

Review of the Potential Noise Impacts of the Proposed Hard Rock Mine

This report is prepared for

Town of Osceola, Polk County, WI
516 East Avenue North, Dresser, WI 54009-0216

QRDC Project Tracking Number: **Q091001120-Osceola**
Customer PO: **N/A**

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1 Executive Summary

The Town of Osceola has hired QRDC for reviewing the noise aspects of the revised SEP application. Specifically, the Town has requested that certain reports be reviewed and certain questions to be answered. The consultant, Dr. Daryoush Allaei, PE, reviewed the documents that had relevance to noise and vibration issues raised by the proposed mining operation.

Based on the reviewed data and documents, it was concluded that the operation of the proposed mining plant will have adverse impact on the community and its residents. The degree of impact is yet to be determined. In addition, there is no engineering data that supports that blasting activity is safe and does not negatively impact the residents and their houses. Finally, meeting standards does not mean that the proposed operation will not negatively impact the community.

The following recommendations are made. Background noise and ground vibration in the local community should be measured in order to more accurately determine the impact of generated noise and vibration on the surrounding community.

It is best if the noise and vibration levels are measured inside the nearby houses. In particular, living rooms, kitchen, and bedrooms is where people spend most of their day and night times. The measurement of the background noise in the houses will be very useful for determining the impact on community.

It will be useful to conduct a survey of other similar sites referenced by Kraemer's consultants and reports. The survey should focus on the community and not if these existing sites meet the standards and regulatory limits. For example, the residents should be asked if their lives have been negatively impacted due to excess noise and/or vibration. Has there been any reported damage due to ground vibration generated by blasts? What are the current noise and vibration levels in their houses while the plant is operating at its normal and optimum production?

This report delivery concludes the entire work for this project. The consultant plans to attend the County's public hearing to be held on October 21st, 2009.

2 Introduction

Per the information provided by the Town of Osceola (Town), Kraemer Mining and Materials (Kraemer) submitted a Special Exception Permit (SEP) application to Polk County (County) in October of 2008. Kraemer has proposed to operate a hard rock mine in Town. As part of the application, Kraemer included a petition to rezone approximately 23 acres on the west from Commercial to Agricultural -1. After an extensive review of the proposed mining operation, the Town denied the rezoning petition component, in large part due to concerns about noise impacts on the surrounding residences. Kraemer has re-submitted their SEP application without the parcel in question, and including an additional parcel of approximately 35 acres to the northeast. Because there is no rezoning petition in the current application, granting authority for the SEP rests entirely with the County. The County is soliciting the Town's opinion as part of the SEP application evaluation process. The public hearing where the Town will present this opinion is October 21st, 2009.

The Town hired QRDC for reviewing the noise aspects of the revised SEP application. Specifically, the Town would appreciate having the following deliverables:

1. A report detailing
 - a. A review of the revised application, referencing Mr. Kampermann's report for an assessment of the original application.
 - b. Comments on the applicant's challenge of Mr. Kampermann's findings, and
 - c. Responses to a list of specific questions (see below). Other significant issues may be brought to the Town's attention.
2. Presenting a professional opinion on the Town behalf at the County's public hearing to be held October 21st, 2009 in Balsam Lake, Wisconsin. If unable to do this, QRDC will have the option to suggest an alternative.

Specific Questions that Town seeks answers are listed below.

1. Regarding the revised application, Town is aware of the following:
 - a. The daytime noise level has been raised from 50 to 60 dB. What exactly does this mean as far as additional noise? 20% more? 100% more?
 - b. The proposed hours of operation are stated as from 6 am to 10 pm. Is this typical for this type of setting? For this type of operation in general? What is the anticipated impact on nearby residents?
 - c. Conveyors have been added. How significantly does this contribute to overall noise emissions?
 - d. The business operation is now on top of the hill (to the north and east).
2. There is a lot of prep work (overburden removal, berm construction, etc) described in the revised Special Exception Permit application that will be done prior to actual extraction of the basalt. Can you comment on anticipated noise levels of these operations?
3. Can you give a reasonable estimate of the cumulative noise emission during full operations (trucks, conveyor, grinding, loading, etc all happening at the same time). Do all these activities tend to happen at the same time? Usually? Regularly? Occasionally? Rarely?

4. A resident who works at a similar facility nearby commented that safety regulations require that he wear double ear protection while rail cars are being loaded. What kind of noise level would require this and how audible would it be to surrounding residents?
5. Note that the rail bed, running through the proposed site and nearby residences, is oriented North-South. Do you see this as having any affect on how noise would travel? If so, would it negatively impact residents?
6. In the MN noise standards, it appears that L50 means the standard only has to be met for 30 minutes of the hour. If this is true, what about the other 30 minutes? Is this an appropriate standard for the proposed operation? If our understanding of L50 is not correct, please clarify.
7. In the MN noise standards, under Scope, there is the statement "However, these standards do not, by themselves, identify the limiting levels of impulsive noise needed for the preservation of public health and welfare." What does this mean?
8. Given the above, are there any short- or long-term health-related issues regarding the anticipated noise emissions?
9. A summary opinion of whether or not, from a noise perspective, the proposed operation is compatible with the surrounding land use? Why or why not?

This work was described by Quote Number Q091001120-Osceola. A summary of our findings, results and recommendations is presented in this report.

3 Assumptions, Procedure, and Data

3.1 Key Assumptions

The following assumptions were used throughout this work.

- 1) The customer provided all the data and reports reviewed by the consultant.
- 2) The customer is interested in the assessment of the impact of noise generated by a mining site on the community.
- 3) The customer will facilitate site visits if needed.
- 4) The customer is interested in post processing and brief analysis of the data.
- 5) No noise data will be collected in this phase of the project.
- 6) Per the Customer's request, only 10 hours is allocated to this phase of the project. The customer has the option to increase the number of hours at anytime provided QRDC's workload allows the allocation of the additional hours.
- 7) If needed, the customer will provide detailed material properties, dimensions, and geometrical data.
- 8) The customer is responsible for implementation of recommendations, if any.

3.2 Procedure

In addition to sending files as attachment in emails, Town provided web links to reports and data that were reviewed. The consultant downloaded and printed the entire set of documents. The main focus was on the report by Kamperman Associates, Inc. No noise, vibration, or blast data was collected during the course of this project. Table 1 identifies the documents reviewed in this project. The main emphasis was given to the sections related to noise or vibration. Other environmental impacts were not considered in this review.

Table 1 Documents provided by Town

File No.	Document Description	Web site or sent via email
1	Overview of Initially Proposed Mining Operation	http://www.communityhotline.com/upload/Application%20Cover-TOC%20Overview.pdf
2	Initial Braslau Report re: Noise	http://www.communityhotline.com/upload/Report_on_Air_Quality_Blasting_and_Traffic.pdf
3	Kampermann 22 Jan 09 Review of Noise for Initial Quarry Application	http://www.communityhotline.com/upload/Kamperman_Noise_Review_and_References.pdf
4	Kraemer Revised Special Exception Application	http://www.co.polk.wi.us/landinfo/ZoningSpecialExceptionApplication.asp
4a	Special Exception Application Form – For overview of operation	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerSpecialExceptionApplicationForm.pdf
4b	Maps – Map 1A – Shaded relief map too help you get a feel for the terrain	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerMaps.pdf
4c	Summary of Information – Blasting on pg 4, Noise on pp 7-8 and Conclusions on pg 11	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerSummaryofInformation.pdf
4d	Appendix E – Braslau letter re: noise	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerAppendixE.pdf
4e	Appendix F – Minnesota noise standards	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerAppendixF.pdf
4f	Supplemental Rezoning –Petition was denied by the Town	http://www.co.polk.wi.us/landinfo/pdfs/Zoning/KraemerSupplementalRezoning.pdf
5	Extensive documentation of the process at the Town level.	http://www.townofosceola.com/KraemerQuarryProposal.aspx
6	TownofOsceola_NoiseReview_RFP.doc	Emailed
6	Presentation by Bob Wright	http://www.communityhotline.com/News_Photos/news_photos_DetailCustomerRemote.php?newsid=3047
7	KraemerMine_LandUseEvaluation_2009_Handout.pdf	Emailed
8	KraemerProposal_Houses_Revised.xls	Emailed
9	Residences_with_Labels.pdf	Emailed

4 Review, Analysis, and Discussion

4.1 Comments on the applicant's challenge of Mr. Kamperman's findings

As the first task, the revised application, dated August 4, 2008 and referencing Mr. Kamperman's report, was reviewed. Next, the report by Mr. George Kamperman, dated January 22, 2009, was reviewed. Mr. Kamperman represents the Kamperman Associates, Inc. in Wisconsin Dells, WI. What follows here is a summary of the review of the above reports and assessments. The main focus of this review and analysis was on blasting, operational, and traffic noise can potentially be generated by the proposed hard rock mining operation.

- 1) First, it is indicated that the planned stone blasting technique and the resulting ground vibration levels are safe for all residential structures. Second, it was reported that most of the time the quarry normal operating noise emission is expected to meet the 50 dBA noise limit criterion. These findings are based on the analysis conducted by Mr. David Braslau who was hired by Kraemer Mining & Materials.

{Dr. Allaei, PE} - The revised SEP application mostly focused on whether the blasting technique and generated noise and vibrations meet the state or federal regulations. The key question is whether the life, health, safety, and properties of the surrounding residences would be negatively impacted by the proposed hard rock mining operation. The latter question was not addressed in any meaningful way in the SEP application.

Furthermore, none of the reports presented any engineering data that could support their statements in the SEP application. First, no data was presented to support the claim that the blasting technique and the resulting ground vibration levels are safe for all residential structures. Engineering data on the soil mechanics, the path of energy propagation to each residential structure, the type of structures, and the blast techniques and generated energy should all be studied in order to discuss and draw any conclusion on how safe the proposed blasting could be. It was noted that even though the blasting technique and the resulting seismic activity might meet the state or federal regulation, it did not necessarily mean they were safe for this particular area. Second, the word "most" was used in a statement related to noise. It was stated that "*Secondly the quarry normal operating noise emission is expected to meet the 50 dBA noise limit criterion most of the time.*" This finding was based on the analysis performed for Kraemer Mining & Materials by Dr. David Braslau. In other words, based on this statement, it was acknowledged that there would be operation periods when the noise level could exceed 50 dBA limit. For example, the noise level, generated by a blast in the local area, was not measured in this particular case. Some model generated numbers were presented. These models are often misleading if they are not considered along with the assumptions built in the model and they often under estimate the impacts.

- 2) The SEP application indicated that "since the standards will be met no damage will occur to adjacent structures or homes."

{Dr. Allaei, PE} - This statement may be misleading. Meeting the standards does not necessarily mean that the nearby structures and homes are safe or will not be damaged. Most of these standards are old (60s and 70s) and have not even been adjusted to accommodate the recent developments in housing and construction. Furthermore, unless the structure of each home and the path between the blasting area and each home are considered, no such

conclusion should be made. Actual seismic measurement at or near the houses will help to better assess the safety of the homes.

- 3) In a letter from Kris Anderson (dated February 5, 2009), it was indicated that “Noise at a quarry operation is one of the items that can and will be mitigated to reduce noise exposure to neighbors of the facility. Noise can and will be controlled through the location of equipment and berms by Kraemer. Further the MN Nighttime Residential Noise Classification is a residential classification used in rural areas. Our proposal will satisfy the MN noise standard.” In other parts of the SEP application, Kraemer has implied that noise is one of the easiest issues to deal with.

{Dr. Allaei, PE} – Dealing with, mitigating, or controlling noise generated by such mining operation is anything but simple and trivial. There are not many mining sites that have been able to mitigate the radiated noise to a level that satisfies the nearby community. Control and mitigation of environmental noise is a challenging and costly project. Furthermore, the fact that the facility meets certain MN noise standards does not mean that the residences will not suffer or lose sleep due to excess noise.

- 4) Response to Kamperman Report – Dr. Braslau concluded the following:

“Conclusion: All of the submitted information suggests that the quarry can be operated in a way that will not have a health, safety or welfare impact on the area. The Minnesota Standards and WI blasting standards were established specifically for this reason, and further numerous examples of other quarries employing the same techniques exist in both WI and MN in similar or even more densely populated environments.”

{Dr. Allaei, PE} – I did not see any engineering data that supports Dr. Braslau conclusions. Even assuming all the WI and MN standards were met, there is no engineering data showing that the operation of the quarry will not negatively impact health, safety, or welfare of the residents in the area. In fact, it is hard to believe that there will be zero negative impact. In regard to other similar sites in MN and WI, one has to survey the residents in order to determine the impact of the local operations. Per my experience, I have not seen one mining operation that did not have some negative impact on the local area.

- 5) In the same document, Kraemer claims that “Further noise from an operation can and will be controlled and is something that will be continuously addressed to reduce noise emissions from the operation. Kraemer can and will control this aspect of the operation to make sure it is compatible with neighbors. Noise control berms and plant shielding with stockpiles is a routine and customary method of operation at numerous aggregate sites.”

{Dr. Allaei, PE} – The above statements are not based on engineering data or analysis. An expert in the field of noise and vibration must know very well that controlling noise in open area is challenging and often satisfactory outcome are not easy and/or are very costly to achieve. The fact that berms and plant shielding, etc have been used for years, does not make them effective. For example, most processing plants have used vibrating machinery in their processing plants, but this does not mean they have not had noisy environment or excess vibration, nor does it mean the industry has determined how to control their radiate noise and propagated vibrations. All it means is that the industry has had no choice but using them to run their operations. In fact vibrating screens or separators are often one of the key sources of excess noise and vibration. In spite of the fact that many of mining plants meet the

standards and regulatory limits, the negative impact of excessive noise and vibration on employees must not be ignored. If such vibrating screens are used in mobile systems that are usually placed outdoor, their loud noise could have an adverse impact on the community.

- 6) In the same report, Kraemer concludes that because the operation meets WI and MN standards, therefore there will be no impact to health, safety or welfare from the proposed operations. It is further claimed that the MN pollution Control Agency Noise Standard which have been in existence since 1974 for the protection of health, safety and welfare of residents while balancing economic development. The later was used as the evidence for no adverse impact on the community.

{Dr. Allaei, PE} – The above statements are not based on engineering data or analysis. In general noise and/or vibration transmitted to human body could cause sleep deprivation, lack of concentration, negatively impact attitude and comfort, create annoyance, and possibly diseases. Most standards are old (created in 60s or 70s) and they were designed for a balance or compromise between industrial and community development at that time. They should not be used as safety or health limits.

- 7) In the memorandum from Dr. David Braslau to Kris Anderson, dated February 5, 2009, it is indicated that “The noise assessment was based upon the nighttime noise standard of L50 50 dBA, which is the level not to be exceeded for 50% or 30 minutes of an hour.” It is further indicated that the night operation meets this standard. For day time, L50 60 dBA was used.

{Dr. Allaei, PE} – As Dr. Braslau indicated, L50 means it is required that the noise level meets the limits 50% of time. In other words, 50% of times it may exceed the limits. What this means is that, for example, over 8 hours sleeping period for residents; it is possible that the noise limits exceed the recommended limit half of the period, i.e., for 4 hours. This could cause sleep deprivation, lack of concentration, negatively impact attitude and comfort, and create annoyance. Dr. Braslau’s analysis is mostly focused on whether the plant meets the standards. The key question is what negative impacts the community would be exposed to as the result of the proposed operations. The latter was not sufficiently addressed.

- 8) In the same memorandum, Dr. Braslau indicated that house rattling may or may not occur with blasting that would occur occasionally and during daytime hours. He further argued that rattling will depend upon the air overpressure level, home construction, and its contents.

{Dr. Allaei, PE} – The above statements are in contradiction to the conclusions previously drawn by Dr. Braslau who argued that meeting the standards makes the house structures safe. In the above paragraph, Dr. Braslau argued that house rattling would depend upon several factors including the home construction. House rattling, whether comes from high energy acoustic pulse or ground vibration, is an indication of the shaking structure that could adversely affect fatigue life of the structure and thus compromise safety of the home.

4.2 Responses to a List of Specific Questions

1. Regarding the revised application, Town is aware of the following:
 - a. The daytime noise level has been raised from 50 to 60 db. What exactly does this mean as far as additional noise? 20% more? 100% more?
 - b. The proposed hours of operation are stated as from 6 am to 10 pm. Is this typical for this type of setting? For this type of operation in general? What is the anticipated impact on nearby residents?
 - c. Conveyors have been added. How significantly does this contribute to overall noise emissions?
 - d. The business operation is now on top of the hill (to the north and east).

{Dr. Allaei, PE} – Response:

- a) 10 dB increase in noise means 216% increase in sound pressure. In general, dB is a log scale that compresses numbers and represents the results in a nonlinear scale. For example, 1 dB increase means 12% increase in sound pressure.
 - b) The hours of operation varies from site to site. There are sites that run 24 hours, 7 day a week. In general such mining plants have some adverse impact on the community, environment, and residence comfort and safety. The question is how much the community is willing to compromise and how much the company is willing to work on reducing these adverse impacts.
 - c) Addition of any moving structure or machinery adds to near field and far field noise and vibrations. The degree of impact depends on the size of the machinery, the operating speed, supporting structure, and energy content. Conveyor belts have moving elements that often generate loud noise near the machinery. As a rule of thumb, doubling the noise source adds 3 dB to the noise level. How significant the convey belts would be depends on the above factors.
2. There is a lot of prep work (overburden removal, berm construction, etc) described in the revised Special Exception Permit application that will be done prior to actual extraction of the basalt. Can you comment on anticipated noise levels of these operations?

{Dr. Allaei, PE} – Response:

It will add to the local noise level. The degree of noise increase will depend on many factors including background noise before such operation, number of machinery, their speed of operation, noise mitigation methods, environmental conditions, naming a few. Noise around such machinery could be as loud as 80 to 100 dBA. Since they have low frequency content, their travel range could be long (i.e., 0.5 mile or more).

3. Can you give a reasonable estimate of the cumulative noise emission during full operations (trucks, conveyor, grinding, loading, etc all happening at the same time). Do all these activities tend to happen at the same time? Usually? Regularly? Occasionally? Rarely?

{Dr. Allaei, PE} – Response:

One needs more data to more accurately estimate the noise level. However, it is possible that the noise level could be in the range of 80 to 120 dBA around such operation. Since

they have low frequency content, their travel range could be long (i.e., 0.5 mile or more). It is not unusual that all these machinery run at the same time most of the time for a continuous operation.

4. A resident who works at a similar facility nearby commented that safety regulations require that he wear double ear protection while rail cars are being loaded. What kind of noise level would require this and how audible would it be to surrounding residents?

{Dr. Allaei, PE} – Response:

In general, the requirement for hearing protection depends on the sound level and exposure time. To have double hearing protection, the noise level should exceed 100 dBA. For example, NIOSH's guideline for using double hearing protection (wearing both earplugs and earmuffs) is for noise exposures that exceed 100 dBA over an 8-hour period. In the mining industry, workplace noise levels of 105 dBA or more over an 8-hour period require mine operators to ensure the use of both earplug and earmuff hearing protectors. 85 dBA to 100 dBA requires single hearing protection. See the below web sites.

- <http://www.elvex.com/facts07.htm>
- http://www.osha.gov/pls/oshaweb/owadispl.show_document?p_table=STANDARDS&p_id=9735
- <http://www.msha.gov/regs/complian/guides/noise/guide303.htm>

The loading of rail cars could be very loud (as loud as 100 dBA). The nature of the noise is impulsive in contrast with steady that comes from running machinery. The sound energy can travel within 0.25 to 1 mile depending on the material being loaded, environment, and other conditions.

5. Note that the rail bed, running through the proposed site and nearby residences, is oriented North-South. Do you see this as having any affect on how noise would travel? If so, would it negatively impact residents?

{Dr. Allaei, PE} – Response:

Noise and ground vibration generated by rail tracks are known to be loud and travel long distance (0.25 mile or more). In general, prevailing winds and natural topology could play a role. Noise and ground vibration generated by rail tracks will have adverse impact on residents within the reach. Rail bed has an influence on noise and ground vibration levels.

6. In the MN noise standards, it appears that L50 means the standard only has to be met for 30 minutes of the hour. If this is true, what about the other 30 minutes? Is this an appropriate standard for the proposed operation? If our understanding of L50 is not correct, please clarify.

{Dr. Allaei, PE} – Response:

Please see the discussion on L50 in the previous section. L50 requires that noise limits be met only 50% of the time. In other words, 50% of the time the noise levels could exceed the limits. L50 has its uses for certain applications. However, I don't believe L50 or L60 should be used in order to determine the adverse impact of the noise in the community.

7. In the MN noise standards, under Scope, there is the statement "However, these standards do not, by themselves, identify the limiting levels of impulsive noise needed for the preservation of public health and welfare." What does this mean?

{Dr. Allaei, PE} – Response:

Most of the standards are designed based on steady noise, such as traffic and machine noise. Impulsive forces and release of impulsive energy can generate noise and ground vibration having broad frequency content. The low frequency content portion of the impulsive energy release can travel miles and still have adverse impact on people's life and comfort.

8. Given the above, are there any short- or long-term health-related issues regarding the anticipated noise emissions?

{Dr. Allaei, PE} – Response:

Yes, excess noise and ground vibration will have an adverse impact on the community and its residents. The question is how severe the impact of excess noise and ground vibration will be on the community, and how it can be minimized should the County approve the proposed mining operation.

9. A summary opinion of whether or not, from a noise perspective, the proposed operation is compatible with the surrounding land use? Why or why not?

{Dr. Allaei, PE} – Response:

In order to answer this question, one needs to collect background noise in the current area before the plant starts its operation. No such data has been collected by this consultant. Assuming currently there is no background activity that creates unusual noise level, the proposed operation does not appear to be compatible with the surrounding land use. However, more information and study is needed to draw a more definite conclusion.

10. Mr. Kamperman discussed berms as being ineffective in summer evenings due to temperature inversion. I assume the sound travels up and is refracted back down and over the berms. Is this a similar concern of yours?

{Dr. Allaei, PE} – Response:

Berms have some noise mitigation effect and their performance depends on environmental conditions, location and orientation of noise sources, frequency range, etc.

11. I think you have addressed my concern of even though a standard of 60 dB daytime and 50 dB night time exists; the existing background noise today may be much lower resulting in a significant change. Prior to quoting standards, should one of the first comparisons in a noise analysis be a background noise measurement of the existing environment?

{Dr. Allaei, PE} – Response:

Yes. Measurement of background noise and ground vibration is essential to determine the impact of the noise generated by the proposed operation. As it was pointed out, the question should not be whether the proposed operation meets the standard. Rather, what

impact the noise and vibration generated by the proposed operation will have on the community.

12. Does a temporary rock crusher create more noise than a permanent rock crusher?

{Dr. Allaei, PE} – Response:

Assuming the same size and capacity, a temporary rock crusher may have more adverse impact than a permanent rock crusher on the surrounding noise level. In general a temporary rock crusher is considered mobile rock crusher and is placed outdoors; and thus its loud noise could travel more aggressively to the surrounding communities. However, a permanent rock crusher is often enclosed (i.e. inside a building), and the enclosure mitigate a good portion of the radiate noise.

13. Town is interested to know whether or not the issues raised by Mr. Kamperman were legitimate.

{Dr. Allaei, PE} – Response:

The issues raised by Mr. Kamperman were legitimate. Mr. Kamperman explored the noise and vibration issues as they impact community life rather than whether or not the proposed operation meets the local or federal standards. I agree with his perspective on this issue. However, I don't have enough details to comment on his model and the related analysis. It is the opinion of this consultant that no engineering data was presented to support that the planned stone blasting techniques and resulting ground vibration levels are safe for all residential structures.

5 Conclusions

Based on the reviewed data and documents, the following conclusions are drawn in relation to noise and vibration impacts.

- 1) The operation of the proposed mining plant will have adverse impact on the community and its residents. The degree of impact is yet to be determined.
- 2) There is no engineering data that supports that blasting activity is safe and does not negatively impact the residents and their houses.
- 3) Meeting standards does not mean that the proposed operation will not negatively impact the community.

6 Recommendations

- 1) Background noise and ground vibration in the local community should be measured in order to more accurately determine the impact of generated noise and vibration on the surrounding community.
- 2) It is best if the noise and vibration levels are measured inside the nearby houses. In particular, living rooms, kitchen, and bedrooms is where people spend most of their day and night times. The measurement of the background noise in the houses will be very useful for determining the impact on community.
- 3) It will be useful to conduct a survey of other similar sites referenced by Kraemer's consultants and reports. The survey should focus on the community and not if these existing sites meet the standards and regulatory limits. For example, the residents should be asked if their lives have been negatively impacted due to excess noise and/or vibration. Has there been any reported damage due to ground vibration generated by blasts? What are the current noise and vibration levels in their houses while the plant is operating at its normal and optimum production?

This report delivery concludes the entire work for this project. The consultant plans to attend the County's public hearing to be held on October 21st, 2009.