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FINAL TECHNICAL MEMORANDUM

To: Jim McHargue
APCO
Amador Air District

Date: May 02, 2018

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Project: US Mine Motocross Facility

Subject: Potential Public Health Impacts from Proposed Ione Sands Motor Sport Park
Ione (Amador County), California

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1. INTRODUCTION

This Technical Memorandum evaluates public health risks associated with the operation of the proposed Motor Sport Park at the existing US Mine Corporation location (8625 Highway 124) in Ione. The Memorandum was prepared in response to public concerns that the proposed project may lead to: (1) excessive fugitive dust, (2) some of the dust may migrate to nearby homes, and (3) the dust may contain crystalline silica. This Technical Memorandum will discuss the potential for public health risks to residents near the proposed Sports Park from exposure to dust that contains crystalline silica.

The objective of this Memorandum is to determine if emissions of fugitive dust from the proposed project are likely to cause significant public health risk. "Health Risks" refers to three types of risks:

1. Cancer Risk
2. Chronic (Long-Term) Non-Cancer Health Risk
3. Acute (Short-Term) Non-Cancer Health Risk

2. PROJECT DESCRIPTION

The proposed Motor Sport Park would be located at the current US Mine operation near Ione. The proposed Park would be used for training and competition would be open to the public. Up to 3 to 6 events are expected annually. The project would construct a permanent race track to host motorcycle events. In addition, there would be ticket booths, bleachers, public toilets, tents and vending facilities.

The use of motorcycles on the race track would generate fugitive dust since the race track would be unpaved. As noted previously, fugitive dust contains crystalline silica that has the potential to cause public health risks.

The exact number of motor cycles is unknown, however, it is expected that 25 to 40 motor cycles would be in operation during a given event. In addition, there would be exhaust emissions from vehicles used by the visitors attend the motor sport events. These emissions are not expected to be significant and well below levels that may pose a public health risk. As a result, this analysis is limited to exposure to crystalline silica.

3. EMISSIONS OF CRYSTALLINE SILICA

The movement of motor cycles on the unpaved race track can generate fugitive dust. The amount of dust containing crystalline silica depends on several factors:

- Vehicle Speed
- Silt Content of the Soil
- Soil Moisture Content of the Soil

The transport of the dust to nearby homes depends on local wind speed and wind direction.

EPA has developed several tools (EPA 2006) to estimate the emission rate of fugitive dust from movement of a vehicle over unpaved roads. We have used these tools to quantify the amount of dust and potential crystalline silica that would be released from the movement of motor cycles at the race track. It is estimated that 211 lbs of fugitive dust would be released per event. This emission estimate assumed no mitigation. If mitigation (dust control) is applied, the emissions would be reduced by at least 75%. The dust may contain between 10% to 25% crystalline silica. This equates to a maximum mitigated emission rate of 13.2 lbs of crystalline silica per event or a maximum of 79.3 lbs for 6 events per year. Emissions from the other US Mine operations are not included in this analysis. Detailed calculations are provided in Attachment 1.

4. TOXICITY AND EXPOSURE TO CRYSTALLINE SILICA

Crystalline silica particulates are mainly comprised of quartz, cristobalite and tridymite with a host of minor constituents. The major components of crystalline silica are known to be toxic. For example, breathing very small particles of crystalline silica over years causes silicosis, a serious lung ailment. As a result, there are workplace standards that cover workers in mining and aggregate production. These standards limit the maximum concentration of crystalline silica exposure.

Crystalline silica exists almost everywhere in the natural environment. It is abundant in soil, sand, dust and rock. For example, unwashed root vegetables, such as carrots and potatoes are coated with soil containing crystalline silica. Quartz, a component of crystalline silica, is the second most abundant mineral on the planet (Feldspar is most common).

Silica can cause silicosis only when it is inhaled in sufficient quantities. For ambient air, the California Air Resources Board (CARB) and the Office of Environmental Health Hazard Assessment (OEHHA) have established Reference Exposure Limits (RELs) for inhalation of crystalline silica. ARB and OEHHA have established recommended a chronic exposure limits for crystalline silica to be 3 micrograms per cubic meter (ug/m3) over a one year period. An excerpt of the REL table is provided in Attachment 2. There are no short-term (Acute) RELs nor are there any cancer exposure limits. In other words, OEHHA does not regulate crystalline silica as a carcinogen. The only CARB and OEHHA RELs for the general public limit the concentration to 3 ug/m3 over a one year period.

There are other, more stringent, standards for workplace exposure. These standards apply to workers exposed over an 8-hour work day, 5 days/week. Work place standards are established and enforced by Office of Safety and health Administration (OSHA) and the California Office of Occupational health and Safety (CalOSHA).

5. HEALTH IMPACTS FROM CRYSTALLINE SILICA FROM US MINE MOTOR SPORT FACILITY

To evaluate if the emissions of crystalline silica (calculated in Section 3) would pose a health risks to individuals living near the project site, an air dispersion model was used to calculate its concentration. The AERMOD dispersion model recommended by CARB and EPA was used along with four years of hourly meteorological data from Stockton Metropolitan Airport. Our preference is to use local meteorological data, however, no data from Amador County are available. Therefore, the results in the current analysis provide a rough estimate of annual concentrations of crystalline silica.

A description of AERMOD is attached (Attachment 3). A layout of the modeling area is shown in Figure 1. Figures 2 and 3 provide annual concentrations of crystalline silica near the US Mine site. Concentrations were calculated every 100 meters for a total of 900 individual locations. The concentration at some of these individual receptors is shown in Figure 3.

Figure 1
Modeling Domain

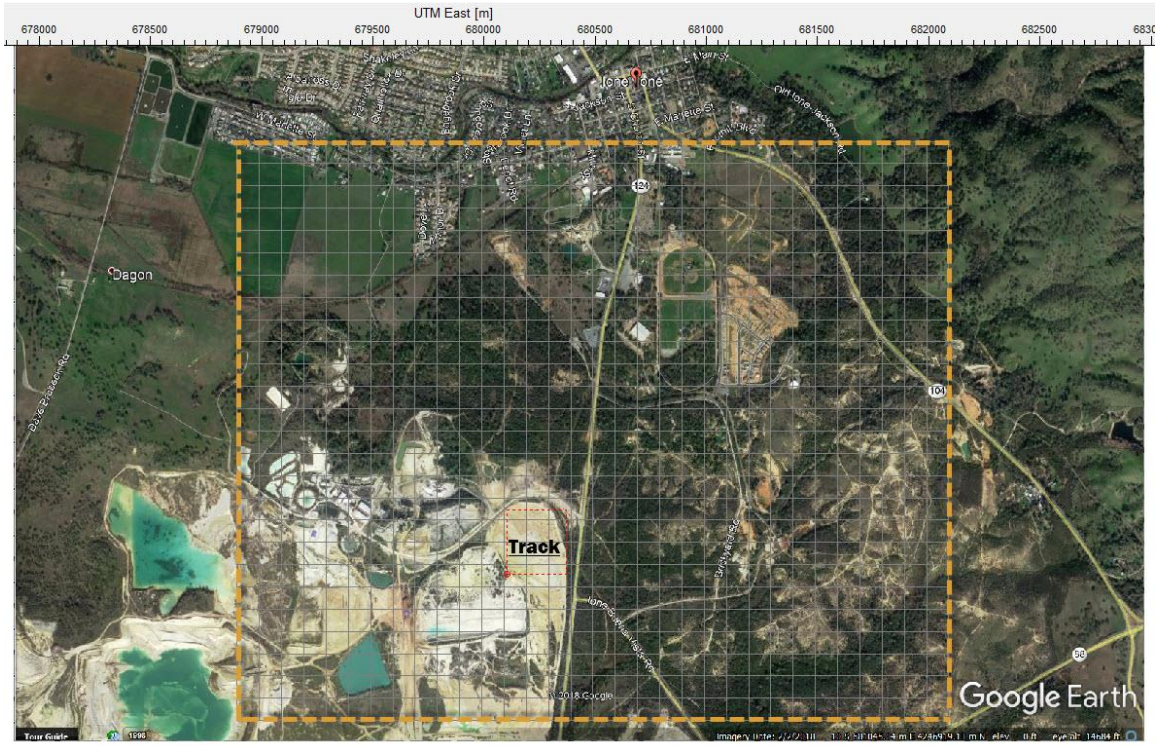

Figure 2
Spatial Variation of Annual Concentration of Crystalline Silica in ug/m3

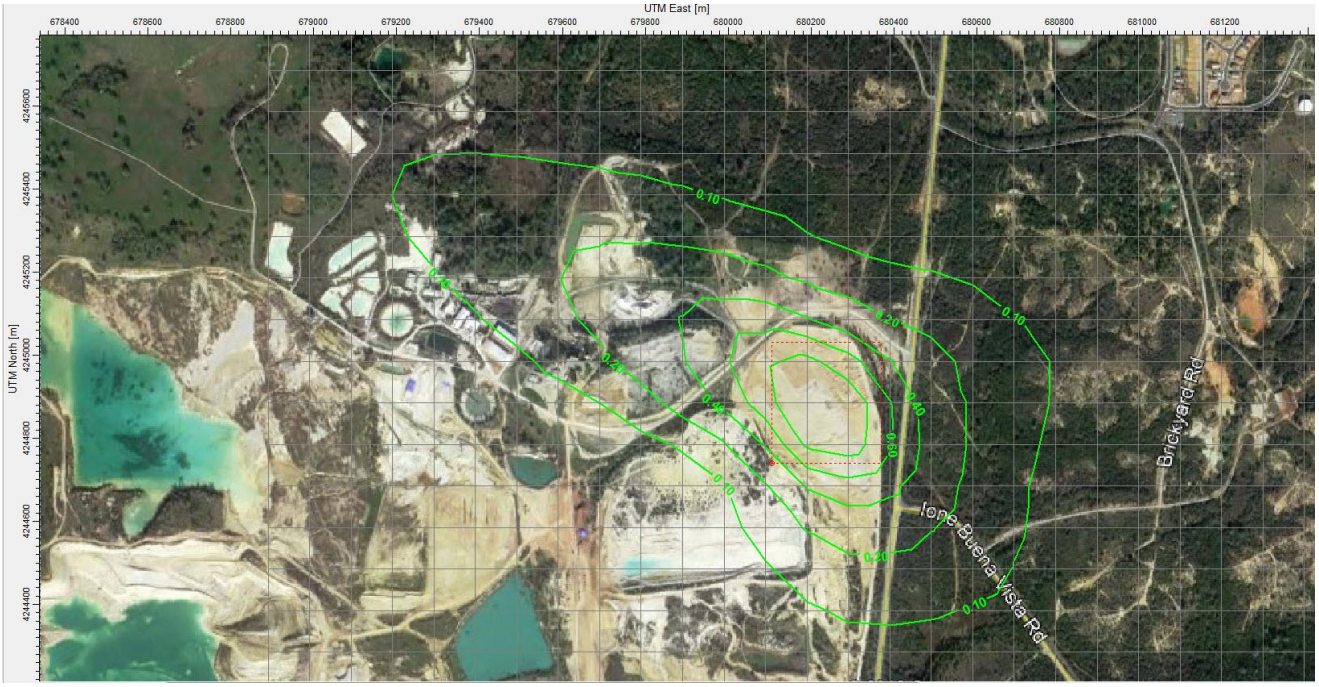

Figure 3
Posted Values of Annual Concentration of
Crystalline Silica in ug/m3

The results presented in Figures 2 and 3 indicate that off-site annual concentration of crystalline silica vary between 0.15 to less than 0.01 ug/m3. The concentration near the Wildflower residential subdivision is estimated to be 0.05 ug/m3. This subdivision is on Foothill Boulevard, near Brickyard Road.

These annual concentrations are well below the recommended exposure level of 3 ug/m3 on an annual basis. The negligible exposure concentration is due to the fact that there would be only 3 to 6 events per year. As a result, there would not be any emissions during the remaining 359 to 362 days per year. As noted previously, there are no acute (short-term) or chronic (long-term) carcinogenic standards for crystalline silica.

On the basis on these results, we conclude that public health risks associated with the proposed project would not be significant.