



**Sound Study
South Windsor Stone & Landscape Supply
287 Strong Road
South Windsor, CT
DPI Project No. 2646**

Prepared by:

**Design Professionals, Inc.
425 Sullivan Avenue
South Windsor, CT 06074**

September 20, 2013

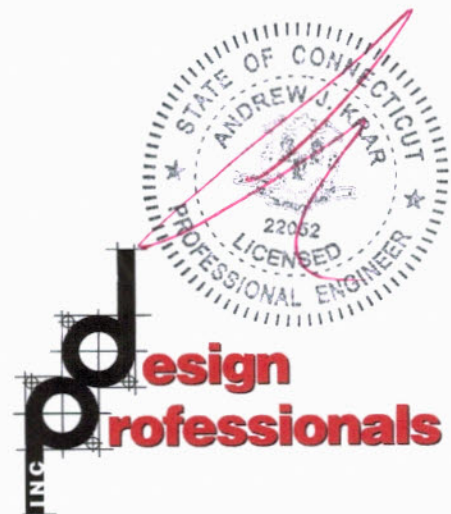


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Introduction

The purpose of this sound study is to outline our findings of sound emissions from business operations at South Windsor Stone & Landscape Supply, LLC located at 287 Strong Road (the site). Measurements were conducted during the morning hours of Friday, September 20th, 2013. The objective was to determine if emitted sound from the site was in conformance with the Town of South Windsor's Noise Pollution Control Ordinance (Town ordinance).

During daytime hours, Town ordinance restricts noise above 61 decibels from industrial uses upon residential property. In the case where background noise exceeds 61 decibels, the industrial use shall not exceed the background noise levels by 5 decibels. The Town ordinance refers to The Connecticut Department of Environmental Protection's "Connecticut Regulations for the Control of Noise".

The Town ordinance also restricts impulse sounds generated from emitter's sites to no more than 100 decibels upon residential properties during daytime hours. The ordinance defines impulse noise as "a sound of short duration, usually less than one second, with an abrupt onset and rapid decay, where said sound is not repetitive".

Sound measurements were taken using a Sper Scientific sound meter, model number 850013. The instrument was calibrated per ANSI/NCSL Z540-1, and ISO/IEC 17025 standards by Sper Scientific on May 29, 2013. All sound measurements reported herein are in decibels at the 'A' weighted scale. Refer to Appendix C for sound meter information.

Sound measurements were conducted in conformance with the "American National Standard's Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-term Measurements with an Observer Present" guidelines as published by ANSI/ASA S12.9-2013/Part 3.

Procedure:

Design Professional's engineer, Andrew Krar, P.E., conducted sound measurements at three locations on residential properties adjacent to the site. The weather was clear, in the low 60's, and negligible wind.

The three sound measurement locations are listed below. Refer to the map presented as Appendix A:

- Front yard of 290 Strong Road (brick house), adjacent to the road and across the street from the site.
- Front yard of 306 Strong Road, adjacent to the road.
- West side yard of 307 Strong Road, adjacent to the CL&P driveway



Sound measurements were conducted at each location during both background and combined noise conditions for approximately 10 minutes. The Town of South Windsor's Zoning Enforcement Officer, Pam Oliva accompanied Mr. Krar during all the measurements. Michele Lipe and Peter DeMallie were also present during portions of the measurements.

Background Sound:

The Town of South Windsor's Noise Pollution Control Ordinance defines background noise as "noise which exists at a point as a result of a combination of many distant sources individually indistinguishable". The Connecticut Department of Environmental Protection (now CT DEEP) further defines background noise statistically as the noise level which is exceeded 90% of the time (L_{90}), in which the measurement is taken.

During the background sound measurements, no operations were taking place at the site. Both the payloader and soil screener were turned off. The only audible sounds emanating from the site were sounds coming from occasional vehicles turning into and out of the driveway.

Combined Sound:

During recording of the combined sound measurements, operations at South Windsor Stone & Landscape Supply were ongoing. The prominent sound sources generated from the site consisted of the following:

- Soil screener
- Payloader transferring topsoil from a stockpile to the soil screener
- Payloader's backup alarm
- Occasional dump truck unloading material to a pile
- One instance of the payloader dumping stone into a customer's pickup truck

Findings

Results demonstrate that the sound emitted from South Windsor Stone & Landscape Supply is in conformance with the Town's ordinance. The readings recorded and observed during the investigation are summarized below and are presented in full as Appendix B:

<u>Location</u>	<u>Condition</u>	<u>Decibels</u>
Site #1 290 Strong Rd.	Background Combined	48.0 (L ₉₀) 54.9 (Average)
Site #2 306 Strong Rd.	Background Combined	47.3 (L ₉₀) 57.0 (Average)
Site #3 307 Strong Rd.	Background Combined	45.9 (L ₉₀) 52.3 (Average)

No impulse sounds in excess of 100 decibels were measured or recorded during any of the sound measurements at any time, from any source. Further findings of impulse sounds are presented below:

- The loudest measured impulse sound was 87.4 decibels. (Truck driving by on Strong Road unrelated to site, while meter was positioned in front yard of 290 Strong Road).
- Loudest measured sound while a dump truck was unloading material on the site was 62.3 decibels. This measurement was taken in front of 306 Strong Road.
- Loudest measured sound while the payloader was dumping stone into a customer's pickup truck was 68.7 decibels. This measurement was taken in the west side yard of 307 Strong Road.

It is noted herein that noise levels generated from South Windsor Stone & Landscape Supply's payloader backup alarm were incorporated into the combined sound measurements. Under section 3d of the Town's ordinance, reference is made regarding sound sources that are excluded from the ordinance. The section refers to the Connecticut Department of Environmental Protection's Regulation for the Control of Noise, sections 22a-69-1.7-1.8. It states that sound created by safety and protective devices do not apply to the regulations. The inclusion of the sound associated with the payloader's backup alarm was done for purposes of conservative approach and simplicity.

Appendix A

MAP



SOUND MEASUREMENT LOCATION #1
BRICK HOUSE



SOUND MEASUREMENT LOCATION #2
#308 STRONG ROAD



SOUND MEASUREMENT LOCATION #3
CLUB DRIVEWAY



TOPSOIL SCREENER/TROMMEL



MAP DETAILS:
EXISTING CONDITIONS INFORMATION SHOWN ON THIS PLAN TAKEN FROM A COMPILED OF SOURCES:
1. "IMPROVEMENT LOCATION PLAN" PREPARED BY DESIGN PROFESSIONALS, INC. DATED 4/27/10
2. ON SITE FIELD MEASUREMENTS AND OBSERVATIONS DURING AUGUST 2013
3. GOOGLE EARTH

DESIGN PROFESSIONALS
TRAFFIC & TRANSPORTATION ENGINEERS
125 South Street, Suite 200, South Windsor, Connecticut 06074
TEL: 860.261.8700 FAX: 860.261.8703
WWW.DESIGNPROFESSIONALS.COM

GRAPHIC SCALE
1 inch = 40 ft.

1" = 40'

REVISIONS

NO.	DATE	DESCRIPTION	BY

PREPARED FOR
287 STRONG ROAD, LLC
287 STRONG ROAD
SOUTH WINDSOR, CONNECTICUT

SOUND MEASUREMENT MAP

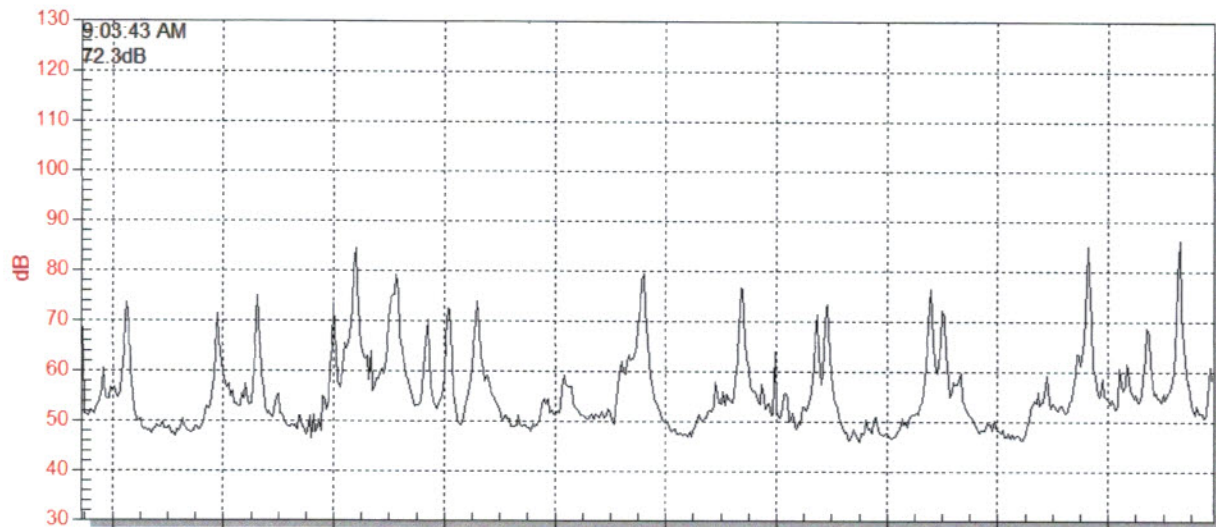
LOCATION: 287 STRONG ROAD
JOB NO.: 2014
DATE: 9/20/13
DRAWN BY: [blank]

SHEET

Appendix B
SOUND DATA

Date: June 20, 2013
Location: Sound measurement location #1 (driveway of brick house)
General Condition: Background sound (nothing operating at site)

Weather: Sunny, 60° F, negligible wind
Atmospheric pressure = 30.06" mercury
Humidity = 85%



Start Time: 9/20/2013 9:03:43 AM
Sampling Rate: 1 second
Data No: 614
Avg.: 55.4
Maximum: 86.1@ 9:13:39 AM
Minimum: 45.9@ 9:10:45 AM

 $L_{90} = 48.0$

Operator Notes:

SWS 85

* Background
Brick house 9:20:

Time	Event	
9:03:44	START	
9:04:07	Truck	* nothing operating at SWS85
9:04:25	car	* no wind
9:05:17	car	* 46.1 lowest observed reading
9:05:59	car	
9:06:09	Truck	
9:06:30	car	
9:06:49	car	
9:07:01	Truck	
9:07:17	car	
9:08:45	bus	
9:09:39	bus	
9:10:21	car	
9:10:26	car	
9:11:22	van	
9:11:29	van	
9:12:47	bus	
9:13:17	car & keeping	
9:13:37	Truck	

SWS 85

Brick house

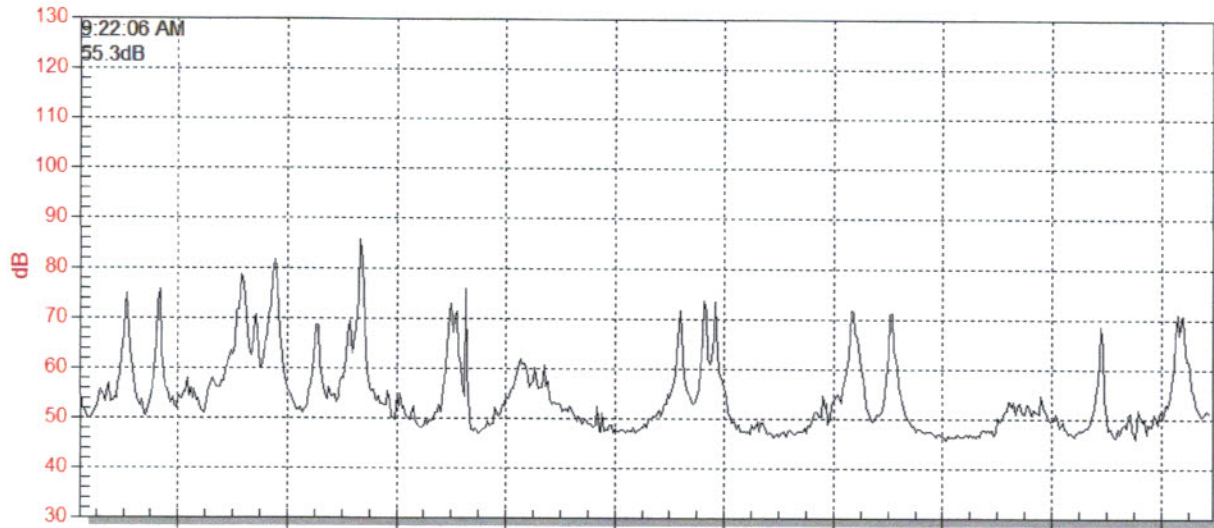
9:20:

Background

Time	Event	
8:55:28	START recording	* payload R operating
8:56:38	car pass	
8:57:01	car pass	
8:57:15	car	
8:57:38	car	
8:58:01	Truck	
8:58:25	car	
8:58:31	car	
8:59:15	car	
9:00:17	car	

Date: June 20, 2013
Location: Sound measurement location #2 (#306 Strong Road)
General Condition: Background sound (nothing operating at site)

Weather: Sunny, 60° F, negligible wind
 Atmospheric pressure = 30.06" mercury
 Humidity = 85%



Start Time: 9:22:06 AM
 Sampling Rate: 1 second
 DataNo: 622
 Avg.: 54.2
 Maximum: 85.7 @ 9:24:40 AM
 Minimum: 45.6 @ 9:30:02 AM

$L_{90} = 47.3$

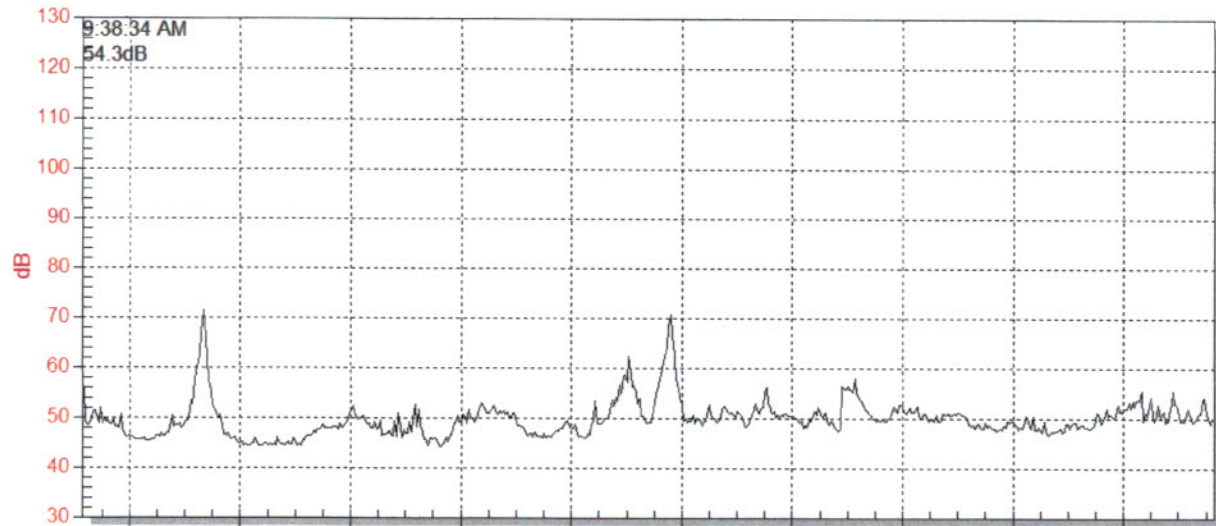
Operator Notes:

SWSBS Backs... #306 6/20/13

Time	Event
9:22:30	start
9:23:30	car
9:23:33	car
9:23:35	bus
9:23:38	car
9:23:40	car
9:23:51	Bus & Car
9:24:16	car
9:24:32	car
9:24:39	Truck
9:24:47	car
9:25:32	car
9:25:38	car
9:26:05	car
9:26:17	car
9:27:33	car
9:27:47	car
9:27:54	car
9:28:08	truck
9:28:30	car
9:28:38	left turn into SWSBS
9:28:45	Train horn 1/2 mile
9:28:58	car
9:29:09	car

Date: June 20, 2013
Location: Sound measurement location #3 (CL&P driveway)
General Condition: Background sound (nothing operating at site)

Weather: Sunny, 60° F, negligible wind
Atmospheric pressure = 30.06" mercury
Humidity = 85%



Start Time: 9:38:34 AM
Sampling Rate: 1 second
Data No: 615
Avg.: 49.8
Maximum: 71.3 @ 9:39:40 AM
Minimum: 44.2 @ 9:41:49 AM

$L_{90} = 45.9$

Operator Notes:

Background
CLBP Drive

9/20/13

Time	Event	
9:38:36	Start	No Wind
9:38:44	car	45.1 low CST
9:39:51	car	observed mag
9:39:26	Truck	
9:39:33	Truck	
9:39:39	CLBP Drive By	
9:40:20	car	
9:41:00	car	
9:41:35	car	
9:41:36	car	
	CLBP Drive By	
9:43:15	car close on bp	
9:43:27	car	
9:43:30	Truck	
9:43:52	CLBP Drive By	
9:44:14	Truck	
9:45:13	Truck Back up at SUSWS	
9:47:52	Truck bump SUSWS	
9:46:53	car & Truck	
9:47:10	Truck	
9:47:51	Back up Brepra	

June 20, 2013

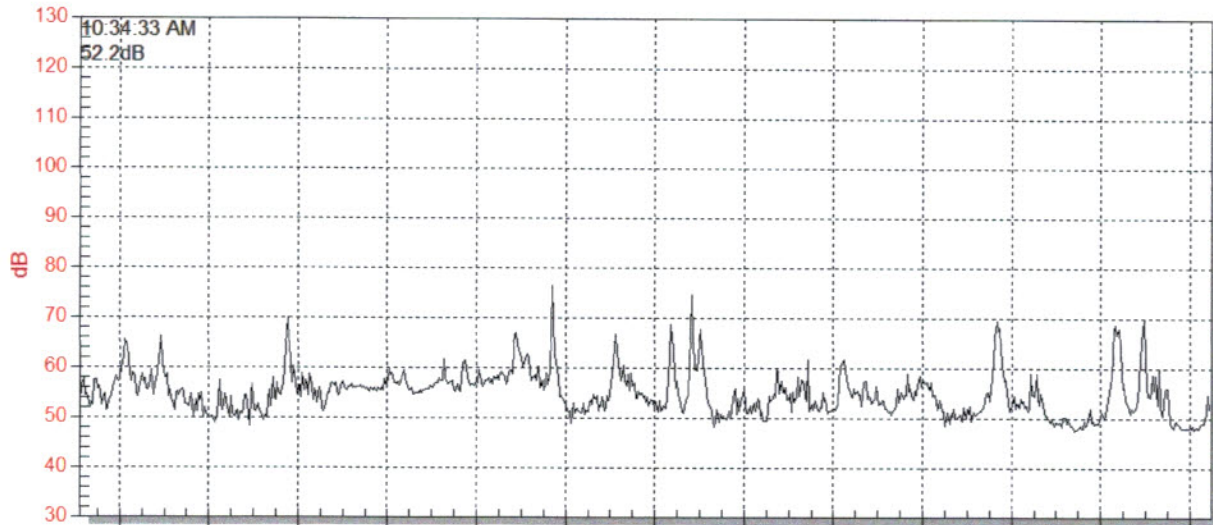
Sound measurement location #1 (brick house)

Combined sound (payloader & screener operating)

Sunny, 60° F, negligible wind

Atmospheric pressure = 30.06" mercury

Humidity = 85%



Start Time: 10:34:33 AM

Sampling Rate: 1 second

Data No: 761

Avg.: 54.9

% tile associated with 61 DbA = 92

Maximum: 76.3 @ 10:39:51 AM (Car passing while payloader was in reverse)

Minimum: 47.4 @ 10:45:42 AM

Operator Notes:

<u>Time</u>	<u>Event</u>	<u>Subs</u>	<u>420</u>
10 34 34	Sta-18		
10 34 40	Recp	10 37 50 car	
10 34 47		10 38 40	
10 35 00		10 39 40	Recp
10 35 03	Truck	10 39 57	
10 35 15	Recp	10 40 31 car	
10 35 37		10 41 09 truck	
10 35 47	car	10 41 22 car	
10 35 50		10 41 29 car	
10 35 58	Recp	10 42 00	Recp
10 36 05		10 42 15	
10 36 27	Recp	10 42 15	Recp
10 36 37	car	10 42 25 - Truck	
10 36 51		10 43 32 - Truck	
10 36 57		10 43 37	
10 37 07	Recp	10 43 38	Recp
10 37 27	car parked in front of 101	10 44 15 Recp	
10 37 37	101	10 44 21	Recp
10 39 35	car	10 44 32	Recp
		10 44 40 car	
		10 44 47 car	

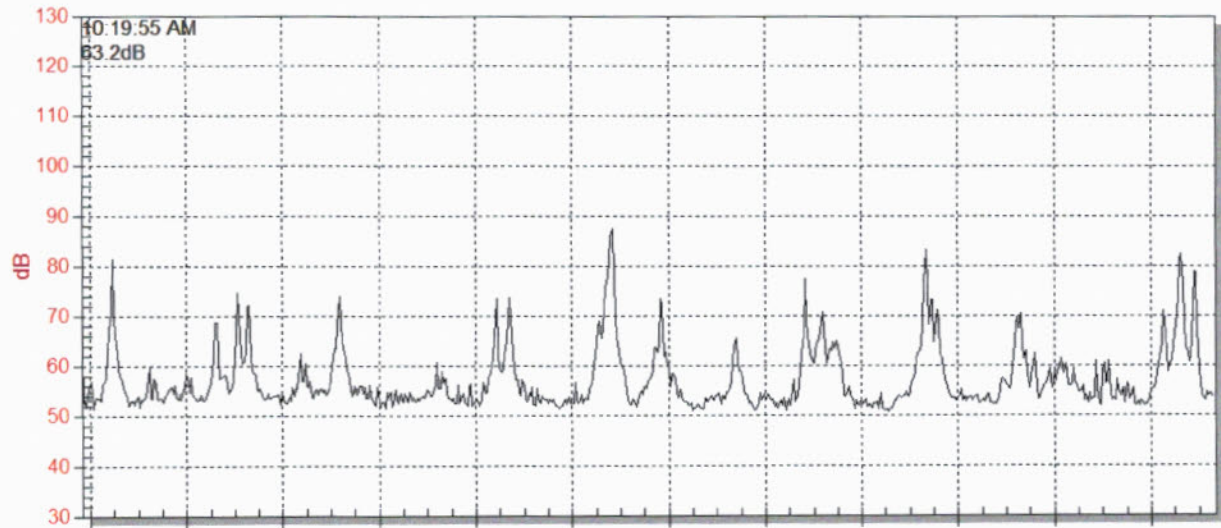
SW845
combined Black
house

9/20/13

<u>Time</u>	<u>Event</u>
10:45:12	car
10:46:10	car
10:46:28	car
10:46:37	Trunk

Date: June 20, 2013
Location: Sound measurement location #2 (#306 Strong Road)
General Condition: Combined sound (payloader & screener operating)

Weather: Sunny, 60° F, negligible wind
Atmospheric pressure = 30.06" mercury
Humidity = 85%



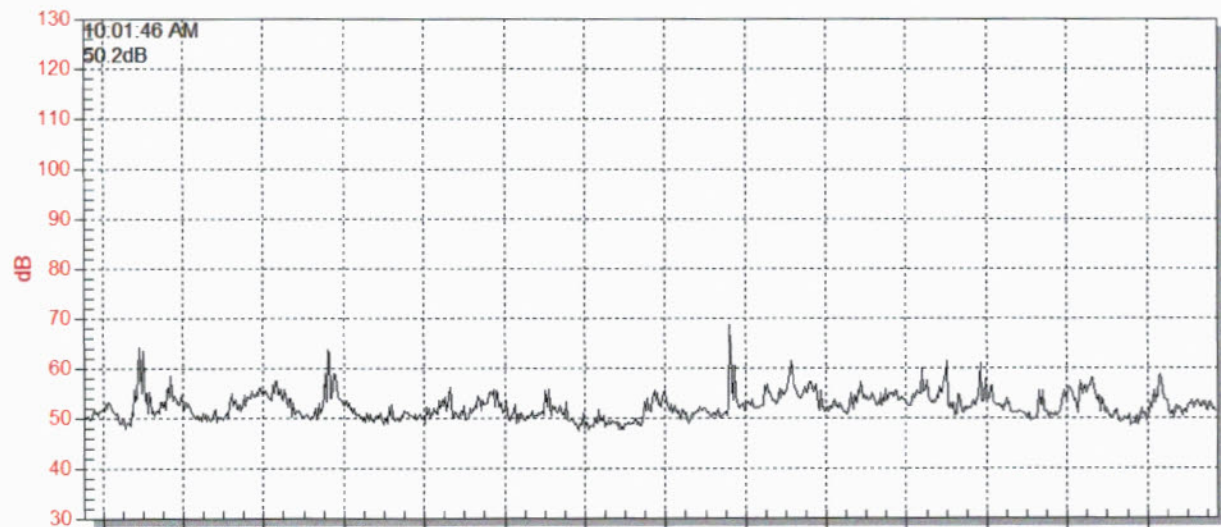
Start Time: 10:19:55 AM
Sampling Rate: 1 second
Data No: 705
Avg.: 57.0 % tile associated with 61 DbA = 81
Maximum: 87.4 @ 10:25:25 AM (Truck drive by)
Minimum: 50.7 @ 10:28:17 AM

Loudest recording while dump truck was dumping & no vehicle drive by = 62.3

[illegible]

Date: June 20, 2013
Location: Sound measurement location #3 (CL&P driveway)
General Condition: Combined sound (payloader & screener operating)

Weather: Sunny, 60° F, negligible wind
Atmospheric pressure = 30.06" mercury
Humidity = 85%



Start Time: 10:01:46 AM
Sampling Rate: 1 second
Data No: 846
Avg.: 52.3 % tile associated with 61 DbA = 99
Maximum: 68.7 @ 10:09:48 AM (Payloader dumping stone in customer's pick up truck
Minimum: 47.5 @ 10:07:55 AM

Loudest recording while dump truck was dumping = 61.3

Time	Event	Notes
10:01:15	Start	
10:04:15	over	
10:04:19	deep	
10:04:43	deep	
10:05:47	deep	
10:07:21	deep	
10:07:27	deep	
10:07:31	deep	
10:07:35	deep	
10:08:17	deep	
10:08:23	deep	
10:08:47	deep	
10:09:01	deep	
10:09:28	deep	
10:09:36	deep	
10:09:53	cast into from truck by	
10:09:50	passenger dumping	
10:10:35	Stone in Cast Truck	
10:12:00	- Load Truck Dump by	
10:13:45	Dump Truck Dumping	
10:13:39	deep	
10:13:45	deep	

Time	Event
10:04:02	Beep
10:04:29	
10:05:08	Beep
10:05:10	
10:05:22	
10:05:28	Beep

Appendix C
SOUND METER INFORMATION

CERTIFICATE OF CALIBRATION

Sper Scientific certifies that the instrument listed above meets the specifications of the manufacture and has been calibrated in a controlled environment at 94.0 dB SPL, single point with a 1 kHz frequency using an instrument which is traceable to the U. S. National Institute of Standards and Technology.

Equipment Used:

Manufacturer	Model	Serial No.	Date Due:
Brüel & Kjær	Type 4231	2169956	1/14/14

This acoustic calibrator has been calibrated using standards with values traceable to the National Institute of Standards and Technology. The calibration of this standard was accomplished using a test system which conforms with the requirement of ANSI/NCSS Z540 -1, ISO/IEC 17025, and the guidelines of ISO 1002-1, Trace Number 1-312603381-308, 1-312603381-101 and 1-302105133-301. Reported values represent expanded uncertainties expressed at approximately 95% confidence level using a coverage factor of K =2. Supporting documentation relative to traceability is on file at this office, and is available for examination upon request.

(Uncertainties of the standards : Acoustic output level - 0.12dB , Output Frequency- 100 ppm)

Acoustical Calibration Test Report

Certificate No.: 130529064379	Model No.: 850013C
Calibration Type: Single Point	Serial No.: 064379

Operating Mode	94dB Acoustical Source As Found	dB Tolerance	Pass/Fail
A-Weighting	93.3	92.5 to 95.5	PASS
C-Weighting	93.4	92.5 to 95.5	PASS

Operating Mode	Acoustical Reading After Calibration	dB Tolerance	Pass/Fail
A-Weighting	94.0	92.5 to 95.5	PASS
C-Weighting	94.1	92.5 to 95.5	PASS

Note: acoustical calibration uses an acoustical signal at 1000Hz, 94dB. It is normal, if the reading after calibration varies ± 0.2 dB from the Acoustical Test Report, due to the different conditions and temp.

Relative Humidity: 31%	Calibration Date: 5/29/2013
Temperature: 24°C	Recommended Due Date: 5/29/2014
Test Report Line Number: 54579	

NIK VINNIKOV

Supervisor-Quality Assurance
Sper Scientific



Appendix D

TOWN OF SOUTH WINDSOR NOISE POLLUTION CONTROL ORDINANCE

ORDINANCE #145NOISE POLLUTION CONTROL ORDINANCE1. PURPOSE

The policy of the State of Connecticut under Connecticut General Statutes, Section 22a-67 is to promote an environment free from noise that jeopardizes the health and welfare of the citizens of the State of Connecticut. To that end, the purpose of this Ordinance is to establish a means for effective enforcement of a noise pollution standard. Further, the Connecticut Legislature has found, and the South Windsor Town Council finds and declares that:

(a) excessive noise is a serious hazard to the health, welfare and quality of life of the citizens of the State of Connecticut and the Town of South Windsor;

(b) exposure to certain levels of noise can result in physiological, psychological and economic damage;

(c) a substantial body of science and technology exists by which excessive noise may be substantially abated;

(d) the primary responsibility for control of noise rests with the State and Towns thereof;

(e) each person has a right to an environment free from excessive noise that may jeopardize their health, safety or welfare.

2. DEFINITIONS

For the purposes of this Ordinance, the following definitions shall apply:

Background Noise: Shall mean noise which exists at a point as a result of a combination of many distant sources individually indistinguishable.

Daytime Hours: Shall mean the hours between 7:00 a.m. and 8:00 p.m. on every day but Sunday and the hours of 9:00 a.m. through 8:00 p.m. on Sundays.

Decibel: Shall mean a unit of measurement of the sound level.

Impulse Noise: Shall mean a sound of short duration, usually less than one second, with an abrupt onset and rapid decay, where said sound is not repetitive.

Nighttime Hours: Shall mean the hours between 8:00 p.m. and 7:00 a.m. each day from Sunday evening through Saturday morning except that night shall mean the hours between 8:00 p.m. Saturday and 9:00 a.m. Sunday.

Noise Level: Shall mean the sound pressure level measured with a sound level meter using the A-weighting network. The level so read is designated dBa(A) or dBA.

Noise Control Officer: Shall mean the individual so designated by the Town Manager as the person responsible to enforce this Ordinance and report to the Town Manager regarding violations and/or non-compliance with the Ordinance.

3. PERFORMANCE STANDARDS

It shall be the responsibility of the designated Noise Control Officer to enforce all aspects of this Ordinance, including the following:

(a) No noise shall be emitted beyond the boundaries of a lot or parcel in excess of the noise levels established in these regulations;

(b) Noise emitted from Commercial and Industrial zones beyond the boundary of the lot or parcel shall not exceed the levels stated herein as to the respective adjacent Residential, Commercial or Industrial Zones:

	<u>Emitter's Zone</u>		<u>Receptor's Zone</u>	
	<u>Industrial</u>	<u>Commercial</u>	<u>Residential/Day</u>	<u>Residential/Night</u>
Commercial:	62dBA	62dBA	55dBA	45dBA
Industrial:	70dBA	66dBA	61dBA	51dBA

The above levels represent the current levels adopted by the State of Connecticut. If the State of Connecticut changes its levels in the future, the levels of this Ordinance will automatically be changed to correspond with the

new State levels. Measurements shall be taken at several different points located beyond the boundary of the emitter's lot or parcel in various locations throughout the receptor parcel or parcels in an attempt to locate the loudest noise level emitted;

(c) High background noise levels and impulse noise are those individual cases where the background noise levels caused by sources not subject to this Ordinance exceeds the standards contained herein. A source shall be considered to cause excessive noise if the noise emitted by such source exceeds the background noise levels by 5dBA, provided that no source subject to the provisions of this Ordinance shall emit noise in excess of 80dBA at any time; and provided that this section does not decrease the permissible levels of other sections of this Ordinance. Further, no impulse noise shall be caused or allowed in excess of 80dB peak sound pressure level during the nighttime hours to any residential zone or use and the emission of impulse noise shall not be caused or allowed in excess of 100dB peak sound pressure level at any time to any zone or use; and

(d) Exclusions and exceptions shall be in accordance with regulations of the Connecticut Department of Environmental Protection, Sections 22a-69-1.7-1.8.

4. SPECIFIC PROHIBITIONS

(a) The operation of lawnmowers, leaf blowers, snow blowers, tractors, chain saws or other machinery powered by an internal combustion engine between the hours of 8:00 p.m. and 8:00 a.m., except during the 24-hour period immediately following a snowfall or other weather-related emergency.

(b) The following activities and uses shall be exempt from the noise level ordinance:

(1) Noises resulting from any authorized emergency vehicle when responding to an emergency call or acting in time of emergency; and

(2) Noises emanating from municipal vehicles, such as snow plows, garbage trucks, emergency road trucks and other emergency vehicles.

5. DETERMINATION OF OFFENSE

The standards which shall be considered by the Noise Control Officer in determining whether a violation of this Ordinance exists shall include, but shall not be limited to, the following:

- (a) The level of noise;
- (b) Whether the origin of the noise is natural or unnatural;
- (c) The background noise level, if any;
- (d) The zoning of the area from which the noise is emitted and the zoning of the area within which the noise is received;
- (e) The time of day or night the noise occurs;
- (f) The duration of the noise; and
- (g) The day of the week, or holiday, on which the noise occurs.

6. APPLICATION FOR TEMPORARY VARIANCE

(a) Any person residing or doing business in South Windsor may apply to the Town Manager for a temporary variance from one or more of the provisions of this article if they are more stringent than the Connecticut Department of Environmental Protection's regulations for the control of noise, provided that the applicant supplies all of the following information to the Town Manager at least twenty (20) days prior to the state of said activity:

- (1) The location and nature of activity;
- (2) The time period and hours of operation of said activity;
- (3) The nature and intensity of the noise that will be generated;
- (4) A plan to be implemented which will correct the noise problem requiring the temporary variance; and

(5) Any other information required by the Town Manager.

(b) No variance from these regulations shall be issued unless it has been demonstrated that:

(1) The proposed activity will not violate any provisions of the Connecticut Department of Environmental Protection regulations;

(2) The noise levels generated by the proposed activity will not constitute danger to the public health; and

(3) Compliance with this article constitutes an unreasonable hardship on the applicant.

(c) The application for variance shall be reviewed and either approved or rejected at least five (5) days prior to the proposed start of said activity. The approval or rejection shall be in writing and shall state the condition of approval, if any, or the reasons for rejection.

(d) Failure to rule on the application in the designated time shall constitute approval of the temporary variance.

7. PENALTIES FOR OFFENSE

Any person or business violating any of the provisions of this Ordinance shall be deemed guilty of a municipal violation punishable by a fine in an amount of ninety-nine dollars (\$99). Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such hereunder.

8. SEVERABILITY

All provisions of the Zoning Regulations of the Town of South Windsor which are more stringent than those set forth herein, shall remain in force. If, for any reason, any word, clause, paragraph, or section of this Ordinance shall be held to make the same unconstitutional or superceded by any State law or regulation, this Ordinance shall not thereby be invalidated and the remainder of the Ordinance shall continue in effect.

Approved at a Regular Meeting of the Town Council of the Town of South Windsor, December 15, 1997.

LEGAL NOTICE

Notice is hereby given that the following ordinance for the Town of South Windsor was duly adopted at the Regular Meeting of the South Windsor Town Council on December 15, 1997.

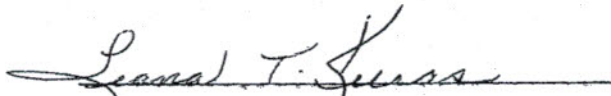
ORDINANCE #145
"NOISE POLLUTION CONTROL
ORDINANCE"

Dated at South Windsor, CT this 18th day of December, 1997.

Attest:
Gretchen E. Bickford
Assistant Town Clerk

Journal Inquirer
December 19, 1997

ATTEST:


Liana T. Kuras, Town Clerk

This Ordinance shall become effective ten (10) days after publication in a newspaper having a circulation in the Town of South Windsor.