19. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during Project construction and operation. Discuss the effect of noise in the vicinity of the Project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

This section presents a summary of the preliminary noise assessment for the development in the AUAR area. The noise assessment included measurement of existing ambient sound levels, estimation of future operational noise levels under the proposed Scenario A and Scenario B development, assessment of future noise levels relative to State of Minnesota noise standards, and discussion of potential noise mitigation measures.

Potential operational noise sources for the development scenarios include heavy truck traffic, stationary mechanical equipment associated with cooling, and emergency power generation for the industrial development in the AUAR area. For Scenario A, truck traffic is expected to occur intermittently as trucks access businesses within the AUAR area. Truck traffic is expected to be minimal for Scenario B. Stationary mechanical equipment is expected to potentially operate during daytime and nighttime hours, depending on the type of facility constructed.

In accordance with the EQB's AUAR guidance document, it is not required to address construction noise unless there is some unusual reason to do so. No unusual circumstances are anticipated for the development scenarios that would warrant conducting a quantitative construction noise analysis. Construction activities would comply with the applicable City and County requirements.

The State of Minnesota's noise rules (Minn. Rules Ch. 7030) establish noise limits by noise area classifications (NACs) based on land use at the location of the person that hears noise. The MPCA enforces noise standards at industrial facilities for which it has issued an air permit. MnDOT is responsible for state highway noise mitigation and coordinates with the Federal Highway Administration (FHWA) and the MPCA to evaluate road projects for noise impacts and possible mitigation measures.

Noise levels decrease as distance from the noise source increases. A general rule for a line source, such as a roadway, is that each doubling of distance from the source over hard ground (pavement, water) will reduce the sound level by 3 dBA. For point sources, such as stationary equipment, sound levels generally decrease at a rate of 6 dBA per doubling of distance from the source over hard ground. Additional factors that can affect sound propagation include ground type, topography, solid structures such as walls or buildings, and meteorological conditions

1) *Existing noise levels/sources in the area*

   Existing sound sources in the AUAR area include vehicle traffic along TH 52 and local roadways including 195th Avenue, 500th Steet, and 490th Street. Ambient sound levels were measured at three locations representing noise-sensitive land uses near the AUAR area. Long-term continuous sound measurements were completed at each location over a 26-hour period to establish existing ambient sound levels in the AUAR area. The three monitoring locations are shown in Figure 14, Appendix A and described further in Table 21.

Table 21. Ambient Sound Monitoring Locations

Measurement Site	Description	Measurement Period	Latitude	Longitude
M1	Representative of existing residences along 195th Avenue near the southern section of the AUAR area.	4/22/25 – 4/23/25 11:00 a.m. – 1:00 p.m.	44.215810°	-92.641570°
M2	Representative of existing residences along Highway 52 near the western section of the AUAR area.	4/22/25 – 4/23/25 11:00 a.m. – 1:00 p.m.	44.222220°	-92.649450°

Measurement Site	Description	Measurement Period	Latitude	Longitude
M3	Representative of existing residences along 195th Avenue near the northern section of the AUAR area.	4/22/25 – 4/23/25 11:00 a.m. – 1:00 p.m.	44.230780°	-92.641520°

Existing audible sound sources observed at the monitoring sites included vehicle traffic along Highway 52, birds, wind rustling, and occasional traffic along local roads.

Measured ambient sound levels at the three monitoring sites are summarized in Table 22. The average 1 hour L10 and L50 sound levels during daytime and nighttime periods are presented to provide a comparison to MPCA noise limits and estimated future Project-generated noise levels.

Table 22. Measured Existing Ambient Sound Levels

Measurement Site	Average 1-Hour Sound Levels, dBA			
	Daytime		Nighttime	
	L_{10}	L_{50}	L_{10}	L_{50}
M1	57	53	55	53
M2	67	62	60	57
M3	53	50	50	48

The measurement data in Table 22 shows that the average 1-hour L_{50} sound level ranges from 50-62 dBA during daytime hours and 48-57 dBA during nighttime hours, while average 1-hour L_{10} sound levels range from 53-67 dBA during daytime hours and 50-60 dBA during nighttime hours. The L_{50} sound level represents the median, or average, sound level measured over the hour while the L_{10} sound level represents the loudest 10 percent (6 minutes) of sound levels measured over the hour.

2) *Nearby sensitive receptors*

The AUAR area includes four existing rural residences that would be displaced as part of the development. Several dispersed rural residences are located along 195th Avenue to the east of AUAR area and along US-52 to the north and west of the AUAR area. Medium density residential developments are located to the southeast of the AUAR area. A DNR snowmobile trail, which is a recreational use, is located southwest of the AUAR area.

Nine sensitive receptor locations (named R-01 – R-09) were selected to represent existing residences and nearby agricultural land, as shown in Figure 14, Appendix A. Future operational noise levels were estimated at each of the representative noise-sensitive receptor locations.

3) *Conformance to State noise standards*

Minnesota's noise pollution rules[95] are based on statistical calculations that quantify noise levels over a one-hour monitoring period. The L_{10} calculation is the noise level that is exceeded for 10 percent, or 6 minutes, of the hour, and the L_{50} calculation is the noise level exceeded for 50 percent, or 30 minutes, of the hour. There is no limit on maximum noise.

[95]More information on Minnesota Noise rules, Minn. Rules Ch. 7030, may be found at: https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf

The statutory limits for a residential location are L_{10} = 65 dBA and L_{50} = 60 dBA during the daytime (7:00 a.m. – 10:00 p.m.) and L_{10} = 55 dBA and L_{50} = 50 dBA during the nighttime (10:00 p.m. – 7:00 a.m.). This means that during a one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time or 60 dBA more than 50 percent of the time. These noise limits apply within the noise-sensitive property at the area of normal outdoor human activity nearest to the noise source. Table 23 summarizes noise standard classifications by land use.

Table 23. Noise Area Classifications

NAC	Common land use associated with the Noise Area Classification	Daytime (dBA) L_{10}	Daytime (dBA) L_{50}	Nighttime (dBA) L_{10}	Nighttime (dBA) L_{50}
1	Residential housing, religious activities, camping and picnicking areas, health services, hotels, educational services	65	60	55	50
2	Retail, business and government services, recreational activities, transit passenger terminals	70	65	70	65
3	Manufacturing, fairgrounds and amusement parks, agricultural and forestry activities	80	75	80	75

NACs are based on the land use at the location of the person who hears the noise, which does not always correspond with the zoning of an area. Therefore, noise from an industrial facility near a residential area is held to NAC 1 standards if it can be heard on a residential property.

By state law, the future proposed development in the AUAR area must comply with state noise standards.

Development Scenario Noise Modeling

Future noise levels under both development scenarios were estimated using concept-based standard equipment assumptions and minimum setback distances. The Datakustik CadnaA noise modeling software, which incorporates ISO Standard 9613-2 methods to estimate outdoor sound propagation, was used to simulate noise associated with the development in the AUAR area. Peak (anticipated worst-case) daytime and nighttime 1-hour L_{10} and L_{50} noise levels generated by activities on the site were estimated for comparison with State noise limits. Modeled noise sources included truck movements on on-site truck access roads, trucks idling at warehouse building loading bays, and stationary technology center mechanical equipment, including emergency generators and cooling equipment.

For both Scenario A and Scenario B, future operational noise levels were estimated for two conditions:

1. Daytime Operation – represents normal daytime warehousing, logistics, and technology center operations. Technology center cooling equipment was assumed to be operational. Generator testing was assumed to be occurring during this period. For Scenario A, peak hour truck movements and truck idling at bays were assumed. For Scenario B, truck movements and idling are expected to be minimal and therefore were not included in the model.

2. Nighttime Operation– represents normal nighttime warehousing, logistics, and technology center operations. Technology center cooling equipment was assumed to be operational. Generator testing would not occur during this period. For Scenario A, peak hour truck movements and truck idling at bays were assumed. For Scenario B, truck movements and idling are expected to be minimal and therefore were not included in the mode

Noise Modeling Results

Estimated 1-hour L_{50} and L_{10} noise levels for the two operational conditions described above are shown in Table 24 and Table 25 for Scenario A and Scenario B, respectively. The estimated operational noise levels represent the anticipated peak hour daytime and nighttime noise levels generated by activities and equipment associated with the proposed development scenarios. The estimated noise levels do not include the contribution of ambient sound levels.

Table 24. Scenario A Estimated Operational L_{50} and L_{10} Noise Levels

Receiver	Land Use	NAC	MPCA Noise Limit, dBA L_{50}		MPCA Noise Limit, dBA L_{10}		Estimated Peak Hour Project-Generated Noise Level, dBA L_{50}		Estimated Peak Hour Project-Generated Noise Level, dBA L_{10}[1]	
			Day	Night	Day	Night	Day	Night	Day	Night
R-01	Existing residential	1	60	50	65	55	30	24	33	27
R-02	Existing residential	1	60	50	65	55	58	47	61	50
R-03	Existing residential	1	60	50	65	55	54	45	57	48
R-04	Existing residential	1	60	50	65	55	56	45	59	48
R-05	Existing residential	1	60	50	65	55	58	46	61	49
R-06	Existing residential	1	60	50	65	55	35	26	38	29
R-07	Existing agricultural	3	75	75	80	80	47	36	50	39
R-08	Existing residential	1	60	50	65	55	49	47	52	50
R-09	Existing commercial	2	65	65	70	70	39	32	42	35

[1] L_{10} sound levels were assumed to be 3 dB greater than the L_{50} sound levels.

Table 25. Scenario B Estimated Operational L_{50} and L_{10} Noise Levels

Receiver	Land Use	NAC	MPCA Noise Limit, dBA L_{50}		MPCA Noise Limit, dBA L_{10}		Estimated Peak Hour Project-Generated Noise Level, dBA L_{50} and L_{10}[1]	
			Day	Night	Day	Night	Day	Night
R-01	Existing residential	1	60	50	65	55	29	29
R-02	Existing residential	1	60	50	65	55	50	49
R-03	Existing residential	1	60	50	65	55	48	47
R-04	Existing residential	1	60	50	65	55	50	48
R-05	Existing residential	1	60	50	65	55	47	46
R-06	Existing residential	1	60	50	65	55	35	34
R-07	Existing agricultural	3	75	75	80	80	48	47
R-08	Existing residential	1	60	50	65	55	48	47
R-09	Existing commercial	2	65	65	70	70	37	36

[1] All sources included in Scenario B modeling are assumed to operate continuously in a steady-state manner. Therefore, L_{50} and L_{10} sound levels generated by Scenario B are expected to be equivalent.

The above tables show that for both Scenario A and Scenario B, for both Daytime and Nighttime operations, estimated Project-generated noise levels are below the corresponding L50 and L10 noise limits at each identified receptor location.

4) *Quality of life*

For Scenario A, Table 24 shows that the estimated peak daytime and nighttime hour Project-generated noise levels range from 30 to 58 dBA L_{50} and 33 to 61 dBA L_{10} during daytime and 24 to 47 dBA L_{50} and 27 to 50 dBA L_{10} during nighttime at noise-sensitive receptor locations. For comparison, the existing average 1-hour ambient sound levels measured at representative measurement sites M1-M3 ranged from 50 to 62 dBA L_{50} and 53 to 67 dBA L_{10} during daytime and 48 to 57 dBA L_{50} and 50 to 60 dBA L_{10} during nighttime. Thus, at nearby residences, Project-generated noise levels are expected to be similar to or slightly greater than existing ambient sound levels during daytime hours and lower than or similar to existing ambient sound levels during nighttime hours. Based on the noise assessment results, typical noise from the Project facilities would be expected to be audible at residential areas at times, but not significantly louder than existing conditions.

For Scenario B, Table 25 shows that the estimated peak daytime and nighttime hour Project-generated noise levels range from 29 to 50 dBA L_{50} and L_{10} during daytime and 29 to 49 dBA L_{50} and L_{10} during nighttime at noise-sensitive receptor locations. For comparison, the existing average 1-hour ambient sound levels measured at representative measurement sites M1-M3 ranged from 50 to 62 dBA L_{50} and 53 to 67 dBA L_{10} during daytime and 48 to 57 dBA L_{50} and 50 to 60 dBA L_{10} during nighttime. Thus, at nearby residences, Project-generated noise levels during normal operation are expected to be lower than or similar to existing ambient sound levels during daytime and nighttime hours. Based on the noise assessment results, typical noise from the Project facilities would be expected to be audible at residential areas at times, but not significantly louder than existing conditions.

During a utility power outage, all technology center emergency backup generators would be operational to provide emergency power for technology center operation until utility power is restored. This emergency operating condition would result in higher noise levels compared to the operating scenarios that were modeled, but typically only occur for a short time period.

Item 19 Mitigation Strategies

- The results of the noise assessment show that Scenario A and Scenario B Project-generated noise levels are expected to comply with the State of Minnesota noise limits. Noise mitigation measures would be incorporated into the site design, as necessary, to meet the State noise limits. Mitigation measures that may be considered to achieve compliance include, but are not restricted to, the following:
    - Equipment acoustical silencers
    - Equipment acoustical enclosures
    - Noise barriers or berms
- Because this analysis was based on preliminary conceptual design information, preliminary equipment selection, and preliminary assumptions for future industrial and technology center uses, it is recommended that an updated noise assessment be completed at a later design stage to finalize the noise mitigation requirements for the site.