Shropshire Associates LLC
Traffic Engineering, Transportation Planning & Design
277 White Horse Pike, Suite 203, Atco, NJ 08004
P: 609-714-0400 F: 609-714-9944 www.sallc.org

SBE Certified

David R. Shropshire, PE, PP
A Andrew Feranda, PE, PTOE, CME
Randal C. Barranger, PE
Nathan B. Mosley, PE, CME

May 12, 2022

Pierson Pleasantville, LLC
c/o Mr. Brian J. Murphy, P.E., P.P., C.M.E. (via email: b.murphy@mvengllc.com)
MV Engineering, LLC
P.O. Box 484
Cape May Court House, NJ 08210

Re: **Response to April 25, 2022 Review Comments**
Pierson Concrete Plant
Dennis Township, Cape May County, NJ
SA Project No. 22016

Dear Brian:

We have reviewed the April 25, 2022 review letter from John C. Gibson, P.E. and have the following responses to requests in Section D regarding our February 11, 2022 Sound Level Evaluation (SLE).

Comment a: Provide the calculations which determined the 40 dBA and 45 dBA respectively at the equivalent distance to the nearest residential property line.

***Response**: On page 4 of the SLE, the formula for calculating the sound pressure levels of the proposed concrete plant at the nearest residential property line known as the inverse square law should be expressed as:*

$$SPL_2 = SPL_1 - 10 \log (d_2 / d_1)^2 = SPL_1 - 20 \log (d_2 / d_1)$$

where: SPL_2 *= the projected sound pressure level*
SPL_1 *= the measured sound pressure level at the comparable site of 40 dBA or 45 dBA*
d_2 *= distance to the nearest residential property line of 1,450' from the proposed plant*
d_1 *= distance between the comparable source and the sound meter of 170'*

With a measured comparable SPL_1 *of 64.0 dBA, the projected sound pressure level of the proposed concrete plan at the nearest residential property line is 45.4 dBA. With a measured comparable* SPL_1 *of 59.0 dBA, the projected sound pressure level of the proposed concrete plan at the nearest residential property line is 40.4 dBA*

Comment b: Explain what the anticipated sound levels will be at the residential property line when the above (a) is combined with those measurements of the existing mining operation.

***Response**: As shown in Tables 2 and 3 of the SLE, nighttime and daytime sound pressure measurements at the nearest residential property line included on-site operations of the existing mining facility which ranged between 43.0 and 53.0 dBA. Based on N.J.A.C. 7:29, the lowest source-on noise is used for determining the impact of sound. At 43 dBA, the current mining operation is very comparable to the sound that would be produced at the nearest residential property line of the proposed concrete plant at 40.4 to 45.4 dBA.*

A common misperception is that multiple source sound levels are arithmetically additive. In reality, the addition of a new sound source to existing sound is based on a logarithmic scale. The equation to add two decibel levels is:

$$\textbf{\textit{Total Decibels} = 10log}(10^{SP1/10} + 10^{SP2/10})$$

where: SP1 is the first sound pressure of 43.0 dBA, and
SP2 is the second sound pressure level of 45.4 dBA

Using the above equation, the total sound pressure level of the mining operation and the proposed concrete plant is calculated at 47.4 dBA which complies with the N.J.A.C. daytime and nighttime requirements for noise control.

Comment c: Consider a cedar tree screen along a portion of the nearest residential property line and estimate what further sound dissipation could be expected.

***Response**: A tree screen has minimal impact on sound dissipation. An approximate 1 dBA reduction could be achieved based on the extent of the screen. Tree screens are more effective in achieving an 'out of sight, out of mind' type condition rather than being an effective means of addressing sound dissipation.*

If you have any questions, please do not hesitate to call us.

Sincerely,
Shropshire Associates LLC

David R. Shropshire, P.E., P.P.
Principal
DRS/jab

cc: Cynthia S. Chemerys (via email: c.chemerys@mvengllc.com)
Paul Baldini (via email: paul@paulbaldinilaw.com)
Slavic Mokienko (via email: slavic@piermat.com)
Tiffany Morrissey (via email: tamorrissey@comcast.net)
Bill Bowling (via email: bbowling@piermat.com)
Bob Todd (via email: btodd@piermat.com)