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Email: AGreen@mmc.org
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Subject Helipad Sound Management Plan Peer Review
Maine Medical Center - Portland, ME
Acentech Project No. 631363

Dear Alexander:

At your request we have conducted a peer review of the Sound Management Plan (SMP) for the proposed changes to the helipad serving Maine Medical Center (MMC) in Portland (the project). This letter presents our comments, which are based on the SMP, the documents provided to us by MMC (including the Final SMP), as well as a phone conference with MMC and Russel Acoustics.

SUMMARY

Based on our discussions and review of project documents, we agree with the way in which the SMP outlines the standards and guidelines relevant to helipad noise. The follow-up measurement/analysis method proposed is a reasonable way to establish the DNL attributable to helipad operations.

The following comments largely summarize and clarify the comments in the SMP.

SOUND MANAGEMENT PLAN

QUALIFICATIONS

The SMP has been prepared with input from Norman R. Dotti, P.E., P.P a Principal at Russel Acoustics, LLC (Point Pleasant, NJ). Mr. Dotti's experience as described in Appendix A forms a reasonable basis to qualify his analysis and recommendations.

GUIDELINES AND TERMINOLOGY

National Standards for Helicopter Noise

As stated in the SMP, to our knowledge, no national standards exist which contain binding regulations for helicopter noise. Rather, agencies such as the Federal Aviation Administration (FAA) publish guidelines to assist facility planners in determining the potential for community noise impacts.

These guidelines most often use a noise descriptor referred to as the *day-night average sound level*, DNL, which is expressed in A-weighted decibels re: 20 µPa (abbreviated "dBA"). The DNL is a 24-hour energy-average sound level, wherein sound occurring between the hours of 10:00 PM and 7:00 AM is "penalized" by 10 dB to account for the increased impact of noise during traditional sleeping hours.

DNL Produced by Helipad Operations

The actual DNL that would be measured at a specific location is composed of sources such as auto traffic, industrial equipment, and aviation traffic. Helicopter operations contribute some portion of the overall DNL, but it is not possible to measure solely the contribution of helicopter noise.

As such, most noise studies for large aviation facilities use computer modeling software such as the Aviation Environmental Design Tool[1] (AEDT) to estimate the noise impacts of aviation operations exclusively. It is these DNL that are the object of the recommendations in the FAA guidelines, not necessarily the measured DNL.

Based on our phone conference we understand that the SMP will rely on direct field measurement of the sound exposure level (SEL) of representative helipad events to predict the DNL attributable to helipad use. We agree with this approach.

Standards vs Guidelines

The first page of the SMP appropriately notes that:

> *…no national standard or best-practice exists to measure the noise impact from helicopter operations associated with a hospital on adjacent residential properties exists. The standard selected in this Sound Management Plan is the most applicable and widely-used sound measurement standard available for this situation.*

Anticipated Growth and Bottleneck Reduction

Were helipad operations to be sole contributor to the DNL, the increase from 450 to 750 trips would increase the DNL by about 2 dBA, which is not significant. In that helipad operations are not the only source of community sound, we expect the increase to the DNL to be about 1 dBA or less on account of the increased trip volume.

One "trip" is defined as the transport of one patient or group of patients, and involves at a minimum one drop-off and one pickup. We understand that there are times when access to only one helipad (as currently exists) creates a bottleneck resulting in two drop-offs and two-pickups per trip, which effectively doubles the community's exposure to helipad sound for that trip. Therefore, we agree with the statement in the SMP that:

> *As a result of these … additional helicopter trips, unnecessary noise is created in surrounding neighborhoods…*

EXISTING AMBIENT SOUND LEVELS

On behalf of the City of Portland, Acentech conducted a 3-month survey of existing sound levels at 13 locations in the City (as well as 2 locations in South Portland) during the summer of 2017. The mean DNL are shown in Figure 1. Our work product for this survey is part of the public domain, and we would be pleased to share it at your request.

The mean measured DNL throughout the City proper were in the range of 65 to 76 dBA, and levels at the monitoring stations nearest the existing helipad were about 70 dBA. Our spatial mapping of the measured DNL does not indicate a particularly noisy area in the vicinity of existing helipad operations or flight tracks. Rather, it suggests that long-term average noise levels in the vicinity of the project are relatively uniform and spatially homogenous.

[1] https://aedt.faa.gov/

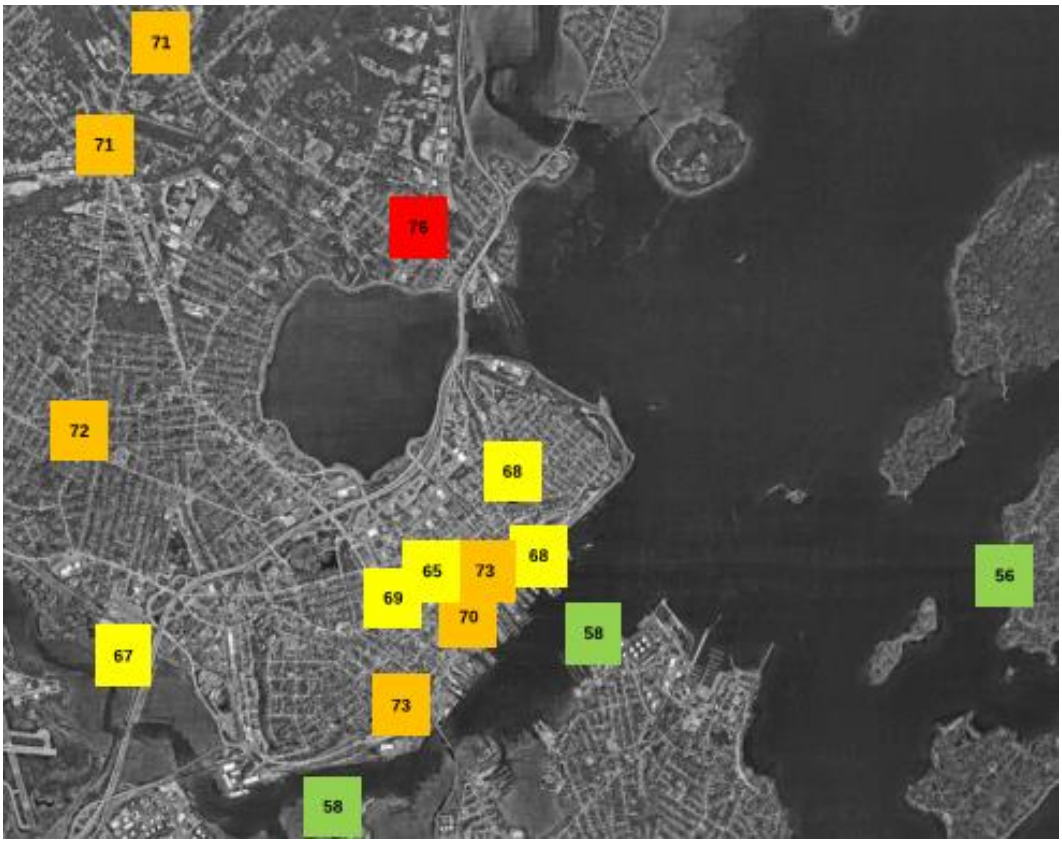

Figure 1. Mean measured DNL, summer 2018

PLAN FOR VALIDATION

Pad Operations

The proposed measurement plan is a reasonable way to assess noise impacts in such a way that project noise can be compared to FAA guidelines as recommended. A-weighted sound levels produced by representative helipad operations should be measured in 1-second intervals at impacted residential locations. From these data, the sound exposure level, SEL of each event should be calculated. The SEL, along with the average number of trips per day will allow MMC and its consultant to calculate the DNL attributable to helipad operations directly, as recommended below.

We understand that this is consistent with the methodology proposed by MMC.

CONCLUSION

It is our opinion that the SMP describes a reasonable method to assess the impact of the project on potentially-impacted residences throughout the city, and to compare these impacts with appropriate guidelines.

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I trust this letter provides the information you need at this time. Please contact me with questions at 617-499-8025 or acarballeira@acentech.com.

Sincerely,

Andrew C. Carballeira, INCE Bd Cert
Senior Consultant

CC: Benjamin Davenny, Eric Wood (Acentech)
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