

**Payne & Dolan, Inc.**  
**Racine Quarry - Village of Caledonia**  
**Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area**  
**July 2025**

All Ground Vibrations (PPV) were below State of Wisconsin and Village of Caledonia Maximum Limits

All Airblasts (AO) were below State of Wisconsin and Village of Caledonia Maximum Limits

Time	Activity	Location	Distance	PPV	Freq	AO
7/25/2025 11:56	EAST 27	Ellis	1,754	N/T	N/T	N/A
7/25/2025 11:56	EAST 27	St. Rita	1,963	N/T	N/T	N/A
7/25/2025 11:56	EAST 27	Marquette	480	0.1575	22.7	115
7/25/2025 11:56	EAST 27	Berkeley	1,476	0.3025	35.7	117
7/8/2025 13:08	EAST 26	Ellis	2,322	0.0225	13.9	115
7/8/2025 13:08	EAST 26	St. Rita	1,962	0.025	17.2	117
7/8/2025 13:08	EAST 26	Marquette	921	0.1375	19.2	119
7/8/2025 13:08	EAST 26	Berkeley	553	0.235	35.7	116
7/8/2025 9:32	EAST 25	Ellis	2,295	0.025	13.2	112
7/8/2025 9:32	EAST 25	St. Rita	1,961	N/T	N/T	N/A
7/8/2025 9:32	EAST 25	Marquette	855	0.215	62.5	116
7/8/2025 9:32	EAST 25	Berkeley	548	0.32	27.8	114
7/2/2025 12:59	EAST 24	Ellis	2,111	0.0225	20.8	103
7/2/2025 12:59	EAST 24	St. Rita	2,140	N/T	N/T	N/A
7/2/2025 12:59	EAST 24	Marquette	N/A	0.22	31.3	113
7/2/2025 12:59	EAST 24	Berkeley	1,013	0.15	50	112
7/2/2025 9:16	EAST 23	Ellis	2,249	N/T	N/T	N/A
7/2/2025 9:16	EAST 23	St. Rita	2,048	N/T	N/T	N/A
7/2/2025 9:16	EAST 23	Marquette	539	0.21	33.3	115
7/2/2025 9:16	EAST 23	Berkeley	580	0.2375	62.5	117

N/T - seismograph did not trigger

Ground Vibration (PPV) Limit - The Village of Caledonia explosives use ordinance states that "The maximum ground vibration at the location of any dwelling, public building, place of employment, school, church or community or institutional building outside or beyond the permitted explosives use area shall have a maximum peak-particle-velocity limit as provided by the Department, the scaled-distance equation of paragraph (ii), or the blasting level chart of paragraph (iii), whichever is applicable hereunder. Notwithstanding this general requirement, an annual permit holder who is subject to the limitations of paragraph (iii)a (Figure A, incorporated by herein reference), below, may exceed the limitation of Figure A on up to five percent (5%) of the blasts it initiates during the six (6) month period from July 1 to December 31 and during the six (6) month period from January 1 to June 30 without violating this Section, provided that the ground vibration produced by such blasts does not exceed 0.65 inches per second or the limitations imposed by the Wisconsin Department of Industry, Labor and Human Relations in Section ILHR 7.64(4), Wis. Adm. Code, as amended from time to time, whichever is more stringent".

Airblast (AO) Limit - The Village of Caledonia explosives use ordinance states that "Airblast shall not exceed the maximum limits listed in Table A-1 at the location of any dwelling, public building, place of employment, school, church or community or institutional building outside and beyond the permitted explosives use area. Notwithstanding this general requirement, an annual permit holder subject to this limitation may exceed the limitation on up to five percent (5%) of the blasts it initiates during the six (6) month period from July 1 to December 31, and during the six (6) month period from January 1 to June 30, without violating this ordinance, provided that the airblast produced by such blasts does not exceed the limitations on airblast imposed by Wisconsin Department of Industry, Labor and Human Relations in Subsection ILHR 7.64(2), Wis. Adm. Code, as amended from time to time."

TABLE A-1 AIRBLAST

LIMITS

Lower Frequency Limit of Measuring System in Hz	Maximum Level in db
2 Hz or lower -- Flat response	123 peak
6 Hz or lower -- Flat response	129 peak

# PPV vs. Frequency

USBM Blasting Level Criteria  
(RI 8507, 1980)

