DRAFT MEMORANDUM

Date: March 7, 2013

To: Merrick Turner, BETA Group, Inc.

From: Robert O'Neal, CCM, INCE, Epsilon Associates, Inc.

Subject: Noise Impact Assessment Review – University Station, Westwood

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Epsilon Associates, Inc. has reviewed the noise impact assessment done by University Station's consultant, Tech Environmental, Inc. (TEI), and offers the following preliminary opinions. For this work, the following documents were reviewed:

- Noise Impact Analysis for University Station, Westwood, MA, January 3, 2013, TEI,
- Roadway Noise Analysis for University Station, Westwood, MA, January 3, 2013, TEI, and
- Section 11.10 Noise Impacts, prepared by Rizzo Associates, December 13, 2006.

We understand the proponent is preparing additional documentation analyzing loading-related sound sources at the site. We will review that material once it is available.

Summary

In general, the sound level impact analysis for University Station conforms to best practices for community noise studies. The following points summarize our observations on the analyses:

- The baseline sound level measurement data is old (2005). The data should either be updated, or documentation provided as to why 2005 data is still representative of 2013 conditions.

- Low-noise HVAC equipment were assumed on the rooftop of two office buildings (Office A and B), and on three residential buildings (Residential A1, A2, B). Use of this noise-control technology should be made part of the project approval conditions.

- The report discusses a proposed 12-foot high sound level barrier along Blue Hill Avenue west of Whitewood Road. Project approval should include this barrier as a condition. The original 2007 TEI roadway study should also be provided.

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- Construction noise should be limited by Best Management Practices such as restricting noisy activities to daytime hours only.

Baseline Measurement Program

Existing condition sound level measurements were taken in December 2005, and reused for the January 2013 analysis. Data that are over seven (7) years old are pretty dated. The consultant notes that "the existing acoustical environment, dominated by highway traffic noise, has not changed significantly since then..." This statement should either be corroborated by more detailed information (AADT on Route 128 in 2005 vs. 2013; no new construction of nearby office buildings since 2005; etc.), or the baseline survey updated for 2013 conditions.

Operational Impact Assessment

The major difference between the original 2006 analysis by Rizzo Associates and the 2013 analysis by TEI is that the cogeneration plant has been removed and replaced by individual rooftop HVAC units on each building in the development. The TEI report states a "rule of thumb" of ~1 ton HVAC capacity per 400 square feet of space was used to calculate the amount of rooftop equipment needed for the project. An engineering reference supporting this "rule of thumb" should be provided. The TEI operational analysis appears to have been done properly using appropriate software (Cadna/A) and reasonable assumptions. We have not independently verified the modeling results. Maximum sound level impacts at the three residences ranged from 44.2 dBA to 46.5 dBA. These are below the Town of Westwood limits of 50 dBA but with only a 3.5 dBA margin.

A key assumption in the impact analysis is the use of low-noise HVAC units on the two office buildings closest to NSA 1 (Office A and B), and on the three residential buildings closest to NSA 3 (Residential A1, A2, B). The assumed sound power level for the low-noise Carrier (or equivalent) HVAC unit was 81.3 dBA. The Town should consider requiring the developer to accept this assumption as a permit condition, or have the developer present additional sound level modeling during final design when the HVAC equipment is selected by the contractor. An alternative would be to require post-construction sound level measurements to confirm University Station is below 50 dBA. However, given the relatively high pre-construction background (L90 values of 47 to 51 dBA); it may not be possible to separate future sound levels between background and the Project contributions so this option is less appealing.

Roadway Impact Assessment

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) was used to estimate traffic-related noise impacts from the Project. This is a proper methodology. All sound levels are below the FHWA criteria. What is unclear from the report are what roadway segments were

included in the modeling. These should be stated. In addition, the report discusses a proposed 12-foot high sound level barrier along Blue Hill Avenue west of Whitewood Road. Since the results and conclusions rely on this barrier, any Project approval should include the construction of this barrier as a condition. More barrier details such as the location, length, and proposed material(s) must be included as part of the approval. This information should also be included in the report.

It would be helpful to have the more detailed 2007 TEI "Roadway Noise Study for the Westwood Station Project." This would shed light on how the internal site roads were modeled, and which off-site roads were considered. In addition, it is unclear if the Existing sound levels in Table 1 of the 2013 update are modeled or measured.

Construction Impact Assessment

Construction sound levels were estimated using old data from a US EPA publication (1971). Unless the Town is really interested in a quantitative analysis, this is probably sufficient. The best noise control for construction is usually a mutually agreeable set of daytime hours. If a more detailed quantitative analysis of construction noise levels is desired, we would recommend using the FHWA Roadway Construction Noise Model (RCNM). This has more up-to-date construction equipment sound level data from Boston's "Big Dig" project. However, to be useful, one must have knowledge of locations, types, and quantities of each piece of equipment. This detailed knowledge is rarely available this early in the permitting process.