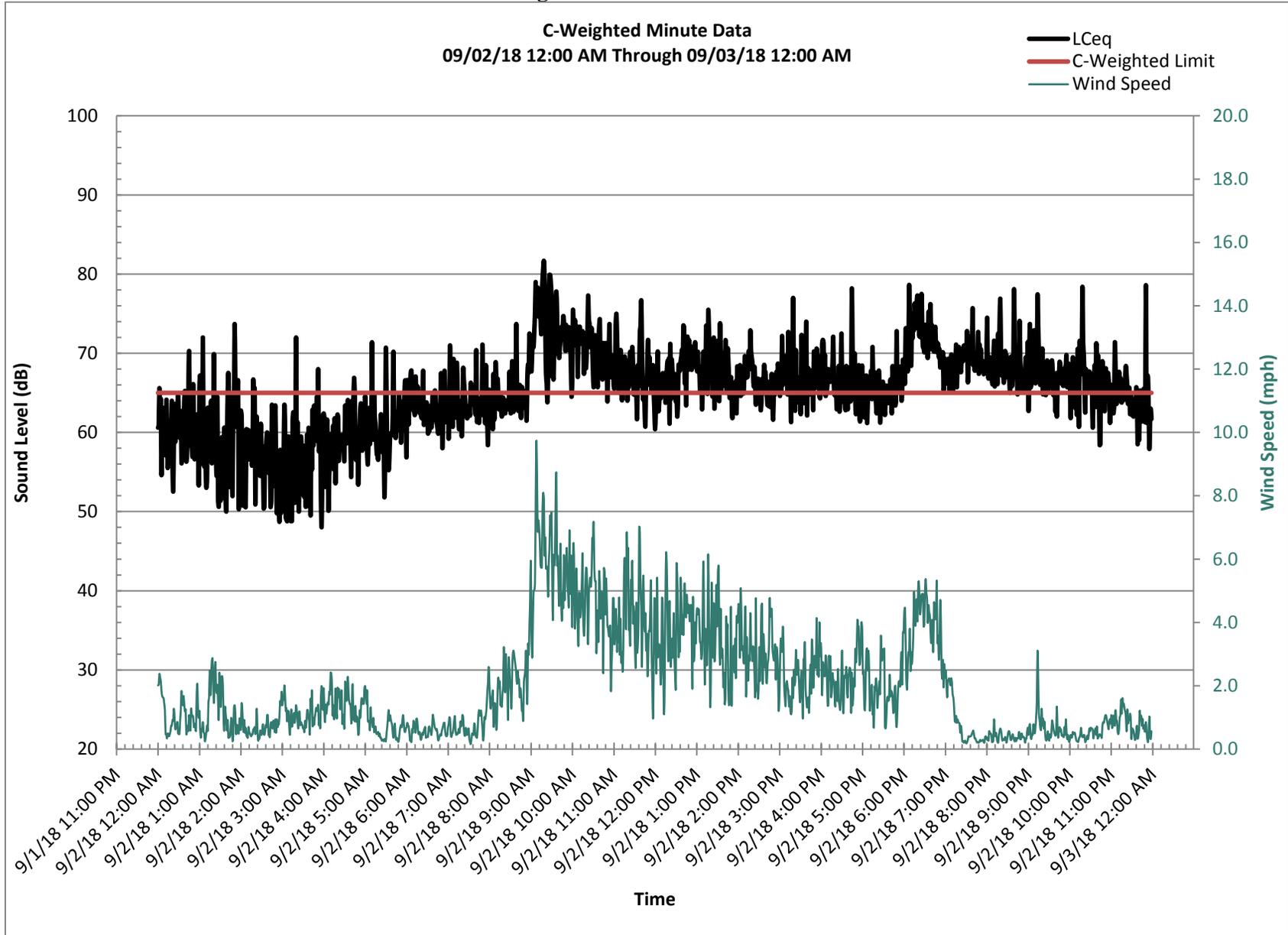


Chart 5: C-Weighted sound levels with minute resolution



**Chart 6: C-Weighted sound levels with minute resolution**

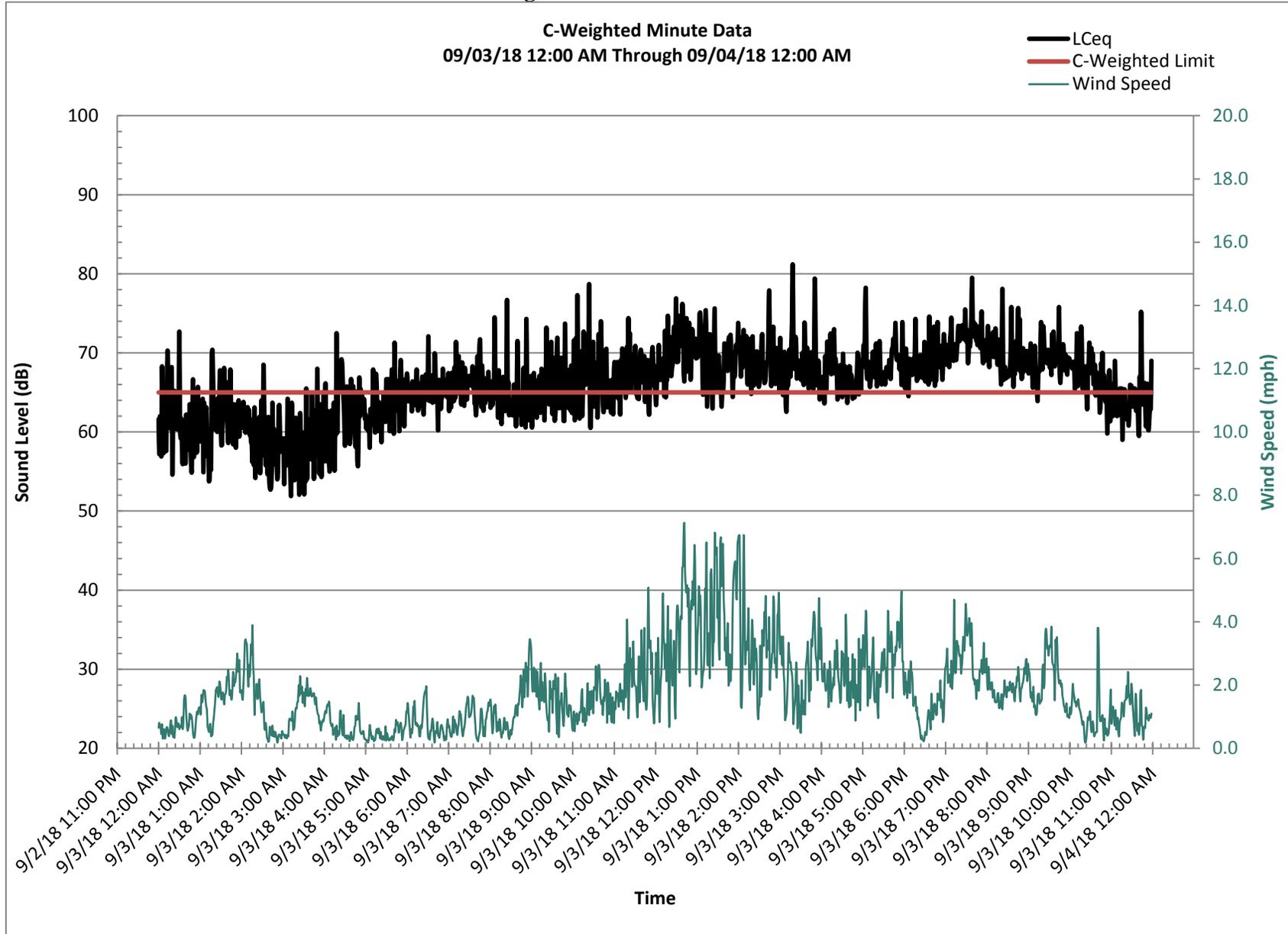
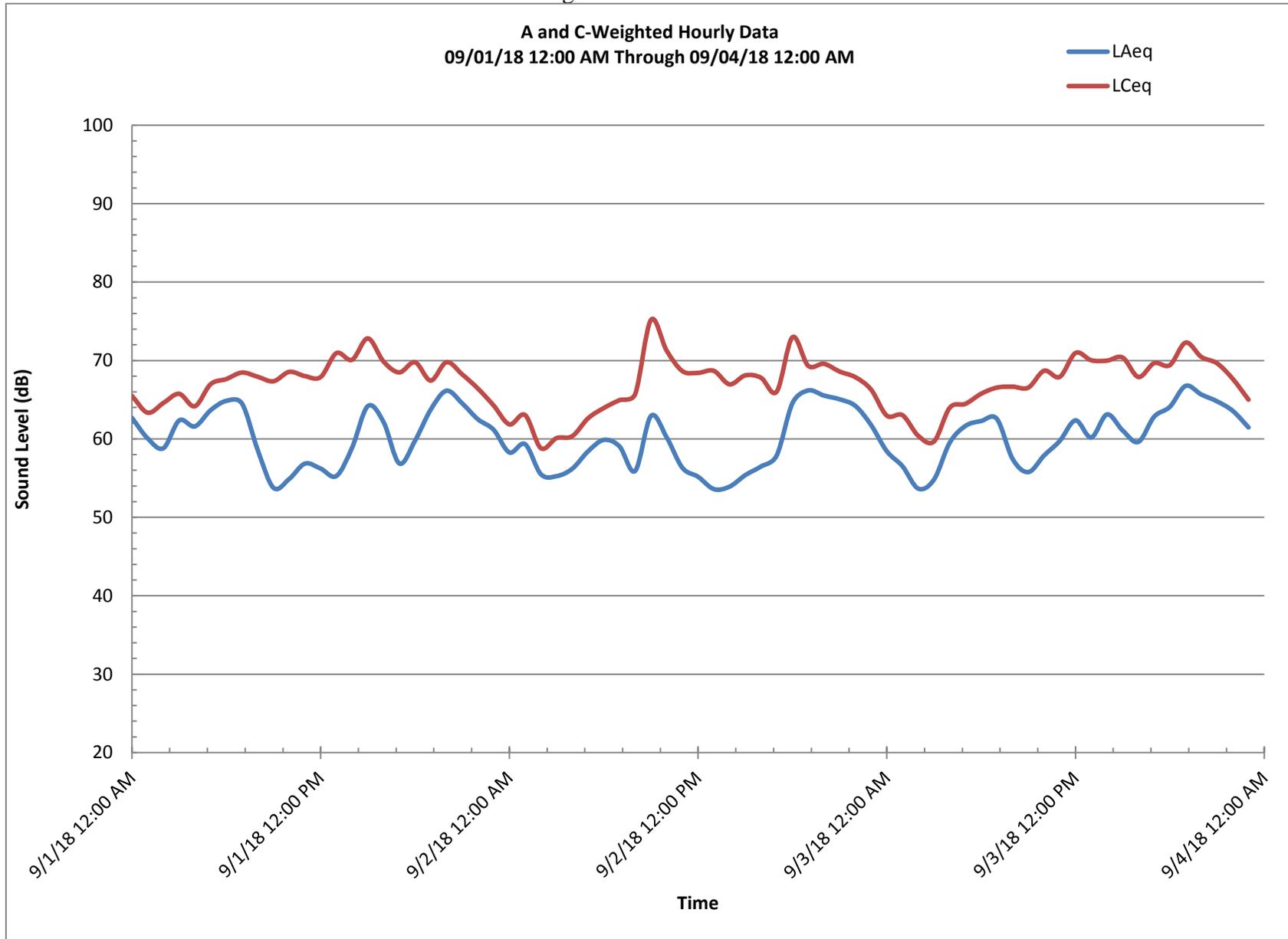


Chart 7: A & C-Weighted sound levels with hour resolution





## **Ambient Sound Level Survey Report**

Northwest Monitoring Point  
MCC 3-66 Pad Adams County, CO

Prepared for:

GMT Exploration  
1560 Broadway #2000  
Denver, CO 80202

Prepared by:

Urban Solution Group, LLC  
4230 Elati Street Suite 200  
Denver, CO 80216

September 24<sup>th</sup>, 2018

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**Date:** September 17<sup>th</sup>, 2017

**From:** Heidi Gill

**To:** GMT Exploration

**Phone:** (925) 683-5529

**ATTN:** Hans Schuster & Phil Wood

**Email:** Heidi.Gill@urbansolutiongroup.com

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Hans & Phil,

Please see the attached Ambient Report for the Northwest Monitoring Point for the MCC 3-66 Pad.

### Executive Summary

Urban Solution Group, LLC prepared this report to document background ambient sound levels at the proposed MCC 3-66 Pad in Adams County, Colorado. The intent was to assess existing noise levels prior to GMT Exploration’s proposed operations in the area.

The data collection period was from September 1<sup>st</sup>, 2018 to September 4<sup>th</sup>, 2018. **Table 1** shows the dB(A) and dB(C) scale averages for the three-day monitoring period.

**Table 1: Overall Study Averages**

Description	LAeq (dB)	LCeq (dB)	Wind Speed (mph)
Average	52.24	62.50	1.94

### Regulation and Noise Standard Summary

This report utilizes the Colorado Oil and Gas Conservation Commission (COGCC) Section 802 “Noise Abatement” requirements and guidelines for reasonable noise control for oil and gas development as of September 30, 2014.

Section 802.b of the Regulation states:

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- (1) Except as required pursuant to Rule 604.c.(2)A., operations involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones.
- (2) In remote locations, where there is no reasonably proximate occupied structure or Designated Outside Activity Area, the light industrial standard may be applicable.

- (3) Pursuant to Commission inspection or upon receiving a complaint from a nearby property owner or local governmental designee regarding noise related to oil and gas operations, the Commission shall conduct an onsite investigation and take sound measurements as prescribed herein.

Noise limits are provided in **Table 2**.

**Table 2: COGCC Land Use Zone and Designated Limits for Oil and Gas Operations**

ZONE	7:00 a.m. – 7:00 p.m.	7:00 p.m. – 7:00 a.m.
Residential	55 dB(A)	50 dB(A)
Commercial	60 dB(A)	55 dB(A)
Light industrial	70 dB(A)	65 dB(A)
Industrial	80 dB(A)	75 dB(A)

Section 802.c outlines the guidance for noise level measurements, equipment and conditions:

- (1) Sound levels shall be measured at a distance of three hundred and fifty (350) feet from the noise source. At the request of the complainant, the sound level shall also be measured at a point beyond three hundred fifty (350) feet that the complainant believes is more representative of the noise impact. If an oil and gas well site, production facility, or gas facility is installed closer than three hundred fifty (350) feet from an existing occupied structure, sound levels shall be measured at a point twenty-five (25) feet from the structure towards the noise source. Noise levels from oil and gas facilities located on surface property owned, leased, or otherwise controlled by the operator shall be measured at three hundred and fifty (350) feet or at the property line, whichever is greater.

In situations where measurement of noise levels at three hundred and fifty (350) feet is impractical or unrepresentative due to topography, the measurement may be taken at a lesser distance and extrapolated to a 350- foot equivalent using the following formula:

$$dBA_{Distance\ 2} = dBA_{Distance\ 1} - 20 \log_{10} \left( \frac{Distance\ 2}{Distance\ 1} \right)$$

- (2) Sound level meters shall be equipped with wind screens, and readings shall be taken when the wind velocity at the time and place of measurement is not more than five (5) miles per hour.
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Specific to ambient noise, section 802.c.(5) states:

In all sound level measurements, the existing ambient noise level from all other sources in the encompassing environment at the time and place of such sound level measurement shall be considered to determine the contribution to the sound level by the oil and gas operation(s).

### Location Information and Meter Placement

**Proposed Site:** MCC 3-66 Pad

**Monitoring Point Location:** 39°46'8.67"N, 104°44'3.86"W

The proposed MCC 3-66 Pad is located north of East 26<sup>th</sup> Avenue and west of E-470 (toll road). The sound meter was deployed approximately one mile northwest from the proposed site where 72 hours of monitoring data was collected. The closest road, Picadilly Road, is a paved road with moderate amounts of traffic and is approximately 60 feet west of the measuring point. The speed limit for the vehicles on the road was 35 mph during the study. E-470 is approximately 5,000 feet east and had a speed limit of 75 mph during the study. Green Valley Ranch neighborhood is approximately 450 feet northeast from the monitoring location.

There are several structures near the site. From the monitoring point, the closest residential structure, a neighborhood, is 450 feet to the northeast. The next closest structure is a manufacturing facility approximately 1,300 feet to the southwest. The closest town (Watkins) was approximately 6 miles to the southeast. The monitor was placed in an open area with minor changes in elevation such that there were hills surrounding the monitor. This change in topography was not prominent enough to impact sound levels in any significant way. **Figure 1** shows the monitoring point in relation to the proposed pad. Photos of each monitoring location can be found in **Appendix 1**.

While on site there was noise from road traffic and weather. Denver International Airport is approximately 6 miles northeast of the area, and several aircraft could be seen while on location. Occasional air traffic likely increased sound averages during this study. A light hum could be heard from the traffic on E-470. Wind data was measured for the area using a weather station that was deployed near the meter.



**Figure 1:** Aerial View of Monitoring Point in relation to MCC 3-66 Pad

### Sound Level Meter Specifications

A Brüel & Kjær Type 2250, 4th generation, hand-held analyzer (S/N 3003388) with transducer (S/N 2922641) measured sound levels at the monitoring location. **Attachment 2** lists the manufacturer's specification for this meter. The software modules in the Type 2250 allows for real-time frequency analysis, analysis of time histories for broadband parameters and spectra, and documentation of measurements through recording of measured sound. The 2250 sound level meter continuously sampled sound levels logging the specified data every minute; therefore, each one-hour period provided 60 readings.

Prior to beginning the monitoring, the 2250 meter was calibrated using a Brüel & Kjær Type 4231 Acoustical Calibrator (S/N: 3006472). The calibrator emits a reference sound pressure level of 94 dB. The calibrator attaches to the transducer to verify the meter accurately measures the reference sound level. Full manufacturer calibration documentation is available upon request.

After monitoring, the data collected by the 2250 sound level meter was downloaded to a computer using Brüel & Kjær BZ-5503 Utility Software for Hand-held Analyzers Version 3.11.0.389. The manufacturer's software coupled with Excel spreadsheets was used to summarize the data.

### Ambient Monitoring Data and Results

Background ambient sound level survey data was collected from approximately 12:00 a.m. on Saturday, September 1<sup>st</sup>, 2018 to 12:00 a.m. on Tuesday, September 4<sup>th</sup>, 2018. **Table 3** summarizes the logarithmic averages of the study.

**Table 3: Daily and Overall Sound Level Averages (dBA and dBC)**

Description	LAeq (dB)	LCeq (dB)	Wind Speed (mph)
Saturday, September 1 <sup>st</sup> , 2018	53.13	62.60	2.04
Sunday, September 2 <sup>nd</sup> , 2018	50.73	62.17	2.01
Monday, September 3 <sup>rd</sup> , 2018	52.51	62.72	1.78
<b>Average</b>	<b>52.24</b>	<b>62.50</b>	<b>1.94</b>

**Appendix 3** contains the hourly average summary table and charts obtained from the background ambient evaluation.

Common sounds for the MCC 3-66 site primarily included road traffic, air traffic and weather. The sounds are characteristic of a residential area. The overall study averages are comparable to sound levels on a quiet street. The maximum study sound level at the monitoring location was 78.9 dBA and 85.9 dBC which occurred on Saturday, September 1<sup>st</sup>, 2018 at approximately 6:31 p.m.

### Notations

The services provided for this project were performed in accordance with generally accepted profession consulting services. No warranty, expressed or implied, is made or intended by rendition for these consulting services or by furnishing oral or written reports of the findings made. Urban Solution Group, LLC subcontracts various vendors for different areas of mitigation assessment, analysis, data collection and mitigation equipment rental or manufacturing. Urban Solution Group, LLC contracted Principle Environmental, LLC for the data collection and initial analysis of this location. The content of this report contains information and analysis from both parties. This report was generated for the exclusive use by GMT Exploration.

## Appendix 1 – Photo Log

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**Photo 1:** View of Monitoring Location looking north



**Photo 2:** View of Monitoring Location looking east



**Photo 3:** View of Monitoring Location looking south



**Photo 4:** View of Monitoring Location looking west



## Appendix 2 – Manufacturer’s Specification

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## PRODUCT DATA

Hand-held Analyzer — Type 2250, with Sound Level Meter Software BZ-7222, Frequency Analysis Software BZ-7223, Logging Software BZ-7224, Enhanced Logging Software BZ-7225 and Sound Recording Option BZ-7226

*Type 2250 is the innovative, 4th generation, hand-held analyzer from Brüel & Kjær. The design philosophy is based on extensive research which concluded that the instrument should be **easy** and **safe** to use, while at the same time incorporating **clever** features. Type 2250 has been awarded several prizes for its combination of excellent ergonomics and attractive design.*

*Type 2250 can host a number of software modules, including frequency analysis, logging (profiling) and recording of the measured signal. These are available separately at any time – or you can order a fully pre-configured instrument from the factory.*

*The combination of software modules and innovative hardware makes the instrument into a dedicated solution for performing high-precision measurement tasks, in environmental, occupational and industrial application areas. As a result, you get the functionality you need now, plus the option of opening up for more functionality later – and your investment is securely protected.*



### Uses and Features

#### USES

- Environmental noise assessment and monitoring
- Occupational noise evaluation
- Selection of hearing protection
- Noise reduction
- Product quality control
- Class 1 sound measurements to the latest international standards
- Real-time analysis of sound in 1/1- and 1/3-octave bands
- Analysis of time histories for broadband parameters and spectra (Logging)
- Documentation of measurements using text and voice annotations
- Documentation of measurements through recording of measured sound

#### FEATURES

- Large, high-resolution, touch-sensitive colour screen
- Data storage on plug-in memory-cards
- Standard USB (On-the-Go) computer interface
- Dynamic range in excess of 120 dB
- 3 Hz – 20 kHz broadband linear frequency range
- Real-time frequency analysis in 1/1- or 1/3-octave bands
- Broadband and spectral data can be logged to obtain a time history for later analysis
- Sound recording of measured signal during all or parts of a measurement
- Personal measurement, display and job setup
- PC software included for setup, archiving, export and reporting
- Automatic detection of, and correction for, windscreen
- Robust and environmentally protected (IP44)

## Appendix 3 – Monitoring Location Summary Data and Charts

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**Table 4:** Ambient Sound Level Survey and Report - MCC 3-66 Pad, Northwest MP

Timestamp	LAeq (dBA)	LCeq (dBC)	Timestamp	LAeq (dBA)	LCeq (dBC)
9/1/18 12:00 AM	49.40	56.74	9/2/18 12:00 PM	50.92	63.95
9/1/18 1:00 AM	49.40	57.21	9/2/18 1:00 PM	50.81	62.13
9/1/18 2:00 AM	52.50	59.39	9/2/18 2:00 PM	49.71	61.99
9/1/18 3:00 AM	48.69	57.17	9/2/18 3:00 PM	50.11	59.28
9/1/18 4:00 AM	47.04	54.49	9/2/18 4:00 PM	51.90	63.52
9/1/18 5:00 AM	49.81	56.07	9/2/18 5:00 PM	51.34	59.00
9/1/18 6:00 AM	52.18	59.64	9/2/18 6:00 PM	53.77	64.15
9/1/18 7:00 AM	54.10	65.45	9/2/18 7:00 PM	51.97	59.23
9/1/18 8:00 AM	52.68	63.52	9/2/18 8:00 PM	52.07	61.53
9/1/18 9:00 AM	52.33	63.05	9/2/18 9:00 PM	55.34	62.32
9/1/18 10:00 AM	52.02	63.01	9/2/18 10:00 PM	52.45	60.64
9/1/18 11:00 AM	50.81	61.67	9/2/18 11:00 PM	49.12	57.65
9/1/18 12:00 PM	50.65	63.10	9/3/18 12:00 AM	48.34	57.12
9/1/18 1:00 PM	52.11	65.50	9/3/18 1:00 AM	49.13	60.01
9/1/18 2:00 PM	50.23	61.25	9/3/18 2:00 AM	46.36	55.56
9/1/18 3:00 PM	51.51	63.62	9/3/18 3:00 AM	49.25	58.71
9/1/18 4:00 PM	53.17	64.29	9/3/18 4:00 AM	46.74	56.34
9/1/18 5:00 PM	53.26	63.70	9/3/18 5:00 AM	47.66	55.57
9/1/18 6:00 PM	61.77	69.04	9/3/18 6:00 AM	49.78	58.31
9/1/18 7:00 PM	52.29	61.29	9/3/18 7:00 AM	51.58	59.11
9/1/18 8:00 PM	53.24	60.30	9/3/18 8:00 AM	49.18	57.75
9/1/18 9:00 PM	52.03	59.13	9/3/18 9:00 AM	49.14	59.09
9/1/18 10:00 PM	52.22	60.91	9/3/18 10:00 AM	49.53	58.83
9/1/18 11:00 PM	51.64	62.35	9/3/18 11:00 AM	51.18	61.54
9/2/18 12:00 AM	49.67	58.63	9/3/18 12:00 PM	51.60	61.74
9/2/18 1:00 AM	48.29	56.62	9/3/18 1:00 PM	53.72	68.25
9/2/18 2:00 AM	47.13	55.37	9/3/18 2:00 PM	53.01	64.72
9/2/18 3:00 AM	46.64	58.47	9/3/18 3:00 PM	52.48	62.88
9/2/18 4:00 AM	45.20	51.71	9/3/18 4:00 PM	51.80	61.29
9/2/18 5:00 AM	47.14	54.06	9/3/18 5:00 PM	58.79	65.28
9/2/18 6:00 AM	47.89	55.85	9/3/18 6:00 PM	54.77	64.72
9/2/18 7:00 AM	51.54	59.31	9/3/18 7:00 PM	56.13	67.11
9/2/18 8:00 AM	50.65	61.95	9/3/18 8:00 PM	57.08	68.74
9/2/18 9:00 AM	48.91	69.03	9/3/18 9:00 PM	51.97	59.93
9/2/18 10:00 AM	49.69	67.67	9/3/18 10:00 PM	51.10	61.11
9/2/18 11:00 AM	50.62	63.76	9/3/18 11:00 PM	49.92	58.34

Chart 1: A-Weighted sound levels with minute resolution

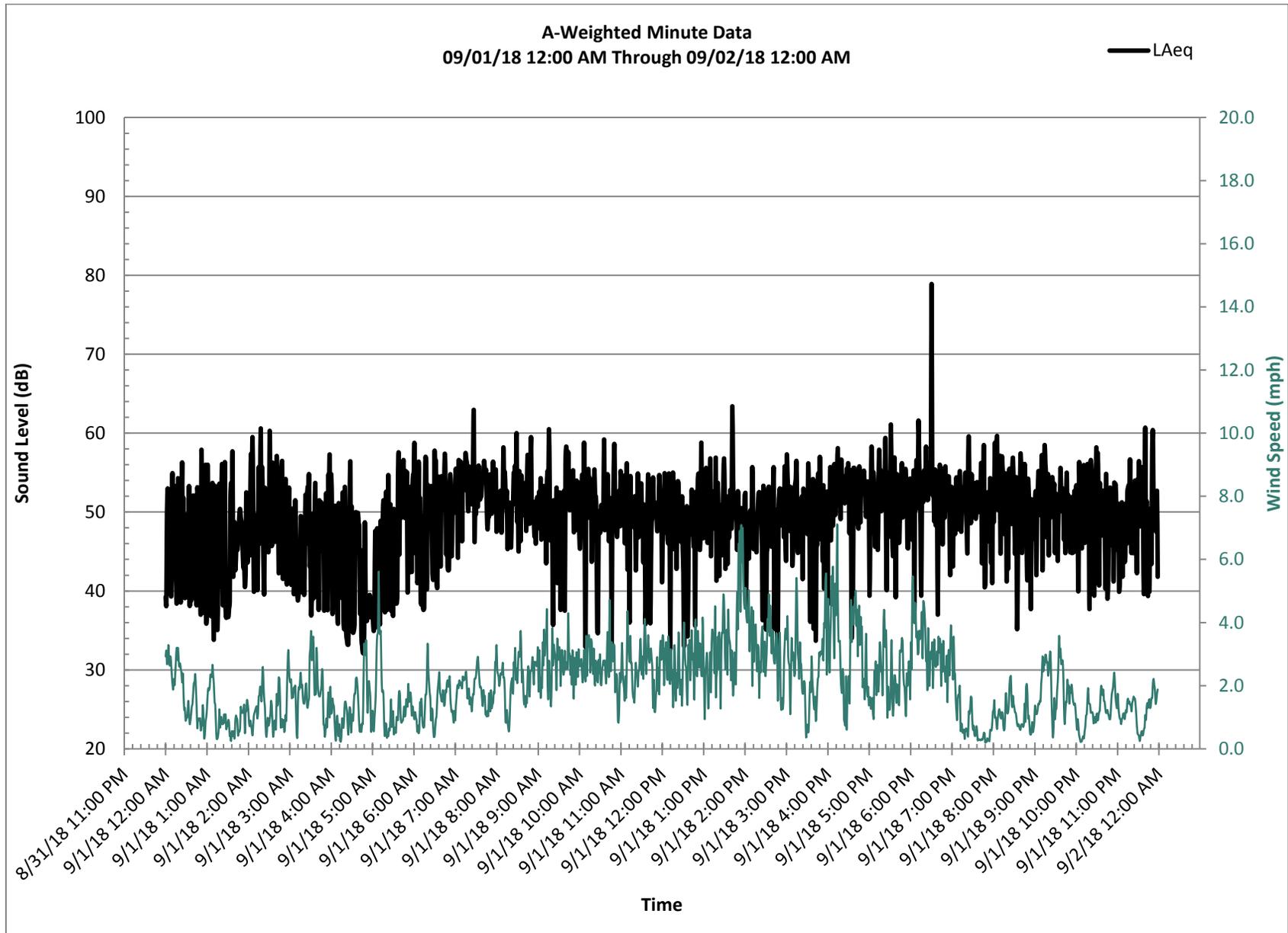


Chart 2: A-Weighted sound levels with minute resolution

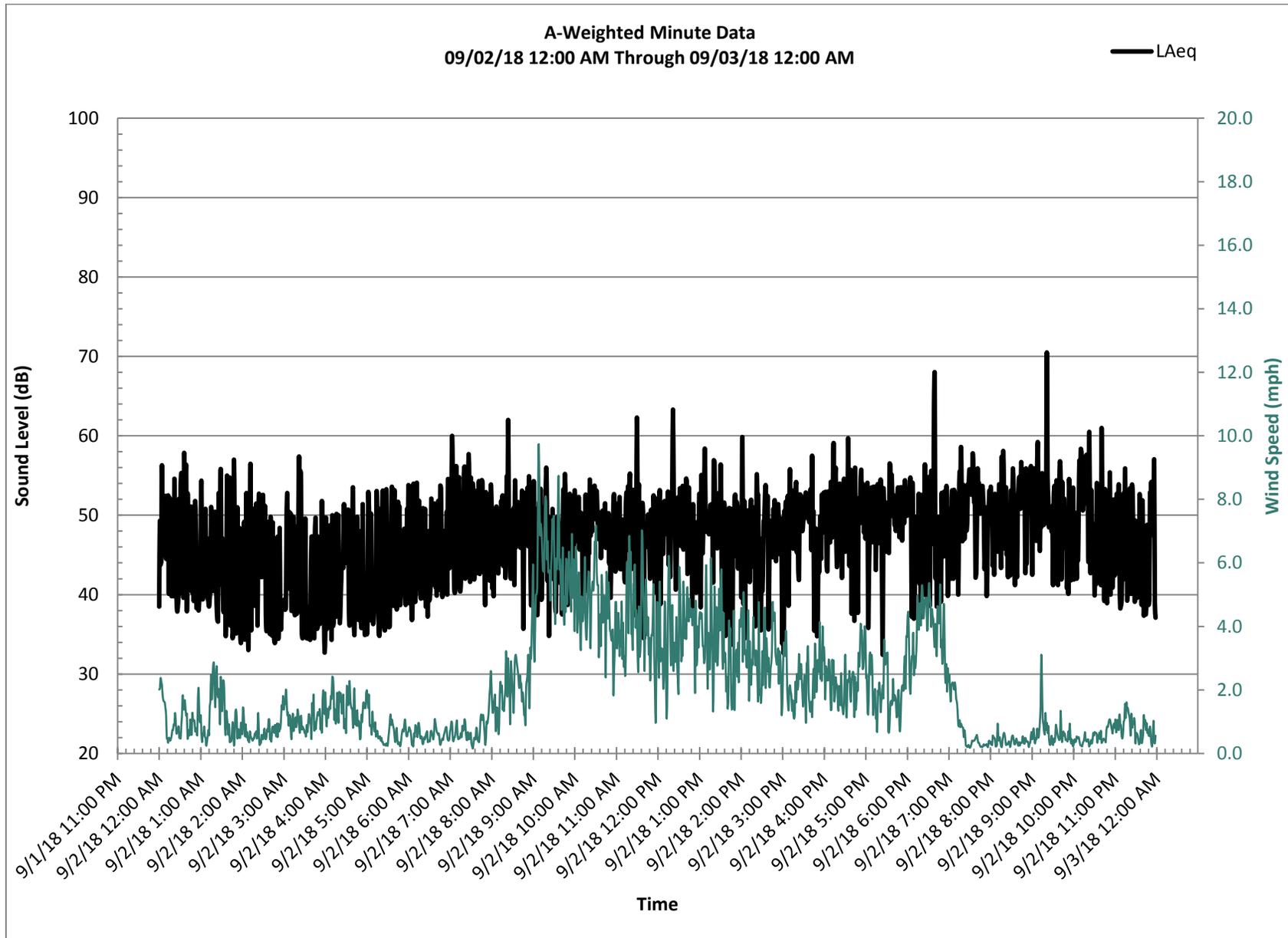


Chart 3: A-Weighted sound levels with minute resolution

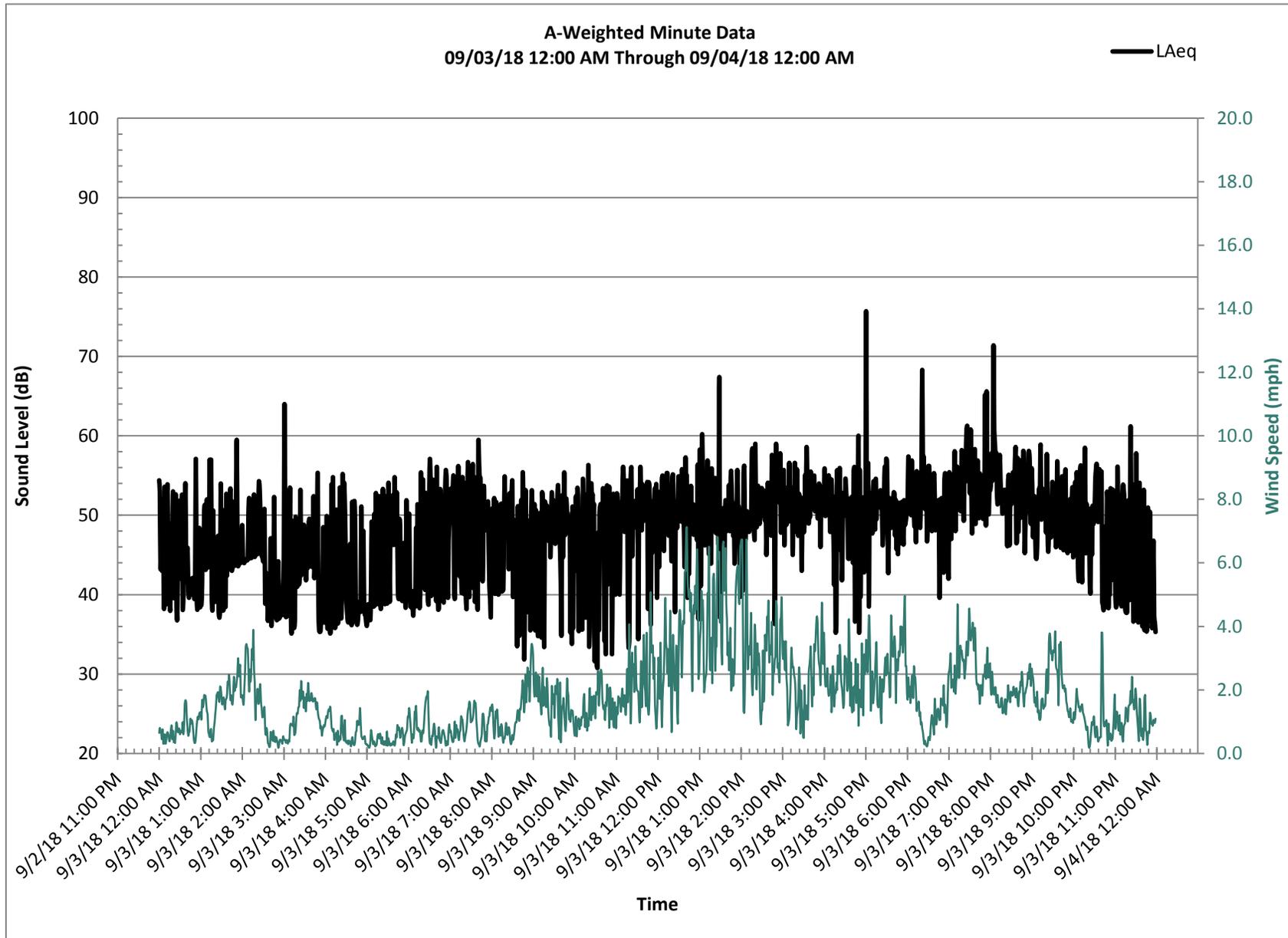


Chart 4: C-Weighted sound levels with minute resolution

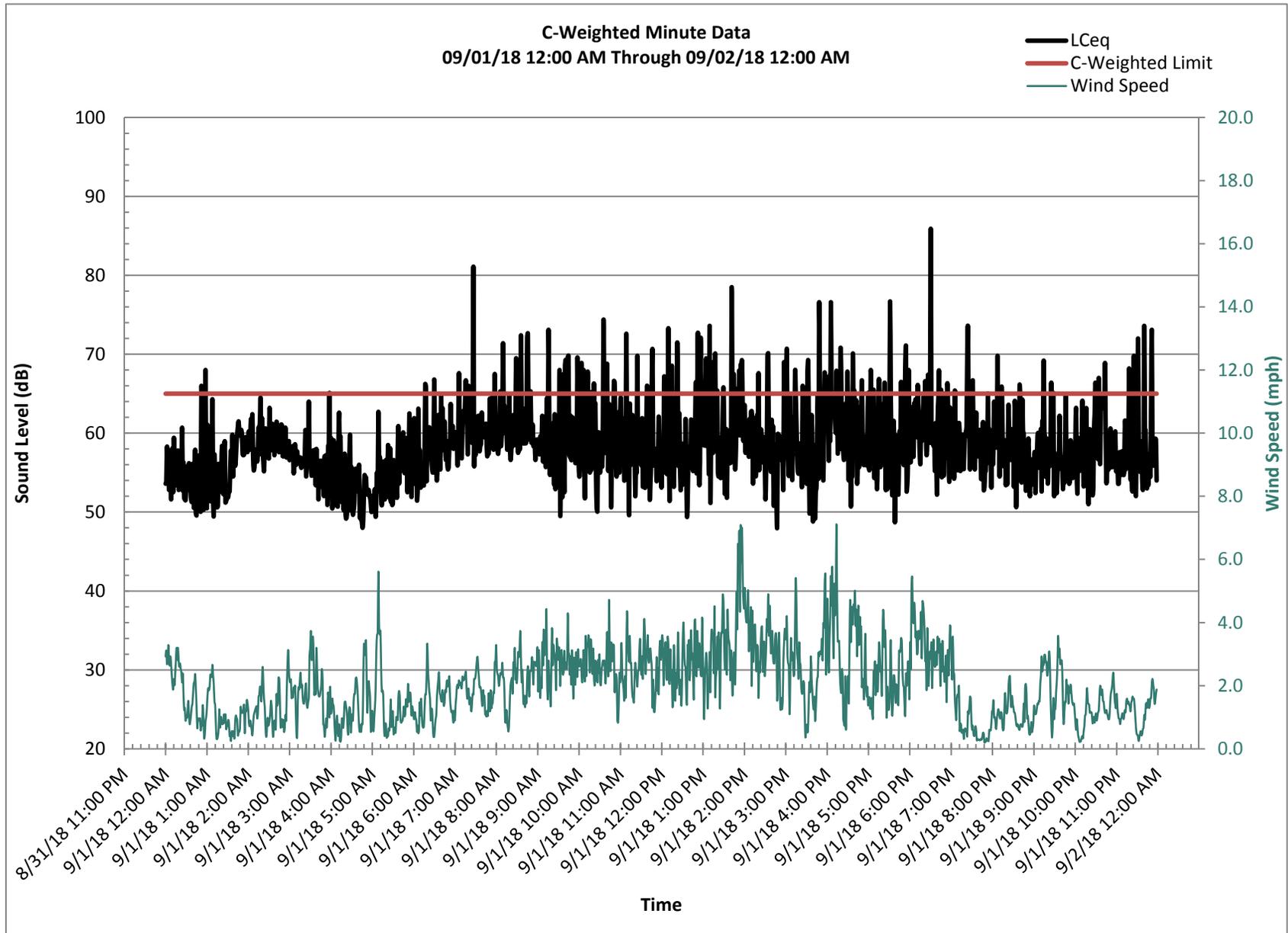


Chart 5: C-Weighted sound levels with minute resolution

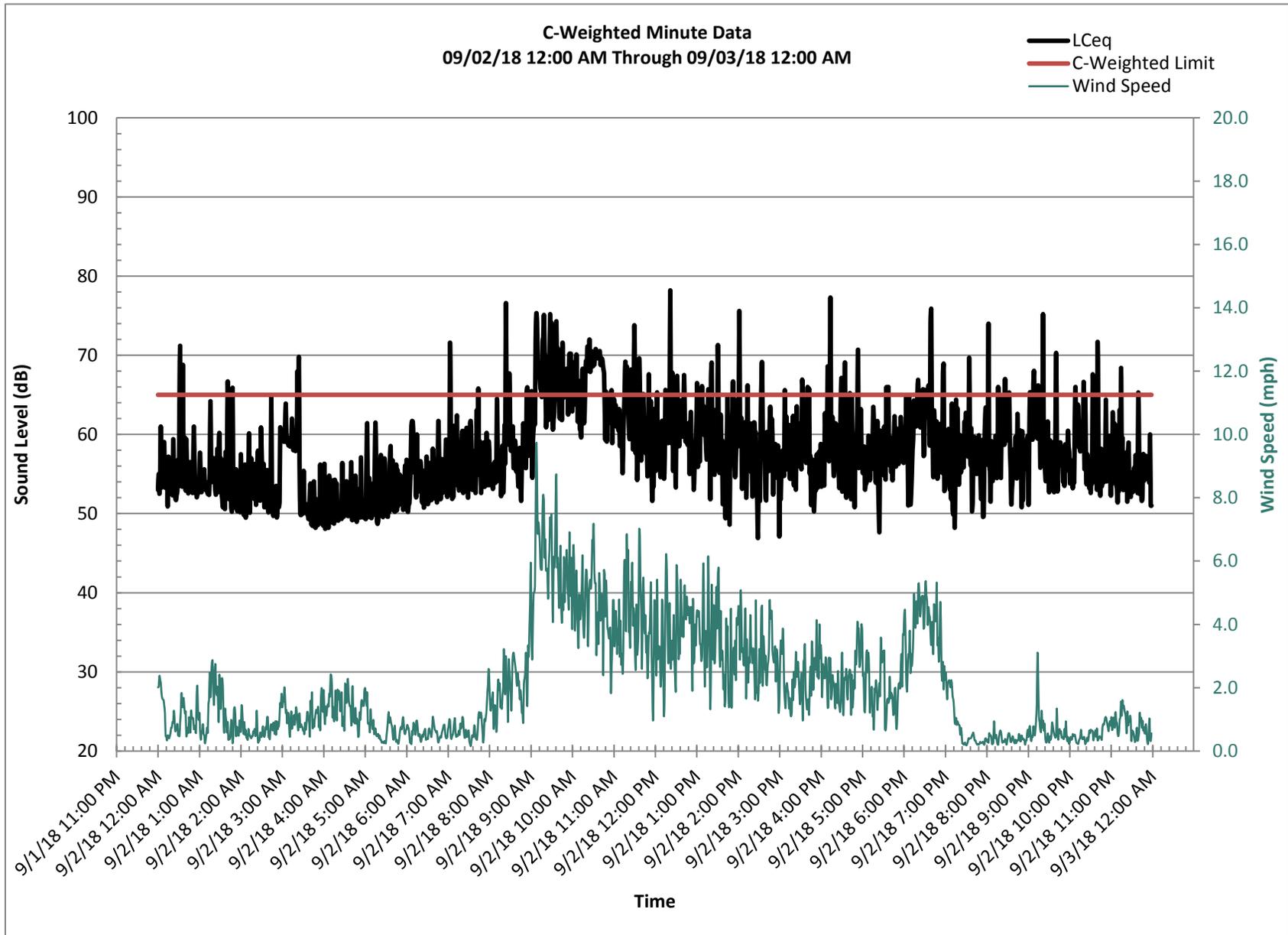
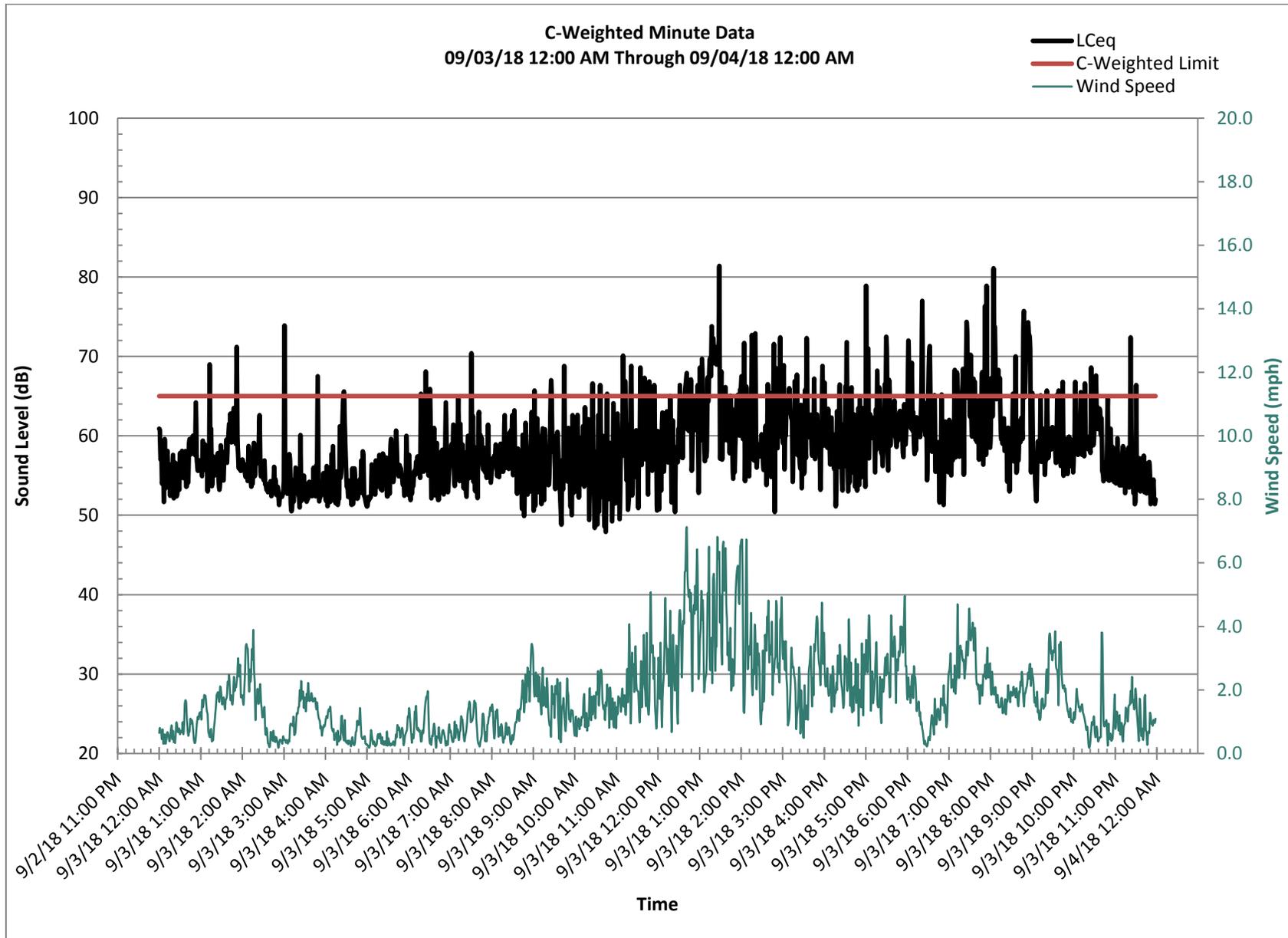


Chart 6: C-Weighted sound levels with minute resolution



**Chart 7: A & C-Weighted sound levels with hour resolution**

