



August 11, 2017

David Goodwin
Director
Planning & Economic Development Department
City of St. Petersburg

Re: City of St. Petersburg

Dear Mr. Goodwin,

The following is the summary of Keane Acoustics' community mechanical noise study for the City of St. Petersburg.

Introduction

Keane Acoustics was commissioned to undertake a noise impact assessment of mechanical noise within St. Petersburg city limits in an effort to better understand how to best protect citizens from excessive noise events. This document deals strictly with noise impacts from mechanical equipment in the following locations:

Dr. Martin Luther King Jr Street N – This street hosts a fairly dense network of businesses surrounded by neighborhoods to the east and west. It is understood that residents have complained about noise emissions from roof top mechanical equipment at a building located at 2600 Dr. Martin Luther King Jr Street N. The residences investigated in this neighborhood are bounded by 30th Avenue North to the north, 25th Avenue North to the south, and 11th Street North to the west and Dr. Martin Luther King Jr Street N to the east, respectively.

Beach Drive - This neighborhood is a historically quiet business neighborhood surrounded by busy streets. It is understood that residents at elevations above street level have complained about noise emissions from roof top mechanical equipment at a building located at 340 Beach Drive NE. The residences investigated in this neighborhood are within two building location at 176 4th Ave NE (Bliss) and 300 Beach Drive NE (Parkshore Plaza).

Noise monitoring was conducted on Thursday, July 13th from approximately 12:00 noon 4:00pm.

Instrumentation

Measurement instrumentation for the ambient sound measurements consisted of one Bruel and Kjaer Type 2270 Hand Held Analyzer, Serial No. 3010848, and one Bruel and Kjaer Type 2270 Hand Held Analyzer, Serial No. 3010767, which meet ANSI standards for Type 1 instruments.

A running “logging” style measurement was conducted at 1 second intervals, measuring Leq (equivalent), maximum, minimum values for each second. Both sound level data and digital audio were recorded during the measurements.

Atmospheric Conditions

During the visit, the following conditions were observed:

Beach Drive

The wind was blowing at 2-7 mph from the east and the temperature ranged from approximately 86-90 degrees Fahrenheit. Relative humidity was 59-89%.

Dr. Martin Luther King Jr Street N

The wind was blowing at 1-3 mph from the ESE and the temperature ranged from approximately 89-91 degrees Fahrenheit. Relative humidity was 65-94%.

These conditions had a negligible impact on the sound level readings.

Methodology

Sound level readings were taken at property lines of the nearest receivers (sometimes near the edges of residential balconies). Sound levels were measured a minimum of 30 seconds at each location.

At Dr. Martin Luther King Jr Street N sound levels were also measured in transit from location to location as the investigator walked. In this neighborhood the measurement locations often share both the property lines of the noise source and nearest receivers.

Beach Drive Investigation

Keane Acoustics visited Bliss the afternoon of Thursday, July 13th. The balconies facing east were visited to provide a bird’s eye view of the rooftop mechanical equipment. Multiple pieces of rooftop equipment were found, including a Closed Circuit Cooler.

It is understood that the complaints occur during the operation of the Closed Circuit Cooler. This piece of equipment has two fans and runs on a variable frequency size, which changes the load of the unit depending upon heating/cooling demand. It is understood that one of the fans is not operational and that this fan was the subject of alleged higher noise levels. The fan running during the investigation appeared to be running at 100% at the time of the measurements.

For purposes of the investigation the equipment at all locations investigated was running under normal settings (no interference from the investigators) to allow the system to emit noise at levels representative of a typical “hot” day.

Sound level readings at Bliss were taken on the balconies with the instrument slightly behind the balcony edge for a minimum of 30 seconds, taking note of any noise interferences from other sources. At Bliss the mechanical noise was high enough that no interferences occurred. Dominant 1/3 octave (tonal) frequencies were noted and the corresponding decibel levels at

those frequencies were also noted. Sound recordings of each measurement were made with the same instrument.

Keane Acoustics visited Parkshore Plaza immediately thereafter (1:30-2:00 pm). Units 2602 and 1102 (26th floor and 11th floor respectively) were visited. The same procedure conducted at Bliss was followed.

Results

The results for both buildings are as follows:

Building	Unit	Mechanical Sound Level dBA Leq	Mechanical Sound Level dBC Leq	Dominant Frequency (Hz)	Dominant Frequency Level (dB)	Approximate Distance to Noise Source (ft)
Bliss	1002	77	87	160	87	50
Bliss	1002 (inside)	47	60	160	58	50
Bliss	1202	71	78	160	76	60
Bliss	1602	68	76	160	69	90
ParkShore	2602	63	71	N/A	N/A	300
ParkShore	1102	63	72	N/A	N/A	250

See Exhibit A for a map of the location.

Observations at Bliss:

The sound levels measured were not likely impacted by other ambient noise sources at this location. In other words, sound level measurements of the equipment in isolation would likely yield similar results.

A 160 Hz tone was very pronounced above the rest of the ambient noise. Tonal sounds are specific frequencies that are significantly louder than the other sound frequencies, often sounding similar to a musical note (often with a harsh or shrill character).

Observations at Parkshore Plaza:

The sound levels measured were likely somewhat impacted by other ambient noise sources at this location. In other words, sound level measurements of the equipment in isolation would likely yield lower decibel levels.

Neither the 160 Hz tone nor other pronounced tones were audible at this location.

Dr. Martin Luther King Jr Street N Investigation

Upon arrival at the building allegedly creating the noise, it was immediately apparent that the mechanical noise in question was only faintly audible and it took some effort to identify due to the masking effect of the traffic from the adjacent Dr. Martin Luther King Jr Street N. It is possible that the alleged excessive noise was due to maintenance issues which may have been rectified.

There was a specific location on 10th Street N where it was clear the sound was coming from the rooftop of the subject building. See Exhibit B for a map of the location. The sound level measured at this location was 51 dBA and 62 dBC with no notable tonal frequencies.

Note that there is an architectural feature (called “the fin” for this report) on the top of the roof that isolates the rooftop mechanical equipment from the blocks to the south. The ambient sound level north of the fin never dropped below 49 dBA 62 dBC during times of reduced traffic activity while the ambient sound level south of the fin occasionally dropped below 46 dBA 59 dBC during times of reduced traffic activity. It is therefore likely that the rooftop mechanical equipment is still contributing to the overall ambient noise, albeit at a lower level than reported.

Residential Noise Sources East of Dr. Martin Luther King Jr Street N

Sound Level measurements were taken at single family residences in the same neighborhood, further away from the subject building. In general, sound levels ranged from about 50-56 dBA and 60-68 dBC when a minimum of 10 feet away from the mechanical equipment (typically on sidewalks). None of the units measured appeared to have clear signs of major mechanical issues that may have produced elevated noise levels. For reference, vehicular pass-bys commonly exceeded 65 dBA and 75 dBC at the sidewalks.

Summary

Keane Acoustics conducted a series of mechanical noise measurements at specific locations of complaints nearby Beach Drive and Dr. Martin Luther King Jr Street N on Thursday, July 13th 2017. Sound levels from mechanical equipment and related impacts have been presented in this report. This information will help inform any proposed revisions to the existing St. Petersburg Noise Ordinance.

Best regards,



Michael Keane, P.E.
President, Keane Acoustics, Inc.

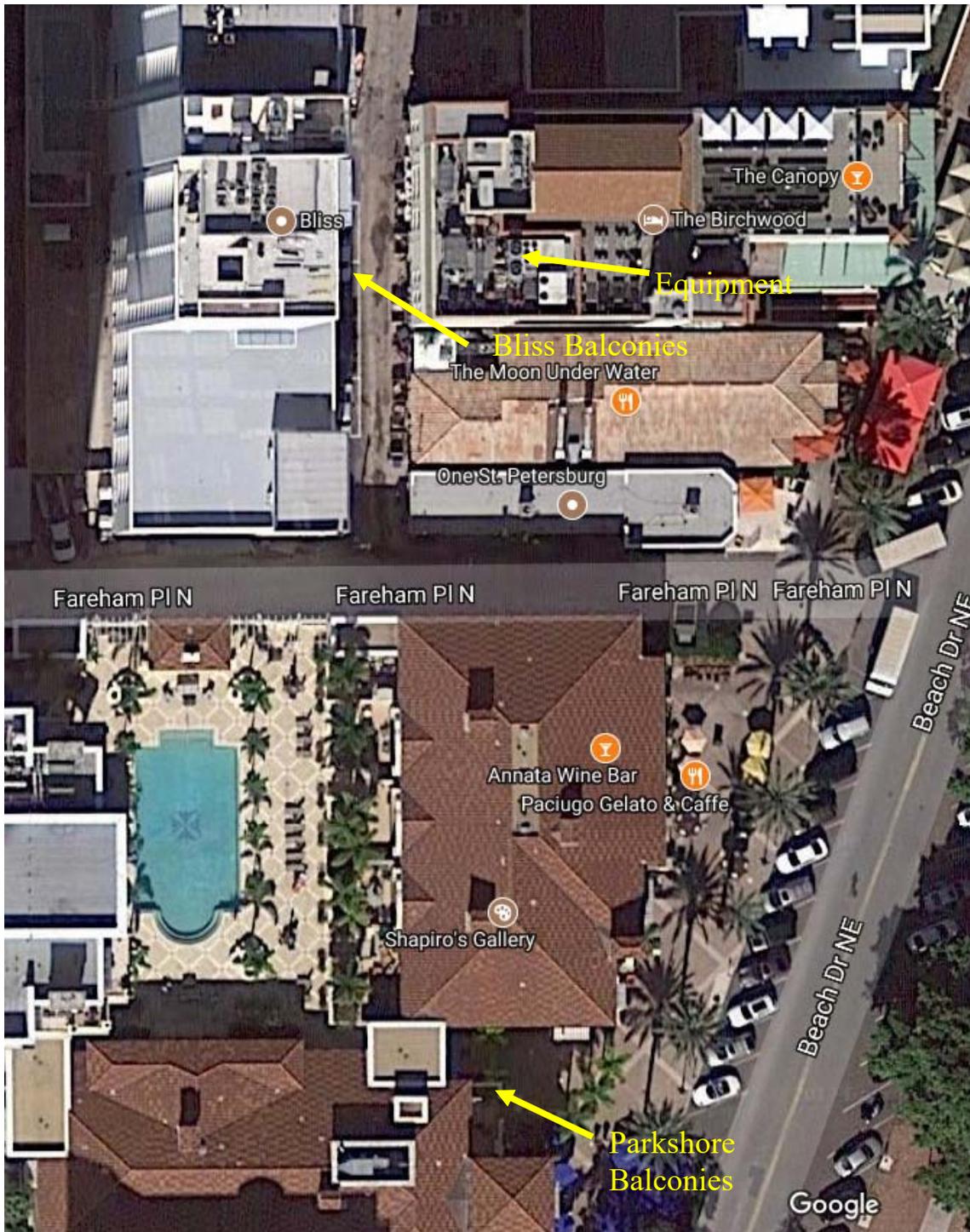


Exhibit A - Beach Drive Area Measurement Locations

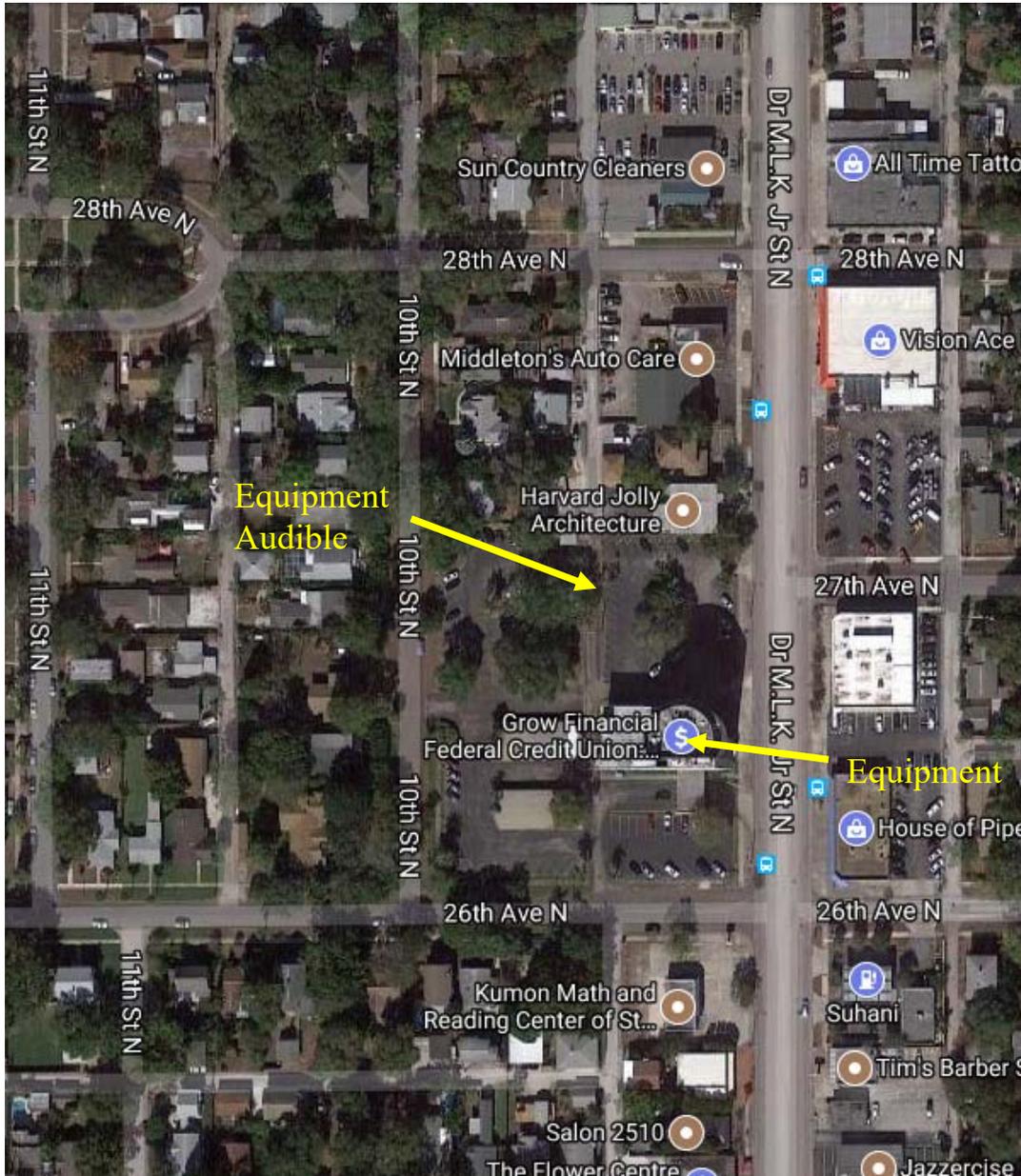


Exhibit B - Dr. Martin Luther King Jr Street N Area Measurement Locations