

**December 20, 2016**

Mr. Blake Araki  
Raging River Quarry LLC  
6101 Preston Fall City Road SE  
Fall City, WA 98024

Re: Monthly Provisional Operations  
Compliance Noise Monitoring - Week 2 Results

Dear Blake,

As you requested, Ramboll Environ US Corporation (Ramboll Environ) measured sound levels of operations at the Raging River Quarry on December 16, 2016. This measurement is the second of four weekly measurement events required by King County DDES during one month of provisional operations. Details and results of the sound level measurement follow.

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### **Applicable Noise Limits**

The quarry was in operation during daytime hours (i.e., between 7 AM and 10 PM), so the hourly noise limits at the nearby rural-residential properties are an  $L_{eq}$  of 57 dBA and an  $L_{max}$  of 72 dBA.

### **Sound Level Equipment**

Ramboll Environ deployed two Larson Davis LxT (Class 1) sound level meters and a Brüel & Kjær 2250 (B&K2250) Class 1 sound level meter for the sound level measurements. All of the meters were set to record 1-second histories, and the B&K2250 was also set to record audio. The meters were field calibrated immediately prior to the measurement and calibrated at the factory within the previous year. The microphones were mounted on tripods at a height of approximately 5 feet above ground.

### **Measurement Locations**

Sound levels were measured at the following three locations representing the adjacent properties to the quarry site:

- **Location 1** – on the southeast boundary of the McClain property and the Raging River Quarry property
- **Location 2** – on the northern boundary of the Shimmel property (formerly known as the Johnson property), near the log pile on the Trisko property
- **Location 3** – on the northern boundary of the Shimmel property (formerly known as the Johnson property), east of Location 2.

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**Measurement Details**

The sound level measurements at SLMs 2 and 3 (both on the Trisko/Shimmel property boundary) were taken between 7 AM and 5 PM on December 16, 2016, with hourly Leqs and Lmaxs calculated from the 1-second data. The sound level meter deployed at SLM1 was vandalized prior to 7 AM (it had been deployed the previous night), with the wire to the microphone cut in three places, so no operational data was captured at SLM1.

The temperatures during the measurement period were in the upper 20s to low 30s °F, clear, with northerly winds at times during the day.

In addition to quarry-related activities, noise sources captured on the audio included weather-related noises (wind), birds, and distant traffic.

**Equipment in Operation**

During the sound level measurement period, the following equipment was in operation:

- 7 to 8:30 AM:** loading trucks and preparing the crushing plant for operations.
- 8:30 AM to 1 PM:** loading trucks, full crushing plant operations, and casting material from the 100 foot level to the quarry floor.
- 1 to 3 PM:** loading trucks, repairing broken conveyor (probably a few loud bangs as a result), no crushing operations due to the broken conveyor, and casting material from the 100 foot level to the quarry floor.
- 3 to 4:30 PM:** crushing plant operation back up and running fully, casting material from 100 foot level to the quarry floor.
- 3 to 4:30 PM:** crushing plant operation back up and running fully, casting material from 100 foot level to the quarry floor.
- 4:30 to 7 PM** – crushing plant down for repairs due to broken cone crusher, repairing cone crusher, casting material from 100 foot level to the quarry floor.

**Sound Level Measurement Results**

The sound level measurement results for each SLM location are presented in the following tables. For hours where compliance with the limits is not initially demonstrated, we reviewed the audio recordings to identify the noise source that caused the elevated levels. If the elevated sound level is from a source that is exempt from the noise limits, we then provide the estimated sound level after removal of the exempt source.

**Table 1. SLM1 – McClain Property Sound Levels (dBA)**

<b>Time</b>	<b>Leq</b>	<b>Lmax</b>	<b>Major Noise Sources</b>
7 AM to 7 PM	NA	NA	NA
Note: The meter at SLM1 was vandalized between 4 and 5 AM on December 16, and no data was captured at this location.			

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**Table 2. SLM2 – Shimmel Property Sound Levels (dBA)**

<b>Time</b>	<b>Leq</b>	<b>Lmax</b>	<b>Major Noise Sources</b>
7 – 8 AM	49	65	
8 – 9 AM	50	66	
9 – 10 AM	52	65	
10 – 11 AM	53	67	
11 AM – Noon	55	64	
Noon – 1 PM	53	64	
1 – 2 PM	50	59	
2 – 3 PM	52	66	
3 – 4 PM	55	65	
4 – 5 PM	55	70	
5 – 6 PM	52	63	
6 – 7 PM	46	56	

**Table 3. SLM3 – Shimmel Property (East of SLM2) Sound Levels (dBA)**

<b>Time</b>	<b>Leq</b>	<b>Lmax</b>	<b>Major Noise Sources</b>
7 – 8 AM	49	67	
8 – 9 AM	50	66	
9 – 10 AM	54	68	
10 – 11 AM	55	67	
11 AM – Noon	57	67	
Noon – 1 PM	55	64	
1 – 2 PM	51	63	
<b>2 – 3 PM</b>	55	<b>73.1</b>	Casting Rock
<b>3 – 4 PM</b>	<b>57.4</b>	67	Casting Rock
<b>4 – 5 PM</b>	<b>57.8</b>	<b>72.2</b>	Casting Rock
5 – 6 PM	55	69	
6 – 7 PM	44	54	

(a) At 2:55:46 PM, there was 1 second exceeding 72 dBA (due to casting rock). At 4:39:05 PM, there was 1 second exceeding 72 dbA (also due to casting rock).

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## **Conclusion**

No extraneous or exempt noise sources were removed from the levels measured between 7 AM and 7 PM on December 16, 2016. The measurements indicate that during two hours, the Lmax levels exceeded 72 dBA, and during two hours the Leq levels exceeded 57 dBA. However, only one of the events, the 1 second Lmax at 2:55:46 PM, exceeded the limit by more than 1 dBA (with an Lmax level of 73.1 dBA due to casting rock). The other three levels would be considered to be in compliance with the Leq limit of 57 dBA and the Lmax limit of 72 dBA given the range of error of a Class I sound level meter, which is +/- 1 dBA.

Please call me (425-412-1807) if you have any questions regarding the above material.

Yours sincerely,



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