

**County of Santa Clara  
Department of Environmental Health**

**First Quarter 2017 Noise Monitoring Report for  
Lehigh Southwest Cement Company  
24001 Stevens Creek Blvd.  
Cupertino, CA 95014**

In the first quarter of 2017 the Department of Environmental Health (DEH) received six complaints related to noise in the vicinity of the Lehigh Cement Plant. We performed six different measurements in six different locations as presented in Table 1 below.

**Table 1 - LEHIGH NOISE MONITORING - FIRST QUARTER 2017**

<b>DATE AND TIME</b>	<b>LOCATION</b>	<b>dB(A) NOISE MEASUREMENT*</b>	<b>BACKGROUND NOISE OBSERVATIONS / COMMENTS /</b>
1/6/17 5:48 am	Voss Avenue <sup>1</sup>	45.0	Observed owl sounds during monitoring and was the dominant sound, also observed plane flyover, Lehigh Cement was barely audible. Not a violation.
1/29/17 4:00 am	Lebanon Drive	47.2	No background noise. Lehigh Cement was the dominant noise, a violation of the County Noise Ordinance.
2/19/17 12:55 am	Lebanon Drive <sup>1</sup> (Different location on Lebanon Dr.)	38.0	Faint sound of crickets, a few cars passed by and a few planes passed over. Cement plant was barely audible. Not a violation.
3/19/17 10:09 pm	Voss Avenue (Different location on Voss Avenue) <sup>1</sup>	40.1	Multiple plane flybys; Lehigh Cement was barely audible. Not a violation.
3/26/17 11:08 pm	Black Oak Way <sup>1</sup>	39.9	Several plane flybys, Lehigh Cement plant was barely audible. Not a violation.
3/31/17 10:06 pm	Medina Court	46.2	No cricket or other animal noises, several plane flybys, Lehigh Cement was audible and the dominant noise source, violation of the County Noise Ordinance.

<sup>1</sup> – Not a violation due to background noise, Lehigh Cement plant was barely audible.

\* Noise meter Session Reports included in Attachment 1 and expressed as L<sub>eq</sub>

**County of Santa Clara  
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**Conclusion**

Based upon our review of the data shown above DEH concludes that when the noise monitoring occurred, the Plant was operating in violation of SCC Noise Ordinance on two occasions, on 1/29/17 and 3/31/17.

# Session Report

1/6/2017

## Information Panel

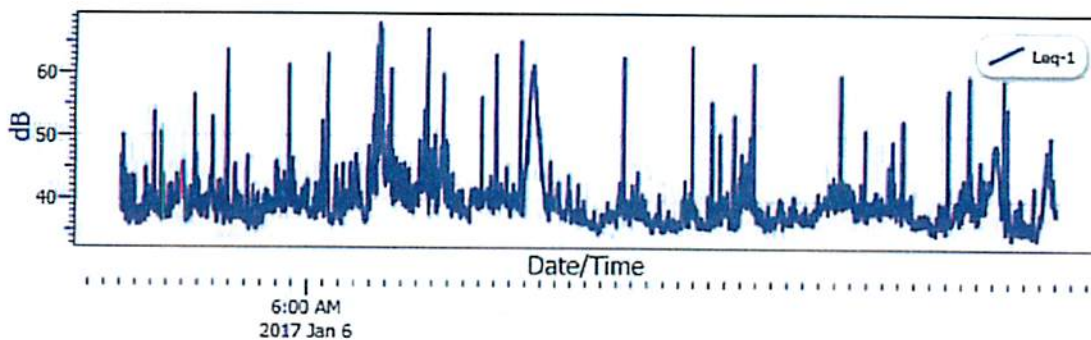
Name Lehigh Cement Noise Survey  
Start Time 1/6/2017 5:48:02 AM  
Stop Time 1/6/2017 6:48:02 AM  
Device Name BGK120021  
Model Type SoundPro DL  
Device Firmware Rev R.13H  
Comments Noise was measured on Voss Avenue in Cupertino, CA  
Observed a few plane flyby's and sporadic owl noise.  
The weather was clear and cold.  
No wind was observed.

## Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	45 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	FAST	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	C
Response	2	FAST			

## Logged Data Chart

Lehigh Cement-Voss Ave: Logged Data Chart



## Calibration History

Date	Calibration Action	Level	Cal. Model Type	Serial Number	Cert. Due Date
1/6/2017 5:13:34 AM	Calibration	113.9	QC-10	Q1L010123	5/19/2017



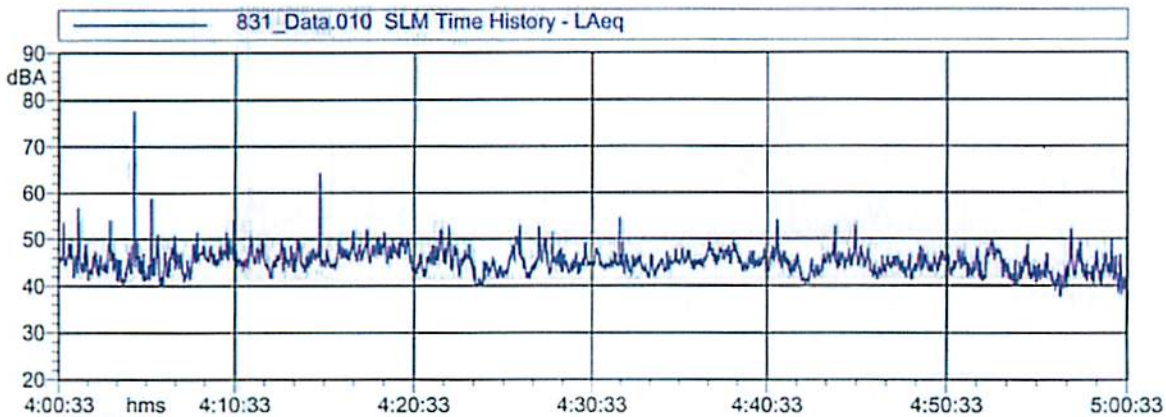
County of Santa Clara  
Department of Environmental Health  
Noise Compliance Program

Measurement Time: 4:00:33 AM  
Location: Lebanon Drive; Cupertino, CA  
Measurement Name: 831\_Data.010 SLM Time History  
Instrumentation: 831 0004340  
Duration: 3600.0  
Operator Name: Peder W Eriksson Jr  
Measurement Date: 1/29/2017

L90.0: 42.1 dBA

$L_{Aeq} = 47.2 \text{ dB}$

Annotation:



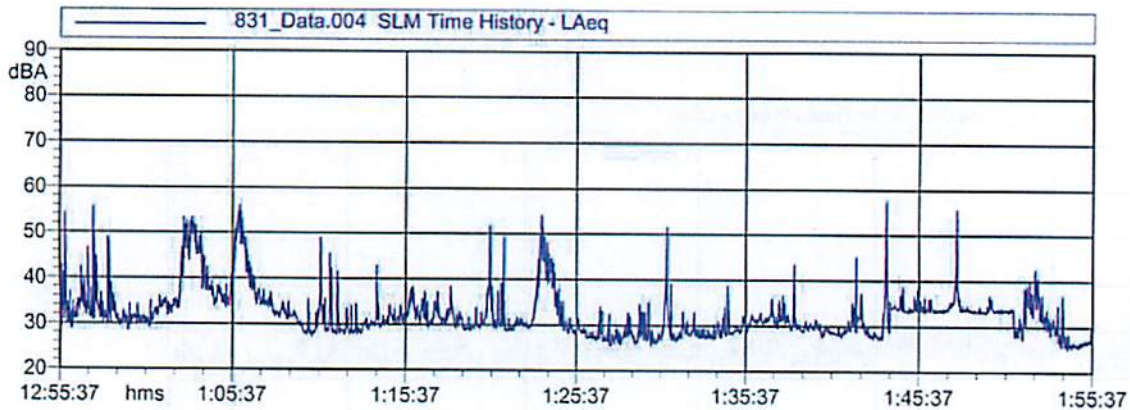
County of Santa Clara  
Department of Environmental Health  
Noise Compliance Program

Measurement Time: 12:55:37 AM  
Location: Lebanon Drive; Cupertino, CA  
Measurement Name: 831\_Data.004 SLM Time History  
Instrumentation: 831 0004340  
Duration: 3600.0  
Operator Name: Peder W Eriksson Jr  
Measurement Date: 2/19/2017

L90.0: 27.5 dBA

Annotation:

$L_{Aeq} = 38.0 \text{ dB}$



 **LARSON DAVIS**  
A PCB PIEZOTRONICS DIV.

Larson Davis, a division of PCB Piezotronics, Inc.  
3425 Walden Avenue, Depew, New York 14043 USA  
Toll-Free Phone: 888-258-3222 [www.larsondavis.com](http://www.larsondavis.com)



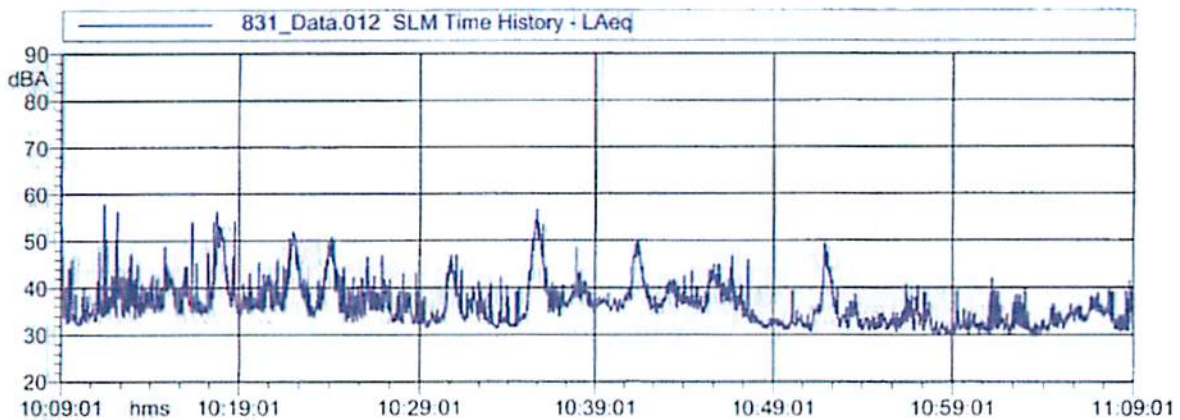
County of Santa Clara  
Department of Environmental Health  
Noise Compliance Program

Measurement Time: 10:09:01 AM  
Location: Voss Avenue; Cupertino, CA  
Measurement Name: 831\_Data.012 SLM Time History  
Instrumentation: 831 0004340  
Duration: 3600.0  
Operator Name: Peder W Eriksson Jr  
Measurement Date: 3/19/17

L90.0: 31.7 dBA

$L_{Aeq} = 40.1$  dB

Annotation:



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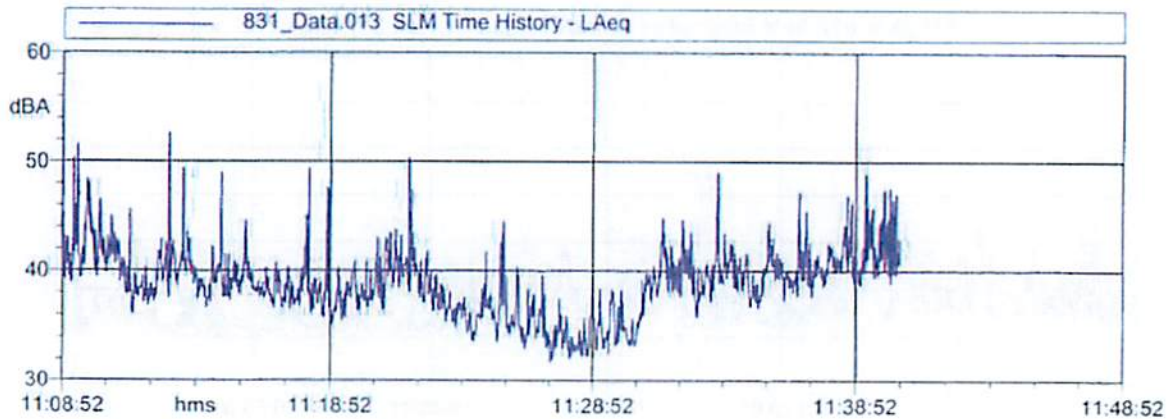
County of Santa Clara  
Department of Environmental Health  
Noise Compliance Program

Measurement Time: 11:08:22 AM  
Location: Black Oak Way; Cupertino, CA  
Measurement Name: 831\_Data.013 SLM Time History  
Instrumentation: 831 0004340  
Duration: 1897.0 (Seconds)  
Operator Name: Peder W Eriksson Jr  
Measurement Date: 3/26/17

L90.0: 34.6 dBA

$L_{Aeq} = 39.9$  dB

Annotation:



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A PCB PIEZOTRONICS DIV.

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Toll-Free Phone: 888-258-3222 [www.larsondavis.com](http://www.larsondavis.com)





County of Santa Clara  
Department of Environmental Health  
Noise Compliance Program

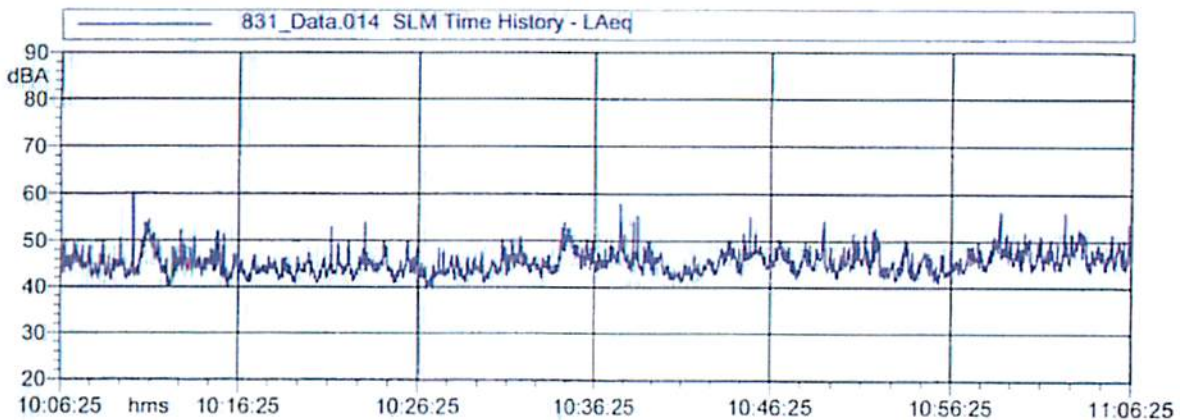
10:06:25 PM

Location: Medina Court; Cupertino, CA  
Measurement Name: 831\_Data.014 SLM Time History  
Instrumentation: 831 0004340  
Duration: 3600.0  
Operator Name: Peder W Eriksson Jr REHS  
Measurement Time: 3/31/2017

L90.0: 42.4 dBA

**L<sub>Aeq</sub> = 46.2 dB**

Annotation:



 **LARSON DAVIS**  
A PCB PIEZOTRONICS DIV.

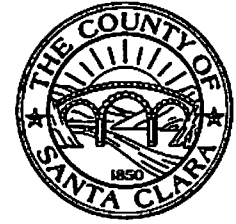
Larson Davis, a division of PCB Piezotronics, Inc.  
3425 Walden Avenue, Depew, New York 14043 USA  
Toll-Free Phone: 888-258-3222 [www.larsondavis.com](http://www.larsondavis.com)



# County of Santa Clara

Department of Environmental Health

1555 Berger Drive, Suite 300  
San Jose, California 95112-2716  
(408) 918-3400  
www.EHInfo.org



February 16, 2017

Lehigh Southwest Cement Company  
Attn.: Sam Barket  
24001 Stevens Creek Blvd.  
Cupertino, CA 95014

**RE: Violation of the Santa Clara County Noise Ordinance Section B11-152**

Dear Mr. Barket:

Since the notice of violation issued on May 5, 2016, additional formal complaints have been filed with the Department of Environmental Health (DEH) alleging that Lehigh Southwest Cement Company (located at 24001 Stevens Creek Boulevard, Cupertino and hereinafter referred to as Subject Property) is allowing an ongoing, steady noise at excessively-loud levels.

Santa Clara County Ordinance Code (Ordinance Code) section B11-152 generally limits noise on the Subject Property, which is in a residential land use area, of no more than 55 dB (A) (decibel A-weighting) between the hours of 7:00 a.m. and 10:00 p.m. In a one or two-family residential area, Section B11-152 limits the permissible noise level to 45 dB (A) between the hours of 10:00 p.m. and 7:00 a.m. the following day. According to Section B11-152(b), if the offensive noise contains a steady, audible tone such as a whine, screech or hum, the limit is reduced by 5 dB (A).

On January 29, 2017, DEH staff took sound level measurements for a period of one hour, starting at 4:00 a.m., on a property located on Lebanon Drive in Cupertino. The attached sound level data sheet and graph indicates that the  $L_{eq}$  value was 47.2 dB (A) for a period of one hour. During that one hour period, there was no background noise (e.g. cricket or other animal noises) except for one plane, one car, and one helicopter that lasted about 30 seconds each. After taking into account extraneous noise sources, the noise level contributed by Lehigh Southwest Cement Company was between 44 and 46 dB (A) based upon our continuous observation during the monitoring period. The noise limit for this monitoring session was 40 dB (A) because the noise contained a steady, audible hum for the entire monitoring period.

This is Lehigh Southwest Cement Company's second notice of violation and third instance of a violation (first violation noted on April 14, 2016 and second violation noted on April 24, 2016). Lehigh Southwest Cement Company is directed to immediately reduce the noise causing the violation on the Subject Property. DEH will reevaluate the sound level on Lebanon Drive within 30 days to confirm that Lehigh

has taken steps to reduce the sound emanating from the Subject Property. Please provide a response to DEH by March 24, 2017 detailing the measures that Lehigh has taken to reduce the noise.

For further information, please contact me at (408) 918-3449.

Sincerely,

A handwritten signature in black ink, appearing to read "Rochelle Gaddi".

Rochelle Gaddi, Acting Director  
Consumer Protection Division

Attachment-Session Report from January 29, 2017

Cc: Rob Eastwood, SCC Planning Department

**Lehigh Hanson**  
HEIDELBERGCEMENT Group

24001 Stevens Creek Blvd.  
Cupertino, CA 95014  
(408) 996-4000

March 24, 2017

VIA EMAIL & CERTIFIED MAIL/RETURN RECEIPT

Ms. Rochelle Gaddi, Acting Director  
County of Santa Clara  
Department of Environmental Health  
Consumer Protection Division  
1555 Berger Drive  
Suite 300  
San Jose, CA 95112-2716

**RE: Lehigh Southwest Cement Company—Permanente Plant  
Update on Sound Reduction Projects**

Dear Ms. Gaddi:

This letter is in response to your February 16, 2017 letter, regarding allegations that Lehigh Southwest Company (Lehigh) Permanente Facility had violated section B11-152 of the Santa Clara County noise ordinance. Lehigh has been performing sound surveys that demonstrate that Lehigh has remained in compliance with the above mentioned ordinance.

I want to reiterate Lehigh's commitment to be a good neighbor in the community, and reassure you and others that we continue to work diligently in finding solutions to further reduce the emissions of sound from the facility into the surrounding community.

In response to your request to explain all past, present and future measures that Lehigh has taken to reduce sound levels in its operation, below is a summary of those actions, including a robust plan of present and near term activities. In addition to various studies and capital investments made, these actions include ongoing communication with the members of the community.

In May 2015, at the request of the Santa Clara County Department of Environmental Health (SCCDEH), Lehigh studied sound levels in and around the plant.

In September 2015, we expanded our sound monitoring study in coordination with SCCDEH. A third party prepared a Sound Compliance Study (SCS) to investigate the noise complaints.

Measurements were collected with SCCDEH's staff in attendance. The study was completed in December 2015 with the following results:

- The study concluded that sound levels from plant operations were in compliance with B11-152 of the Santa Clara County noise ordinance. Sound levels were reduced between May 2015 and September 2015 studies due to the various improvements made at the plant.
- A sound model (CadnaA) was developed to distinguish plant sound levels from other sources.

SCCDEH retained an independent sound expert to peer review the study conducted by the third party. The independent expert verified that the results provided in the SCS were accurate and that Lehigh was in compliance with B11-152 of the Santa Clara County noise ordinance. On December 30, 2015, SCCDEH confirmed that Lehigh was in compliance.

The SCS provided Lehigh with a wealth of data to: assess compliance, identify the main sources creating the highest sound levels around our operations, and establish a baseline for the sound levels produced by the equipment. Since then, Lehigh has continued to work and invest capital to reduce further sound levels at the facility. This is reflected in all the improvements made during the second half of 2015, 2016 and more that are planned for this year. These actions are major capital projects that require engineering, funding and time for planning, procurement and execution.

On June 15, 2016 Lehigh committed to providing updates to SCCDEH about ongoing projects intended to reduce sound levels. As stated in the SCCDEH record (Attachment A), some of these projects are: the modification of Fan 7FA2, Fan 7FA11, Fan 7FA10b, Fan 6FA19 and G-Cooler fans by installing silencers; adding insulating blankets to the G-Cooler and compressor room, and other operational procedures.

These are some of the various projects executed with successful measurable results. In addition to these Lehigh has experimented with fan configurations, and other operational measurements that unfortunately, have not proven viable or effective.

Lehigh continues to look for further sound reduction opportunities. Due to the complexity of this topic, in addition to these investments, and as requested by SCCDEH, we have asked a third party sound specialist to help us:

1. Update and establish a new **Baseline Sound Survey** to obtain operational sound measurements of the current operations. The sound specialists will be taking near-field and far-field measurements. Attachment B contains the proposed onsite and offsite measurements. This will allow us to verify further reductions as we continue to invest in reducing sound levels at the facility.
2. Conduct a **Second Sound Survey** to verify that actions taken to reduce sound levels were effective. This action will generate a report to compare baseline measurements and those

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taken after implementation of actions to further reduce sound levels. All sound level measurements will be performed in accordance with ANSI S1.4, S1.13, and S12.18.

3. **Develop a Sound Monitoring Program Manual** to support the development of Lehigh's sound monitoring program. The monitoring program is hereby provided to the Santa Clara County Department of Environmental Health as an enclosure to this submittal (Attachment C). This will ensure continuity in the implementation of the program with various plant personnel. The manual will include information and instructions on the following:
  - a. Definitions of acoustical terminology
  - b. Guidelines for taking sound level measurements per ANSI standards
  - c. Configuration settings for Larson Davis LxT sound level meter
  - d. Sound level measurement procedures
  - e. Map of sound measurement locations
  - f. Baseline sound levels from previous sound study at each location
  - g. Downloading and processing data
  - h. Sound measurements field data sheets
4. **Conduct Training for Sound Monitoring Program.** The objective of this training is to educate Lehigh personnel on the operation of the Larson Davis LxT sound level meter and proper measurement and reporting procedures.

Lehigh expects that these actions will generate additional data for the company, the authorities and neighbors to objectively identify sound levels related to our facility and record the progress of our improvement actions.

In addition to this, Lehigh would like to reiterate our commitment to fostering an open dialogue with the surrounding community. To this effect, Lehigh hosted two neighbors to observe the plant operations. During their visit, in May 2016 Lehigh's personnel jointly took sound level measurements around the plant. To further enhance this commitment, Lehigh is evaluating the implementation of a "community mailbox" where members of the community can log complaints, request information and make suggestions that help to further reduce sound levels.

This course of action demonstrates Lehigh's ongoing commitment to enhancing community relations and improving the local environment. Lehigh welcomes any additional input that the SCCDEH provides to enhance the planned activities. Please feel free to contact me anytime at 408-996-4269 if you have comments, or if you would like more information.

Sincerely,

**Sam Barket**

Digitally signed by Sam Barket  
DN: cn=Sam Barket, o=Lehigh SW  
Cement, ou=Lehigh Hanson Cement,  
email=Sam.Barket@LehighHanson.c  
om, c=US  
Date: 2017.03.24 16:29:33 -0700

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Sam Barket  
Environmental Manager

**Enclosure**

**Attachment A - Updates to SCCDEH about ongoing projects intended to reduce sound levels.**

**Attachment B – Map of on-field and off-field measurements**

**Attachment C – Lehigh's sound monitoring plan**

**cc (via email):**

**Kari Saragusa, Lehigh**

**Denzil Cotera, Lehigh**

**Keith Krugh, Lehigh**

**Ana Damonte, Lehigh**

**Erika Guerra, Lehigh**

**ATTACHMENT A**

**UPDATES TO SCCDEH ABOUT  
ONGOING PROJECTS INTENDED TO  
REDUCE SOUND LEVELS**



# Lehigh Hanson

HEIDELBERGCEMENT Group

24001 Stevens Creek Blvd.  
Cupertino, CA 95014  
(408) 996-4000

June 15, 2016

VIA CERTIFIED MAIL/RETURN RECEIPT  
7015 0640 0007 4329 0570

Mr. Michael Balliet, Director  
Santa Clara County  
Department of Environmental Health  
Consumer Protection Division  
1555 Berger Drive, Suite 300  
San Jose, CA 95112-2716

**RE: Lehigh Southwest Cement Company—Permanente Plant  
Update on Noise Projects**

Dear Mr. Balliet:

On June 2<sup>nd</sup> Lehigh Southwest Cement Company responded to allegations that the Permanente facility had violated section B11-152 of the Santa Clara County noise ordinance. In that response, Lehigh committed to performing noise attenuation projects to reduce the emissions of noise into the surrounding community. This letter provides a summary of those activities to date.

The table, below, presents a list of noise attenuation projects. Each line includes sound level measurements taken both prior to and subsequent to project completion. Sound level readings were taken using an Extech Instruments Sound Level Meter #407732.

### Projects Summary

Equipment Description	Project Description	Reading Before (dBA)	Reading After (dBA)
G-Cooler Insulation	Installed 1100 square feet of sound insulating blankets to G-cooler structure (11 @ 4' X 25')	83.5	77.9
Compressor Room	Operational change: closed north door to restrict sound escape	85.3	76.8
Compressor Room	Installed 360 square feet of double-thickness sound insulating blankets (9 @ 4' X 10')	88	78.9

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This information has also been communicated to a local resident of Firwood Avenue, Mr. Karim Sharif, who has voiced complaints about noise from the facility in the past.

Lehigh proposes to provide the Santa Clara County Department of Environmental Health with periodic updates regarding further noise attenuation projects at the facility. These projects demonstrate Lehigh's ongoing commitment to enhancing community relations and improving the local environment.

Please feel free to contact anytime at 408-996-4269 if you have comments, or would like more information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sam Barket", written over a horizontal line.

Sam Barket  
Environmental Manager

cc (via email):

Kari Saragusa, Lehigh  
Denzil Cotera, Lehigh  
Alan Sabawi, Lehigh  
Ana Damonte, Lehigh

**Lehigh Hanson**  
HEIDELBERGCEMENT Group

24001 Stevens Creek Blvd.  
Cupertino, CA 95014  
(408) 996-4000

July 18, 2016

VIA CERTIFIED MAIL/RETURN RECEIPT  
7015 0640 0007 4329 0761

Mr. Michael Balliet, Director  
County of Santa Clara  
Department of Environmental Health  
Consumer Protection Division  
1555 Berger Drive  
Suite 300  
San Jose, CA 95112-2716

**RE: Lehigh Southwest Cement Company—Permanente Plant  
Update on Noise Projects**

Dear Mr. Balliet:

On June 15, 2016, Lehigh Southwest Cement Company (Lehigh) committed to providing updates to the Santa Clara County Department of Environmental Health about ongoing projects intended to reduce the emissions of noise from the facility into the surrounding community. This letter details the past month's progress in that regard.

An on-site sound measurement survey had previously identified four (4) sources as creating the highest sound levels at the facility. These sources are identified below. Please note that the "FA" designation indicates that the source is a fan.

- 6FA19 (finish mill draft fan)
- 7FA10b (a dust collector fan)
- 7FA11 (a dust collector fan)
- 7FA21 (provides ventilation for tunnel number 3)

Lehigh has been in contact with dB Noise Reduction Inc. of Ontario, Canada, about the design and purchase of sound suppressors for these devices. Lehigh has provided them with detailed performance information on each source, and has received design proposals from dB Noise Reduction for a suppressor for each source. These proposals are under review. Upon acceptance by Lehigh, the manufacturer requires 6-8 weeks for construction of the devices.

These projects demonstrate Lehigh's ongoing commitment to enhancing community relations and improving the local environment.

Please feel free to contact me anytime at 408-996-4269 if you have comments, or if you would like more information.

Sincerely,



Sam Barket  
Environmental Manager

cc (via email):

Kari Saragusa, Lehigh  
Denzil Cotera, Lehigh  
Alan Sabawi, Lehigh  
Ana Damonte, Lehigh

**Lehigh Hanson**  
HEIDELBERGCEMENT Group

24001 Stevens Creek Blvd.  
Cupertino, CA 95014  
(408) 996-4000

November 30, 2016

VIA CERTIFIED MAIL/RETURN RECEIPT  
7015 1520 0001 8270 3543

Mr. Michael Balliet, Director  
County of Santa Clara  
Department of Environmental Health  
Consumer Protection Division  
1555 Berger Drive  
Suite 300  
San Jose, CA 95112-2716

**RE: Lehigh Southwest Cement Company—Permanente Plant  
Update on Sound Reduction Projects**

Dear Mr. Balliet:

On June 15, 2016, Lehigh Southwest Cement Company (Lehigh) committed to providing updates to the Santa Clara County Department of Environmental Health about ongoing projects intended to reduce the emissions of sound from the facility into the surrounding community. This letter details the recent progress in that regard.

As mentioned in past submittals, Lehigh is working to install sound suppressors on the first four (4) devices listed in the table, below. These sound suppressors have been delivered; installation is complete on the first 3, and the final suppressor is being installed today.

The table also lists projects completed on two (2) other sound sources, the G-Cooler and the compressor room. These projects include installation of sound insulating blankets and process changes (i.e., keeping the door closed at all times, unless it must be opened for maintenance access). Also included in the table are sound measurements taken prior to and subsequent to project completion for each source. Please note that a follow-up measurement of sound from fan 6FA19 will be taken upon project completion.

In addition, Lehigh experimented with changing the booster fan blade pitch angles. In September the fan blade angles were reduced from 25° to 16° in the hope that this would reduce turbulence and, therefore, sound frequency and amplitude. Unfortunately, the booster fan was unable to produce enough draft in the duct using this configuration to be functional, so the blade pitch was

**Santa Clara County, Department of Environmental Health  
Update on Sound Reduction Projects**

returned to its previous configuration. Lehigh continues to investigate additional options to reduce sound from the kiln stack booster fan.

<b>Source</b>	<b>Modification</b>	<b>Sound Before (dBA)</b>	<b>Sound After (dBA)</b>
7FA21	Suppressor	92.2	78.4
7FA11	Suppressor	100	83.3
7FA10b	Suppressor	104.3	103.1
6FA19	Suppressor	99.5	In progress
G-Cooler	Insulating blankets	82.5	77.9
Compressor room, north door	Closed door during normal operation	85.3	76.8
Compressor room	Insulating blankets	88	78.9

As recommended by the County in its August 17<sup>th</sup> letter, Lehigh is working with sound engineers from Burns and McDonnell to develop a formal sound monitoring program. The monitoring program will be provided to the Santa Clara County Department of Environmental Health when it is finalized.

This course of action demonstrates Lehigh's ongoing commitment to enhancing community relations and improving the local environment. Please feel free to contact me anytime at 408-996-4269 if you have comments, or if you would like more information.

Sincerely,

---

Sam Barket  
Environmental Manager

cc (via email):

Kari Saragusa, Lehigh  
Denzil Cotera, Lehigh  
Keith Krugh, Lehigh  
Ana Damonte, Lehigh

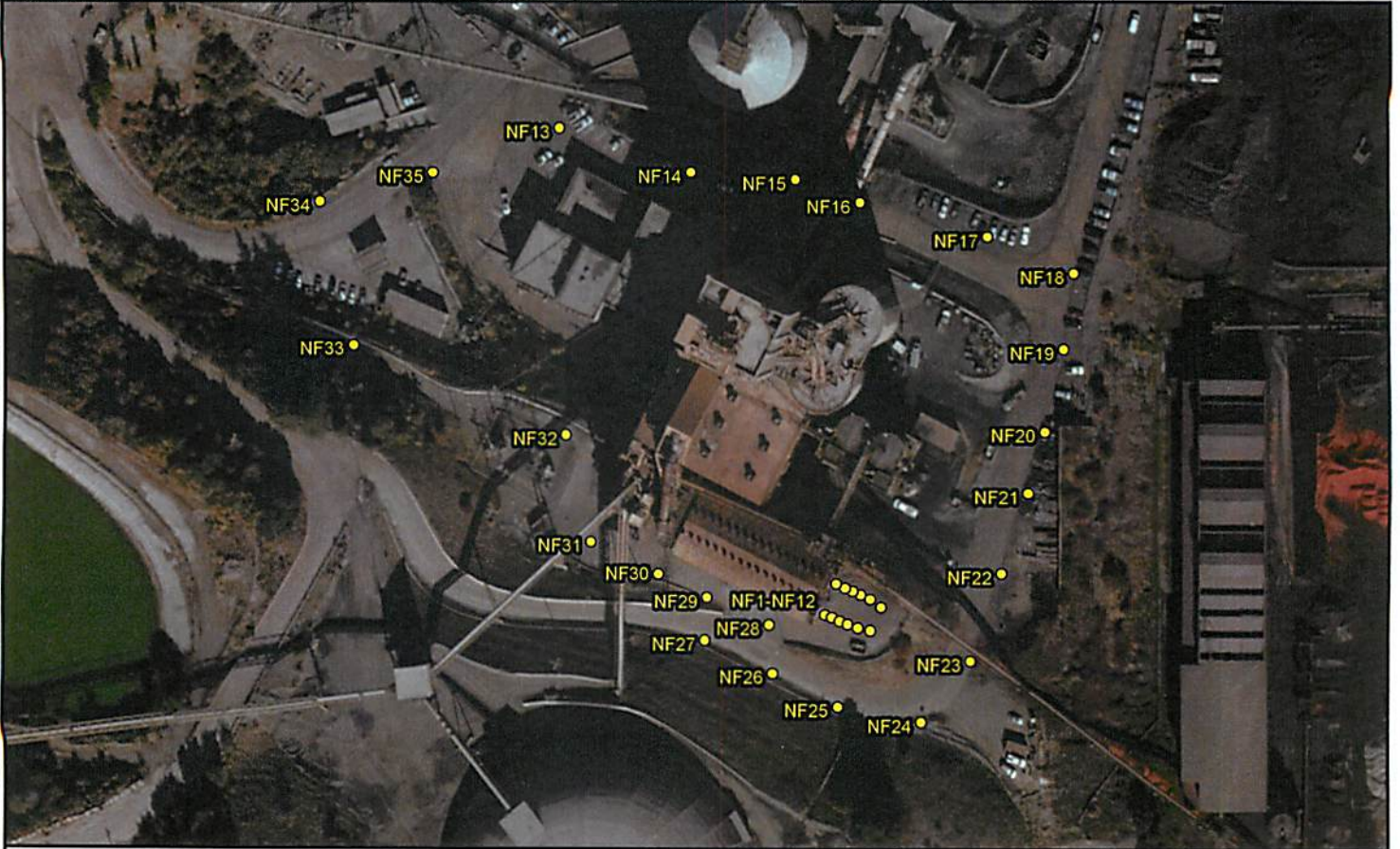
## **ATTACHMENT B**

# **MAP OF ON-FIELD AND OFF-FIELD MEASUREMENT LOCATIONS**



<ul style="list-style-type: none"><li>● Onsite Measurement Points</li><li>● Offsite Measurement Points</li></ul> <p>1,000 500 0 1,000 Scale in Feet</p>		<p>Far-Field Measurement Points</p> <p>CONFIDENTIAL Attorney Client Privileged</p>
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<p>● Near-Field Measurement Points</p>	<p>Scale in Feet</p>		<p>Onsite Near-Field Measurement Points</p> <p>CONFIDENTIAL Attorney Client Privileged</p>
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**ATTACHMENT C**  
**LEHIGH'S SOUND MONITORING PLAN**

### Conduct Quarterly Sound Survey

This procedure describes how to conduct the quarterly sound survey. Ten-minute sound measurements are logged at three (3) different locations around the plant site. NOTE: before coming to the plant, call the control room (408-996-4269) and verify that the kiln is running.

- **Responsibility**—Environmental engineer, or designee.
- **Applicability**—Sound survey.
- **Affected Area**—Environmental department.
- **Frequency**—Quarterly.
- **Procedure**
  - 1) Trained and qualified Lehigh personnel shall collect noise measurements.
  - 2) Noise measurements shall be taken during the nighttime period of 10:00 PM to 7:00 AM to quantify sound levels when non-facility noise is minimal. One measurement will be taken at each selected location.
  - 3) Confirm with the control room operator that the facility is fully operational prior to taking measurements: measurements shall be taken when the cement kiln is operating, and the exhaust stack fan is operating within the range of 700 to 900 revolutions per minute (rpm), which is representative of typical operations.
  - 4) You will need the following equipment:
    - i. 4WD vehicle;
    - ii. Larson Davis LxT1 sound level meter kit;
    - iii. [Sound Monitoring Program field data sheet](#) (attached);
    - iv. Clipboard;
    - v. Anemometer (inside the meter kit);
    - vi. Tripod;
    - vii. Flashlight;
    - viii. Pen.
  - 5) Prepare the sound level meter:
    - i. Turn the meter on by pressing the “On/Off” button;
    - ii. If the meter doesn’t stay on, replace the batteries<sup>1</sup>;
    - iii. The time response of the meters shall be set to “slow” (the A-weighting filter network shall be used for all overall sound level measurements; the sound level measurements shall include, at a minimum, the minimum, average, and maximum A-weighted sound levels recorded throughout the measurement period).
    - iv. Calibrate the meter:
      1. Turn on the calibrator;

<sup>1</sup> Four (4) spare AA batteries are kept in the meter kit.

**Conduct Quarterly Sound Survey**

2. Set it to 94 dB;
  3. Place the calibrator over the end of the microphone;
  4. After it reaches a steady number, read the value in dB;
  5. Record the value at the top of the field data sheet under "Cal Before." NOTE: the calibrator turns off automatically.
- 6) Record the following information on the field data sheet:
- i. Date;
  - ii. Name (printed);
  - iii. Signature;
  - iv. Kiln operating rate (tons per hour)<sup>2</sup>;
  - v. Kiln booster fan speed (rpm).
- 7) Conduct sound measurements:
- i. Proceed to a measurement point<sup>3</sup> (the [Sound Monitoring Program locations map](#) is attached):
    1. Sound level measurements shall be recorded during a period of minimal background influence, i.e. between vehicle passes, aircraft flyovers, train passes, and other discrete non-facility sources. The measurement may be paused during such discrete noise sources if necessary to limit non-facility interference. Non-facility noise sources that are audible during measurements but unavoidable shall be noted on the documentation form. Care shall be exercised to assure that the measurement position is free from excess reflections due to walls, columns, or other equipment, and from significant shadowing effects. Care shall also be taken to minimize the effect of airflow from fans, vent discharges, strong electric or magnetic fields, etc.
    2. Noise measurements shall be made with the sound level meter mounted on a tripod, and the microphone positioned approximately 5 feet above the ground; the microphone shall be pointed at the proper angle relative to a line-of-sight to the source.
    3. Remove tripod from pouch and fully extend the legs;
    4. Place it on the ground so that nothing is between it and the stack, and nothing (such as a vehicle) is directly behind it;

<sup>2</sup> Obtain kiln operating rate and booster fan speed from the control room operator.

<sup>3</sup> Noise monitoring shall be performed at the measurement locations designated MP1 through MP3, shown in Attachment 1. These locations are recommended because they were used in the December 2015 study and baseline monitoring data exists. In addition, each location is in sufficient proximity to the facility's noise-generating equipment that facility noise will tend to dominate extraneous noise sources, and thus allow for consistency in results, ease of measurement, and avoid the need for additional methodologies to distinguish facility noise from other sources.

**Conduct Quarterly Sound Survey**

5. Attach the oval mounting bracket (see photo, below) to the top of the tripod by screwing it onto the mounting stud at the top of the tripod;
  6. Raise the tripod extension to its fullest height using the hand crank;
  7. Attach the mounting flange (see photo, below) to the back of the sound meter by screwing it in beneath the battery cover;
  8. Place the flange collar down over the aluminum mounting bracket stud, then tighten the knob.
- ii. Position the meter:
1. The angle of the microphone shall be as specified by the manufacturer as that angle for which the microphone has the most uniform frequency response;
  2. The observer shall not stand between the microphone and the source, and shall stand behind and to one side of the microphone at all times during the actual noise testing periods;
  3. Adjust the position of the meter so that the microphone is pointed directly at the stack, *then rotate it to either side about 30 degrees*;
  4. Add the wind screen (the spherical foam attachment).
- iii. Begin recording:
1. The duration of measurement shall be a minimum of 10 minutes, which is commonly considered a sufficient amount of time to represent noise over an hour time period;
  2. The noise meter shall collect and save sound level measurements every second for the entire 10 minute measurement period;
  3. Press the black arrow on the left of the "Run/Pause" button;
  4. Verify that the animated run arrow is lit to the right of the battery indicator.
- iv. Use the thermo-anemometer to view and record (on the field data sheet) the following weather data (see [anemometer SOP](#)):
1. Temperature (°F);
  2. Relative humidity (%);
  3. Wind speed (mph) and gust;
  4. Wind direction (degrees);
  5. Measurements shall not be taken when the average wind velocity exceeds 7 miles per hour (3 meters per second) measured 5 feet (1.5 meters) above the ground, or if humidity is greater than 90 percent; no measurements shall be collected during rain events; sound measurements shall not be made under any condition that allows the instrumentation to become wet (i.e. when raining or snowing).
- v. Finish logging data:

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1. After 10 minutes<sup>4</sup>, press the “Stop/Store” button twice;
  2. At the “Save File” query, highlight “Yes” then press “Enter.”
- 8) Repeat steps 6 & 7 for the remaining measurement points.
- 9) Calibrate the meter:
- i. Turn on the calibrator, set at 94 dB;
  - ii. Place the calibrator over the end of the microphone;
  - iii. Read the value in dB;
  - iv. Record the value at the top of the field data sheet under “Cal After.” NOTE: the calibrator turns off automatically.
- 10) After all readings are completed, turn off the meter by pressing and holding the “On/Off” button until it shuts off.
- 11) Replace and store all equipment.

• **Records**

- 1) Download logged data.
- 2) Lehigh shall provide DEH with a report of the monitoring results collected during the preceding calendar quarter. The data will include a table of the measured noise levels, meteorological conditions, and any noted extraneous noises during each measurement. Full octave band and overall dBA data should be included in the report. Overall dBA data should be inclusive of average (Leq) and 90% exceedance sound levels (L90). Field data sheets used should be included. Additionally, the report should include the names of all personnel who conducted and witnessed the testing.

• **NOTES**

- 1) As part of the present sound monitoring program, Burns & McDonnell recommends that the monitoring consist of regular sound level measurements at certain onsite locations. Collecting measurements from these existing “baseline” locations will allow an ongoing comparison between current sound levels and levels recorded during the December 2015 study. Using onsite locations allows the most accurate tracking of the facility noise levels over time while minimizing the influence of extraneous noise sources known to dominate offsite locations. If the sound measured is less than or approximately equal to baseline levels recorded in the prior study, the data indicates that sound emitted from the facility has not increased and that the facility remains in compliance with respect to sound generated by Lehigh at offsite receivers. If sound levels at one or more locations exceed the baseline levels, further investigation may be warranted. Burns & McDonnell recommends the use of the following industry standards to guide the monitoring program with respect to procedures and other details not specifically addressed in

<sup>4</sup> The sound meter will stop recording automatically at 10 minutes.

**Conduct Quarterly Sound Survey**

this letter: the American National Standards Institute, Inc. (ANSI) S1.4, ANSI S12.13, ANSI S12.18, and American Society of Mechanical Engineers (ASME) PTC-36-2004.

- 2) Sound level measurements shall be made using Lehigh's sound level meter. The meter is a Type 1 meter as defined in ANSI S1.4. Type 1 meters are typically used for measuring environmental noise including overall and frequency data. Type 1 meters must meet the tolerances provided in the standard. Wind Screen: A microphone windscreen shall be used for all measurements. The windscreen shall not affect the response of the sound level meter by more than 0.5 decibel (dB) at frequencies below 2,000 Hertz (Hz) and 1.0 dB at frequencies from 2,000 Hz to 10,000 Hz. Anemometer: Wind speed, atmospheric temperature, and relative humidity will be recorded once per each set of field measurements. Calibrator: The sound level meter shall be field-calibrated using a sound level calibrator with accuracy of 0.5 dB. The standard reference sound pressure shall be 20 micropascals. Field calibrations shall be performed before and after each measurement series, and upon any significant change in recording conditions (i.e. battery change operation). The field-calibration frequency shall be 1,000 Hz. A field-calibration level change exceeding 1.0 dB will require that the measurement series be repeated.



Mounting flange



Mounting bracket

Date: \_\_\_\_\_  
Tech Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Operating Conditions: \_\_\_\_\_ tph Fan Speed: \_\_\_\_\_ rpm

Temperature: \_\_\_\_\_ F  
Humidity: \_\_\_\_\_ %  
Wind Speed: \_\_\_\_\_ mph \_\_\_\_\_ mph (gust)  
Wind Direction: \_\_\_\_\_ degrees

**Measurement Point #1**

Location: MP1 (Rock Plant)  
Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Sound Level: Minimum \_\_\_\_\_ dBA Average \_\_\_\_\_ dBA Maximum \_\_\_\_\_ dBA  
Field Notes: \_\_\_\_\_  
\_\_\_\_\_

**Measurement Point #2**

Location: MP2 (RR Tracks)  
Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Sound Level: Minimum \_\_\_\_\_ dBA Average \_\_\_\_\_ dBA Maximum \_\_\_\_\_ dBA  
Field Notes: \_\_\_\_\_  
\_\_\_\_\_

**Measurement Point #3**

Location: MP3 (EMSA)  
Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Sound Level: Minimum \_\_\_\_\_ dBA Average \_\_\_\_\_ dBA Maximum \_\_\_\_\_ dBA  
Field Notes: \_\_\_\_\_  
\_\_\_\_\_

1. Do not take readings in rain or if humidity exceeds 90%.  
2. Give Control Room operator your cell number; have him call you if fan speed changes significantly during inspection (comment in field notes)



Path: Z:\Clients\ESP\LehighSouthw\85239\_Lehigh\Studies\Tech\_Consult\Monitoring Program\Old\Attachment 1 - Monitoring Locations.mxd irbrewe 10/7/2016  
COPYRIGHT © 2016 BURNS & McDONNELL ENGINEERING COMPANY, INC  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



<p>● Measurement Points</p>	<p>NORTH</p> <p>1,000 500 0 1,000</p> <p>Scale in Feet</p>		<p>Figure A-1 Monitoring Locations</p>
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Source: Burns & McDonnell Engineering Company

Issued: 10/7/2016



**Lehigh Hanson**  
HEIDELBERGCEMENT Group

24001 Stevens Creek Blvd.  
Cupertino, CA 95014  
(408) 996-4000

November 30, 2016

VIA CERTIFIED MAIL/RETURN RECEIPT  
7015 1520 0001 8270 3543

Mr. Michael Balliet, Director  
County of Santa Clara  
Department of Environmental Health  
Consumer Protection Division  
1555 Berger Drive  
Suite 300  
San Jose, CA 95112-2716

**RE: Lehigh Southwest Cement Company—Permanente Plant  
Update on Sound Reduction Projects**

Dear Mr. Balliet:

On June 15, 2016, Lehigh Southwest Cement Company (Lehigh) committed to providing updates to the Santa Clara County Department of Environmental Health about ongoing projects intended to reduce the emissions of sound from the facility into the surrounding community. This letter details the recent progress in that regard.

As mentioned in past submittals, Lehigh is working to install sound suppressors on the first four (4) devices listed in the table, below. These sound suppressors have been delivered; installation is complete on the first 3, and the final suppressor is being installed today.

The table also lists projects completed on two (2) other sound sources, the G-Cooler and the compressor room. These projects include installation of sound insulating blankets and process changes (i.e., keeping the door closed at all times, unless it must be opened for maintenance access). Also included in the table are sound measurements taken prior to and subsequent to project completion for each source. Please note that a follow-up measurement of sound from fan 6FA19 will be taken upon project completion.

In addition, Lehigh experimented with changing the booster fan blade pitch angles. In September the fan blade angles were reduced from 25° to 16° in the hope that this would reduce turbulence and, therefore, sound frequency and amplitude. Unfortunately, the booster fan was unable to produce enough draft in the duct using this configuration to be functional, so the blade pitch was

returned to its previous configuration. Lehigh continues to investigate additional options to reduce sound from the kiln stack booster fan.

Source	Modification	Sound Before (dBA)	Sound After (dBA)
7FA21	Suppressor	92.2	78.4
7FA11	Suppressor	100	83.3
7FA10b	Suppressor	104.3	103.1
6FA19	Suppressor	99.5	In progress
G-Cooler	Insulating blankets	82.5	77.9
Compressor room, north door	Closed door during normal operation	85.3	76.8
Compressor room	Insulating blankets	88	78.9

As recommended by the County in its August 17<sup>th</sup> letter, Lehigh is working with sound engineers from Burns and McDonnell to develop a formal sound monitoring program. The monitoring program will be provided to the Santa Clara County Department of Environmental Health when it is finalized.

This course of action demonstrates Lehigh's ongoing commitment to enhancing community relations and improving the local environment. Please feel free to contact me anytime at 408-996-4269 if you have comments, or if you would like more information.

Sincerely,



Sam Barket  
Environmental Manager

cc (via email):

Kari Saragusa, Lehigh  
Denzil Cotera, Lehigh  
Keith Krugh, Lehigh  
Ana Damonte, Lehigh