ACENTECH

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July 26, 2018

Mr. Conrad Ello
Oudens Ello Architecture, LLC
46 Waltham Street, Suite 210
Boston, MA 02118

Subject: Martha's Vineyard Museum
Environmental Background Noise Measurements
Acentech Project No. 627055R

Dear Conrad:

As you know, during the period from July 9 through July 16 we measured environmental noise conditions at the Martha's Vineyard Museum site to document the base-line noise conditions. The measurements were made at four locations around the site, selected to address specific potentially sensitive receiver locations and for general documentation of the conditions. The measurement locations are shown on the attached site diagram. Measurements were made with continuous noise monitors, which sample the noise condition about every 0.2 seconds. The sampled data are stored for subsequent statistical analysis. Statistical analysis was compiled hourly and the result of this for the four locations are presented in the four attached data charts of sound level verses time.

Note that construction was occurring on site during weekday daytime hours and the data collected during these hours is not an appropriate assessment of the normal noise conditions.

The L_{90} sound level is commonly taken as the residual ambient noise condition for many purposes, especially relative to noise control provisions. The primary location of noise emission from our site will be the generator/condenser enclosure to the west of the main building. This is close to measurement location 1 and near the most critical receiver location for noise control purposes. The residual nighttime ambient noise here was an average of about 34 dBA over the measurement period. The daytime ambient noise levels on the weekend, when we presume there was no construction, was on the order of 40 dBA.

The state DEP requirement limiting noise emissions to the nearby community is to not produce noise that is more than 10 dBA higher than the residual ambient noise level and this is typically taken as the L_{90} sound level. This is the sound level exceeded 90% of the time. So, for our critical receiver located near measurement position 1, we need to limit noise at this location to be no more than 44 dBA at night to officially comply with the state requirement. However, although the state would allow the sound emissions from the site to be 10 dBA over the ambient, we would suggest that this is not really a very neighbor-friendly noise condition for regularly and generally continuously occurring sounds such as from HVAC equipment. We would generally suggest that a more neighbor friendly noise emission limit would be no greater than 5 dBA over the residual ambient level, which in this case would be 39 dBA. We suggest this should apply for the condensing unit as it operates at night. As we suggested previously, for the generator, which will be tested during the day, this could be allowed to produce a sound level of 10 dBA over the ambient. So, in this case, this should be limited to about 50 dBA at the critical neighboring residence.

Given that there is a fence at the property line and this will shield the area very near it on the receiver side from sound emissions, we suggested that the allowable noise levels here be applied at the neighbor's deck rather than right at the property line. I believe this is the most critical place at which to apply the criteria.

I believe that this provides the basic findings from the measurements and we have translated this into the criteria that should be applied for the critical neighbors. If we meet the suggested criteria for this critical

neighbor, noise conditions relative to the overarching site noise criteria at other receiver locations will even more comfortably meet the criteria.

We can separately address equipment noise emissions and mitigation from the planned equipment to meet these goals.

Sincerely Yours,

ACENTECH INCORPORATED

Douglas H. Sturz (INCE Board Certified, Emeritus)

Environmental Background Noise MeasurementsR


Martha's Vineyard Museum
Monitoring Locations
1
2
3
4
N
200 ft
Google Earth

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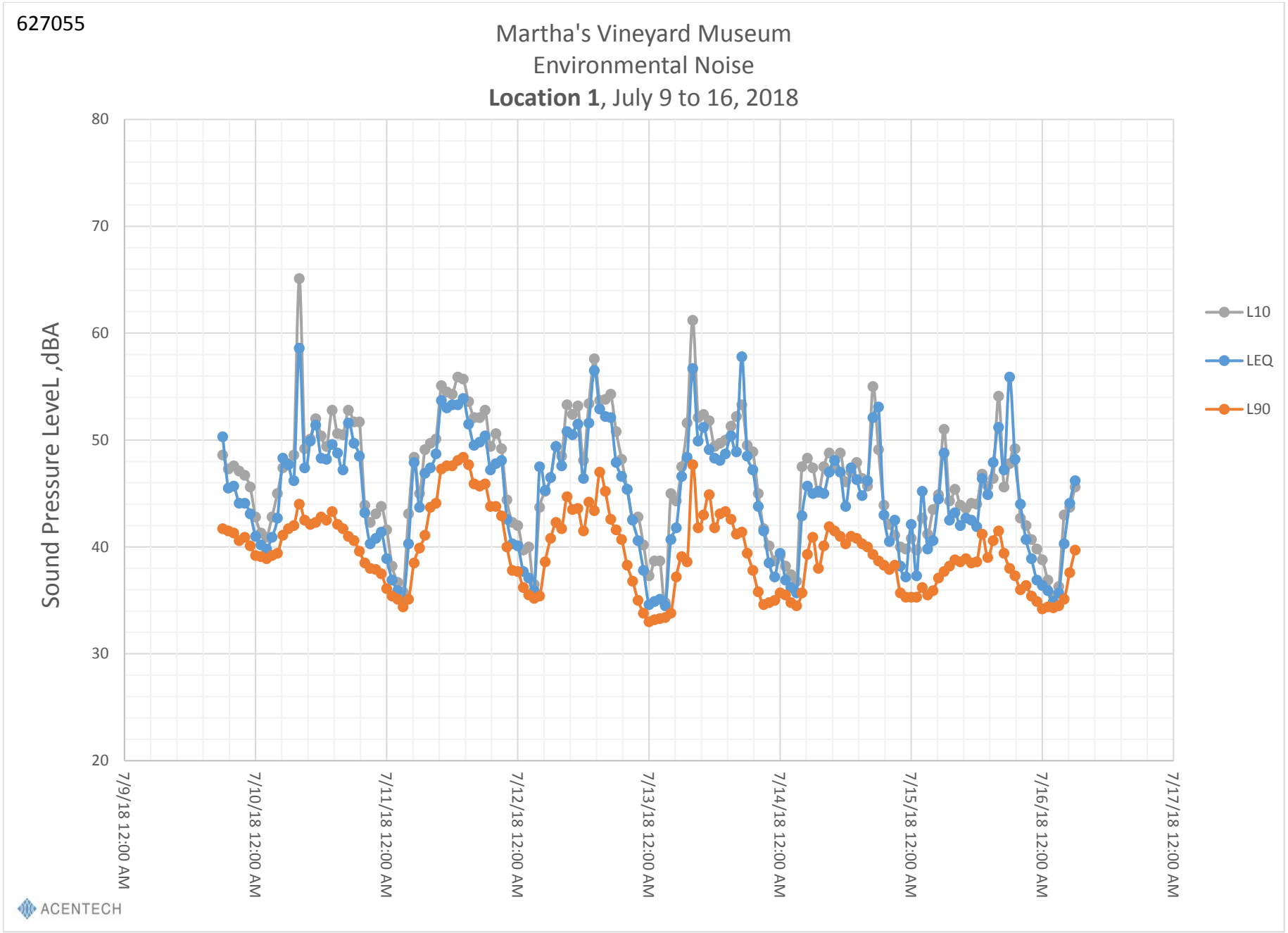
Martha's Vineyard Museum
Environmental Noise
Location 1, July 9 to 16, 2018
Sound Pressure LeveL ,dBA
80
70
60
50
40
30
20
7/9/18 12:00 AM
7/10/18 12:00 AM
7/11/18 12:00 AM
7/12/18 12:00 AM
7/13/18 12:00 AM
7/14/18 12:00 AM
7/15/18 12:00 AM
7/16/18 12:00 AM
7/17/18 12:00 AM
L10
LEQ
L90
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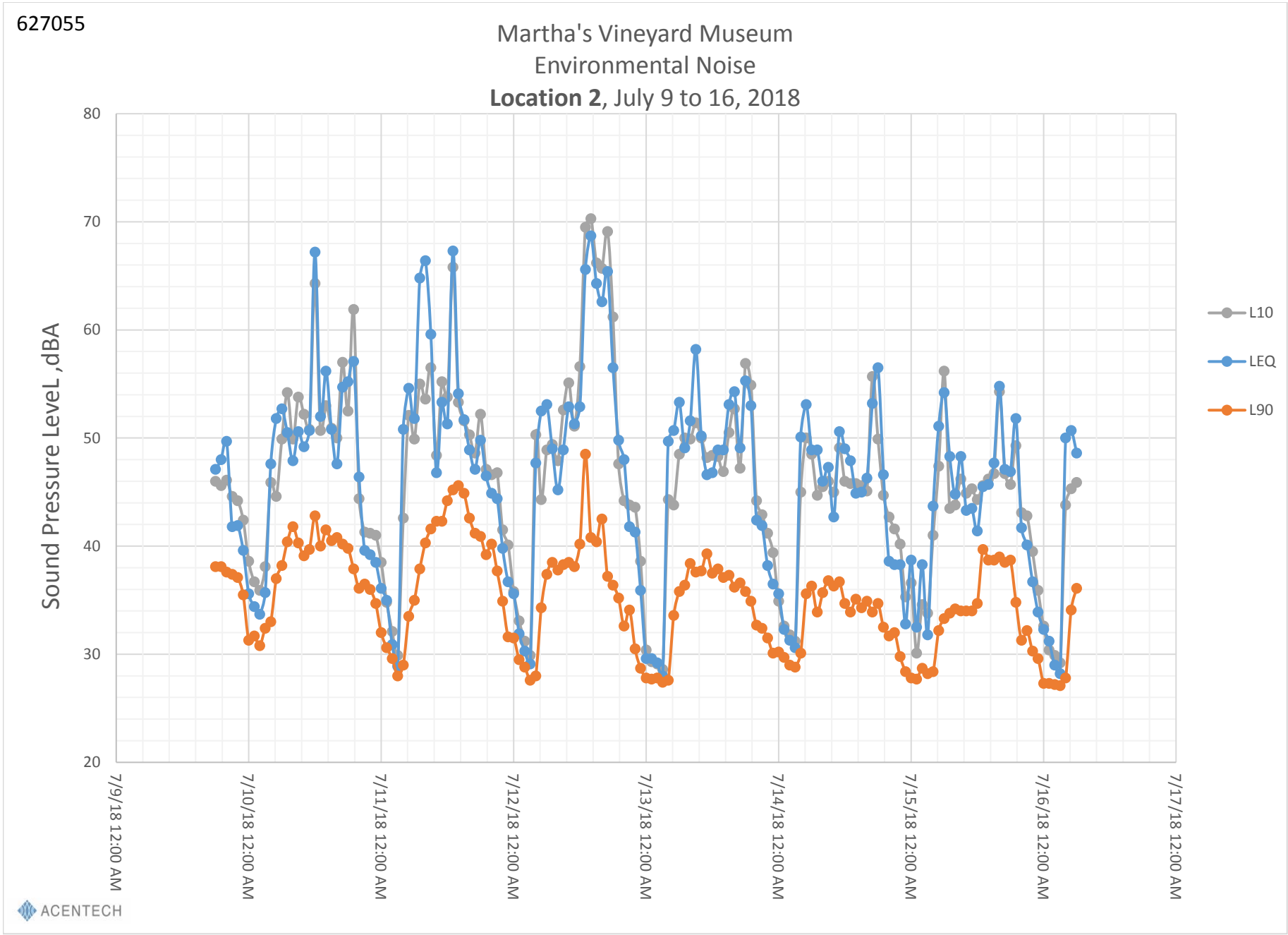
Martha's Vineyard Museum
Environmental Noise
Location 2, July 9 to 16, 2018
Sound Pressure Level ,dBA
80
70
60
50
40
30
20
7/9/18 12:00 AM
7/10/18 12:00 AM
7/11/18 12:00 AM
7/12/18 12:00 AM
7/13/18 12:00 AM
7/14/18 12:00 AM
7/15/18 12:00 AM
7/16/18 12:00 AM
7/17/18 12:00 AM
L10
LEQ
L90
ACENTECH

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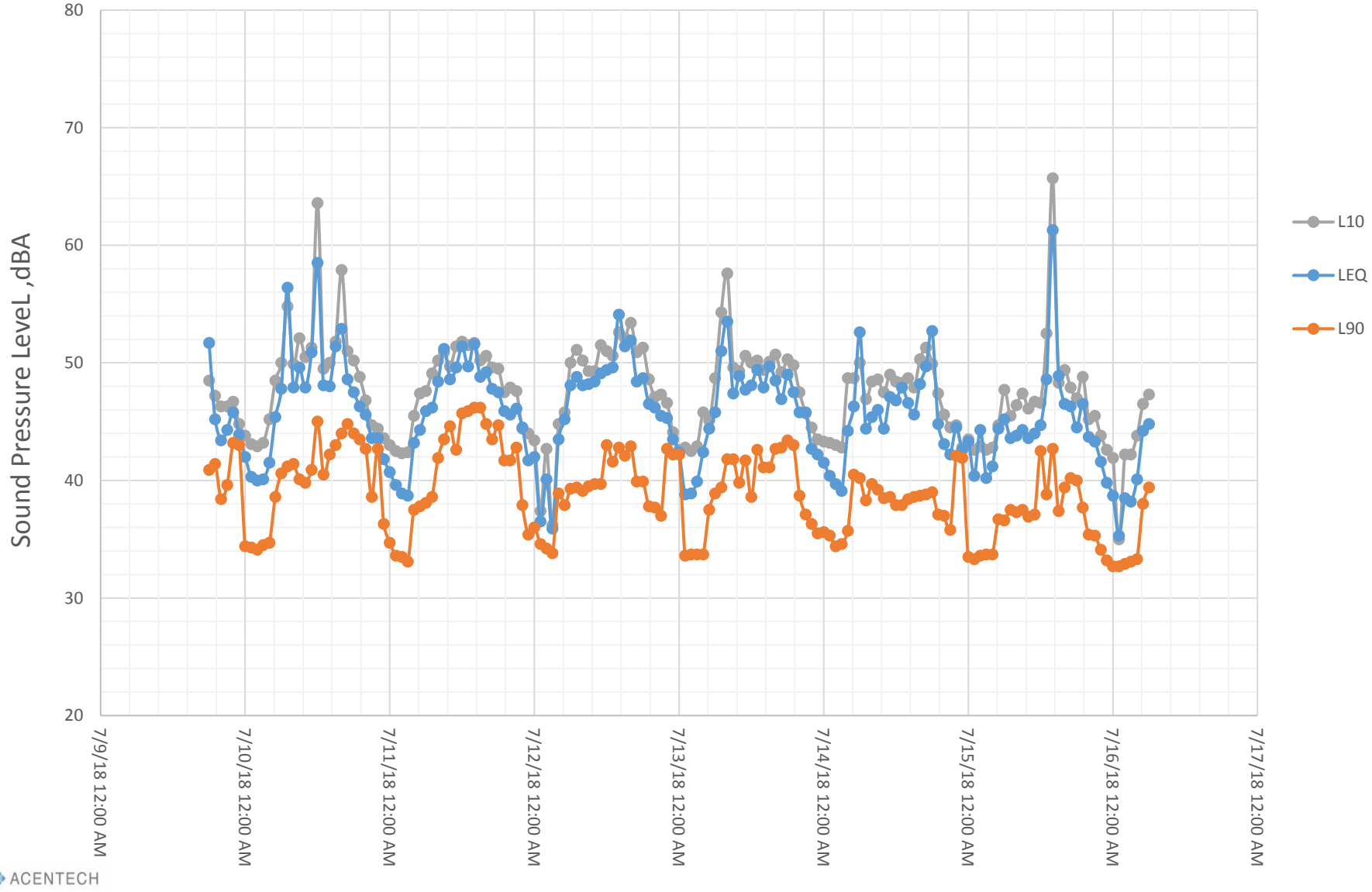
Martha's Vineyard Museum
Environmental Noise
Location 3, July 9 to 16, 2018



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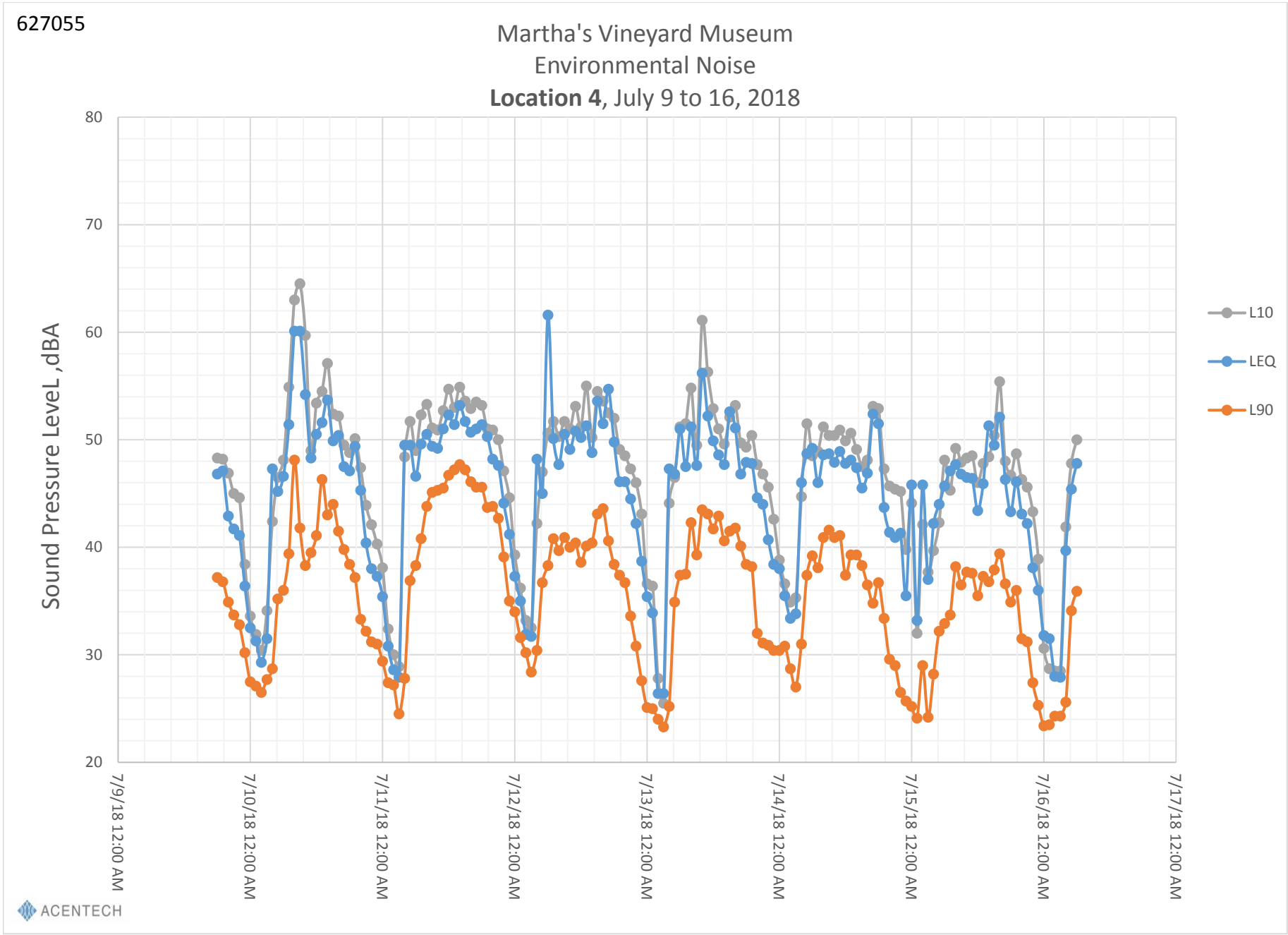
Martha's Vineyard Museum
Environmental Noise
Location 4, July 9 to 16, 2018
Sound Pressure LeveL ,dBA
80
70
60
50
40
30
20
7/9/18 12:00 AM
7/10/18 12:00 AM
7/11/18 12:00 AM
7/12/18 12:00 AM
7/13/18 12:00 AM
7/14/18 12:00 AM
7/15/18 12:00 AM
7/16/18 12:00 AM
7/17/18 12:00 AM
L10
LEQ
L90
ACENTECH