

From: Jim Kuipers [Professional Engineer (PE Mining/Minerals)]  
Subject: NOISE in 10.19. Small Scale Sand and Gravel Extraction regulations  
Date: July 21, 2016  
To: Ross Lockridge [Emphasis added by RL]

Ross,

Noise is a particularly difficulty subject particularly when we are talking residential areas and mining activities.

Under the Stillwater GNA we've performed background noise studies as suggested by the regs for both before and during mining activities. We also interviewed people who lived near those activities to find out what kind of noises from the mine they found noticeable. I also did the same thing for Olathe County, Kansas dealing with a limestone quarry that had been surrounded by a residential area while inactive and then when it went active again the residents had all kinds of complaints.

In my experience except in the most extreme cases the problem is nuisance noise rather than noise exceeding decibel levels. In addition, the noise is more influenced by wind direction and atmospheric conditions than you might think. Barriers, while certainly helpful from a decibel standpoint, are of limited use from a nuisance standpoint.

The best approach is setbacks and barriers to decrease the overall sound impacts but in particular in terms of decibels, combined with nuisance noise preventative measures. This means if there are residential areas within one mile (I'd suggest more given how much I value my quiet at night) limiting hours of operation to daylight hours and weekdays. This also means mitigating back-up alarms and other nuisance noise sources (e.g. generators, fans) by either eliminating them or insulating them to reduce noise. It's those high-pitched noises that in particular that don't have to be much in terms of decibels that turn out to be the biggest problem, particularly at night, along with crushing activities. At a large tailings impoundment the primary complaint turned out to be folks at night hearing a pickup's

backup alarm and honking their horn before moving forward (both required by MSHA) when the foreman did a tailings inspection every hour (good practice!) during the night. It wasn't even detectable in terms of decibels. We eliminated that by creating a loop so he didn't have to stop and backup then go forward again during the inspection.

If you could incorporate some of Section 5.0 from the attached [Hertzler mitigation plan (r 4-23-01.doc)] as an addition it might help. Basically, the requirements of the GNA were to do a baseline study and develop a mitigation plan, similar to the regulatory requirements. But ideally there would be some structure and it needs to address nuisance noise.

Also see 18.50.160 Quarries & Mines of a land use document from Olathe County that I helped with. [http://www.olatheks.org/files/Development/50%20Supplemental%20Use%20Regulations\\_4%20AB%20Graphics\\_1.pdf](http://www.olatheks.org/files/Development/50%20Supplemental%20Use%20Regulations_4%20AB%20Graphics_1.pdf) It provides some interesting perspective (e.g. vibration for one) and supports the 1,000 ft setback. Everything I know suggests that should be a minimum for a variety of reasons.

Jim K

From: Ross Lockridge  
Subject: NOISE in 10.19. Small Scale Sand and Gravel Extraction regulations  
Date: July 20, 2016  
To: Jim Kuipers

Jim,

There are several items in the [Santa Fe County's code] 10.19. Small Scale Sand and Gravel Extraction regulations that focus on noise, listed below. It seems that these could have some relevance pertaining to setbacks.

In my reading of various recommended setbacks, certain decibel levels are tied to property lines, but not often to specific setbacks. However I did find in Robert Freilich's book, *21st Century Land*

*Development Code*, a suggestion that “[if] a sound barrier is constructed that is capable of reducing sound levels at the nearest residential lot line to a level meeting the performance standards of the [LOCAL GOVERNMENT NOISE ORDINANCE], the required distance from residential zones for crushing, processing, and blasting may be reduced to 500 feet.” — *Freilich, 7.20.3.3. Sound Barrier*.

Here he is reducing the setback from [down to] 750 feet, a setback he recommends “when the proposed activity will not exceed 24 months”. Otherwise he recommends 1,000 feet from residential areas.

Here is how 10.19. Small Scale has addressed the subject of noise:

10.19.3.8. A description of the projected noise to be generated and an explanation of how the operator will comply with the requirements of §7.21.4 ([Noise](#)).

10.19.3.1.16. Air Quality and Noise.

a. The requirements of Section 7.21 (Air Quality and Noise) of the SLDC shall be met; however, only a preliminary air quality report is required . . . .

b. Noise Study. A noise study showing the projected noise from the specific equipment to be used is required to be submitted with the application. Such noise study shall provide a baseline of three consecutive weekdays representative of existing conditions.

I wonder if you might reflect some on decibel levels related to setback?

Best,  
Ross