



P.O. Box 1653  
Durango, Colorado 81302  
(970) 764-7356  
[www.cottonwoodconsulting.com](http://www.cottonwoodconsulting.com)

February 16, 2023

Sabre Beebe  
IKAV Energy Inc.  
1199 Main Street Suite 101  
Durango, CO 81301

**RE: Noise Survey Results  
Keating #2 (API #05-067-09001)  
La Plata County, Colorado**

Dear Ms. Beebe,

Cottonwood Consulting LLC (Cottonwood) is pleased to provide you with the results of a noise survey conducted at the Keating #2 (API #05-067-09001) in La Plata County, Colorado. Details regarding the background, methodology, and associated results are summarized below.

### **Background**

The Keating #2 gas well is operated by Simcoe LLC (Simcoe) and is located in the northwest quarter of the northeast quarter of Section 3, Township 34 North, Range 7 West, New Mexico Principal Meridian in La Plata County, Colorado. The well pad is located approximately 1.0 miles west of the Bayfield city limits and 1,152 feet (ft) west of County Road (CR) 502. Equipment on the well pad includes a pumping unit, separator, and below grade tank.

A residence is located approximately 700 ft east of the well pad at 1413 CR 502, Bayfield, CO 81122. On October 19, 2022, the landowner of the property filed a complaint with the Colorado Oil and Gas Conservation Commission (COGCC) regarding noise generated from the well pad (COGCC Complaint Doc # 403202336). On January 9, 2023, the COGCC conducted a noise survey at the site in response to the landowner's complaint (COGCC Inspection Doc # 700300549).

Results of the high frequency survey conducted by COGCC indicated that although noise from the pumping unit did not exceed the maximum permissible noise levels as outlined by COGCC Rule 423, a periodic increase of 9 db(A) (A-weighted decibels) in mechanical noise was observed when the pumping unit was operating. Per COGCC Rule 423, periodic, impulsive, or shrill noise must be reduced by 5 dB(A) below the levels in COGCC Table 423-1.

In February 2023, Simcoe conducted maintenance at the pumping unit and motor in an effort to mitigate noise from the equipment. Cottonwood was retained by Simcoe to conduct a follow-up noise survey to evaluate compliance with COGCC Rule 423.

## Methodology

On February 16, 2023, Cottonwood was onsite to conduct the noise survey. The noise survey consisted of three surveys taken at one location on the well pad and one location near the residence.

Surveys #1 and #2 were conducted at a location approximately 90 ft east of the pumping unit and motor (in the direction of the residence). The location was at the same elevation as the pumping unit and motor. Survey #1 was conducted between 5:42 a.m. and 6:57 a.m. and Survey #2 was conducted between 7:09 a.m. and 8:25 a.m. Both surveys were high frequency (A-weighted) surveys using a fast response setting on the meter. Weather during the surveys was cloudy to clear, with winds of 0.0 miles per hour (mph), and temperatures ranging from 7° Fahrenheit (F) to 15° F.

Survey #3 was conducted at a location approximately 25 ft northwest of the residence in the direction of the well pad. The location was at a lower elevation than the well pad. The survey was conducted between 8:57 a.m. and 10:09 a.m. The survey was a low frequency (C-weighted) survey using a slow response setting. Weather during the surveys was clear, with winds of 0.0-2.4 mph, and a temperature of approximately 30° F. Figure 1 shows the locations of the three surveys conducted for the project.

During all surveys, a Casella CEL-246 Type 2 sound level meter (Serial No. 1574744) was used to record noise measurements at 1 second intervals. The meter was factory calibrated on October 27, 2022 and field calibrated before and after each of the three surveys on February 16, 2023. The meter was fitted with a wind screen and attached to a tripod resulting in measurements being collected approximately 5 ft above ground surface. All measurements were Leq (equivalent continuous sound level) readings.

For Surveys #1 and #2, measurements were extrapolated to a distance 350 ft from the pumping unit using the following equation from COGCC Rule 423(c)(2)(B):

$$db(A) \text{ distance } 2 = db(A) \text{ distance } 1 - 20 \times \log 10 (\text{distance } 2/\text{distance } 1)$$

## Results

Results of Survey #1 indicate that the average sound pressure was 42.3 db(A) at a distance of 90 ft from the pumping unit and motor. Using the distance equation from COGCC Rule 423(c)(2)(B), this calculates to a sound pressure of 30.5 db(A) at 350 ft equivalent, which is below the maximum permissible noise level of 50 db(A) for the hours between 7:00 p.m. and 7:00 a.m. in residential/rural areas. The pumping unit motor was running for the entirety of the survey and the pumping unit was running from 5:57 a.m. to 6:16 a.m. and from 6:36 a.m. to the end of the survey

at 6:57 a.m. The average sound pressure when the pumping unit was off was 42.2 db(A) at 90 ft from the pumping unit and 30.4 db(A) at 350 ft equivalent. The average sound pressure when the pumping unit was on was 42.4 db(A) at 90 ft from the pumping unit and 30.6 db(A) at 350 ft equivalent; indicating an increase of 0.2 db(A) when the pumping unit was on.

Results of Survey #2 indicate an average sound pressure of 41.7 db(A) at 90 ft from the pumping unit and 29.9 db(A) at 350 ft equivalent, below the maximum permissible noise level of 55 db(A) for the hours between 7:00 a.m. and 7:00 p.m. in residential/rural areas. The pumping unit and motor ran nearly continuously for the duration of Survey #2.

Results of Survey #3 indicate an average sound pressure of 45.5 db(C) (C-weighted decibels) at a distance of 25 ft from the residence. This sound pressure is below the maximum permissible noise level of 60 db(C) at 25 ft from a residence. Airplanes were observed flying at various times during Survey #3.

Results of the surveys are summarized on Table 1, a photographic log is included as Attachment 1, and specifications of the Casella CEL-246 Type 2 sound level meter used during the surveys are included as Attachment 2.

## **Conclusion**

Based on the results of all three surveys, it appears that the maintenance conducted at the pumping unit and motor has reduced periodic noise to levels below the threshold found in COGCC Rule 423 and in compliance with COGCC Rule 423(b)(7).

Should you have any questions regarding the results of the noise survey, please do not hesitate to contact me at 970-764-7356 or [ksiesser@cottonwoodconsulting.com](mailto:ksiesser@cottonwoodconsulting.com). We appreciate the opportunity to provide services to Simcoe.

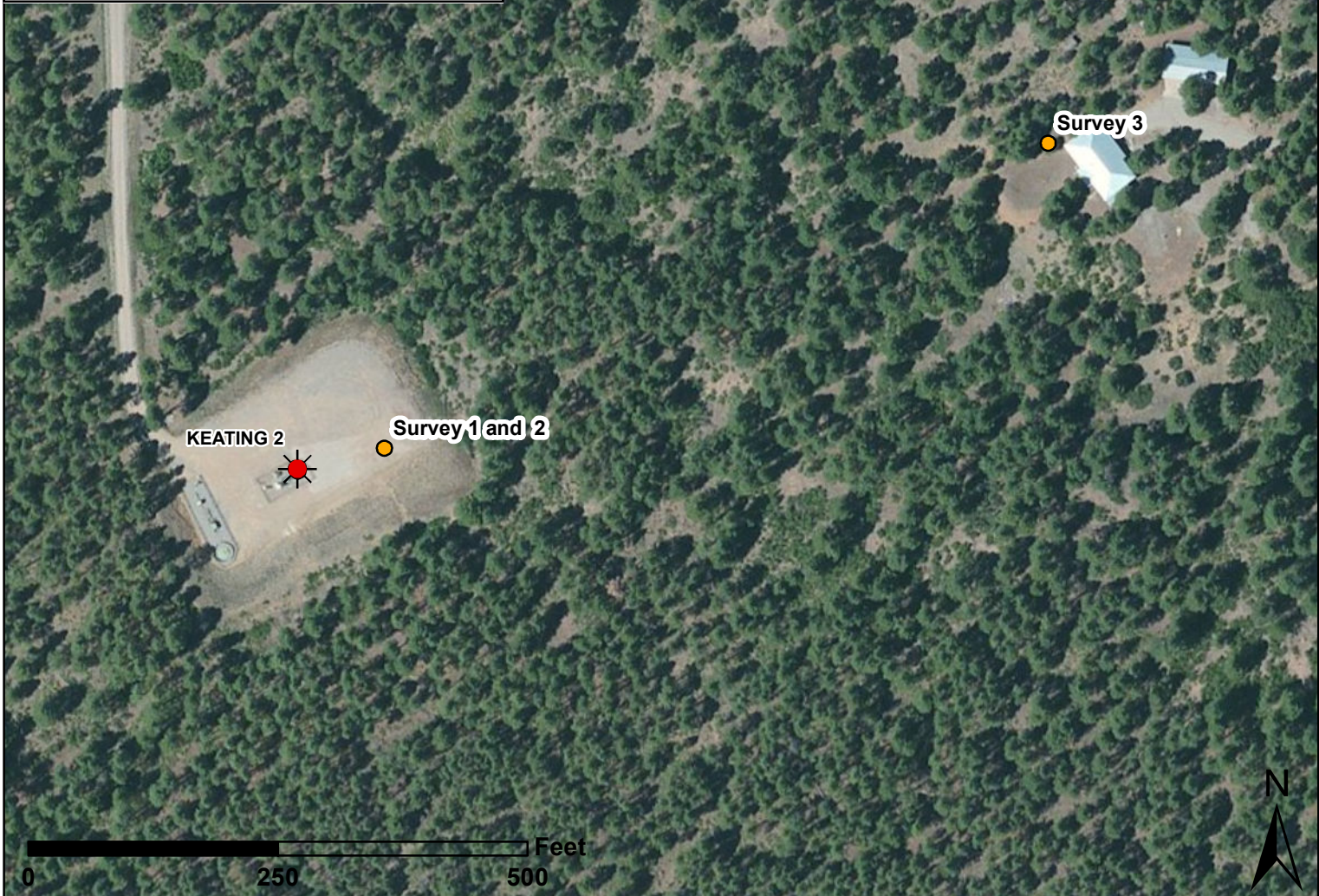
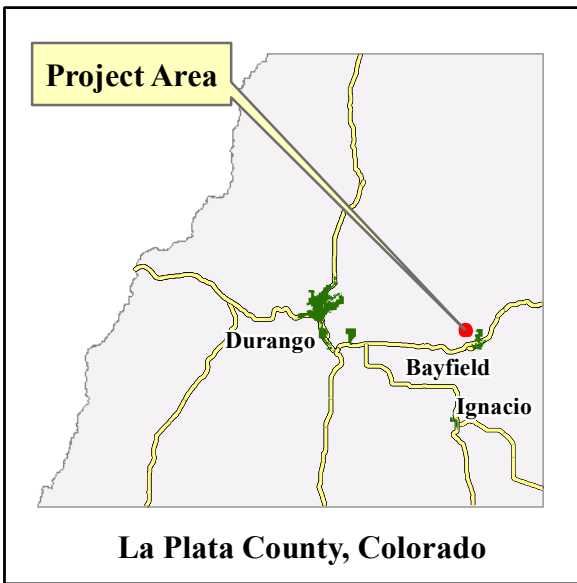
Sincerely,



Kyle G. Siesser, P.G.  
Cottonwood Consulting, LLC



Attachments: Figure 1 – Project Map  
Table 1 – Noise Survey Results  
Attachment 1 – Photographic Log  
Attachment 2 – Casella CEL-246 Specifications

**FIGURE 1**



Notes: Surveys conducted 2/16/2023.

**Legend**

-  Oil & Gas Well
-  Survey Point



Mapping by: K. O'Brien, 2/16/2023  
 Coordinate System:  
 NAD 1983 UTM Zone 13 N

Location: NWNE Sec 3 T34N R7W NMPM

**Figure 1**  
**Keating #2**  
**Project Map**  
**Simcoe LLC**

**TABLE 1**

**Table 1**  
**Noise Survey Results**  
**Keating #2**  
**Simcoe LLC**

Survey	Date	Start Time	End Time	Start Time	End Time	Duration	Weighting	Response	Leq	Leq @ 350 ft	Location
Survey #1	2/16/2023	5:42 am	6:57 am	NA	NA	1:15:28	A	Fast	42.3	30.5	90 ft E of PU
Survey #1 (pumping unit off)	2/16/2024	5:42 am	5:57 am	6:16 am	6:36 am	0:39:13	A	Fast	42.2	30.4	90 ft E of PU
Survey #1 (pumping unit on)	2/16/2025	5:57 am	6:16 am	6:36 am	6:57 am	0:36:15	A	Fast	42.4	30.6	90 ft E of PU
Survey #2	2/16/2026	7:09 am	8:25 am	NA	NA	1:15:59	A	Fast	41.7	29.9	90 ft E of PU
Survey #3	2/16/2027	8:57 am	10:09 am	NA	NA	1:12:12	C	Slow	45.5	NA	25 ft W of residence

**Notes:**

All surveys conducted using a Casella CEL-246 Type 2 sound level meter with wind screen.

Leq is an average of logarithmic measurements take over the duration of survey.

Measurements taken approximately 5 ft above ground surface.

Exchange rate (Q) = 3 db

Leq @ 350 ft is based on equation from COGCC Rule 423(c)(2)(B).

db - decibel

ft - feet

NA - Not Applicable

E - East

W - West

PU - pumping unit

**ATTACHMENT 1**

**Keating #2  
Photographic Log  
Simcoe LLC**



Photo 1: Keating #2 well sign, 2/16/2023.

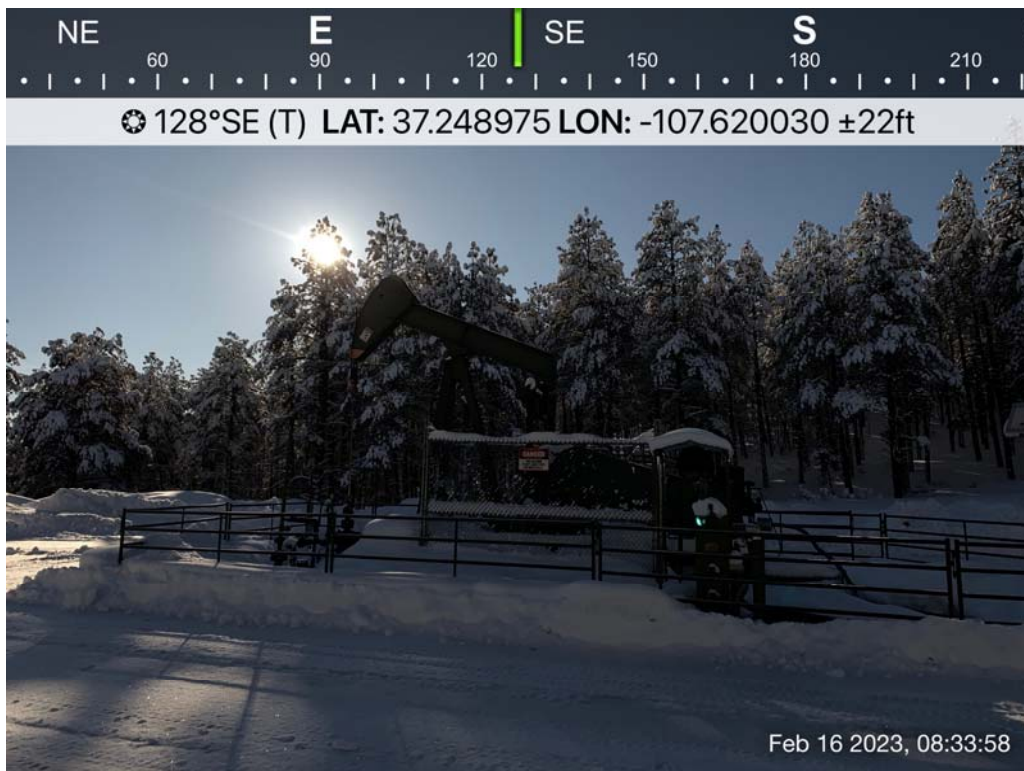


Photo 2: Pumping unit on location, 2/16/2023.



Photo 3: Location of sound level meter during Survey #1 and #2, 2/16/2023.



Photo 4: Location of sound level meter during Survey #3, 2/16/2023.

**ATTACHMENT 2**

## CEL-246 Digital Logging Sound Level Meter

### Introduction

The **CEL-246** is a completely new design of integrating noise meter with memory. It features the power of Digital Signal Processing (DSP) technology and the simplicity and low cost of a traditional analog instrument. It can be used for a wide range of simple noise measurement tasks. Complying with all the relevant specifications in the Type 2 category the **CEL-246** will appeal to new and experienced users who need basic data logging of varying noise levels in the workplace or the community.

### Applications

The **CEL-246** has a low and high measurement range that covers a full 70dB on each range. It can be used for machinery noise surveys as well as all general purpose workplace noise level measurements. With the A and C frequency scales and the S, F and I time response the meter can be used to assess the right hearing protectors using the NRR method. A hold feature on every display captures and displays the highest and average sound level of any noise until reset by the user. On-board memory allows for simple data logging to be performed with up to 65,000 samples in each of 100 runs to a maximum of 419,000 samples.

### Ordering information

CEL-246  
CEL-120/2  
CEL-6841  
CEL-6840  
CMC51  
CEL-6842  
Other items available -  
CEL-246/K1

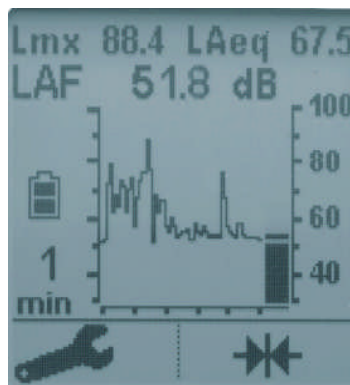
CEL-246/K2  
CEL-246/6

Casella USA  
(800) 366-2966  
info@CasellaUSA.com



### Key benefits

- Wide range from 30 to 130dB
- Large graphic LCD screen 128 x 128 pixels
- Slow, Fast and Impulse time weightings
- Current, highest and average noise level shown in display
- Large numeric and analog bar graph display
- Output to computer for simple data logging with pc
- Data logging to on-board memory at variable intervals
- Auto calibration at either 114 or 94.1 kHz decibel level
- Scrolling sound level display



main display with scrolling time history trace and simultaneous instant, maximum and average levels displayed

The new **CEL-246** features a standard 1/4" threaded socket on the back of the meter to allow it to be mounted on a tripod for fixed measurement applications. The meter is powered from 3 x AA alkaline batteries and will run for up to 35 hours on its own or continuously when powered from a mains-to-USB style adaptor or from a computer. Digital output via a USB mini B socket is available plus analog ac (or dc) voltage output through a 2.5mm jack socket to connect the **CEL-246** to other external computers or recorders. Standard or computer output kits are available to the optional dB24 software package.

Digital Logging Sound Level Meter Type 2 with standard accessories  
Acoustic calibrator Class 2 114 dB at 1 kHz  
Foam windscreen to protect against wind induced interference  
Attaché foam lined kit case for meter and standard accessories  
USB mini B cable from meter to computer for remote power/download  
dB24 software for data logging and download as a text format file

Standard sound level meter kit including meter, calibrator, windscreen and kit case plus various accessories, batteries, wrist strap etc.  
All items in K1 kit plus CMC51 USB cable to pc plus dB24 software  
Pack of 6 x CEL-246 sound level meters for larger bulk purchases

<b>Technical Specification - General</b>	
Accuracy:	ANSI S1.4 & S1.43 Type 2, IEC 61672-1 2002-5
Microphone type:	¼" Electret mic. in standard ½" fixed housing
Reference Conditions:	68°F (20°C) air temperature, 65% Relative Humidity, 1013 mbar (101.325 kPa) atmospheric pressure.
Operating Temperature Range:	32 to 104°F (0 to 40°C) (Class 2)
Effect of Humidity:	Less than ±0.5dB over the range 30 to 90% RH (non-condensing), rel. to value at ref. conditions
Operating pressure range:	650 to 1080 mbar (65 to 108 kPa)
Batteries:	3 x AA Alkaline or rechargeable types
Battery Life: (hours)	At least 35 hours
Dimensions w x h x d: (in/mm)	2.8 x 8.3 x 1.2 in (71.5x 212.0x 31.0mm) including preamplifier and microphone
Weight including batteries: (oz/gm)	8.8 oz (< 250g)
Operator controls:	buttons for power On/Off and 2 x context sensitive menu selection plus initial configuration screen

\*\*\* Every CEL-246 is supplied with an initial individual calibration and conformance certificate plus a foam windscreen and wrist strap and 3 x AA batteries + operator manual on cdrom

<b>Technical Specification - Performance</b>	
Total measurement range (dB)	30 to 130
Dynamic span on single range (dB)	70
Number of measurement ranges - 2 ranges	(30 – 100 & 60 – 130)
Noise floor (A weighted dB)	< 33
Frequency weightings	A and C
Time weightings	Slow, Fast and Impulse
Displayed parameters always available on all user available screens	Instantaneous level - Lp, Maximum level – Lmx Time average level – Leq or Lavg
Reset of maximum level from key press by user	Yes – with non-decaying max hold
Display type	128 x 128 dot matrix LCD digital including real-time analog bar graph scale
Display resolution – numeric (dB)	0.1
Display resolution – graphical (dB)	1
Update rate for display (seconds)	0.5
Displayed time span for time history chart (minutes)	Last 1 or 5
Calibration method	Automatically recognized by meter
Signal detected when calibrator placed over mic.	Calibration level set to 114.0 or 94.0 dB
External power option (5 Vdc)	Yes with CMC51 cable via USB socket
Analog outputs	AC (and optional DC) via 2.5 mm jack socket
AC output characteristics - (Provided for DAT tape / PC wav file recording or headphone applications)	Approx 0.85V RMS FSD output on selected sound level measurement range. Minimum load impedance 22kΩ.
DC output characteristics - (Provided at time of order as option for connection to chart recorder or pc data logging system)	0 to 1.3V DC for FSD on selected range. Output corresponds to selected frequency and time weighting. 2kΩ Output impedance
Digital output	USB 2.0 format of instantaneous sound level via 'mini B' USB socket (also powers meter)
Digital output characteristics – (real time current value output once per second)	Instantaneous SPL output (software required) as per selected frequency and time weightings.
Memory storage in up to 100 separate runs with date and time stamp from internal real time clock	Up to 65,000+ samples per run of 1, 2, 5 or 10 sec. average sound level to a max. of 419,000 samples