




**COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567**

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Red Canyon Quarry	MINE/PROSPECTING ID#: M-1985-043	MINERAL: Limestone (general)	COUNTY: Fremont
INSPECTION TYPE: Blast Monitoring	INSPECTOR(S): Timothy A. Cazier	INSP. DATE: October 9, 2015	INSP. TIME: 13:00
OPERATOR: Rocky Mountain Materials and Asphalt, Inc.	OPERATOR REPRESENTATIVE: Tom Smith	TYPE OF OPERATION: 112c - Construction Regular Operation	

REASON FOR INSPECTION: Citizen Complaint	BOND CALCULATION TYPE: None	BOND AMOUNT: \$334,000.00
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: U.S.BLM	JOINT INSP. AGENCY: None
WEATHER: Clear	INSPECTOR'S SIGNATURE: 	SIGNATURE DATE: October 29, 2015

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

(AR) RECORDS----- <u>N</u>	(FN) FINANCIAL WARRANTY----- <u>N</u>	(RD) ROADS----- <u>N</u>
(HB) HYDROLOGIC BALANCE----- <u>N</u>	(BG) BACKFILL & GRADING----- <u>N</u>	(EX) EXPLOSIVES----- <u>Y</u>
(PW) PROCESSING WASTE/TAILING---- <u>N</u>	(SF) PROCESSING FACILITIES----- <u>N</u>	(TS) TOPSOIL----- <u>N</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>N</u>	(FW) FISH & WILDLIFE----- <u>N</u>	(RV) REVEGETATION---- <u>N</u>
(SM) SIGNS AND MARKERS----- <u>N</u>	(SW) STORM WATER MGT PLAN---- <u>N</u>	(CI) COMPLETE INSP---- <u>N</u>
(ES) OVERBURDEN/DEV. WASTE----- <u>N</u>	(SC) EROSION/SEDIMENTATION--- <u>N</u>	(RS) RECL PLAN/COMP-- <u>N</u>
(AT) ACID OR TOXIC MATERIALS----- <u>N</u>	(OD) OFF-SITE DAMAGE----- <u>Y</u>	(ST) STIPULATIONS----- <u>N</u>

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

OBSERVATIONS

The purpose of this site visit was to monitor a planned blast at the Red Canyon Quarry as a result of a complaint received (via email on July 14, 2015) by the DRMS. Tim Cazier and Tyler O'Donnell, representing the DRMS met Tom Smith, representing the Operator (Rocky Mountain Materials and Asphalt, Inc. – RMMA) and drove to the Complainant's residence to monitor the scheduled blast. This was the second blast monitored by the DRMS.

Blast Monitoring:

Buckley Powder set up a seismograph at the point where they initiated the blast. RMMA set up a second seismograph (see **Photo 1**) on the west side of the Complainant's residence in the same place as the previous August 18, 2015 blast, again with a clear view of, and facing the blast area (see **Photo 2**). Mr. O'Donnell observed the blast with Mr. Smith near the seismograph set up at the complainant's residence. Mr. Cazier experienced the blast in the complainant's residence at his request.

Based on the blast area coordinates included in Buckley's blast report (attached), the RMMA seismograph was set up approximately 1,720 feet southeast (and upgradient) of the blast site (see **Figure 1**).

The DRMS noted RMMA's seismograph (an InstanTel Minimate Plus) was recently calibrated on September 18, 2015 (see **Photo 3**). This calibration is valid for one year.

The Complainant requested notification by RMMA of future blasts. RMMA agreed and the Division is requiring the Operator to update their blasting plan as part of the current geotechnical stability technical revision (TR-03).

Results:

After the blast was initiated, the Complainant indicated this particular blast was much less intense than earlier blasts that prompted his complaint.

The DRMS received seismograph data and the blast report on October 27, 2015. This documentation is attached. The seismograph results from the initiation point is presented in "Buckley Powder Co. Blast Report" and the from the Complainant's residence are hand-labeled "RMMA". It should be noted there is a typographical error in the Buckley GPS longitudinal coordinate, it should be W -104.94572 (the typo was confirmed by the Operator on 10/28/2015). In summary, the recorded ground vibration peak particle velocity (PPV) was less than the 1 inch/second limit for a distance between 301 and 5,000 feet from the blast (0.0776 – reported as 1.97 mm/s). The recorded air blast was 115.6 dB (RMMA reported as 12 pascals, or 0.0017 psi) at 6.6 Hz. When compared to the U.S. Bureau of Mines (USBM) recommended levels, this is below the 120 dBL level that may "produce some annoyance from rattling and fright", and well below the 134 dBL level for which up to 10 % of homes exhibit disturbances. The USBM recommends efforts be made to try to keep air blast levels to 110 dBL (or 6.3 pascals or 0.00091 psi) if possible. The blast did not trigger Buckley's seismograph at the blast initiation area (1,400 ft east of the shot), therefore no results were recorded.

Summary and Recommendations:

1. RMMA should make efforts to limit air blasts to 110 dBL (or 6.3 pascals or 0.00091 psi) if possible.
2. Based on the Complainant's response and the blast monitoring data, this particular blast would not have initiated a complaint.

3. The Complainant, DRMS and RMMA discussed monitoring future blasts in order to try to determine what conditions result in a blast that would initiate a complaint. RMMA agreed to notify the Complainant of future blasts in a timely manner (ideally at least 48 hours in advance of a blast). The notification is to be documented in an updated blasting plan as part of the geotechnical stability technical revision (TR-03) currently under review.
4. The DRMS will be attend future blast monitoring events if either party requests DRMS presence and if the proposed blast schedule can be accommodated by the DRMS.

PHOTOGRAPHS



Photo 1. Seismograph setup adjacent to Complainant residence (looking NW).

PHOTOGRAPHS (cont.)



Photo 2. Telephoto view of blast area from RMMA seismograph location (looking NW).



Photo 3. Instantel Minimate Plus seismograph with valid calibration tag.

Inspection Contact Address

Rob Mangone
Rocky Mountain Materials and Asphalt, Inc.
1910 Rand Ave
Colorado Springs, CO 80905




Enclosures

EC: Wally Erickson, DRMS
Tyler O'Donnell, DRMS
DRMS file
Tom Smith, RMMA
Stephanie Carter, BLM
Phil Courtney, SLB
Complainant (via email)

Figure 1. October 9 Blast Monitoring

Google Earth Image from 2011

Legend

-  Bishop Residence
-  M-85-43 Blast
-  Red Canyon Quarry



Google earth

USCS

© 2015 Google

800 ft

Buckley Powder Co.

BLAST REPORT



SERVICE SITE LOCATION: Louviers ORDER NO.: 7402685

BLAST NUMBER: 5 BLAST TIME: 1:14 pm BLAST DATE: 10/09/2015
 CUSTOMER: ROCKY MOUNTAIN MATERIA MINE ADDRESS: Colorado Springs, CO
 ROCK TYPE: Granite Tons/Yd3: 2.00 EXPECTED VIBRATION: 0.000

LOCATION OF BLAST

LOCATION OF BLAST IN MINE: South BENCH: Bench 1
 BLAST GPS POINTS: N 038.60790 & W -106.94572 W -104.94572

WEATHER

WEATHER: Partly Cloudy CEILING: High TEMPERATURE: 68 WIND DIRECTION & SPEED: Northeast 5

NEAREST NON-OWNED STRUCTURE

NAME: _____ GPS Points: N & W
 DISTANCE: _____ Ft DIRECTION: _____ °

SEISMOGRAPH DATA

LOCATION		DISTANCE		GPS POINTS			CALIBRATION DATE	
1	N/A	N/A	Ft	N	N/A	& W	N/A	N/A
	L (F)	T (F)	V (F)	AIR (db)	SEISMOGRAPH	SERIAL	OPERATOR	
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

BLAST DATA

NUMBER OF HOLES (EA)	106	EXPLOSIVES SIZE, TYPE & WEIGHT		
HOLE DIAMETER (IN)	4.5	SIZE	TYPE	WEIGHT
HOLE DEPTH (FT)	45	0.44	SPARTAN 200	46.64
FACE HEIGHT (FT)		0.75	SPARTAN 350	79.5
SUB DRILLING (FT)	0	BULK	TITAN 1000 XL	25,455
AVG. STEM FACE HOLES (FT)				
STEM OTHER HOLES (FT)	12			
BURDEN FRONT ROW (FT)				
BURDEN OTHER ROWS (FT)	15			
SPACING FRONT ROW (FT)				
SPACING OTHER ROWS (FT)	15			TOTAL WEIGHT: 25,581.14

DETONATORS USED IN BLAST: Non-Electric MATS USED: No STEM TYPE: CLEAN CRUSHED STONE

TYPE	MFG	DATE CODE	USED	TYPE	MFG	DATE CODE	USED
MS 350 50FT	Dyno Nobel Global	13JY15	80	SPARTAN 200	Dyno Nobel Global	13MY15	106
EZDET 25/350 40 FT	Dyno Nobel Global	20AP15	86	EZTL 67MS 30 FT	Dyno Nobel Global	20JU15	18
MS 350 50FT	Dyno Nobel Global	27AP15	51	SPARTAN 350	Dyno Nobel Global	27MY15	106
LEADLINE 2500FT	Dyno Nobel Global	27MY15	250	EZTL 42MS 20FT	Dyno Nobel Global	29JU15	2

CU YDS IN SHOT: 39,750 SCALED DISTANCE FACTOR: _____ % OF ANFO: 0
 TONS IN SHOT: 79,500 HOLES/DELAY: 3 FUEL OIL % (BULK): 0
 MAX LBS/DELAY: 724 AVERAGE LBS/HOLE: 241

POWDER FACTOR (TONS/LB): 3.11 POWDER FACTOR POUNDS/YD3: 0.64

BLASTERS NAME: Farmer, Jimmie BLASTERS NUMBER & STATE: 1-035-0748 Colorado

BLASTERS SIGNATURE: _____ SITE SAFETY INSPECTION PERFORMED: Yes

NUMBER OF PERSONNEL ON SITE: 7

REMARKS : Shot loaded good had 1 bad hole driller redrilled and was still bad. No seismograph reading at 1400' East of shot.

START TIME	END TIME	TOTAL TIME	TRUCK NUMBERS
7:30 AM	11:50 AM	04:20	5013

RECEIVED

OCT 27 2015

DIVISION OF RECLAMATION
 MINING AND SAFETY

Date: 10-9-15 Location: Recolant shot #: _____



BLASTER'S CHECKLIST

Must be filled out as you go

PRE-TRIP CHECKLIST

yes / no / NA	
✓	Measuring Tapes and lead ends
✓	Burden pole
✓	Paperwork and Hold Harmless
✓	Splices
✓	Starter and primers
✓	Blasting Signs & cones
✓	Sirens in working order
✓	Seismographs
✓	Paint
✓	Set back Stakes
✓	camera and tape for specific acct.

yes / no / NA

✓	Drillers log (if faxed prior to shot)
✓	Shot reports
✓	Load - blocked and braced
✓	Loading Poles / T Bars
✓	Density Cup and Scales
✓	Two Way Radios
✓	Radios fully Charged
✓	Wheel Chocks
✓	Harness & Lanyard
✓	First Aid Kits
✓	PPE

yes / no / NA

PRESHIFT CHECKLIST

✓	Inspect blast area for Unsafe Working Conditions (including face) for voids, cracks, caves, etc..
✓	Ensure all employees have their site specific training.
✓	Secure blast site with warning signs and cones (including floor in front of face)
✓	Mark fall zone area at least six(6) feet from the crest
✓	Inspect Harness/ Lanyard before each use if needed for fall zone or top of trucks
✓	All equipment - back up alarms operational
✓	Measure front row burden with burden pole or profiler
✓	Check drill log and all holes for proper depth and blockage
✓	Insure all needed products are present-enough boosters, detonators etc
✓	Insure blast design is consistent with closest structures requirements
✓	Check shot access including traffic activity
✓	Any need for calling assistance (Hold Harmless, equipment to close, drilling problems, etc...)
✓	Conduct pre-blast safety meeting with blast crew and customer blast coordinator (include names below)
	<u>Matt B Bruce</u> <u>Matt G Patrick</u> <u>Don</u>
	Items covered <u>loading 4.5" hole, Two Trucks, 13 to 11'</u>
	<u>stem</u>

yes / no / NA

TIE-IN CHECKLIST

✓	Shot tie inspected and signed off by two persons prior to shot including lead line (include names below)
	<u>ADZ</u> <u>Don Shewchuk</u>
✓	Blast area is cleared and blocked before attaching starter cap and lead line
✓	Blaster in charge in communication with all guards at this time
✓	Blaster in charge will insure blast area has been cleared and guarded before the siren is sounded
✓	After proper waiting time blaster in charge will contact all guards before firing blast
✓	Seismograph located at nearest off site structure or at the Property Line
✓	Was the shot video taped
	Reason for not videoing:

yes / no / NA

POST BLAST CHECKLIST

✓	Maintain guards until shot is cleared and "all clear" is sounded
✓	Check for misfires, undetonated explosives or burning product and other dangers
✓	Sound all clear that is audible to all parties
✓	Dispose of lead line in approved manner
✓	Dispose of empty boxes in approved methods only
✓	Complete all paper work prior to leaving site- delivery ticket, return bill of lading Blaster's checklist
	cup densities 1st <u>1.36</u> 2nd 3rd Final Density <u>1.15</u>
	Amount of water used in repump operations
✓	Make one final check of blast site before leaving property to insure no materials have been left and that no hazards are present that may have been missed during clearing process

1.12

Must be completed and turned in daily

Blaster In Charge _____

Buckley Powder Co.

CUSTOMER NAME: ROCKY MOUNTAIN MATERIALS
BENCH: Bench 1
BLASTER'S NAME: Farmer, Jimmie

DIAGRAM

BLAST DATE: 10/09/2015
BLAST NUMBER: 5



- 117 ○ 92 ○ 57 ○ 42 ○ 17 ○ 0 ○ 25 ○ 50 ○ 75 ○ 100 ○ 125
- 209 ○ 184 ○ 159 ○ 134 ○ 109 ○ 92 ○ 117 ○ 142 ○ 167 ○ 192 ○ 217
- 268 ○ 243 ○ 218 ○ 201 ○ 184 ○ 209 ○ 234 ○ 259 ○ 284 ○ 309
- 393 ○ 368 ○ 343 ○ 318 ○ 293 ○ 276 ○ 301 ○ 326 ○ 351 ○ 376 ○ 401
- 485 ○ 460 ○ 435 ○ 410 ○ 385 ○ 368 ○ 393 ○ 418 ○ 443 ○ 468 ○ 493
- 577 ○ 552 ○ 527 ○ 502 ○ 477 ○ 460 ○ 485 ○ 510 ○ 535 ○ 560 ○ 585
- 669 ○ 644 ○ 619 ○ 594 ○ 569 ○ 552 ○ 577 ○ 602 ○ 627 ○ 652 ○ 677
- 761 ○ 736 ○ 711 ○ 686 ○ 661 ○ 644 ○ 669 ○ 694 ○ 719 ○ 744
- 853 ○ 828 ○ 803 ○ 778 ○ 753 ○ 736 ○ 761 ○ 786 ○ 811 ○ 836
- 945 ○ 920 ○ 895 ○ 870 ○ 845 ○ 852 ○ 853 ○ 878 ○ 903 ○ 928

Date/Time Vert at 13:14:03 October 9, 2015
 Trigger Source Geo: 0.630 mm/s, Mic: 5.90 pa.(L)
 Range Geo: 31.7 mm/s
 Record Time 30.0 sec at 1024 sps
 Job Number: 1

Serial Number BC6736 V 10.72-8.17 MiniMate Plus
 Battery Level 6.2 Volts
 Unit Calibration September 18, 2015 by InstanTel
 File Name __TEMP.EVT

Notes

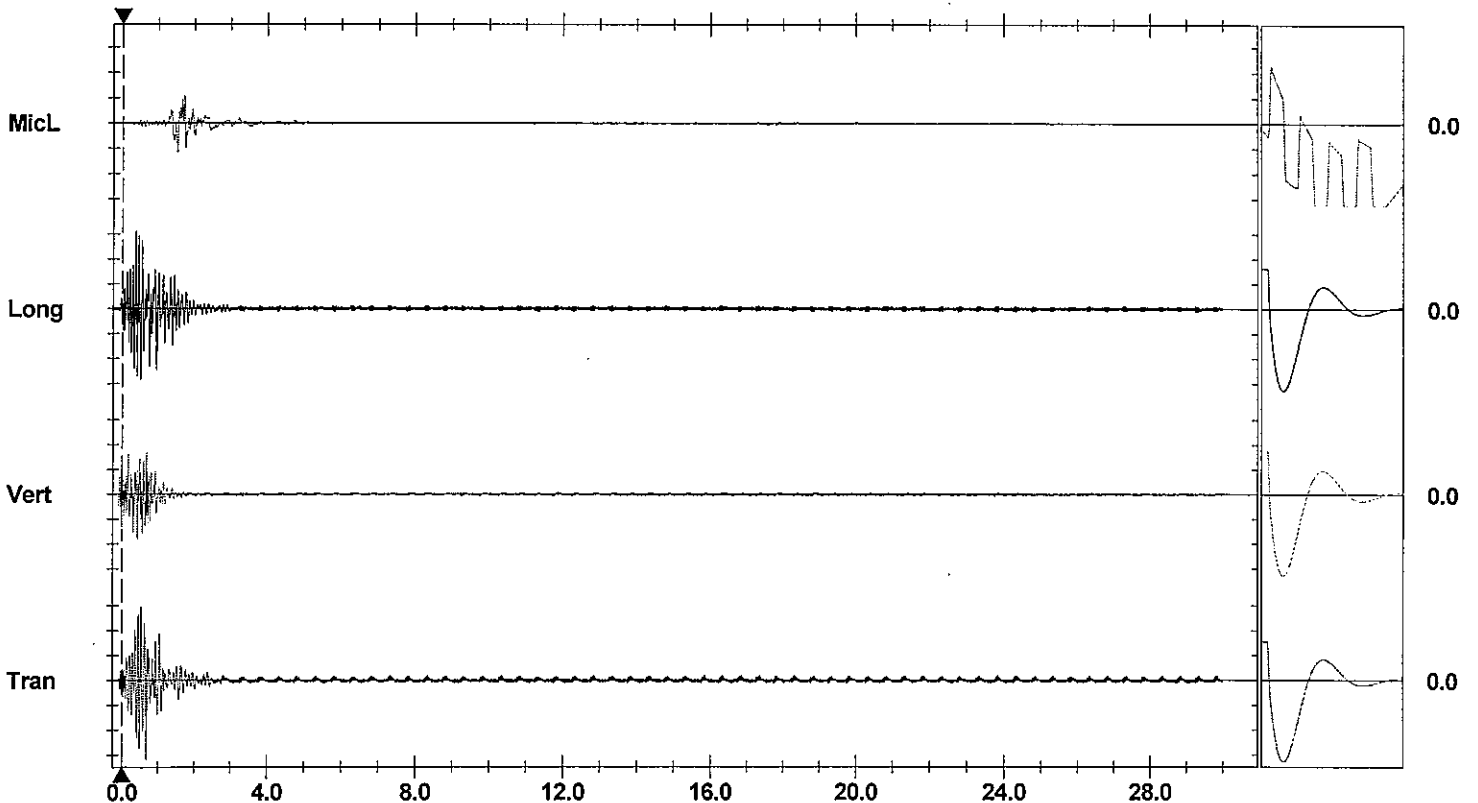
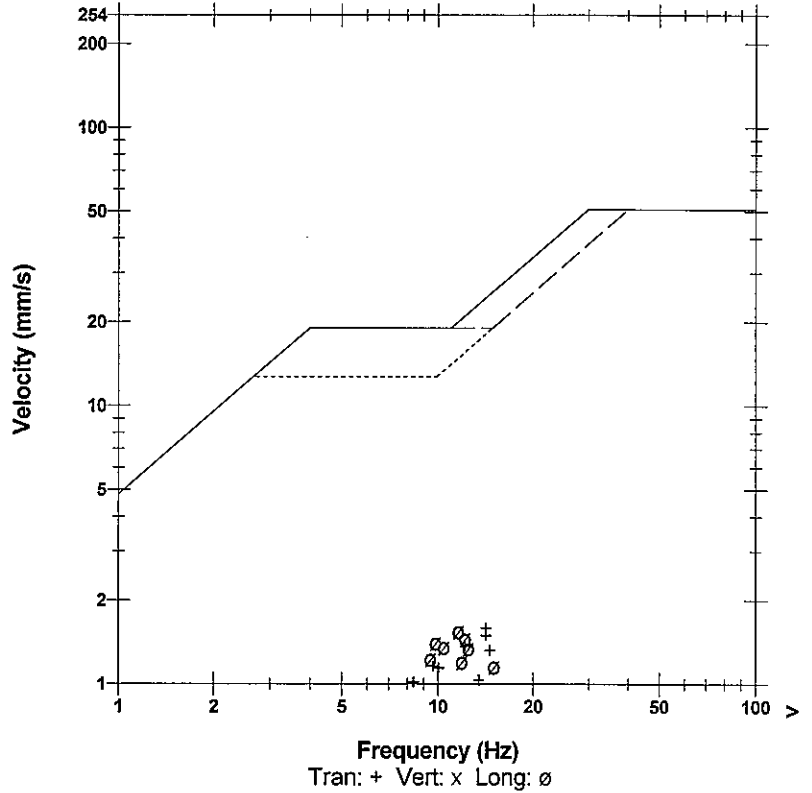
Location: Red Canon Scalehouse
 Client: Matheson Mining Ltd.
 User Name: Tech: 14
 General: Tests

Microphone Linear Weighting
 PSPL 12.0 pa.(L) at 1.519 sec
 ZC Freq 6.6 Hz
 Channel Test Passed (Freq = 20.1 Hz Amp = 663 mv)

	Tran	Vert	Long	
PPV	1.59	0.921	1.56	mm/s
ZC Freq	14	17	12	Hz
Time (Rel. to Trig)	0.692	0.440	0.376	sec
Peak Acceleration	0.0199	0.0215	0.0182	g
Peak Displacement	0.0167	0.00824	0.0195	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.2	7.5	7.3	Hz
Overswing Ratio	4.0	3.4	3.7	

Peak Vector Sum 1.97 mm/s at 0.546 sec

USBM RI8507 And OSMRE



Time Scale: 1.00 sec/div Amplitude Scale: Geo: 0.500 mm/s/div Mic: 10.00 pa.(L)/div
 Trigger =

Sensor Check