March 1, 2024

Avenue 55
601 Union Street, Ste. 2930
Seattle, WA 98101

Attention: Ben Varin
Subject: Dupont 243 Noise Study Response to Landau Peer Review

Ladies & Gentlemen:

This report presents responses to the comments and questions posed in the December 8, 2023 peer review report prepared by Landau Associates. These comments and questions are based on their review of my updated noise study report dated October 18, 2023.

Noise Standards

- The FHWA noise impact criterion of 67 dBA peak hour Leq is the threshold for consideration of a noise barrier, but it much too high of a threshold to mention for this project. Ambient noise measurements conducted in October 2018 about 1/2-mile east of this site (for a different project) revealed an L_{dn} of 54.7 at a distance of 150 feet from the centerline of Center Drive.

City of DuPont Noise Ordinance

- Assuming the Class A EDNA for all areas adjacent to the project site, except the property north of the project site which is Class B ENDA is the safest (conservative) way to proceed.

- Since the noise-sensitive properties south and east of the project are being considered as Class A EDNA, motor vehicle noise on private property must comply with the noise ordinance.

Ambient Noise Measurements

- As noted in the Figure 3 title, this noise measurement location is on the Sequalitchew Creek Trail, so the steady background noise is likely due to water flowing in the creek.

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Predicted Site-Generated Noise Levels -Traffic data

- There is a question as to why the 6 AM hour was selected as the worst-case hour, and why the 7 AM and 5 PM hours were not considered. This question is answered on pages 9, 10, and 11 in the noise study. While the 7 AM and 5 PM peak traffic hours might represent the worst-case scenario for traffic impacts on the area streets, it is not the worst-case scenario for this noise study. I should point out that if the 7 AM or 5 PM hour was incorrectly selected as the worst-case hour, the delivery truck volume would be much lower (see Table 4) and the allowable project noise levels would be 10 dBA higher making compliance with the noise ordinance easier to achieve.

Predicted Site-Generated Noise Levels - Onsite noise sources

- Landau is correct that the noise model does not include noise associated with trucks starting their engines, or the noise of opening and closing doors. The model also does not include any noise due to objects being dropped on the ground or vehicles accidentally bumping into the loading docks. All of these sounds are so brief in duration and in frequency that they dwarf in comparison to the noise generated by the trucks and the air brake release that is included in the noise study.

- Landau asked to clarify how the number, distribution, and duration of idling trucks were determined. The location and number of idling trucks was estimated based on the proposed truck traffic volumes. Not all arriving trucks will be left idling after arriving at the loading docks, so it was arbitrarily assumed that 50% of the arriving trucks would be left at idle after arriving at the loading dock. Parked trailers in the 38 slots south of the loading docks were not included in the model since they would provide an additional barrier to sound transmission from the loading docks toward the trail.

Predicted Site-Generated Noise Levels – Receivers

- Landau asked about the selection of receiver locations. The receiver locations were selected along the existing trail when there were two delivery vehicle entrances and a second building near the southeast corner of the site. Locating receivers south of the property line would put them off the trail, into the woods, and farther from the noise sources.

Noise Ordinance Compliance

- Landau has detected that the 10/18/23 noise model report has slightly different noise contours than the 7/21/24 report in the vicinity of T8 and T9. This is because one of the two idling trucks in the southeast parking lot was moved to the north side of the parking lot. In the prior location, the trailer was shielding the truck engine noise from the south property line. In the new location the truck engine noise is allowed to radiate toward the trail without any shielding from the trailer. Table 5 was not changed from the previous report because there was no known change in traffic volumes, and I did not notice the slight change in the noise contours. I have since received the updated traffic study dated October 9, 2023, and I see that the expected average number of delivery trucks has actually decreased from 152 to 146, so the noise levels in the report would be slightly lower if Table 5 would be revised to match the latest traffic study.

- Landau is correct that Receiver 4 is currently a Class B EDNA, which has higher allowable noise levels compared to the other Class A receivers.

- Table 5 presents the CadnaA predicted L_{eq}, L_{max}, and time over threshold statistics for each receiver. Compliance with the noise ordinance is only determined by the time over threshold statistics and the L_{max} during the worst-case hour. All other hours of the day will have lower sound levels.

- I agree with Landau regarding the use of the trail during all hours of the day. The noise study report shows that the off-site receiver locations on the trail are expected to be in compliance with the noise ordinance during all hours of the day and night.

Noise Impact Analysis

- The noise impact analysis section of the 10/18/23 noise model report addresses only the 4 receiver locations included in the noise study. None of these 4 receiver locations are less than 800 feet from the intersection of Center Drive and Sequalitchew Road, so they will not be significantly impacted by traffic turning noise at that intersection.

- The project noise levels in Table 6 were determined from the CadnaA model analysis at each of the 4 selected receiver locations. The procedure required taking the CadnaA predicted L_{eq} values including traffic noise on Sequalitchew

Road and adjusting the L_{eq} for all of the other hours of the day using the hourly distribution of traffic volumes presented in Table 4. The hourly L_{eq} values were then used to calculate L_{dn} and the average day and night L_{eq} values.

- The project L_{dn} values shown in Table 6 are based on the worst-case condition. This is confirmed by recognizing that the basis of the analysis is the L_{eq} computed at 6 AM where the traffic volume used in the model is 1.18 times the average traffic volume (see page 9 of the noise study report). When the 6 AM hour L_{eq} is the basis for the other hours of the day, this procedure essentially assumes that traffic volumes for every hour of the day are 18% above the average traffic volume.
- The maximum sound level (L_{max}) at each receiver location (and the time over threshold value) was determined in the CadnaA model using the Pass-by-Level tool for each vehicle path at each receiver location and adjusting the value by the number of vehicles using that path. Both the maximum sound level and the time above threshold were determined using this technique.
- I suppose that I could have introduced the FTA criteria earlier in the report, and then repeated it again during the noise impact analysis.

Impulsive Noise Sources

- The impulsive noise levels assumed in the analysis are presented on page 15 of the noise study report (L_{wA} = 120 dB re 1 picowatt) for the air brake release and 20 dB lower (L_{wA} = 100 dB re. 1 picowatt) for the backup beeper. Although these noise sources are intermittent, they can occur at any time, day or night, at the same source sound power level. The resulting sound level at the receiver will vary depending upon the distance from the source, taking into account any shielding provided by the building or site topography.
- I cannot confirm the reason for the changes in the Table 7 sound levels between the July and the October reports, because those reports did not identify the precise source locations assumed in the analysis. To correct that error, I have revised Table 7 which now includes nighttime average ambient L_{max} values and predicted project L_{max} noise levels at Receiver T14, all evaluated with the specific source and source locations closest to the receivers listed on the following page:

Backup Beeper #1: 128 feet south of the warehouse at the closest loading dock
Air Brake Release #1: 44 feet from the warehouse at the closest loading dock
Backup Beeper #2: 60 feet north of the south edge of SE parking lot
Air Brake Release #2: 132 feet north of the south edge of SE parking lot

Table 7 (revised). Predicted maximum sound levels of impulsive noise sources (dBA)

Impulsive Source	P1	P2/T9	P3	P4	T10	T13	T14	T15
Backup Beeper #1, L_{max}	13.0	39.0	44.6	22.1	39.2	38.6	41.6	38.7
Air Brake Release #1, L_{max}	25.7	57.8	51.0	15.7	58.4	58.0	61.3	56.0
Backup Beeper #2, L_{max}	39.2	46.1	34.9	15.5	39.2	41.7	37.8	34.4
Air Brake Release#2, L_{max}	49.6	66.1	30.4	30.7	65.4	63.1	55.4	51.7
Noise Ordinance Daytime Limit, L_{max}	72	72	72	75	72	72	72	72
Noise Ordinance Nighttime Limit, L_{max}	62	62	62	75	62	62	62	62
Hourly Average Day Ambient, L_{max}	62.9	61.8	70.0	N/A	N/A	N/A	N/A	N/A
Hourly Average Night Ambient, L_{max}	53.7	52.8	55.7	N/A	N/A	N/A	N/A	N/A

- I agree with Landau that backup beepers are exempt from the noise ordinance, and that air brake noise is not exempt. Is clear from the revised Table 7 that the predicted air brake noise from trucks at the loading docks will meet the noise ordinance limits (day or night). However, as noted by the sound levels highlighted in red text in the revised Table 7, the air brake release noise from trucks in the overflow parking lot southeast of the warehouse building could exceed the nighttime maximum limit of 62 dBA at Position 2 (T9) by as much as 4 dBA if a truck releases its air brakes in this lot during the nighttime hours. Note that air brake release noise at Receivers T10 through T13 are also expected to exceed the 62 dBA nighttime L_{max} limit, but these trail locations are on the source property and not subject to the noise ordinance.
- A brief discussion of the tonal nature of backup beepers is provided on page 15 of the noise study report.

Summary and Mitigation

- Landau has made good comments and posed reasonable questions regarding the need for additional clarification of how the sound levels were determined in this report. I believe that this response has provided the information that was missing in the most recent noise study report.

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- This study has shown the project is not expected to create a noise impact in accordance with FTA guidelines at any of the 4 selected receiver locations surrounding the site. In addition, the project is expected to meet the noise ordinance at all of the 19 selected receiver locations, with only one minor exception: if a delivery truck were to move into the overflow trailer parking lot and release the air brakes during the nighttime hours (10 PM to 7 AM), this brief noise could exceed the 62 dBA nighttime noise ordinance limit along the south property line near Position 2 (T9). Having a truck use this overflow trailer parking lot during the nighttime hours is expected to be a very rare occurrence because of its remote location and because nighttime activity would typically be focused on the loading docks. To ensure full compliance with the noise ordinance, I recommend adding signage behind the trailer parking stalls prohibiting trailer movements between the hours of 10 PM and 7 AM. Releasing the air brakes during the daytime hours would not violate the noise ordinance at any source location.

If you have any questions or comments concerning my response to these peer review comments, do not hesitate to contact me.

Very truly yours,
JGL Acoustics, Inc,

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