

# ALLSTONE CHESTER QUARRIES NOISE REPORT ADDENDUM





**Report Title:**

Allstone Chester Quarries Noise Report Addendum

**Report Prepared by:**

RSG

**Report Prepared for:**

Julian Materials

**For additional information regarding this report, or for questions about permissions or use of findings contained therein, please contact:**

RSG (Headquarters)  
55 Railroad Row  
White River Junction, VT 05001  
(802) 295-4999  
[www.rsginc.com](http://www.rsginc.com)



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## 1.0 ADDENDUM BACKGROUND

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RSG conducted a noise assessment of the proposed changes to the three existing quarries operated by Julian Materials in Chester, Vermont, known as Allstone Vermont. The results of the noise assessment were published in a report<sup>1</sup> in June 2023 (“Noise Report”). This document is an addendum to the Noise Report that provides additional sound propagation modeling related to the proposed crushing at the South Quarry and a correction to the proposed frequency of rock hammer usage at the site.

### **Rock Hammer**

The Noise Report stated in Section 5.2 that the rock hammer at each of the three quarries is only needed at times and operates approximately two days per month. While the rock hammer is still only needed at times, we need to correct the frequency of its use which would actually be approximately two days per week. The project would limit hours of hammering from 8 AM to 3 PM on Tuesdays and Thursdays. This correction does not affect the model results in the Noise Report.

### **Crusher**

As identified in the presentation before the Development Review Board on September 11, 2023, The Act 250 permit for the South Quarry (#2S0775-1, altered) allows for crushing at the South Quarry with a portable crusher for up to 4 weeks per year. The crushing operation was not included in the sound propagation model in the Noise Report, and so it is provided in this addendum in the following section.

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<sup>1</sup> RSG, *Allstone Chester Quarries Noise Assessment*, Julian Materials, June 2023.

## 2.0 PROJECTED SOUND LEVELS WITH SOUTH QUARRY CRUSHING OPERATION

### 2.1 MODEL METHODOLOGY & SCENARIOS

The modeling methodology used in this addendum is the same as that used in the Noise Report. Additional modeling was conducted for two scenarios which are identified in Table 1. These scenarios include the crushing operation, while regular quarry operations are occurring under both the existing and future terrain stages. The sound power level ( $L_{max}$ ) of the crushing operation used in the sound propagation model is provided in Table 2, and is similar to the total sound power level of the rock hammer which was modeled in the Noise Report.

**TABLE 1: ADDITIONAL SOUND PROPAGATION MODEL SCENARIOS**

Scenario ID	Scenario Description	Terrain Stage	Sources
16	Existing Crushing Operation, South Quarry	Existing	Crushing Operation Dump Truck Dozer Truck Being Loaded
17	Proposed Crushing & Processing Operation, South Quarry	Future	Crushing Operation Dump Truck Dozer Rock Splitting (Indoors) Rock Cutting (Indoors) Rock Loaded into Bins

**TABLE 2: SOUND EMISSION DATA ( $L_{max}$ ) OF MODELED SOURCES**

SOURCE	SOUND POWER LEVEL (dBZ) AT FULL OCTAVE BAND CENTER FREQUENCY (Hz)									OVERALL SOUND POWER LEVEL (dBA)	REFERENCE
	31.5	63	125	250	500	1000	2000	4000	8000		
Crushing Operation	117	125	124	124	122	122	120	111	100	126	RSG Library Compilation

In addition to the sources that are listed in Table 1, the regular operations at each of the other quarries are included in each scenario.

For each model scenario, the maximum sound level ( $L_{max}$ ) was calculated at nearby residences and throughout the project area including project property lines. The average equivalent continuous sound levels ( $L_{eq}$ ) from the project would be less than the sound levels reported in modeling of this assessment.

Additional model input information is provided in Appendix A.

## 2.2 MODEL RESULTS

The model results for each scenario are presented for all receptors in Appendix B at the end of this document. A summary of the model results for the closest receptors are provided below.

### Results Summary

A summary of model results at the closest receptors from model scenarios that include the crushing operation are provided in Table 3. Projected sound levels while the crushing operation is at the site are generally 1 to 4 dB higher than regular quarry operations, which were provided in the Noise Report.

As shown in the maps of model results in Appendix B, sound levels do not exceed 70 dBA at the property line at the VT-103 South Quarry. Sound levels may briefly exceed 70 dBA as vehicles pass over the property line to access the site via the access road, which is typical of any property that has access from a road.

**TABLE 3: SUMMARY OF SOUTH QUARRY MODEL RESULTS WITH CRUSHING OPERATION**

Receptor Address	Projected Maximum Sound Pressure Level <sup>2</sup> (L <sub>max</sub> , dBA) by Scenario	
	16 - Existing Crushing Operation	17 - Proposed Crushing Operation
3840 VT ROUTE 103 N	55	51
3668 VT ROUTE 103 N	66	61
3630 VT ROUTE 103 N	67	62
3610 VT ROUTE 103 N	67	61
3590 VT ROUTE 103 N	66	59
3526 VT ROUTE 103 N	65	54
3504 VT ROUTE 103 N	65	53
3489 VT ROUTE 103 N	62	51
3457 VT ROUTE 103 N	61	49
3466 VT ROUTE 103 N	63	50
3432 VT ROUTE 103 N	59	49
129 CLEMONS RD	61	50
355 CLEMONS RD	53	48
29 VT ROUTE 10	58	47
105 BROOKS RD	50	52
272 CLEMONS RD	55	49
406 CLEMONS RD	54	48
51 BLACKBERRY HILL RD	55	46
261 BROOKS RD	49	51
178 VT ROUTE 10	56	46

<sup>2</sup> Sound levels may vary some as equipment moves around the site, but model results represent sound levels when equipment are in locations that produce the highest sound levels at the closest receptors.

## **Mitigation**

As was previously reported and shown in Table 3, sound levels are generally less as the extraction progresses. Most of the reduction is due to the continued extraction of the quarry to lower elevations and further south where there will be a berm on the southeastern corner of the quarry as it progresses. There is also some reduction due to shielding provided by the processing building.

There is one additional mitigation measure that we recommend be incorporated into the project. Similar to the recommendation from the Noise Report that simultaneous drilling and hammering be prohibited within same quarry, crushing should not occur at the South Quarry while drilling and hammering is taking place.

## 3.0 SUMMARY & CONCLUSIONS

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This addendum to the Noise Report<sup>1</sup> provides additional sound propagation model results that represent the range of maximum sound levels that could occur while a portable crushing operation is at the South Quarry, which could be up to 4 weeks per year as allowed in the existing Act 250 permit (#2S0775-1, altered). As discussed in Section 2.2, projected sound levels with the crushing operation are 1 to 4 dB higher than those of the regular quarry operations.

With the mitigation identified in the Noise Report, and the additional recommendation made in this addendum to prohibit crushing while drilling or hammering is occurring at the South Quarry, sound levels around each of the three quarries and the potential for noise impacts will be reduced. The information contained in this addendum does not modify the recommendations or conclusions stated in the Noise Report.



## APPENDIX A. MODEL INPUT DATA

TABLE 4: MODELED POINT SOURCE INPUT DATA

SOURCE	SOUND POWER LEVEL (dBA)	RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + SOURCE HEIGHT (m)	MODEL SCENARIO
			X (m)	Y (m)		
Dozer	119	1.6	490913	91675	246	16
Dozer	119	1.6	491091	91496	233	17
Dump Truck	107	1.6	493184	92225	203	16 & 17
Dump Truck	107	1.6	490626	92509	245	16 & 17
Dump Truck	107	1.6	491000	91657	232	16 & 17
Excavator	120	1.9	493065	92489	207	16 & 17
Excavator	120	1.9	490617	92479	251	16
Loader	114	1.8	493085	92350	204	16
Loader	114	1.8	493061	92426	204	16
Loader	114	1.8	490961	91595	235	17
Loading Truck	120	2.0	493061	92426	204	17
Loading Truck	120	2.0	491053	91566	249	16
Rock Bins	116	1.0	493071	92390	203	16
Rock Bins	116	1.0	493080	92394	204	16
Rock Bins	116	1.0	493086	92401	203	16
Rock Bins	116	1.0	490885	91644	234	17
Rock Bins	116	1.0	490895	91639	234	17
Rock Bins	116	1.0	490905	91633	234	17
Crushing Operation	126	2.5	491008	91560	234	17
Crushing Operation	126	2.5	490903	91647	247	16

**TABLE 5: MODELED VERTICAL AREA SOURCE INPUT DATA**

<b>SOURCE</b>	<b>SOUND POWER LEVEL (dBA)</b>	<b>LOCATION</b>	<b>MODEL SCENARIO</b>
Saw Building Open Doors	110	Chandler Road, Existing	16
Saw Building Open Doors	102	Chandler Road, Existing	16
Splitter Building Door	97	Chandler Road, Existing	16
Splitter Building Door	98	Chandler Road, Existing	16
Splitter Building Door	98	Chandler Road, Existing	16
Saw Building Opening	92	Chandler Road, Existing	16
Splitter Building Door	97	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	87	Chandler Road, Existing	16
Splitter Building Opening	91	Chandler Road, Existing	16
Splitter Building Door	93	Chandler Road, Existing	16
Splitter Door Breakout	97	South Quarry, Proposed	17
Splitter Door Breakout	97	South Quarry, Proposed	17
Splitter Door Breakout	97	South Quarry, Proposed	17
Splitter Door Breakout	97	South Quarry, Proposed	17
Splitter Door Breakout	97	South Quarry, Proposed	17
Saw Door Breakout	110	South Quarry, Proposed	17
Saw Door Breakout	110	South Quarry, Proposed	17
Saw Door Breakout	110	South Quarry, Proposed	17
Splitter Door Breakout	97	South Quarry, Proposed	17
Saw Door Breakout	110	South Quarry, Proposed	17



FIGURE 1: SOURCE MAP, SCENARIO 16

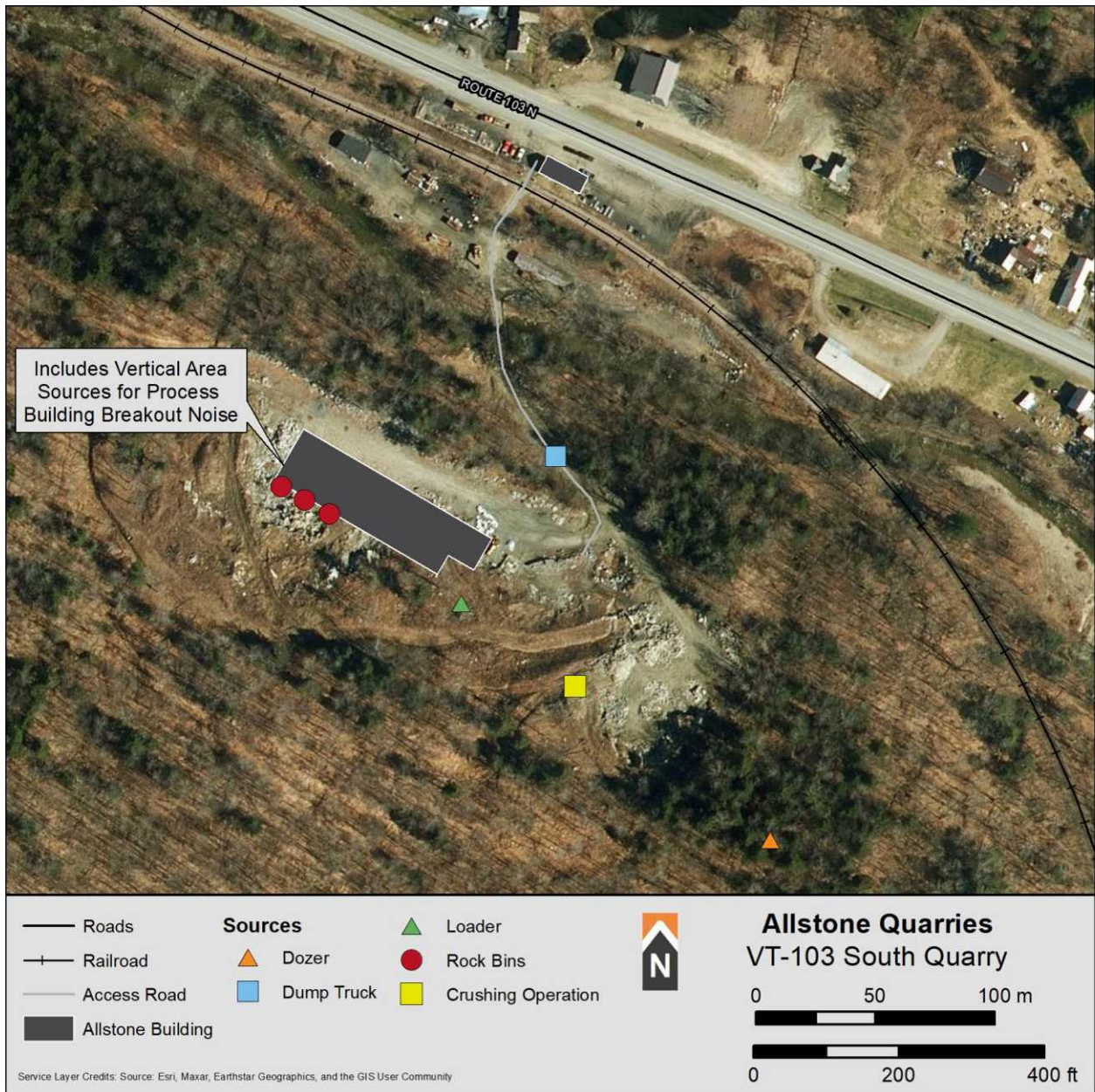


FIGURE 2: SOURCE MAP, SCENARIO 17

## APPENDIX B. MODEL RESULTS

RECEPTOR	MODEL RESULTS BY SCENARIO (L <sub>max</sub> , dBA)		RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + RECEPTOR HEIGHT (m)
	16 - EXISTING CRUSHING OPERATION	17 - PROPOSED CRUSHING OPERATION		X (m)	Y (m)	
	733 WHITMORE BROOK RD	45		43	4.0	
88 SUGARBUSH RD	39	38	4.0	490003	93237	319
528 WHITMORE BROOK RD	36	36	4.0	490069	92783	359
260 WHITMORE BROOK RD	41	39	4.0	490095	93207	310
341 WHITMORE BROOK RD	41	41	4.0	490142	93014	329
125 WHITMORE BROOK RD	43	44	4.0	490221	93366	272
4678 VT ROUTE 103 N	47	49	4.0	490439	93242	244
4644 VT ROUTE 103 N	46	47	1.5	490459	93191	240
37 NEWTON RD	58	62	4.0	490649	92698	238
173 CAVENDISH RD	53	56	1.5	490662	92809	234
174 CAVENDISH RD	58	62	4.0	490684	92767	237
247 CAVENDISH RD	54	57	4.0	490714	92913	240
244 CAVENDISH RD	52	56	1.5	490741	92892	237
3840 VT ROUTE 103 N	55	54	4.0	490803	92195	273
576 CAVENDISH RD	47	49	4.0	490898	93377	246
3668 VT ROUTE 103 N	66	64	4.0	490984	91833	230
3630 VT ROUTE 103 N	67	64	4.0	491041	91816	229
3610 VT ROUTE 103 N	67	63	4.0	491076	91799	227
3590 VT ROUTE 103 N	66	62	4.0	491106	91806	227
3526 VT ROUTE 103 N	65	62	4.0	491195	91740	225
3504 VT ROUTE 103 N	65	62	4.0	491218	91727	225
3489 VT ROUTE 103 N	62	60	4.0	491227	91672	224
3457 VT ROUTE 103 N	61	59	1.5	491255	91639	221
3466 VT ROUTE 103 N	63	60	4.0	491289	91697	224
3432 VT ROUTE 103 N	59	57	4.0	491328	91663	224
129 CLEMONS RD	61	58	4.0	491345	91801	224

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RECEPTOR	MODEL RESULTS BY SCENARIO (L <sub>max</sub> , dBA)		RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + RECEPTOR HEIGHT (m)
	16 - EXISTING CRUSHING OPERATION	17 - PROPOSED CRUSHING OPERATION		X (m)	Y (m)	
355 CLEMONS RD	53	51	4.0	491373	92137	232
29 VT ROUTE 10	58	56	4.0	491383	91614	222
105 BROOKS RD	50	49	4.0	491454	91179	239
473 CLEMONS RD	49	47	4.0	491476	92416	243
272 CLEMONS RD	55	51	1.5	491480	92033	227
538 CLEMONS RD	53	49	4.0	491563	92351	241
406 CLEMONS RD	54	50	4.0	491565	92230	238
51 BLACKBERRY HILL RD	55	53	4.0	491615	91668	228
261 BROOKS RD	49	48	4.0	491633	91061	263
178 VT ROUTE 10	56	53	4.0	491656	91719	227
729 CLEMONS RD	46	44	4.0	491667	92687	260
650 CLEMONS RD	46	43	1.5	491671	92540	243
314 VT ROUTE 10	55	52	4.0	491734	91736	235
331 VT ROUTE 10	52	48	1.5	491818	91868	220
362 VT ROUTE 10	51	48	1.5	491857	91827	224
927 CLEMONS RD	47	45	4.0	491860	92949	276
758 CLEMONS RD	46	44	4.0	491870	92662	275
296 BLACKBERRY HILL RD	51	49	4.0	491878	91499	263
291 BLACKBERRY HILL RD	50	49	4.0	491918	91562	261
422 VT ROUTE 10	50	46	1.5	491955	91810	226
498 VT ROUTE 10	49	45	1.5	492072	91863	222
559 VT ROUTE 10	46	43	1.5	492156	92064	226
917 DEAN BROOK RD	40	40	4.0	492234	93433	218
621 VT ROUTE 10	48	45	4.0	492268	92086	237
979 DEAN BROOK RD	38	38	4.0	492328	93366	219
665 VT ROUTE 10	46	43	1.5	492337	91918	222
786 VT ROUTE 10	46	45	1.5	492562	91810	231
93 RACHELS WAY	48	47	4.0	492629	91749	231
33 RACHELS WAY	45	43	4.0	492636	91887	225
53 PRUSAK MOUNTAIN RD	56	56	4.0	492660	92465	244

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RECEPTOR	MODEL RESULTS BY SCENARIO (L <sub>max</sub> , dBA)		RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + RECEPTOR HEIGHT (m)
	16 - EXISTING CRUSHING OPERATION	17 - PROPOSED CRUSHING OPERATION		X (m)	Y (m)	
129 RACHELS WAY	48	47	4.0	492680	91653	239
895 VT ROUTE 10	43	41	1.5	492710	91954	223
1698 DEAN BROOK RD	55	54	4.0	492725	92613	222
131 RACHELS WAY	47	46	1.5	492756	91528	258
50 PRUSAK MOUNTAIN RD	56	55	1.5	492771	92530	213
945 VT ROUTE 10	44	44	4.0	492787	91915	221
76 PRUSAK MOUNTAIN RD	56	56	1.5	492803	92462	209
75 PRUSAK MOUNTAIN RD	57	57	1.5	492827	92400	209
978 VT ROUTE 10	45	45	1.5	492834	91867	215
121 RACHELS WAY	50	50	4.0	492840	91629	241
592 BLOOD RD	46	46	4.0	492848	93107	269
1648 DEAN BROOK RD	58	58	1.5	492861	92543	208
607 BLOOD RD	50	50	4.0	492894	93020	266
25 PRUSAK MOUNTAIN RD	61	61	1.5	492909	92446	207
1029 VT ROUTE 10	50	50	1.5	492918	91928	220
1026 VT ROUTE 10	51	50	4.0	492925	91872	217
106 WARREN RD	52	52	4.0	492944	91704	229
62 WARREN RD	52	51	4.0	492958	91762	224
55 WARREN RD	51	50	4.0	492969	91832	218
105 WARREN RD	50	49	4.0	493023	91753	222
441 BLOOD RD	51	50	4.0	493061	92877	254
41 MATTSON RD	51	51	4.0	493084	91842	213
496 BLOOD RD	47	46	1.5	493105	93090	270
97 SNELL RD	53	52	4.0	493121	91730	230
152 SNELL RD	51	51	4.0	493133	91625	239
1929 DEAN BROOK RD	64	63	1.5	493149	92196	202
1189 VT ROUTE 10	54	54	1.5	493161	91954	204
1983 DEAN BROOK RD	60	60	4.0	493191	92120	203
165 SNELL RD	52	52	4.0	493207	91674	237
328 SNELL RD	48	48	4.0	493211	91404	263

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RECEPTOR	MODEL RESULTS BY SCENARIO (L <sub>max</sub> , dBA)		RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + RECEPTOR HEIGHT (m)
	16 - EXISTING CRUSHING OPERATION	17 - PROPOSED CRUSHING OPERATION		X (m)	Y (m)	
20 CHANDLER RD	55	54	1.5	493218	91979	200
157 MATTSON RD	53	53	4.0	493224	91798	219
106 CHANDLER RD	54	53	1.5	493257	92094	199
232 MATTSON RD	53	53	4.0	493273	91736	227
231 SNELL RD	51	51	4.0	493287	91601	250
574 SNELL RD	44	44	4.0	493288	91026	293
506 SNELL RD	42	42	1.5	493290	91119	284
486 SNELL RD	43	43	1.5	493295	91179	279
428 SNELL RD	47	47	4.0	493302	91275	274
610 SNELL RD	44	44	4.0	493305	90971	295
168 CHANDLER RD	58	57	4.0	493311	92120	218
221 MATTSON RD	51	50	1.5	493333	91815	217
242 MATTSON RD	53	52	4.0	493341	91754	226
287 SNELL RD	45	45	1.5	493342	91508	247
525 SNELL RD	41	41	1.5	493345	91081	285
219 BLOOD RD	54	54	4.0	493346	92687	257
206 CHANDLER RD	57	56	4.0	493346	92172	219
178 CHANDLER RD	55	54	4.0	493369	92082	218
196 CHANDLER RD	54	53	4.0	493380	92103	218
669 SNELL RD	39	39	1.5	493407	90906	293
1337 VT ROUTE 10	43	42	1.5	493413	91964	196
290 MATTSON RD	51	50	4.0	493433	91744	226
343 SNELL RD	48	48	4.0	493458	91400	264
507 SNELL RD	43	43	1.5	493487	91180	289
339 MATTSON RD	49	48	4.0	493532	91782	223
2875 TREBO RD	38	38	1.5	493540	90873	298
379 MATTSON RD	48	47	4.0	493603	91741	222
394 MATTSON RD	46	45	1.5	493609	91647	226
723 CHANDLER RD	48	48	4.0	493652	92654	259
456 CHANDLER RD	51	50	4.0	493667	92430	248



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RECEPTOR	MODEL RESULTS BY SCENARIO ( $L_{max}$ , dBA)		RELATIVE HEIGHT (m)	COORDINATES (VT STATE PLANE)		ELEVATION + RECEPTOR HEIGHT (m)
	16 - EXISTING CRUSHING OPERATION	17 - PROPOSED CRUSHING OPERATION		X (m)	Y (m)	
453 MATTSON RD	47	46	4.0	493671	91739	224
1497 VT ROUTE 10	39	39	1.5	493695	91968	201
482 MATTSON RD	45	45	4.0	493702	91609	228
407 MATTSON RD	46	45	4.0	493722	91683	223
489 MATTSON RD	44	43	1.5	493729	91678	221
519 MATTSON RD	44	44	4.0	493785	91635	227

The model result maps on the following pages show sound level isolines ( $L_{max}$ ) throughout the area where 70 dBA is represented by a purple line and 55 dBA is represented by an orange line. The light grey dashed lines between each of the solid color isolines represent 1 dB increments.

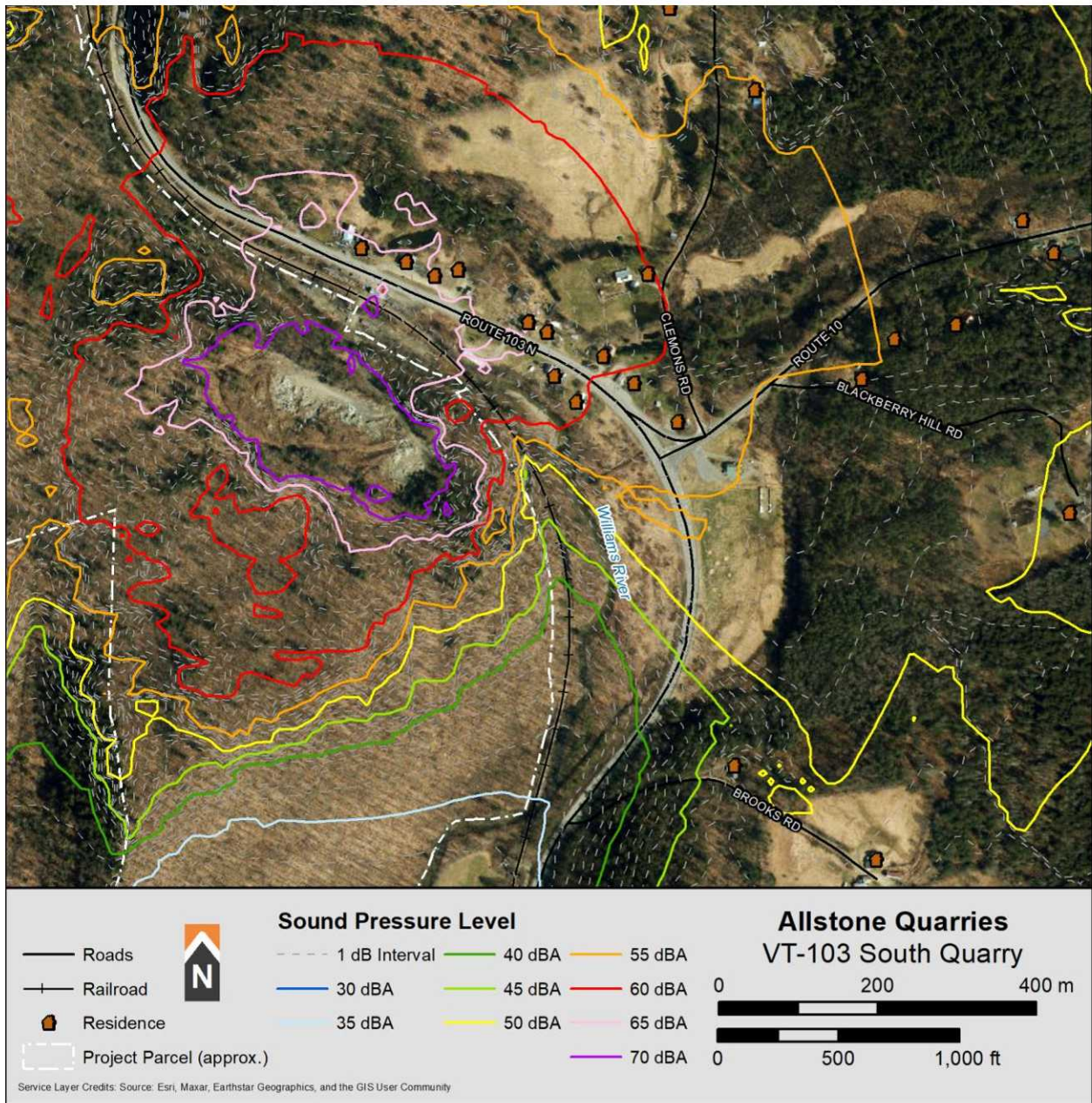


FIGURE 3: MODEL RESULTS, SCENARIO 16, SOUTH QUARRY EXISTING CRUSHING OPERATION

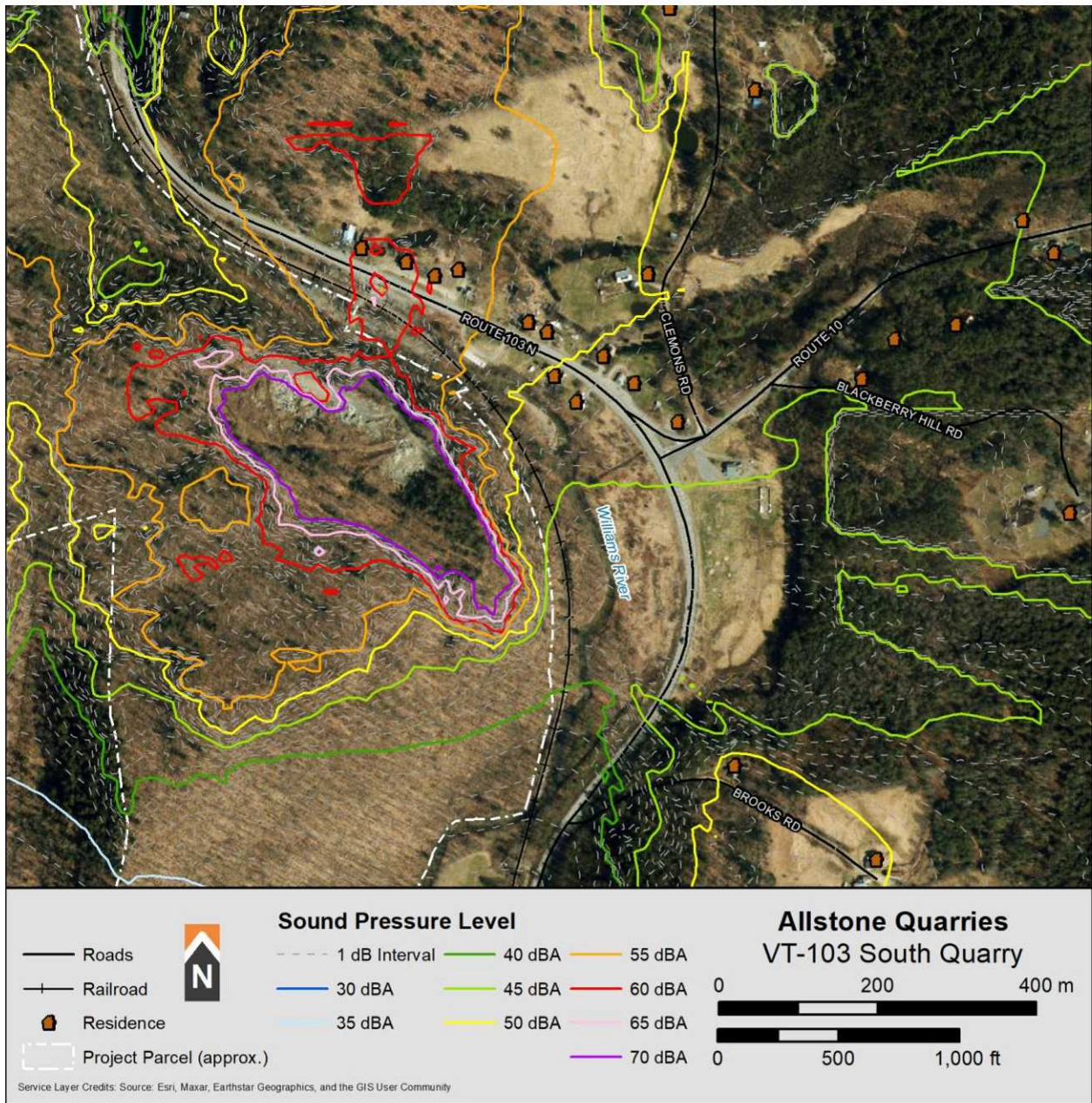


FIGURE 4: MODEL RESULTS, SCENARIO 17, SOUTH QUARRY PROPOSED CRUSHING OPERATION