

Noise Impact Study

Sand & Gravel Mining and Accessory Uses
Empire Township, Dakota County, MN



January 2005

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1.0 INTRODUCTION

1.1 Project Description

A consortium of mine operators and landowners (Mining Consortium) propose to open new mines and expand existing aggregate mining areas to include a total area of approximately 3,600 acres in the northwest portion of Empire Township, Dakota County. Mining would be conducted in a similar manner to the current practices at existing mines within and adjacent to the Mining Area. Routine functions as well as ancillary operations are described in detail below.

Mining and Aggregate Processing

- Clearing and grubbing the site of vegetation and structures, as necessary
- Relocation of infrastructure, as necessary
- Excavation and transport of the raw aggregate materials
- Excavation, stockpiling, and transporting of other soils materials, including clay and topsoil, which may be present within the Mining Area for shipment to sites out of the Mining Area or for use in reclamation
- Washing, grading and stockpiling aggregate materials for sale or later internal use
- Transporting and stockpiling waste "fines" for potential later use in reclamation
- Transporting finished aggregate materials internally for subsequent processing and to construction sites beyond the Mining Area
- Transporting, accepting, and stockpiling clean, compactable fill materials, typically referred to as "backhauled", for potential later use in reclamation
- Transporting, accepting, and stockpiling clean organic soil materials (i.e., peat) for potential later use in reclamation
- Eventual redistribution, compacting, grading of overburden and clean fill materials to reclaim the sites

Ancillary Manufacturing

- Manufacture and transport of asphalt products
- Manufacture, stockpiling, warehousing and transporting of ready-mixed concrete, bagged mortar products, concrete block, concrete pavers, concrete pipe, concrete plank, etc.
- Importing, grading, processing and stockpiling aggregates to be blended with local aggregates in the production of various products which will increase the effective use of the local aggregates and extend the life of the resource
- Transporting, accepting and recycling products returned from construction sites, including "come-back" asphalt, ready-mixed

concrete, bagged mortar products, concrete block, concrete pavers, concrete pipe, concrete plank, etc.

- Transporting, accepting, stockpiling and processing recycled construction materials for inclusion in new products

General and Administrative Operations

- Offices and sales areas
- Equipment maintenance areas
- Fuel storage and refueling areas

Currently, various companies included in the Mining Consortium either own, lease, or have purchase options on a majority of the Mining Area. Those properties not currently controlled by the mining companies are included in this study in recognition that future mining could occur. The mine operators with current and/or future interest or ownership in the Mining Area include:

- Aggregate Industries North Central Regional (Aggregate Industries)
- Cemstone Products Company (Cemstone)
- Dakota County Transportation Department (Dakota County)
- Fischer Sand and Aggregate Company (Fischer)
- Heikes Property (Heikes)
- McNamara Contracting, Inc. (McNamara)
- Tiller Corporation (Tiller)
- Don Peterson (Peterson)

1.2 Purpose of this Study

The various mine operators have investigated the potential for aggregate production in this area. In addition, the Minnesota Geologic Survey (MGS), Minnesota Department of Natural Resources (DNR), Metropolitan Council (METC) and local governments have conducted studies of available mineral aggregates in the metropolitan area. These studies, together with investigations conducted by mining companies, have revealed extensive reserves of mineral aggregates in portions of Empire Township. Over the next 30 to 40 years the Mining Consortium will remove and process approximately 200 million tons of sand and gravel reserves within the Mining Area.

A Scoping Environmental Assessment Worksheet (Scoping EAW) was prepared for the proposed project in October 2003. Following review of that document, the Minnesota Environmental Quality Board (EQB) designated the review process as a "Related Actions Environmental Impact Statement (EIS)", since multiple companies and property owners are involved. A Scoping Decision Document was published in February 2004 declaring the need for an EIS and an outline of what it would address.

The Scoping Decision Document required that additional analysis be completed for the Mining Area, addressing a number of topics, including noise and air quality. This Noise Impact Study has been prepared to provide an analysis of

potential noise impacts in the Mining Area, and to identify options for mitigating these potential impacts. The findings of this Impact Study will be incorporated into the forthcoming EIS.

1.3 Project Location and Setting

The project is proposed for Empire Township, which lies in the central portion of Dakota County, MN (**Figure 1**). The proposed Mining Area is in the northwest portion of the township, occurring in all or part of Township (T) 114N, Range (R) 19W Sections 5, 6, 7, 8, 9, 10 and 16 (**Figure 2**).

1.4 Study Area

For this Noise Impact Study, the Study Area was expanded to include representative sensitive noise receptors. Noise receptors were located where sensitive noise receivers exist and where project-related noise impacts might be anticipated. The receptors chosen represent adjacent residences that may experience changes in noise. They are within and adjacent to the Mining Area, and along roadways that will carry traffic related to the site. Some of these receptors fall outside the Mining Area, along Pilot Knob Road to the west, and along Chippendale Avenue south of the Mining Area. **Figure 3** shows all sites that were analyzed for noise as a part of this study.

1.5 Previous Studies

No previous site-specific noise studies were referenced as a part of this document, as none were identified for areas near the project site.

2.0 METHODOLOGY AND ASSUMPTIONS

2.1 Regulations

At the State level, environmental noise is regulated by the Minnesota Pollution Control Agency (MPCA). The MPCA enforces noise standards that limit the level and amount of time a noise may occur on specific land uses. Noise levels are computed and assessed in terms of noise descriptors as decibels (dBA). MPCA uses the descriptors L_{10} and L_{50} as the primary standards to limit noise to an acceptable level. L_{10} is the decibel level that is exceeded during ten percent of any period, i.e. six minutes of an hour. L_{50} is the decibel level that is exceeded during fifty percent of any period, i.e. 30 minutes of an hour.

City and County roads are exempt from State standards:

No standards adopted by any State agency for limiting levels of noise in terms of sound pressure which may occur in the outdoor atmosphere shall apply to... (3) except for the cities of Minneapolis and St. Paul, and existing or newly constructed segment of a road, street, or highway under the jurisdiction of a road authority of a town, statutory or home rule charter city, or county, except for roadways for which full control of access has been acquired...Minnesota Statutes Section 116.07, Subd.2a

Because of this exemption for City and County roads, exceedances of the state standards by traffic on these roadways do not require noise mitigation. For other roadways, such as state highways, the standards do apply. However, the methodology of this Impact Study is to evaluate all impacts, and provide details of the changes predicted as a result of this project.

2.2 Noise Methodology

Traffic noise levels are measured in units of A-weighted decibels to represent the response of the human ear to sound energy. Since the human ear is more sensitive to middle and high frequency sounds than it is to low frequency sounds, sound levels are weighted to reflect human perceptions more closely. These “A-weighted” sounds are measured using the decibel unit dBA. On this logarithmic scale, a doubling of sound energy (due to a doubling of traffic, for example) increases nearby noise levels approximately three dBA, and a tenfold sound energy increase raises noise levels approximately ten dBA. However, humans do not perceive noise variations in direct proportion to the change in sound energy. An average person cannot perceive noise changes of less than three dBA from a continuous noise source like a highway. A ten dBA noise increase sounds to the average person as though the noise has become twice as loud.

As a means to compare noise level changes due to the proposed project, the nighttime peak (6:00-7:00 AM) and daytime peak hour (7:00 AM-8:00 AM) L₁₀ and L₅₀ A-weighted noise levels have been predicted. The nighttime peak corresponds to the highest noise levels occurring during the nighttime (10:00 PM – 7:00 AM).

These noise levels were predicted and compared for a Year 2025 No-Build and a year 2025 Build Scenario, as defined in the Traffic Impact Study (TIS) for the project. The No-Build scenario reflects the following:

- Anticipated residential growth and associated increases in background traffic
- All existing mining companies not in operation (exports exhausted in remote locations and existing parcels within the proposed Mining Area), except;
- Material export by existing Cemstone plant only, via its railroad off-loading operation

The Build scenario used in this study includes all mining operations proposed within the Mining Area by 2025 (phasing as shown in **Figure 2**), along with Mitigation Option 2 as defined in the TIS. Mitigation Option 2 includes many intersection and roadway improvements, more generally consisting of:

- Relocation of the proposed Aggregate Industries/McNamara access point from 170th Street to Biscayne Avenue
- Geometric improvements at several Mining Area intersections
- Optimized signal operations

Projected noise levels were calculated using the Stamina 2.0 noise prediction model developed by the Federal Highway Administration (FHWA) and modified by Mn/DOT to reflect the sound energy coefficients for heavy truck noise in Minnesota. The noise model uses traffic volumes, vehicle type mix, vehicle speed, and receptor locations to calculate noise levels. Traffic information used for the analysis was taken from the TIS.

3.0 EXISTING CONDITIONS

3.1 Traffic Related Noise

3.1.1. Monitoring of Existing Noise Levels

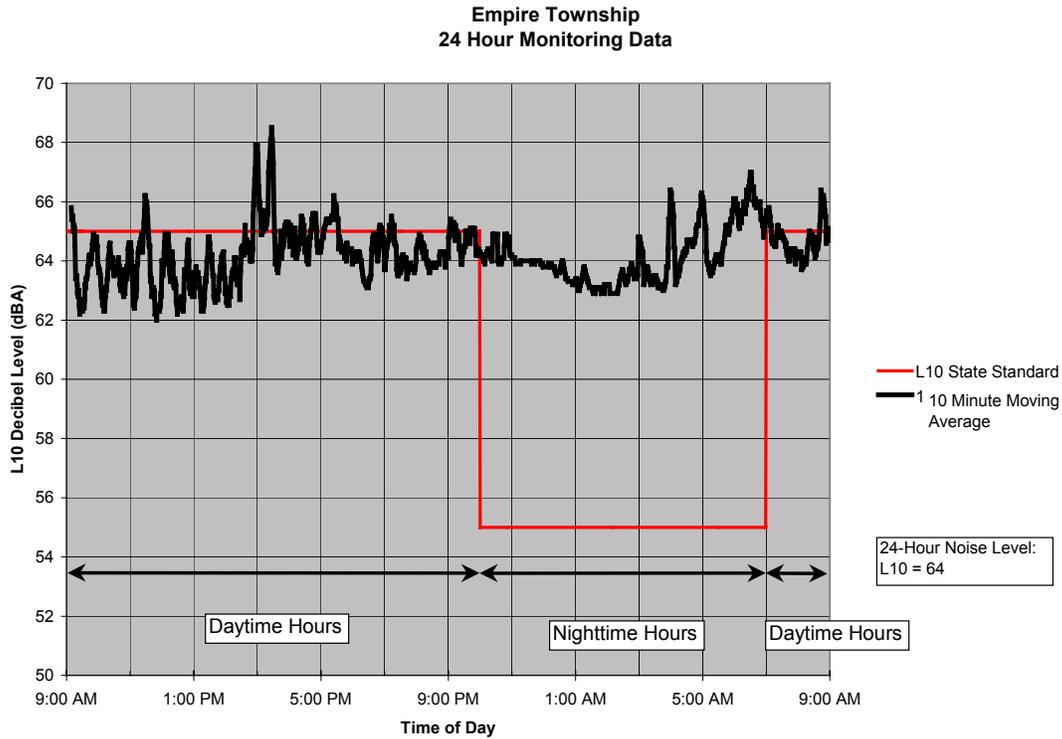
The area adjacent to the proposed Mining Area currently receives noise from a variety of sources, with roadway traffic being the major source. In addition, there are several mining operations that already exist and are in full operation in or near the proposed Mining Area, and therefore currently contribute to truck traffic noise at the site. Two mining companies (Cemstone and Tiller) are currently in operation at the west end of the Mining Area. Three other companies (Aggregate Industries, McNamara and Fischer) are in full operation outside of the proposed Mining Area, between the western edge of the Mining Area and Pilot Knob Road. The Heikes property, which is located east of Biscayne Avenue and south of 170th Street, is also currently being mined by Aggregate Industries. Aggregate Industries trucks material from the Heikes property to the plant west of the Mining Area. These existing facilities are show on **Figure 3**.

Existing noise monitoring was conducted at three locations surrounding the Mining Area. Two of these locations include receptors N-6 and N-8 and are shown on **Figure 3**. At these locations, peak noise levels were monitored at site-specific receptor locations near roadways for analysis of project related traffic noise impacts. The third location is at the Dakota County Highway Department Maintenance Facility, where noise was monitored for 24 hours as a means to display the daily variation of ambient noise levels in the project area.

24-Hour Monitoring

The 24-hour monitoring location was on the roof of the Dakota County Highway Maintenance Facility located on County Highway 46, east of TH 3. This was selected as a location to characterize the daily ambient noise in the project area over the course of a day, and not any specific roadway noise. Table 3-1 shows the L10 dBA levels between 9:00 AM on August 11, 2004 through 9:00 AM on August 12, 2004. The roof of the facility was chosen as a secure location to keep the equipment. The location includes some localized noise from the facility, including air conditioners and other miscellaneous equipment. Additional localized noise sources include some parking lot noise, and maintenance vehicle activity, though the placement was as far as possible from maintenance vehicle activity. Table 3-1 shows 10-minute moving averages to filter out one-minute irregularities, and shows how much noise can vary during the course of a day.

Table 3-1. Existing Project Area Noise Levels – 24 Hour Period



Site-Specific Monitoring

The site-specific traffic-related noise monitoring was conducted in accordance with MPCA guidance at two sensitive receiver locations (receptors N-6 and N-8). This monitoring data is used to provide actual measured noise levels for comparison to the modeling analysis, and give validation that the modeling procedures are predicting noise levels that exist. This validation step is completed to show that the modeling process is a valid method to predict future noise levels based on No-Build and proposed scenario conditions.

Nighttime noise monitoring at the two site-specific locations was conducted between 6:00 AM and 7:00 AM, which is often the highest noise period for the nighttime time period corresponding to the State Standard “nighttime” hours. The nighttime period is between 10:00 PM and 7:00 AM, which typically includes the beginning of the morning rush hour.

Daytime noise monitoring at the two site-specific locations was conducted between 7:00 AM and 8:00 AM, which is often the highest noise period for the daytime period corresponding to the State Standard “daytime” hours. The daytime period is between 7:00 AM and 10:00 PM

3.1.2. Modeling of Existing Traffic Noise levels

Existing traffic noise levels were modeled for 16 receptor locations surrounding the Mining Area, as shown in **Figure 3**. The existing modeling includes predicted

noise levels at the two site-specific receptors that were monitored as described in Section 3.1. This comparison is done to provide validation that the model is closely replicating existing conditions. Following this validation, the model can be used with confidence at additional receptors, and for future year scenarios.

The modeling of daytime noise levels, shown in table 3-1, shows that the modeling is within one decibel of the monitored noise levels (at receptors N-6 and N-8). Typically, a change in three decibels on a day-to-day basis in an outdoor environment is considered just barely perceptible. Therefore, these existing daytime noise levels indicate that the model is appropriately calibrated to predict future noise levels.

The modeling of nighttime noise levels, shown in table 3-2, shows that the modeling is within one or two decibels of the monitored noise levels. Therefore, these existing nighttime noise levels indicate that the model is appropriately calibrated to predict future noise levels.

Table 3-2 Existing Daytime Noise Levels

Receptor	Predicted L ₁₀ and L ₅₀ Noise Level (dBA)			
	Existing Monitored		Existing Modeled	
	L ₁₀	L ₅₀	L ₁₀	L ₅₀
N-1			75	70
N-2			77	72
N-3			75	70
N-4			75	70
N-5			75	70
N-6	75	68	74	69
N-7			59	56
N-8	74	68	73	67
N-9			75	67
N-10			55	52
N-11			64	59
N-12			64	58
N-13			53	49
N-14			58	54
N-15			69	62
N-16			67	61
Daytime State Standards ⁽¹⁾	65	60	65	60

¹ Daytime L₁₀ and L₅₀ State Standards are shown for reference only: the streets analyzed are exempt from the State Standards.

Table 3-3 Existing Nighttime Noise Levels

Receptor	Predicted L ₁₀ and L ₅₀ Noise Level (dBA)			
	Existing Monitored		Existing Modeled	
	L ₁₀	L ₅₀	L ₁₀	L ₅₀
N-1			74	69
N-2			76	71
N-3			74	69
N-4			75	69
N-5			74	69
N-6	76	71	74	69
N-7			59	56
N-8	74	68	73	67
N-9			75	67
N-10			55	52
N-11			64	59
N-12			63	57
N-13			52	48
N-14			58	53
N-15			69	61
N-16			67	60
Nighttime State Standards ⁽¹⁾	55	50	55	50

⁽¹⁾ Nighttime L₁₀ and L₅₀ State Standards are shown for reference only: the streets analyzed are exempt from the State Standards.

3.2 Site Related Noise

Site related noise is generated within the Mining Area at several locations, including three existing mining operations. Tiller currently operates a sand and gravel mine and processing plant and an asphalt plant in the northwest part of the Mining Area. Cemstone operates a ready mix/concrete facility along the western edge of the Mining Area, just south of 170th Street. Heikes operates a sand and gravel and clay extraction facility near the east boundary of the proposed Mining Area. Noise-generating activities at these facilities includes excavation, hauling, stockpiling and washing of aggregate.

On the northwest quadrant of the property, the direct line of sight from active mining operations to nearby residential areas is blocked from view by ground features. In addition, the roadway traffic is a more constant dominant noise source over the mining operation.

4.0 IMPACT ANALYSIS

4.1 Traffic-Related Noise Impacts

Tables 4-1 and 4-2 show the predicted Year 2025 No-Build (including anticipated residential growth in the project area) L₁₀ and L₅₀ noise levels for both daytime and nighttime in comparison to predicted Year 2025 Build scenario. The Build scenario includes traffic projections for 2025, with Mitigation Option 2 from the Traffic Impact Study.

Table 4-1. Predicted Daytime Noise Levels for the Proposed Project

Receptor	Predicted L ₁₀ and L ₅₀ Noise Level (dBA)					
	Existing Modeled		2025 No-Build		2025 Build	
	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀
N-1	75	70	75	70	75	70
N-2	77	72	77	72	77	72
N-3	75	70	75	70	75	70
N-4	75	70	75	71	75	71
N-5	75	70	75	70	75	70
N-6	74	69	75	70	75	71
N-7	59	56	59	57	61	58
N-8	73	67	73	67	76	70
N-9	75	67	74	68	77	71
N-10	55	52	56	54	59	57
N-11	64	59	66	62	69	65
N-12	64	58	66	62	66	63
N-13	53	49	54	52	55	53
N-14	58	54	60	57	61	58
N-15	69	62	72	67	72	67
N-16	67	61	70	65	70	65
Daytime State Standards⁽¹⁾	65	60	65	60	65	60

¹ Daytime L₁₀ and L₅₀ State Standards are shown for reference only: the streets analyzed are exempt from the State Standards.

A three-decibel change is considered just barely perceptible in an outdoor environment, on a day-to-day basis, and a five-decibel change is considered quite noticeable. A ten-decibel increase of noise levels would be perceived as a doubling of noise. Although the noise levels at many locations are higher than the state standards, the roadways are exempt from the state standards, as described under section 2.1 of this report.

The 2025 No-Build scenario includes traffic growth that will occur in the surrounding areas, and the resulting traffic level increases. By 2025, all mining operations within and immediately outside the proposed Mining Area will have ceased, with the exception of the Cemstone plant exporting via its railroad

offloading facility. Therefore, the truck volumes for the No-Build scenario decrease from existing conditions, and Receptor N-9 shows a decrease in L_{10} noise levels from existing as a result. Receptors N-12, N-15, and N-16 would experience decibel increases of more than three decibels at L_{50} noise levels, which means the decibel level would be exceeded 50 percent of the time in any given time period. The increase is due to increases in background traffic. All other receptors would experience no change or an increase of three decibels or less in L_{10} and L_{50} noise levels between existing and No-Build.

The 2025 Build scenario is compared to the 2025 No-Build scenario. Based on the daytime modeling results, the changes in L_{10} and L_{50} noise levels would not exceed three decibels for any receptor, and therefore would be imperceptible.

During the nighttime study period, Receptors N-12 through N-16 would experience L_{50} noise level increases of more than three decibels in the No-Build scenario, which means the Nighttime State Standard decibel level would be exceeded 50 percent of the time in any given time period. The increase is due to increases in background traffic. All other receptors would experience no change or an increase of three decibels or less in L_{10} and L_{50} noise levels between existing and No-Build.

Table 4-2. Predicted Nighttime Noise Levels for the Proposed Project

Receptor	Predicted L ₁₀ and L ₅₀ Noise Level (dBA)					
	Existing Modeled		2025 No-Build		2025 Build	
	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀
N-1	72	66	72	66	72	66
N-2	74	68	74	68	74	68
N-3	72	66	72	66	72	67
N-4	73	66	73	67	73	67
N-5	72	66	72	66	72	66
N-6	71	65	72	66	73	67
N-7	56	52	57	53	58	55
N-8	70	62	70	63	73	66
N-9	72	63	71	63	74	67
N-10	52	49	53	51	56	54
N-11	62	55	63	58	66	62
N-12	61	54	63	58	64	59
N-13	50	45	52	49	53	50
N-14	56	50	58	54	58	54
N-15	66	58	69	63	70	63
N-16	64	56	67	61	68	62
Nighttime State Standards ⁽¹⁾	55	50	55	50	55	50

¹ Nighttime L₁₀ and L₅₀ State Standards are shown for reference only: the streets analyzed are exempt from the State Standards.

In comparing the 2025 Build scenario to the 2025 No-Build scenario, the nighttime modeling results show that the changes in future noise levels as a result of the proposed project would not exceed three decibels, except for the L₅₀ noise levels at receptors N-9 and N-11, which will both increase by four decibels as a result of the proposed project.

All City and County roadways within the proposed Mining Area are exempt from State noise standards. Most are currently operating at noise levels higher than state standards, and this will continue or increase slightly under the Build scenario.

Chippendale Avenue / TH 3 is a state highway that is not exempt from the state standards. However, noise levels at receptors along TH 3 exceed the standards even under the No Build Scenario, and noise levels do not increase substantially as a result of the project. In particular, the noise levels do not increase from below the standards to above the standards as a result of the project, and the noise level increases are all three decibels or less, except for Receptor 11, where the nighttime L₅₀ noise level increases by 4 decibels.

As a result, even though the current noise condition and the predicted noise conditions at these receptor sites exceed the State thresholds, noise abatement measures are not required and are not included in the project plans.

4.2 Mining-Related Noise Impacts

Noise sources that relate directly to the mining operation will include a variety of mobile and stationary equipment.

Mobile equipment will include:

- Bulldozers
- Scrapers
- Front-end loaders
- Excavators
- Trucks for on-site hauling
- Fork trucks
- Small skid loaders
- Various small maintenance trucks

Stationary Equipment will include:

- Conveyors
- Crushers
- Wash Facility
- Processing Plant
- Screening
- Enclosed Hot Asphalt Facilities
- Concrete Batch Plants
- A Concrete Block Plant

Each of these noise sources will function as a point source. In contrast to traffic-related noise impacts, point-source noise levels decrease over distance at a higher rate than traffic-related noises. This is due to the nature of the noise sources. A roadway is considered a line source. When the distance between a line source and a receiver is doubled, noise levels decrease by approximately 3 decibels. However, when the distance between a point source and a receiver is doubled, noise levels decrease by approximately 6 decibels. This is a result of the fact that when the distance between a roadway and a receiver is doubled, only the roadway segment closest to the receiver is doubled. Roadway segments that are significantly far from the receiver experience a smaller percentage increase in the separation distance.

The distances between mining operations and sensitive receivers will vary significantly as mining operations move within the project boundaries. Site activities will be placed to maximize efficiency within the site. In addition, topography will vary significantly by site and year. As mining progresses, mining activities will occur at lower elevations and will be obscured from view by berms or grade, containing much of the site-generated noise. However, whenever

possible, operations will be located as far from sensitive receivers as possible, and will be oriented to direct the loudest equipment away from sensitive receivers whenever possible. Appropriate placement of site activities, will allow noise level dissipation from point source activities, thereby minimizing noise at sensitive receivers. This is not to say that the mining operation will not be heard, but in comparison to state standards, site-generated noise levels will be substantially lower than traffic-related noise described in the previous section.

5.0 MITIGATION OPTIONS

5.1 Traffic-Related Noise Mitigation Options

The roadways associated with the project are exempt from State noise standards. Therefore, no mitigation is required, and none is proposed to mitigate traffic noise impacts.

Mining operators are required by the Township to offer to buy out any residents within the proposed Mining Area. Therefore, all on-site receptors could potentially be bought by the mining operators, thereby removing the potential for on-site noise impact.

5.2 Mining-Related Noise Mitigation Options

During the duration of the mining operation, equipment, facilities, and hauling operations will occur at varying locations. Most often, the distance from these operations to sensitive noise receivers will be significant, and substantial mitigation will not be needed. However, properly working mufflers will be maintained on all internal combustion engines, and the site layout will be such that topography can be used to block noise as much as possible.

Specific Mitigation Measures should include the following:

- Asphalt facilities should be oriented so that the exhaust fan is directed away from sensitive receivers.
- Truck speeds should be kept as low as possible for all on-site roads. Smooth road surfaces should be maintained to reduce tire noise and airborne vibration.
- Standard acoustic backup alarms should be replaced with strobe lights at night and with new technology as it becomes available and permitted by the Occupational Safety & Health Administration (OSHA) and the Mining Safety Health Administration (MSHA). Squeaks and squeals should be minimized by regular maintenance and lubrication of equipment.
- Any redevelopment of the area should minimize the introduction of new receivers that may result in any noise impacts. This can be accomplished by locating and scheduling redevelopment in locations where operations are complete.

Mining operators are required to offer to buy out any residents within the proposed Mining Area. Therefore, any residences within the proposed Mining Area could potentially be bought by the mining operators, thereby removing the potential for site-generated noise impact at these sensitive receptors.

6.0 CONCLUSIONS

6.1 Traffic Related Noise and Mitigation

In comparing the 2025 Build scenario to the 2025 No-Build scenario, the nighttime modeling results show that the changes in future noise levels as a result of the traffic generated by the proposed project would not exceed three decibels, except for the L_{50} noise levels at receptors N-9 and N-11. Noise levels at both of these receptors would increase by four decibels as a result of the proposed project. Receptor N-9 is located just outside the proposed Mining Area, and Receptor N-11 is located within the proposed Mining Area (**Figure 3**). This impact would be limited in duration, and can be minimized by focusing operating hours during daytime hours.

The roadways associated with the project are exempt from State noise standards. Therefore, no mitigation is required, and none is proposed to mitigate traffic noise impacts.

Mining operators are required to offer to buy out any residents within the proposed Mining Area. Therefore, all on-site receptors could potentially be bought by the mining operators, thereby removing the potential for traffic-related noise impact at these locations.

6.2 Mining Related Noise and Mitigation

Distances between mining operations and sensitive receivers will vary as mining operations move within the proposed Mining Area. Site activities will be placed to maximize efficiency within the site. However, whenever possible, operations will be located as far from sensitive receivers (residences) as possible, and will be oriented to direct the loudest equipment away from existing sensitive receivers whenever possible. Appropriate placement of site activities, in coordination with noise level dissipation from point source activities will help reduce noise at sensitive receivers. This is not to say that the mining operation will not be heard, but in comparison to state standards, noise levels will be substantially lower than traffic-related noise.

The proposed project would cause no significant noise impacts with noise mitigation measures in place for the on-site activities. Specific Mitigation Measures should include the following:

- Asphalt facilities should be oriented so that the exhaust fan is directed away from sensitive receivers.
- Construction activities will typically occur between 5 AM and 10 PM, with plant maintenance between 10 PM and 5 AM.
- Projects may require nighttime operation. Nighttime operations will only be conducted after presenting a request to the Township Board.

- Truck speeds should be kept as low as possible for all on-site roads. Smooth road surfaces should be maintained to reduce tire noise and airborne vibration.
- Standard acoustic backup alarms should be replaced with strobe lights at night and with new technology as it becomes available and permitted by the Occupational Safety & Health Administration (OSHA) and the Mining Safety Health Administration (MSHA). Squeaks and squeals should be minimized by regular maintenance and lubrication of equipment.
- Any redevelopment of the area should minimize the introduction of new receivers that may result in any noise impacts. This can be accomplished by locating and scheduling redevelopment in locations where operations are complete.

Mining operators are required to offer to buy out any residents within the proposed Mining Area. Therefore, any residences within the proposed Mining Area could potentially be bought by the mining operators, thereby removing the potential for site-generated noise impact at these sensitive receptors.

7.0 REFERENCES

Minnesota Statutes 2004, Chapter 116.07 Subd. 2a. Exemptions from standards.