Memo

HAMMOND RIVER HOLDINGS

To:	Mike Cormier, P.Eng. – Director, Authorizations Branch, New Brunswick Department of Environment and Local Government
From:	Daniel Guest, Hammond River Holdings Ltd.
Date:	December 1, 2023
Subject:	Monthly Monitoring Report – Upham East Gypsum Quarry – October 2023
Our File:	File # 21-3049

Introduction

This monthly report details activities associated with the Upham East Gypsum Quarry operations for the month of October 2023, in accordance with the Approval to Operate I-10936 conditions. Activities included surface water monitoring, water level monitoring, air quality monitoring, and blasting. For previous monthly activities, refer to the monthly reports provided from December 2019 through September 2023.

Surface Water Sampling

Weekly compliance surface water monitoring in October was conducted as per the following:

- Week 1: October 6, 2023
- Week 2: October 9, 2023
- Week 3: October 18, 2023
- Week 4: October 23, 2023

Field Methods

Field parameters were measured using a calibrated turbidity meter and probe. Field parameters are temperature, conductivity, and turbidity. These parameters were measured at three sampling locations as per the Environmental Management Plan (EMP) for Operation (Dillon 2020). All samples were submitted for lab analysis of total suspended solids (TSS). Surface water samples were collected from three locations (Figure 1). They are as follows:

- PDP-1 was collected at the discharge point from the site, which is located before the confluence with the unnamed tributary to the Hammond River. This is the point of compliance;
- SW3 was the background sample. It was collected within the unnamed tributary approximately 100 m upstream from the PDP-1;

- SW5 was collected within the unnamed tributary approximately 100m downstream from PDP-1

Surface water samples were collected using laboratory-supplied bottles. The bottles were rinsed three times in the watercourse and then submerged below the water surface. The samples were submitted to the Research Productivity Council (RPC) in Fredericton, NB. RPC holds ISO 17025 from the Standards Council of Canada (SCC) for each of the analytical methods utilized and have in-house QA/QC programs to govern sample analysis and analytical data quality assurance.

Compliance Monitoring Results

Surface water compliance monitoring results are provided in Table 1. Analytical certificates are attached. The monthly average of grab samples for TSS was calculated for each site, presented in Table 2. The monthly averages for TSS were all below the site-specific guideline for each site laid out in the Approval to Operate, displayed in Figure 2.

A QA/QC program was implemented to evaluate whether the data collected was of suitable quality to characterize the surface water conditions observed. This program required the collection of field duplicates and the calculation of the relative percent difference (RPD). The calculation method and acceptance level of 40% are discussed in CCME (2016). Two duplicate samples were collected during the October water sampling program. The RPD results could not be calculated due to both results being below the laboratory detection limit. Therefore, the data satisfies the quality objectives of the monitoring program.

Water Level Monitoring

Water levels were downloaded on November 10, 2023. The data retrieved from the dataloggers were graphed as time series plots to display continuous coverage of water levels in the wells.

Methodology

Data loggers were retrieved via Solinst Levelogger Software 4.6.1 the dataloggers were then reset to continue to record the water level every 60 minutes.

Water Level Results

The data for perimeter monitoring wells (Figure 3) and potable monitoring wells (Figures 4, 5, and 6) are presented as time series plots. Total precipitation (mm) is also presented within each figure, representing periods of recharge. The overall trend in almost all of the perimeter monitoring wells has remained consistent with seasonal fluctuations. The potable wells all experienced short-term fluctuations, as is expected with normal well use, and predictable longer-term fluctuations typical of seasonal variations. Based on the available data as described for the October monitoring period,

there does not appear to be a negative impact on water levels in perimeter and potable wells as a result of quarry operations.

Environmental Accidents and Malfunctions

There was one spill during the October 2023 monitoring period. On October 4, 2023, less than 1 litre of transmission fluid was leaked from a rock truck. Absorbant pads were placed down to contain the spill. Impacted soil was removed from the area. The spill report is attached.

Ambient Air Quality Monitoring – Total Suspended Particulate

24-hour air samples are collected every 6 days in accordance with the National Air Pollution Surveillance (NAPS) schedule. The air quality monitor used to conduct the monitoring is a BGI PQ100 air sampler, a high-volume sampler for total suspended particulate matter. In October, there were 5 air quality monitoring events, October 5, 11, 17, 23, and 29 2023. The results are provided in Table 4. There were no exceedances of the 120 µg/m^3 maximum permissible ground level concentration of total suspended particulate that is specified in Schedule B of the New Brunswick *Air Quality Regulation – Clean Air Act*.

Blasting

Three blasts occurred during the October 2023 monitoring period, occurring on October 3, 16, and 25 2023. There were no exceedances of the Approval to Operate limits for maximum velocity and sound pressure for the blasting events. Blast reports are attached.

Public Complaints

There was no public complaint during the months of October.

Summary

Since extraction activities began in July 2020 at the Upham East Gypsum Quarry, the water chemistry at the discharge point into the unnamed tributary has remained comparable to the background, groundwater measured in the perimeter monitoring wells remains comparable to pre-operation conditions, air quality monitoring has remained below guidelines, and decibel levels have remained generally below guidelines.

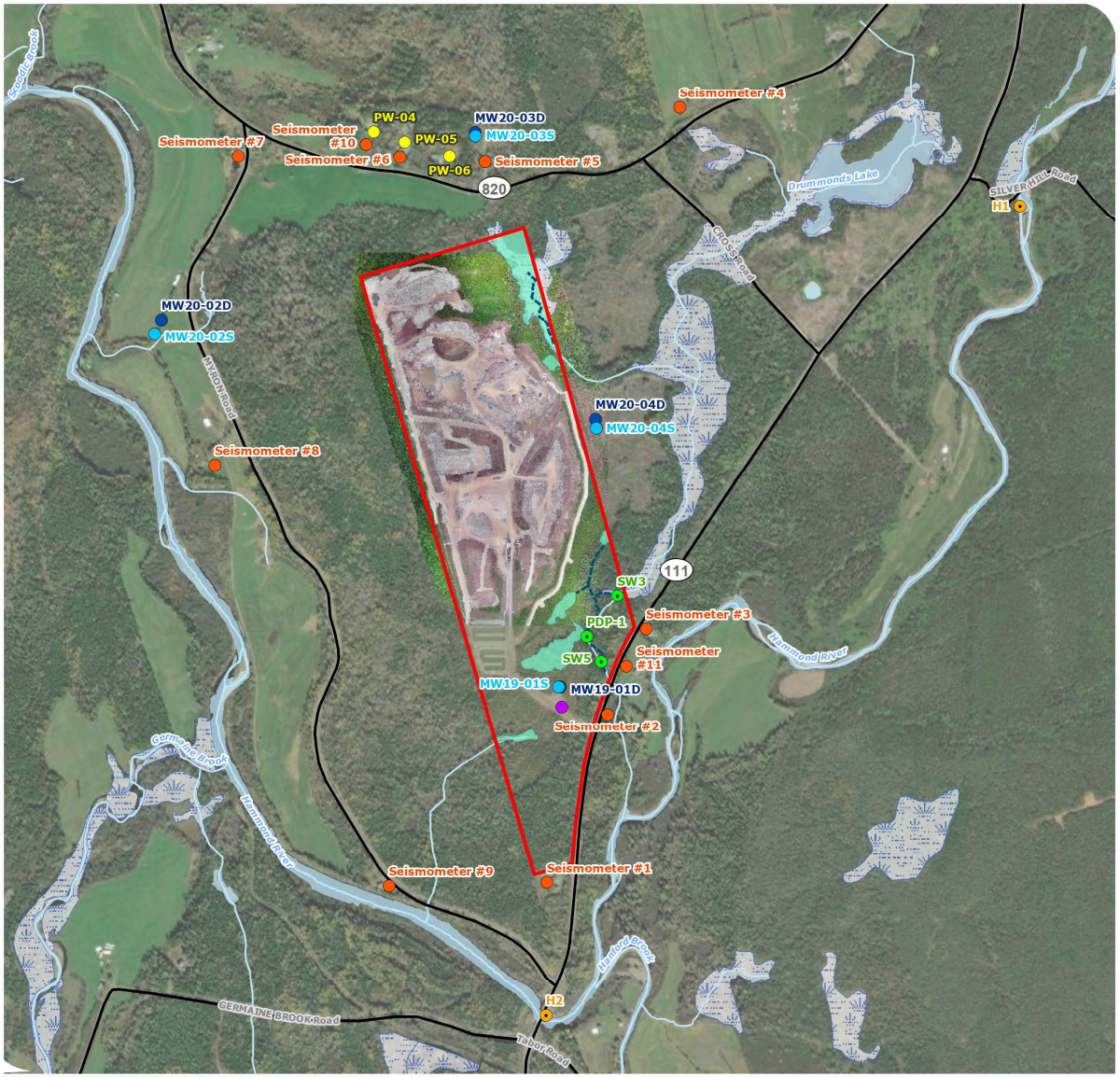
References

Canadian Council of Ministers of the Environment (CCME). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment: Volume 1 Guidance Manual. Canadian environmental quality guidelines. ISBN 978-1-77202-026-7.

Dillon (Dillon Consulting Limited). 2020 Environmental Management Plan (EMP) for Operation. Upham East Gypsum Quarry Project, Upham New Brunswick. Prepared for Hammond River Holdings Limited by Dillon Consulting Limited, Fredericton, New Brunswick. Project 18-8346. June 2020.

Attachment A

Figures



FILE LOCATION: K:\2021\213049\Product\Client\MonthlyReport\MonitoringLocations_2023.mxd

HAMMOND RIVER HOLDINGS

UPHAM EAST GYPSUM QUARRY

MONITORING LOCATIONS

FIGURE 1

- Project Development Area
- Air Quality Monitor
- Blast Monitor Locations

Groundwater Monitoring

- Shallow Perimeter Monitoring Well
- Deep Perimeter Monitoring Well
- Potable Well Data Loggers

Surface Water Sampling Locations

- Weekly Samples
- Quarterly Samples
- Field Delineated Watercourse
- Road
- Watercouse
- Field Delineated Wetlands
- GNB Mapped Wetlands
- Waterbody

Site Imagery is from June 2023

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED

MAP CREATED BY: GAM
MAP CHECKED BY: JTO
MAP PROJECTION: NAD 1983 CSRS New Brunswick

DILLON CONSULTING

SCALE 1:14,000

0 105 210 m

PROJECT: 21-3049
STATUS: DRAFT
DATE: 2023-11-01

Figure 2: TSS Monthly Average

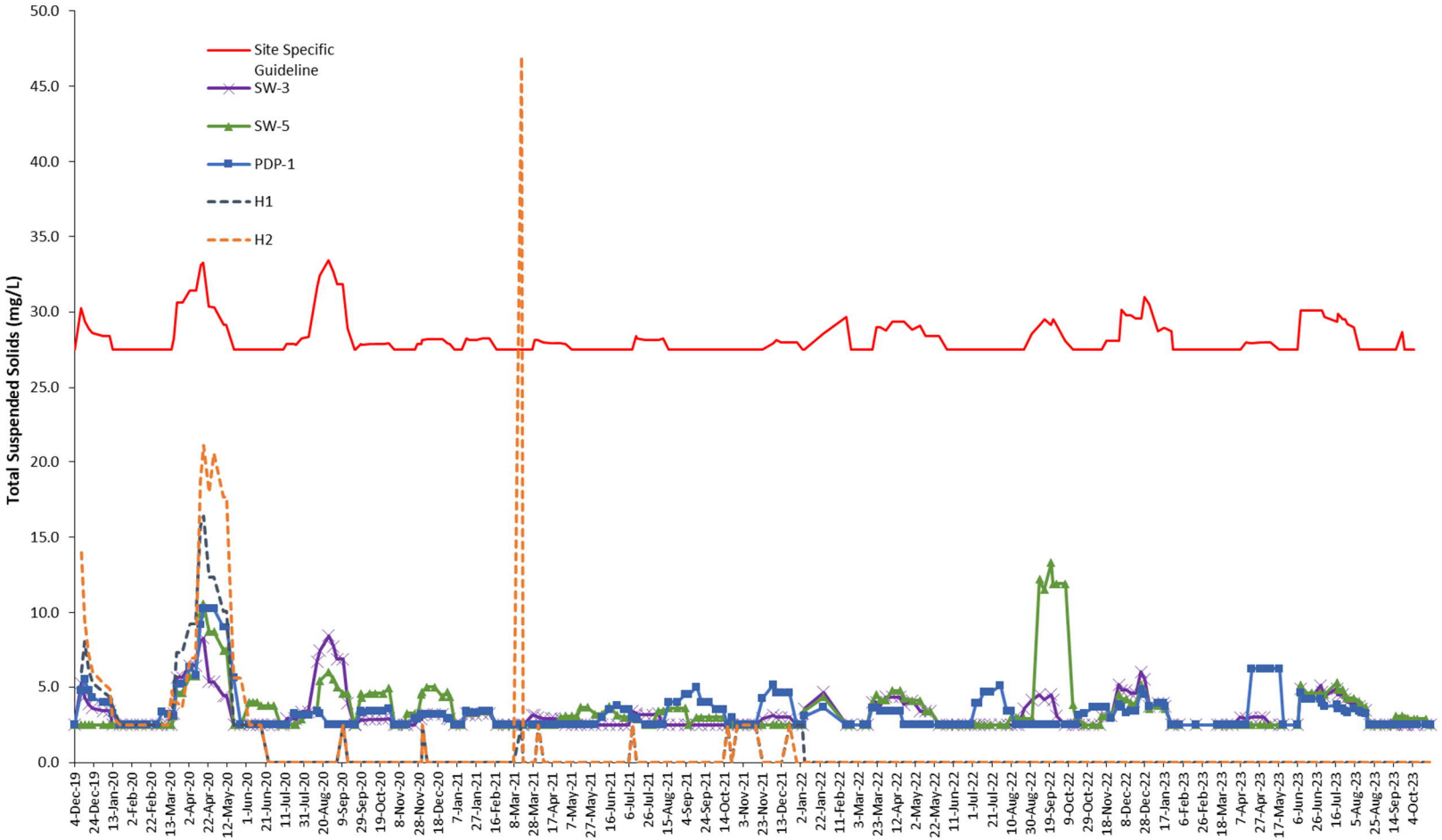


Figure 3: Upham East - Perimeter Monitoring Water Levels

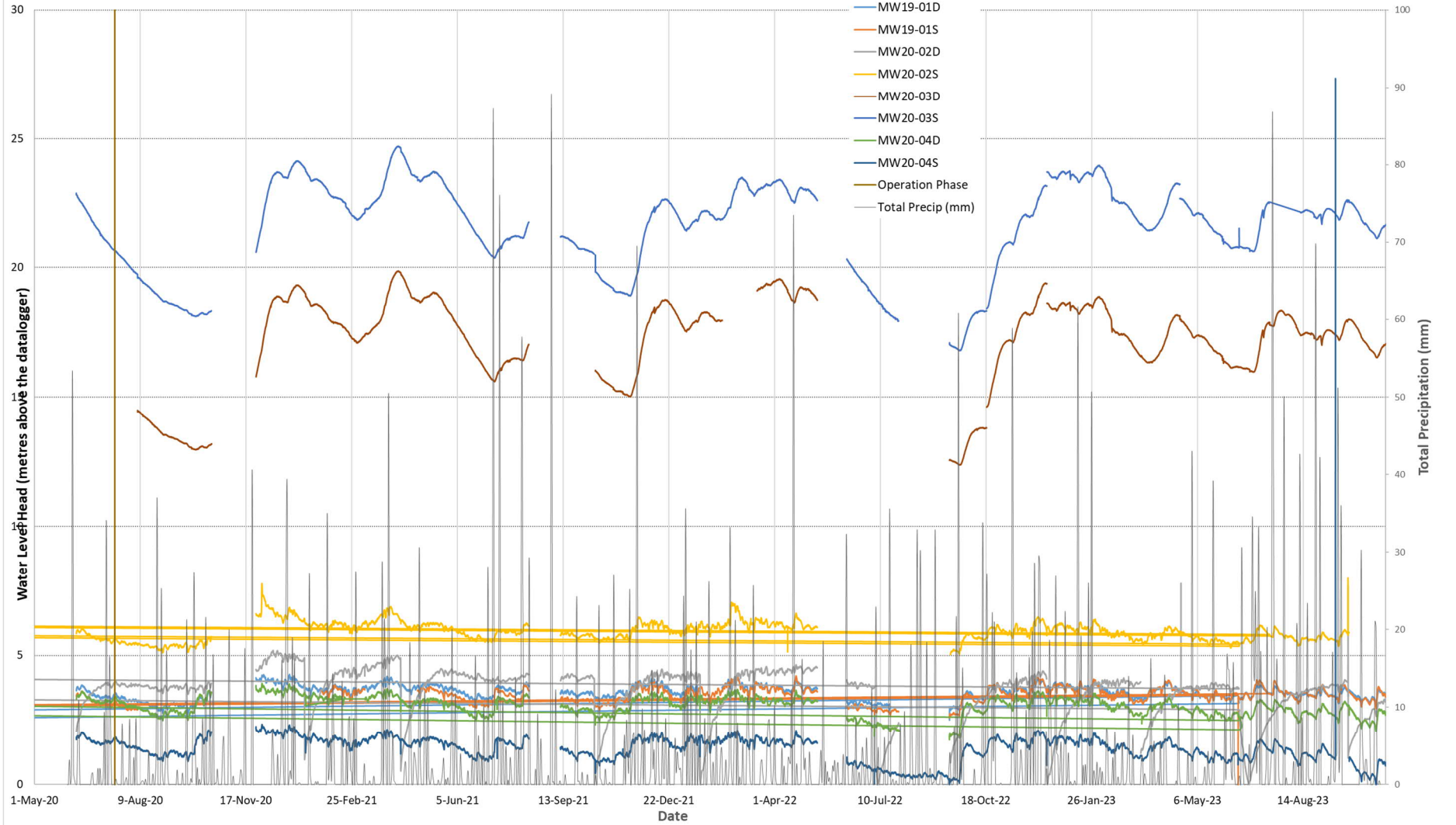


Figure 4: PW-04 Water Levels

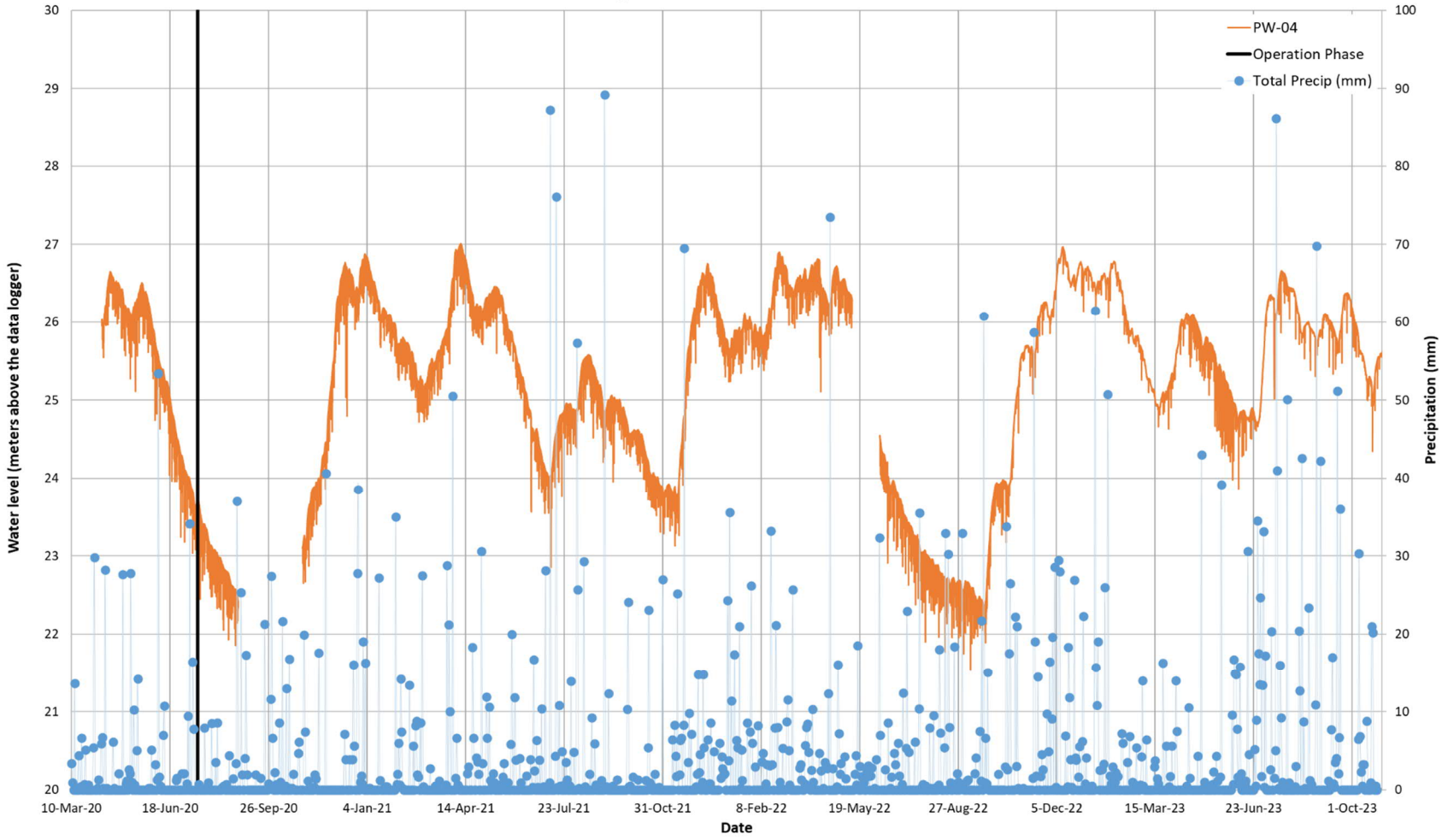


Figure 5: PW-05 Water Levels

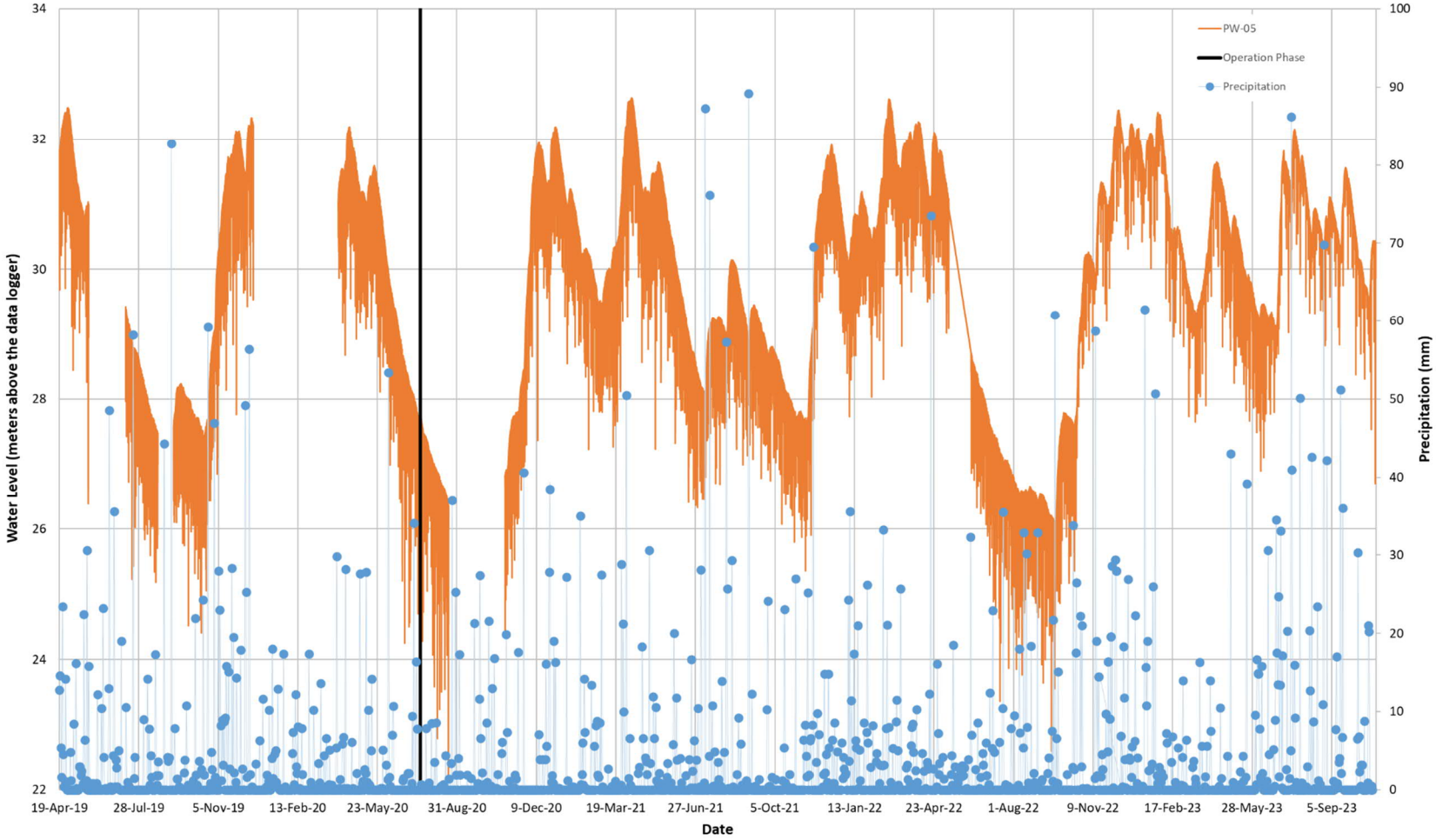
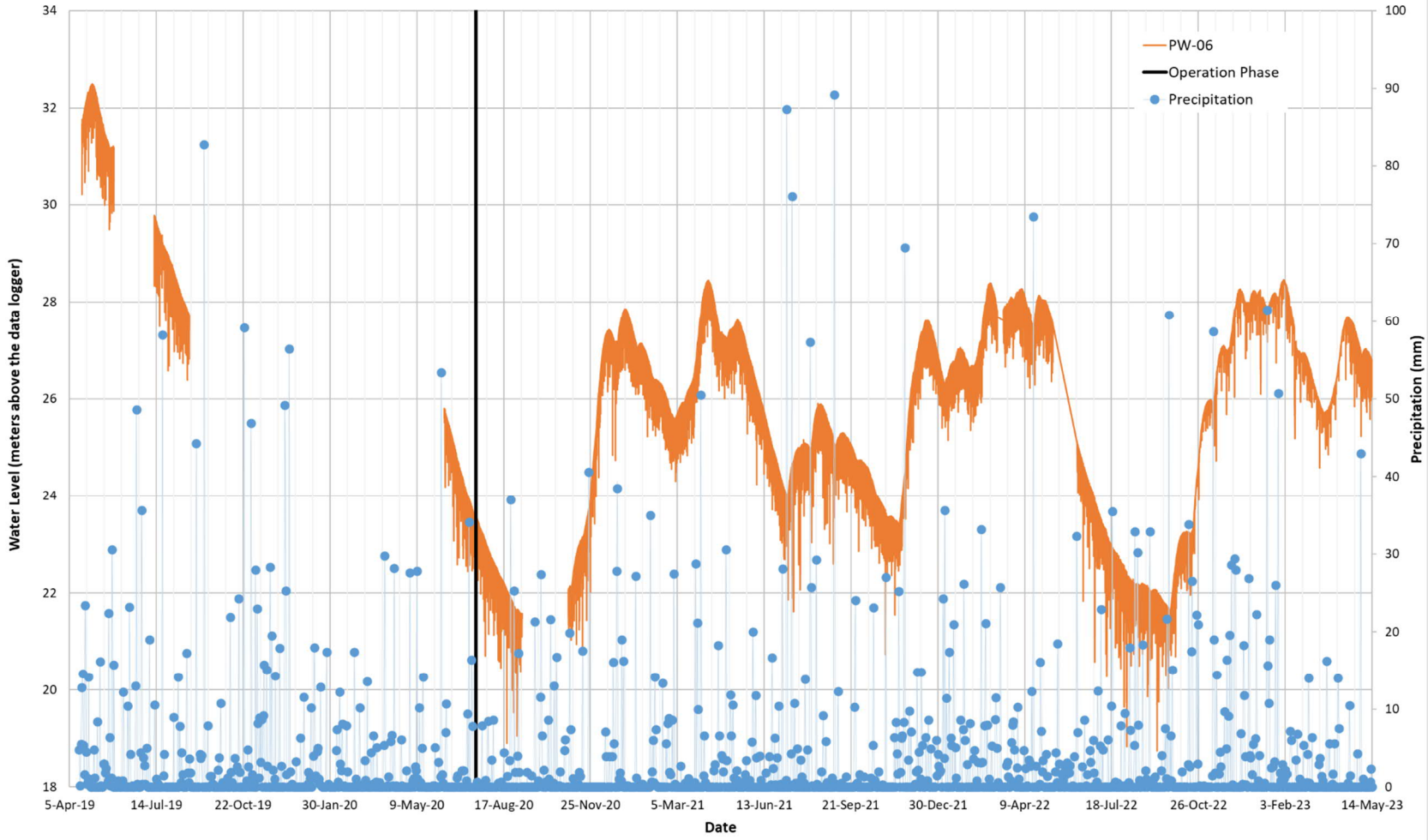


Figure 6: PW-06 Water Levels



Attachment B

Tables

Table 1
Surface Water Monitoring
Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Parameter		Ambient Air Temperature[a]	Precipitation 48 hours prior to sample collection[b]	Water Temperature	Specific Conductivity	Turbidity	Total Suspended Solids[c]
Units		°C	mm	°C	mS/cm	NTU	mg/L
SW3	10-6-23 10:47	18.6	0	14.3	1154	0.20	<5
PDP-1	10-6-23 10:56			14.2	1340	1.10	<5
PDP-1 Dup	10-6-23 10:57			14.2	1344	1.12	<5
SW5	10-6-23 11:02			14.2	1244	0.31	<5
SW3	10-9-23 9:40	14.8	37.1	13.6	571	2.87	<5
PDP-1	10-9-23 9:48			13.9	719	3.59	<5
SW5	10-9-23 9:57			13.5	686	4.00	<5
SW3	10-18-23 10:24	13.2	8.8	8.4	550	0.59	<5
PDP-1	10-18-23 10:34			8.2	690	0.82	<5
SW5	10-18-23 10:40			8.0	695	0.71	<5
SW3	10-23-23 12:35	8	41.2	11.0	113	4.25	<5
PDP-1	10-23-23 12:42			10.7	408	4.47	<5
PDP-1 Dup	10-23-23 12:46			10.6	404	4.49	<5
SW5	10-23-23 12:53			10.7	417	3.40	<5

a) Temperature based on data from the climate station at the Saint John airport. Temperature is the value recorded at 12:00pm on the day of sampling. Data available at: https://climate.weather.gc.ca/historical_data/search_historic_data_e.html

b) Preciptitation based on data from the climate station at the Saint John airport. Data available at: https://climate.weather.gc.ca/historical_data/search_historic_data_e.html

Table 2
Total Suspended Solids - Monthly Average
Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
04-Dec-19	27.5	-	-	2.5	2.5	2.5
11-Dec-19	30.3	6.0	14.0	5.3	4.8	2.5
15-Dec-19	29.3	8.0	9.5	4.3	5.5	2.5
19-Dec-19	28.9	6.2	7.2	3.9	4.8	2.5
23-Dec-20	28.6	5.3	6.0	3.6	4.3	2.5
03-Jan-20	28.4	4.7	5.3	3.4	4.0	2.5
10-Jan-20	28.4	4.3	4.8	3.4	4.0	2.5
13-Jan-20	27.5	3.8	3.0	2.5	3.3	2.5
21-Jan-20	27.5	2.5	2.5	2.5	2.5	2.5
27-Jan-20	27.5	2.5	2.5	2.5	2.5	2.5
03-Feb-20	27.5	2.5	2.5	2.5	2.5	2.5
11-Feb-20	27.5	2.5	2.5	2.5	2.5	2.5
19-Feb-20	27.5	2.5	2.5	2.5	2.5	2.5
28-Feb-20	27.5	2.5	0.0	2.5	2.5	2.5
05-Mar-20	27.5	2.5	2.5	2.5	3.4	2.5
11-Mar-20	27.5	2.5	2.5	2.5	3.2	2.5
15-Mar-20	27.5	3.4	4.8	2.5	3.2	2.5
17-Mar-20	28.3	4.0	4.0	3.3	3.1	3.1
20-Mar-20	30.6	7.3	4.0	5.6	5.2	4.6
26-Mar-20	30.6	7.3	3.6	5.6	5.2	4.6
03-Apr-20	31.4	9.2	6.9	6.4	6.3	5.7
09-Apr-20	31.4	9.2	6.9	6.4	5.8	5.7
14-Apr-20	33.1	15.7	18.8	8.1	9.1	9.9
17-Apr-20	33.3	16.4	21.1	8.3	10.3	10.6
23-Apr-20	30.3	12.3	18.0	5.3	10.3	8.7
28-Apr-20	30.3	12.3	20.6	5.3	10.3	8.7
08-May-20	29.1	9.0	15.5	4.1	9.0	6.7
11-May-20	29.1	9.0	15.5	4.1	8.1	6.7
19-May-20	27.5	2.5	5.1	2.5	5.1	2.5
26-May-20	27.5	2.5	5.1	2.5	2.5	2.5
04-Jun-20	27.5	2.5	2.5	2.5	2.5	10.0
08-Jun-20	27.5	2.5	2.5	2.5	2.5	2.5
12-Jun-20	27.5	2.5	2.5	2.5	2.5	2.5
16-Jun-20	27.5	2.5	2.5	2.5	2.5	2.5
24-Jun-20	27.5	-	-	2.5	2.5	2.5
30-Jun-20	27.5	-	-	2.5	2.5	2.5
07-Jul-20	27.5	-	-	2.5	2.5	2.5
10-Jul-20	27.5	-	-	2.5	2.5	2.5
13-Jul-20	27.9	-	-	5.0	2.5	2.5
21-Jul-20	27.9	-	-	2.5	7.0	2.5
23-Jul-20	27.8	-	-	2.5	2.5	2.5
29-Jul-20	28.3	-	-	6	2.5	5
05-Aug-20	28.4	-	-	3.4	3.1	3.2
14-Aug-20	31.7	-	-	6.7	3.4	3.5

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Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
17-Aug-20	32.4	-	-	7.4	3.3	5.4
26-Aug-20	33.4	-	-	8.4	2.5	6.0
31-Aug-20	32.7	-	-	7.7	2.5	5.5
04-Sep-20	31.8	-	-	6.8	2.5	5.0
10-Sep-20	31.8	2.5	2.5	6.8	2.5	4.6
15-Sep-20	28.9	-	-	3.9	2.5	4.6
22-Sep-20	27.5	-	-	2.5	2.5	2.5
23-Sep-20	27.5	-	-	2.5	2.5	2.5
29-Sep-20	27.9	-	-	2.9	3.4	4.6
30-Sep-20	27.8	-	-	2.8	3.3	4.3
08-Oct-20	27.9	-	-	2.5	2.5	2.5
14-Oct-20	27.9	-	-	2.5	2.5	2.5
22-Oct-20	27.9	-	-	2.5	2.5	2.5
28-Oct-20	27.9	-	-	2.5	2.5	2.5
03-Nov-20	27.5	-	-	2.5	2.5	2.5
05-Nov-20	27.5	-	-	2.5	2.5	2.5
13-Nov-20	27.5	-	-	2.5	2.5	2.5
16-Nov-20	27.5	-	-	2.5	2.5	7.0
24-Nov-20	27.5	-	-	2.5	5.0	2.5
27-Nov-20	27.9	-	-	5	2.5	2.5
01-Dec-20	27.9	-	-	2.9	3.2	4.5
02-Dec-20	28.1	2.5	2.5	3.1	3.1	4.7
07-Dec-20	28.2	-	-	3.2	3.2	5.0
15-Dec-20	28.2	-	-	3.2	3.2	5.0
23-Dec-20	28.2	-	-	3.2	3.2	4.4
28-Dec-20	27.9	-	-	2.9	2.9	4.7
31-Dec-20	27.9	-	-	2.9	2.9	4.4
05-Jan-21	27.5	-	-	2.5	2.5	2.5
12-Jan-21	27.5	-	-	2.5	2.5	2.5
17-Jan-21	28.3	-	-	3.3	3.4	3.4
21-Jan-21	28.1	-	-	3.1	3.3	3.3
27-Jan-21	28.1	-	-	3.1	3.3	3.3
03-Feb-21	28.3	-	-	3.3	3.4	3.4
10-Feb-21	28.3	-	-	3.3	3.4	3.4
18-Feb-21	27.5	-	-	2.5	2.5	2.5
25-Feb-21	27.5	-	-	2.5	2.5	2.5
02-Mar-21	27.5	-	-	2.5	2.5	2.5
08-Mar-21	27.5	-	-	2.5	2.5	2.5
16-Mar-21	27.5	-	-	2.5	2.5	2.5
18-Mar-21	27.5	2.5	-	2.5	-	2.5
26-Mar-21	27.5	-	**47.0**	-	2.5	-
27-Mar-21	28.1	-	-	3.1	2.5	2.5
30-Mar-21	28.1	-	-	3.1	2.5	2.5
02-Apr-21	28.0	-	-	3.0	2.5	2.5

Table 2
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Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
08-Apr-21	27.9	-	-	2.9	2.5	2.5
16-Apr-21	27.9	-	-	2.9	2.5	2.5
19-Apr-21	27.9	-	-	2.9	2.5	2.5
26-Apr-21	27.9	-	-	2.9	2.5	3.0
01-May-21	27.5	-	-	2.5	2.5	3.1
08-May-21	27.5	-	-	2.5	2.5	3.1
13-May-21	27.5	-	-	2.5	2.5	3.1
17-May-21	27.5	-	-	2.5	2.5	3.7
24-May-21	27.5	-	-	2.5	2.5	3.7
01-Jun-21	27.5	-	-	2.5	2.5	3.2
08-Jun-21	27.5	-	-	2.5	3.0	3.2
16-Jun-21	27.5	-	-	2.5	3.5	3.7
24-Jun-21	27.5	-	-	2.5	3.8	3.1
01-Jul-21	27.5	-	-	2.5	3.5	3.0
06-Jul-21	27.5	-	-	2.5	3.5	3.0
10-Jul-21	28.4	-	-	3.4	3.0	3.0
14-Jul-21	28.3	-	-	3.3	2.9	2.9
15-Jul-21	28.1	-	-	3.1	2.9	2.9
24-Jul-21	28.1	-	-	3.1	2.5	2.5
31-Jul-21	28.1	-	-	3.1	2.5	2.5
6-Aug-21	28.3	-	-	3.3	2.5	2.5
11-Aug-21	27.5	-	-	2.5	2.5	2.5
17-Aug-21	27.5	-	-	2.5	4.0	10.0
26-Aug-21	27.5	-	-	2.5	4.0	2.5
3-Sep-21	27.5	-	-	2.5	4.5	5.0
7-Sep-21	27.5	-	-	2.5	4.5	2.5
15-Sep-21	27.5	-	-	2.5	5.0	5.0
20-Sep-21	27.5	-	-	2.5	4.0	5.0
28-Sep-21	27.5	-	-	2.5	4.0	2.5
6-Oct-21	27.5	-	-	2.5	3.5	2.5
13-Oct-21	27.5	2.5	2.5	2.5	3.5	2.5
18-Oct-21	27.5	-	-	2.5	3.0	2.5
22-Oct-21	27.5	-	-	2.5	2.5	2.5
28-Oct-21	27.5	-	-	2.5	2.5	2.5
01-Nov-21	27.5	-	-	2.5	2.5	2.5
03-Nov-21	27.5	-	-	2.5	2.5	2.5
09-Nov-21	27.5	-	-	2.5	2.5	2.5
16-Nov-21	27.5	-	-	2.5	2.5	2.5
23-Nov-21	27.9	-	-	2.9	4.3	2.5
4-Dec-21	28.1	-	-	3.1	5.1	2.5
8-Dec-21	28.0	-	-	3.0	4.6	2.5
13-Dec-21	28.0	-	-	3.0	4.6	2.5
21-Dec-21	28.0	-	-	3.0	4.6	2.5
29-Dec-21	27.5	-	-	2.5	2.5	2.5

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Total Suspended Solids - Monthly Average
Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
4-Jan-22	27.5	-	-	2.5	2.5	2.5
6-Jan-22	28.6	-	-	9.0	6.0	8.0
26-Jan-22	29.7	2.5	2.5	-	-	-
19-Feb-22	27.5	-	-	2.5	2.5	2.5
24-Feb-22	27.5	-	-	2.5	2.5	2.5
9-Mar-22	27.5	-	-	2.5	2.5	2.5
13-Mar-22	27.5	-	-	2.5	2.5	2.5
18-Mar-22	29.0	-	-	4.0	4.0	3.6
22-Mar-22	29.0	-	-	4.0	4.5	3.6
26-Mar-22	28.8	-	-	3.8	4.2	3.4
1-Apr-22	29.3	-	-	4.3	3.4	4.2
8-Apr-22	29.3	-	-	4.3	3.4	4.8
16-Apr-22	29.3	-	-	4.3	3.4	4.8
20-Apr-22	28.8	-	-	3.8	2.5	4.3
29-Apr-22	29.1	-	-	4.1	2.5	4.1
7-May-22	28.4	-	-	2.5	2.5	2.5
13-May-22	28.4	-	-	2.5	2.5	2.5
18-May-22	28.4	-	-	2.5	2.5	2.5
27-May-22	27.5	-	-	2.5	2.5	2.5
4-Jun-22	27.5	-	-	2.5	2.5	2.5
10-Jun-22	27.5	-	-	2.5	2.5	2.5
15-Jun-22	27.5	-	-	2.5	2.5	2.5
22-Jun-22	27.5	-	-	2.5	2.5	2.5
29-Jun-22	27.5	-	-	2.5	2.5	2.5
04-Jul-22	27.5	2.5	2.5	2.5	2.5	3.9
7-Jul-22	27.5	-	-	2.5	2.5	3.9
13-Jul-22	27.5	-	-	2.5	2.5	4.7
20-Jul-22	27.5	-	-	2.5	2.5	4.7
30-Jul-22	27.5	-	-	2.5	2.5	5.1
6-Aug-22	27.5	-	-	2.5	3.4	2.5
10-Aug-22	27.5	-	-	2.5	3.4	3.0
15-Aug-22	27.5	-	-	2.5	2.5	3.0
18-Aug-22	27.5	-	-	2.5	2.5	2.9
24-Aug-22	28.6	-	-	3.6	2.5	2.9

Table 2
Total Suspended Solids - Monthly Average
Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
1-Sep-22	29.2	-	-	4.2	2.5	2.9
9-Sep-22	29.5	-	-	4.5	2.5	12.2
14-Sep-22	29.2	2.5	2.5	4.2	2.5	11.5
21-Sep-22	29.5	-	-	4.5	2.5	13.3
23-Sep-22	29.2	-	-	4.2	2.5	11.9
27-Sep-22	28.1	-	-	3.1	2.5	11.9
06-Oct-22	27.5	-	-	2.5	2.5	11.9
14-Oct-22	27.5	-	-	2.5	2.5	3.8
17-Oct-22	27.5	-	-	2.5	2.5	2.9
20-Oct-22	27.5	-	-	2.5	3.1	2.9
26-Oct-22	27.5	-	-	2.5	3.3	2.5
4-Nov-22	27.5	-	-	2.5	5.0	2.5
11-Nov-22	27.5	-	-	2.5	2.5	2.5
13-Nov-22	28.1	-	-	3.1	2.5	3.1
18-Nov-22	28.1	-	-	3.1	2.5	3.1
23-Nov-22	28.1	-	-	3.1	2.5	3.1
1-Dec-22	30.2	-	-	5.2	3.8	4.5
4-Dec-22	29.8	-	-	4.8	3.6	4.2
9-Dec-22	29.8	2.5	-	4.8	3.3	4.2
14-Dec-22	29.6	-	-	4.6	3.4	3.9
19-Dec-22	29.6	-	-	4.6	3.4	3.9
24-Dec-22	31.0	-	-	6.0	4.8	5.2
28-Dec-22	30.5	-	-	5.5	4.5	4.8
2-Jan-23	28.7	-	-	3.7	3.7	3.6
11-Jan-23	28.9	-	-	3.9	3.9	3.8
17-Jan-23	28.9	-	-	3.9	3.9	3.8
18-Jan-23	28.7	-	-	3.7	3.7	3.6
25-Jan-23	27.5	-	-	2.5	2.5	2.5
27-Jan-23	27.5	-	-	2.5	2.5	2.5
2-Feb-23	27.5	-	-	2.5	2.5	2.5
20-Feb-23	27.5	-	-	2.5	2.5	2.5
14-Mar-23	27.5	2.5	-	2.5	2.5	2.5
17-Mar-23	27.5	-	-	2.5	2.5	2.5
24-Mar-23	27.5	-	-	2.5	2.5	2.5
30-Mar-23	27.5	-	-	2.5	2.5	2.5
7-Apr-23	28.0	-	-	3.0	2.5	2.5
13-Apr-23	27.9	-	-	2.9	2.5	2.5
19-Apr-23	28.0	-	-	3.0	6.2	2.5
28-Apr-23	28.0	-	-	3.0	6.2	2.5
2-May-23	28.0	-	-	3.0	6.2	2.5
9-May-23	27.5	-	-	2.5	6.2	2.5
18-May-23	27.5	-	-	2.5	6.2	2.5
22-May-23	27.5	-	-	2.5	2.5	2.5
6-Jun-23	30.1	-	-	2.5	2.5	2.5
9-Jun-23	30.1	-	-	12.0	11	13.0
14-Jun-23	30.1	-	-	2.5	2.5	2.5
21-Jun-23	30.1	-	-	2.5	2.5	2.5
30-Jun-23	30.1	-	-	6.0	2.5	2.5
2-Jul-23	29.7	-	-	4.7	3.9	4.3

Table 2
Total Suspended Solids - Monthly Average
Upham East Gypsum Project
Upham, New Brunswick
Project No. 21-3049

Date	Site Specific Guideline	Monthly Average				
		H1	H2	SW3	PDP-1	SW5
4-Jul-23	29.4	-	-	4.4	3.7	4.5
17-Jul-23	29.9	-	-	4.9	3.8	5.3
18-Jul-23	29.5	-	-	4.5	3.6	4.8
23-Jul-23	29.5	-	-	4.5	3.6	4.8
26-Jul-23	29.2	-	-	4.2	3.4	4.5
28-Jul-23	29.0	-	-	4.0	3.3	4.3
4-Aug-23	27.5	-	-	2.5	2.5	2.5
10-Aug-23	27.5	-	-	2.5	2.5	2.5
12-Aug-23	27.5	-	-	2.5	2.5	2.5
16-Aug-23	27.5	-	-	2.5	2.5	2.5
20-Aug-23	27.5	-	-	2.5	2.5	2.5
27-Aug-23	27.5	-	-	2.5	2.5	2.5
30-Aug-23	27.5	-	-	2.5	2.5	2.5
6-Sep-23	27.5	-	-	2.5	2.5	2.5
14-Sep-23	27.5	-	-	2.5	2.5	2.5
17-Sep-23	28.7	-	-	2.5	2.5	6.0
20-Sep-23	27.5	-	-	2.5	2.5	2.5
26-Sep-23	27.5	2.5	2.5	2.5	2.5	2.5
27-Sep-23	27.5	-	-	2.5	2.5	2.5
29-Sep-23	27.5	-	-	2.5	2.5	2.5
6-Oct-23	27.5	-	-	2.5	2.5	2.5
9-Oct-23	27.5	-	-	2.5	2.5	2.5
18-Oct-23	27.5	-	-	2.5	2.5	2.5
23-Oct-23	27.5	-	-	2.5	2.5	2.5

Notes:
The detection limit for TSS is 5 mg/L; for results <5 mg/L, half the detection limit was used.
Dashed line indicates monthly average could not be calculated.
Site specific guideline is 25 mg/L above the monthly average.
Monthly average is calculated based on results from the previous 30 days.
The background sample is SW3.
Samples above the site specific guideline are **bolded in red**.

Attachment C

Analytical Certificates

Report ID: 501342-IAS
Report Date: 16-Oct-23
Date Received: 10-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
30 Jervis Lane
Saint John, NB E2J 0A9

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Daniel Guest
Project #: 17-5121
Location: Upham

Analysis of Water

RPC Sample ID:			501342-1	501342-2	501342-3	501342-4
Client Sample ID:			SW3	SW5	PDP-1	PDP-1 Duplicate
Date Sampled:			6-Oct-23	6-Oct-23	6-Oct-23	6-Oct-23
Analytes	**Units**	**RL**				
Solids - Total Suspended	mg/L	5	< 5	< 5	< 5	< 5

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Lisa Ferrish
Supervisor
Inorganic Analytical Services

Report ID: 501342-IAS
Report Date: 16-Oct-23
Date Received: 10-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
30 Jervis Lane
Saint John, NB E2J 0A9

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Methods

Analyte	RPC SOP #	Method Reference	Method Principle
Solids - Total Suspended	IAS-M05	APHA 2540 D	Filtration, Gravimetry

Report ID: 501601-IAS
Report Date: 16-Oct-23
Date Received: 11-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
30 Jervis Lane
Saint John, NB E2J 0A9

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Daniel Guest
Project #: 17-5121
Location: Upham

Analysis of Water

RPC Sample ID:			501601-1	501601-2	501601-3
Client Sample ID:			SW3	SW5	PDP-1
Date Sampled:			9-Oct-23	9-Oct-23	9-Oct-23
Analytes	**Units**	**RL**			
Solids - Total Suspended	mg/L	5	< 5	< 5	< 5

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Lisa Ferrish
Supervisor
Inorganic Analytical Services

Report ID: 501601-IAS
Report Date: 16-Oct-23
Date Received: 11-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
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rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Methods

Analyte	RPC SOP #	Method Reference	Method Principle
Solids - Total Suspended	IAS-M05	APHA 2540 D	Filtration, Gravimetry

Report ID: 502671-IAS
Report Date: 24-Oct-23
Date Received: 19-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
30 Jervis Lane
Saint John, NB E2J 0A9

rpc
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Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Daniel Guest
Project #: 17-5121
Location: Upham

Analysis of Water

RPC Sample ID:			502671-1	502671-2	502671-3
Client Sample ID:			SW3	SW5	PDP-1
Date Sampled:			18-Oct-23	14-Oct-23	14-Oct-23
Analytes	**Units**	**RL**			
Solids - Total Suspended	mg/L	5	< 5	< 5	< 5

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Services

Report ID: 502671-IAS
Report Date: 24-Oct-23
Date Received: 19-Oct-23

CERTIFICATE OF ANALYSIS

for
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Methods

Analyte	RPC SOP #	Method Reference	Method Principle
Solids - Total Suspended	IAS-M05	APHA 2540 D	Filtration, Gravimetry

Report ID: 503282-IAS
Report Date: 26-Oct-23
Date Received: 25-Oct-23

CERTIFICATE OF ANALYSIS

for
Hammond River Holdings Limited
30 Jervis Lane
Saint John, NB E2J 0A9

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Daniel Guest
Project #: 17-5121
Location: Upham

Analysis of Water

RPC Sample ID:			503282-1	503282-2	503282-3	503282-4
Client Sample ID:			SW3	SW5	PDP-1	PDP-1-Duplicate
Date Sampled:			23-Oct-23	23-Oct-23	23-Oct-23	23-Oct-23
Analytes	**Units**	**RL**				
Solids - Total Suspended	mg/L	5	9	< 5	< 5	< 5

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Services

Report ID: 503282-IAS
Report Date: 26-Oct-23
Date Received: 25-Oct-23

CERTIFICATE OF ANALYSIS

for
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rpc
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Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Methods

Analyte	RPC SOP #	Method Reference	Method Principle
Solids - Total Suspended	IAS-M05	APHA 2540 D	Filtration, Gravimetry

Attachment D

Blast Reports

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October 4, 2023

Project No.: 234601.00

Mr. Daniel Guest
Hammond River Holdings
Via email: Guest.Daniel@AtlanticWallboard.com

Re: Blast Vibration Monitoring – Blast No. 2023-33 – Upham East Gypsum Quarry, Upham, N.B.

Following are the results of the vibration monitoring carried out on behalf of Hammond River Holdings for the blast detonated by Gulf Operators Ltd. at 13:00 on October 3, 2023. For the monitoring we positioned eleven (11) digital seismographs in the area. The location of each monitoring point is noted in the following table.

Blast No. 2023-33 – October 3, 2023

Seismograph Location	Time	Approx. dist. from shot to seismograph (m)	Maximum Velocity (mm/s)	Sound Pressure (dB(L))	Remarks
1. Civic No. 4079 Route 111 (PW-09)	13:00	1,350 m S	< 0.5 mm/s	<120	Units were not triggered
2. Civic No. 4126 Route 111 (PW-10)		950 m S	< 0.5 mm/s	<120	
3. Civic No. 4150 Route 111 (PW-13)		845 m SE	< 0.5 mm/s	<120	
4. Civic No. 2447 Route 820 (PW-07)		1,050 m NE	< 0.5 mm/s	<120	
5. PW-03 - Cottage Route 820		670 m N	< 0.5 mm/s	<120	
6. Civic No. 2341 Route 820 (PW-05)		635 m N	1.52 mm/s @ 64 Hz	106	-
7. Civic No. 50 Myron Road (PW-15)		800 m NW	0.95 mm/s @ 57 Hz	106	-
8. Civic No. 86 Myron Road (PW-16)		645 m W	2.08 mm/s @ 19 Hz	104	-
9. Civic No. 220 Myron Road (PW-01)		1,300 m S	< 0.5 mm/s	<120	Units were not triggered
10. Civic No. 2337 Route 820 (PW-04)		700 m N	< 0.5 mm/s	<120	
11. Civic No. 4140 Route 111 (PW-12)		910 m S	0.51 mm/s @ 85 Hz	NA	Microphone malfunction
maximum limits as per Approval to Operate			**12.5 mm/s**	**128 dB**	

The monitors did not detect any vibrations that exceeded the maximum allowable peak particle velocity of 12.5 mm/s (1.25 cm/s) or the maximum air overpressure of 128 dB(L) as established in the Approval to Operate (I-10936).

We trust this information is sufficient at this time. If you have any questions, please do not hesitate to contact us.

Best regards,
CBCL Limited

Robert Y. Cyr, M.A.Sc., P.Eng.
Senior Technical Specialist

Attachments: Blast Record
Blast and Seismograph Location Plan
Blast Event Reports

Project No: 234601.00

Attachment A

Blast Record

BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

IDENTIFICATION:

Blasting Contractor:	Gulf Operators Ltd.		
Blaster's Certification No.:	1318	**Blaster's Name:**	Daniel Blanchard
Blast Location:	N 45°28.880' W 65°38.144' (see attached sketch)		
Type of Rock:	Anhydrate/Gypsum	**Est. Vol. or Tonnage:**	14,757 tonnes
Weather at time of Blast:	Sunny	**Air Temp.:**	21°C
Est. Wind Speed :	≈ 10 km/h	**Wind Direction:**	N
Cloud Cover:	No	**Precipitation:**	No

BLAST DESIGN:

Total No. Holes:	117	**Hole Diameter:**	4.5"
Average Depth:	5.0 m – 6.3 m	**Spacing:**	11 ft x 11 ft
No. Holes per Delay:	2	**Collar Length:**	7 ft
Delay between Holes:	25 ms	**Delay between Rows:**	84 ms
Initiation Method:	Non-Electric		
Weight of Explosives per Delay:	Max.: 80 kg		
Type and weight of Explosives for Blast:	3,824 kg – Titan XL-1000		

Sketch of shot location, hole layout, timing sequence, free face etc. if available.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

BLAST MONITORING

Distance to the Nearest Structure:	635 m
Direction to the Nearest Structure:	North
Structure Type:	House
Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):	49.4

SAFETY:

Type of Warning Signal Used:	Siren
Blasting Mats Used (yes or no):	No
Airblast Measurement (yes or no):	Yes
Vibration Measurement (yes or no):	Yes
Warning Signs Posted (yes or no):	Yes
Accesses Guarded (yes or no):	Yes
Flyrock Damage (yes or no):	No
If Yes, Describe:	
Misfire (yes or no):	No

Reviewed By: Robert Y. Cyr, M.A.Sc., P.Eng.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #1

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5632
Calibration Date:	.November 16, 2022
Location of seismograph:	Civic Number 4079 Route 111 (PW-09)
Distance and Direction from Blast:	1,350 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #2

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5371
Calibration Date:	August 3, 2023
Location of seismograph:	Civic Number 4126 Route 111 (PW-10)
Distance and Direction from Blast:	950 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #3

Make, Model and Serial # of unit:	Instantel Micromate, Serial #21832
Calibration Date:	July 10, 2023
Location of seismograph:	Civic Number 4150 Route 111 (PW-13)
Distance and Direction from Blast:	845 m Southeast
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #4

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5676
Calibration Date:	March 8, 2023
Location of seismograph:	Civic Number 2447 Route 820 (PW-07)
Distance and Direction from Blast:	1,050 m Northeast
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #5

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5635
Calibration Date:	March 8, 2023
Location of seismograph:	Cottage - PW-03 - Route 820
Distance and Direction from Blast:	670 m North
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #6

Make, Model and Serial # of unit:	Instantel Minimate, Serial #21348
Calibration Date:	July 25, 2023
Location of seismograph:	Civic Number 2341 Route 820 (PW-05)
Distance and Direction from Blast:	635 m North
Transverse Particle Velocity:	1.02 mm/s @ 73 Hz
Vertical Particle Velocity:	1.27 mm/s @ 51 Hz
Longitudinal Particle Velocity:	1.52 mm/s @ 64 Hz
Peak Particle Velocity:	1.52 mm/s @ 64 Hz
Maximum Airblast:	106 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #7

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5487
Calibration Date:	January 16, 2023
Location of seismograph:	Civic Number 50 Myron Road (PW-15)
Distance and Direction from Blast:	800 m Northwest
Transverse Particle Velocity:	0.38 mm/s @ N/A
Vertical Particle Velocity:	0.95 mm/s @ 57 Hz
Longitudinal Particle Velocity:	0.57 mm/s @ 51 Hz
Peak Particle Velocity:	0.95 mm/s @ 57 Hz
Maximum Airblast:	106 dB(L)

Data Collection – Seismometer #8

Make, Model and Serial # of unit:	Instantel Micromate, Serial #18187
Calibration Date:	May 12, 2023
Location of seismograph:	Civic Number 86 Myron Road (PW-16)
Distance and Direction from Blast:	645 m West
Transverse Particle Velocity:	1.35 mm/s @ 17 Hz
Vertical Particle Velocity:	1.32 mm/s @ 23 Hz
Longitudinal Particle Velocity:	2.08 mm/s @ 19 Hz
Peak Particle Velocity:	2.08 mm/s @ 19 Hz
Maximum Airblast:	104 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #9

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5372
Calibration Date:	February 28 2023
Location of seismograph:	Civic Number 220 Myron Road (PW-01)
Distance and Direction from Blast:	1,300 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #10

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5489
Calibration Date:	May 5, 2023
Location of seismograph:	Civic Number 2337 Route 820 (PW-04)
Distance and Direction from Blast:	700 m North
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 3, 2023
Project No.:	234601.00	**Time of Blast:**	13:00
Inspector:	C. Buckley	**Blast No.:**	2023-33
Client:	Hammond River Holdings		

Data Collection – Seismometer #11

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5673
Calibration Date:	April 25, 2023
Location of seismograph:	Civic Number 4140 Route 111 (PW-12)
Distance and Direction from Blast:	910 m South
Transverse Particle Velocity:	0.32 mm/s @ 73 Hz
Vertical Particle Velocity:	0.38 mm/s @ 57 Hz
Longitudinal Particle Velocity:	0.51 mm/s @ 85 Hz
Peak Particle Velocity:	0.51 mm/s @ 85 Hz
Maximum Airblast:	N/A dB(L)

Attachment B

Blast and Seismograph Location Plan

Blast and Seismograph Location Plan
Blast No: 2023-33
Upham East Gypsum Quarry, Upham, NB

Date: October 3, 2023
Project No.: 234601.00

Attachment C

Blast Event Reports

Event Report

Date/Time	Vert at 12:56:59 October 3, 2023
Trigger Source	Geo: 0.510 mm/s, Mic: 120.0 dB(L)
Range	Geo: 254.0 mm/s
Record Time	7.0 sec at 1024 sps
Job Number:	1

Notes
Location:
Client:
User Name:
General:

Extended Notes

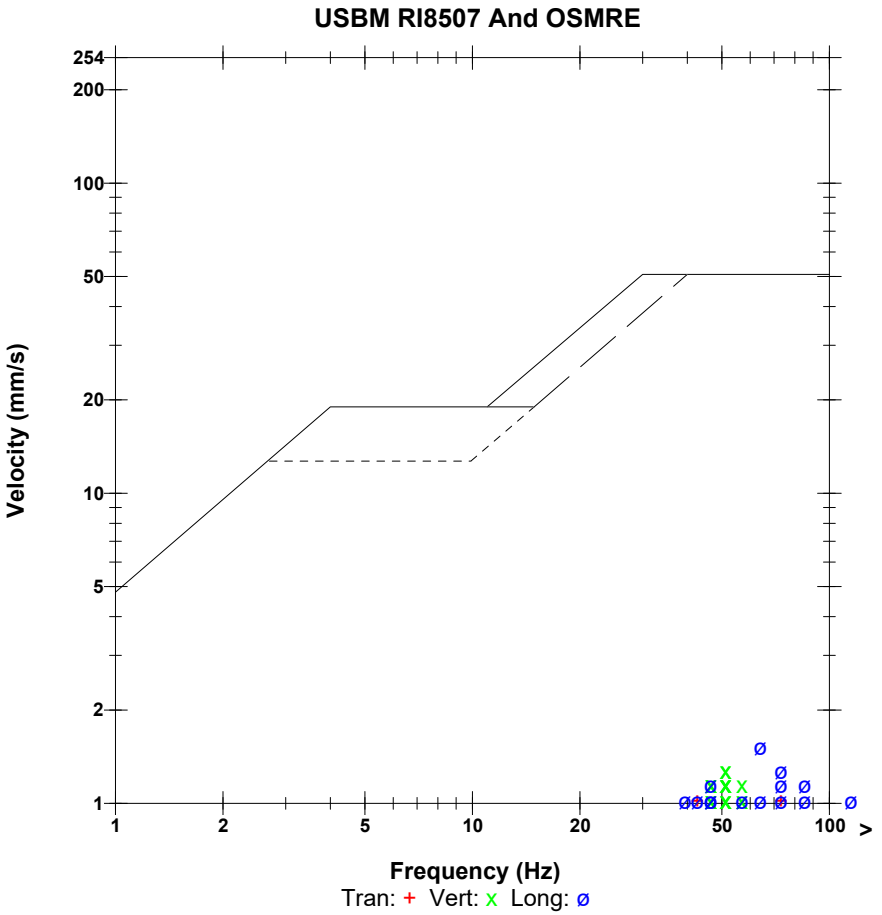
Microphone	Linear Weighting
PSPL	105.5 dB(L) 3.750 pa.(L) at 1.904 sec
ZC Freq	10 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 516 mv)

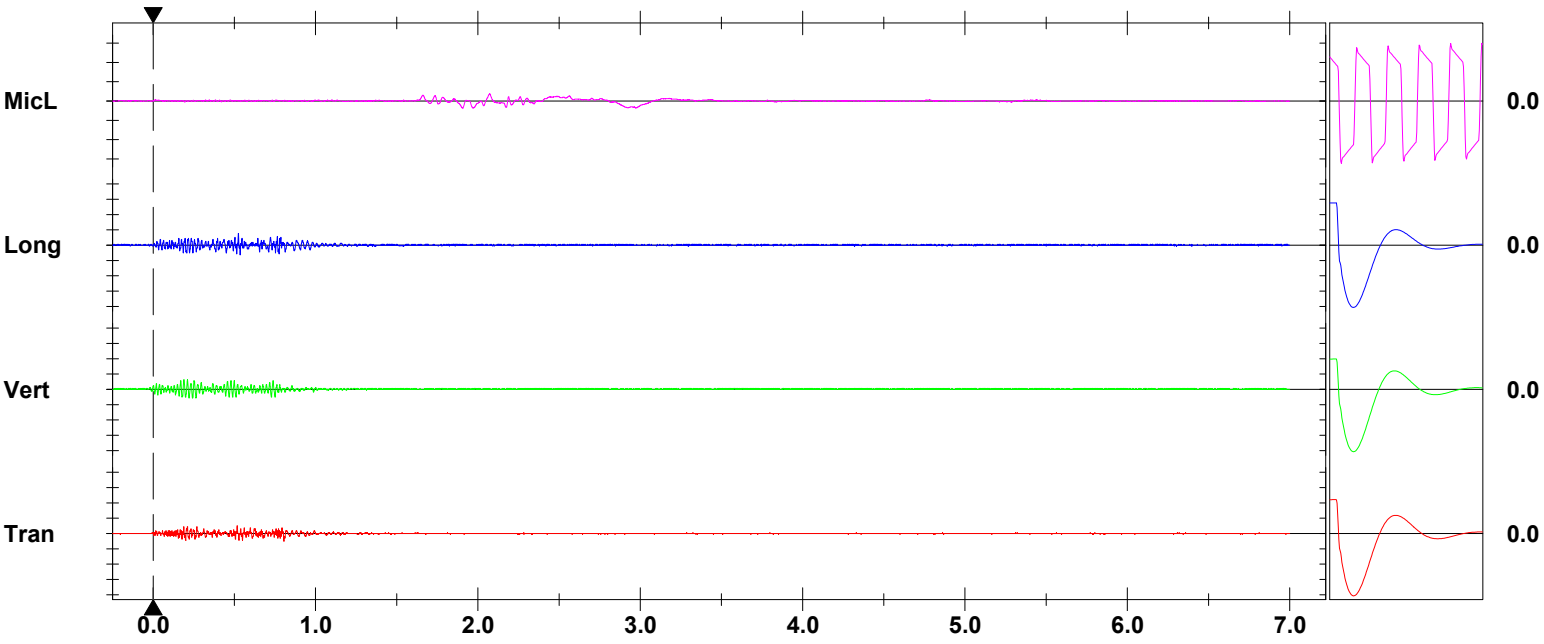
	Tran	Vert	Long	
PPV	1.016	1.270	1.524	mm/s
PPV	51.14	53.08	54.66	dB
ZC Freq	73	51	64	Hz
Time (Rel. to Trig)	0.517	0.188	0.524	sec
Peak Acceleration	0.053	0.053	0.066	g
Peak Displacement	0.003	0.004	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.7	7.4	Hz
Overswing Ratio	3.5	3.4	4.0	

Peak Vector Sum 1.631 mm/s at 0.211 sec

Serial Number	BE21348 V 10.72-1.1 Minimate Blaster
Battery Level	6.3 Volts
Unit Calibration	July 25, 2023 by Instantel
File Name	W348K843.YZ0

Post Event Notes
Location: 2341 Route 820 (PW-05)
Blast No.: 2023-33
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 10.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Vert at 13:00:48 October 3, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 3, 2023 15:02:57 (V10.72.1)

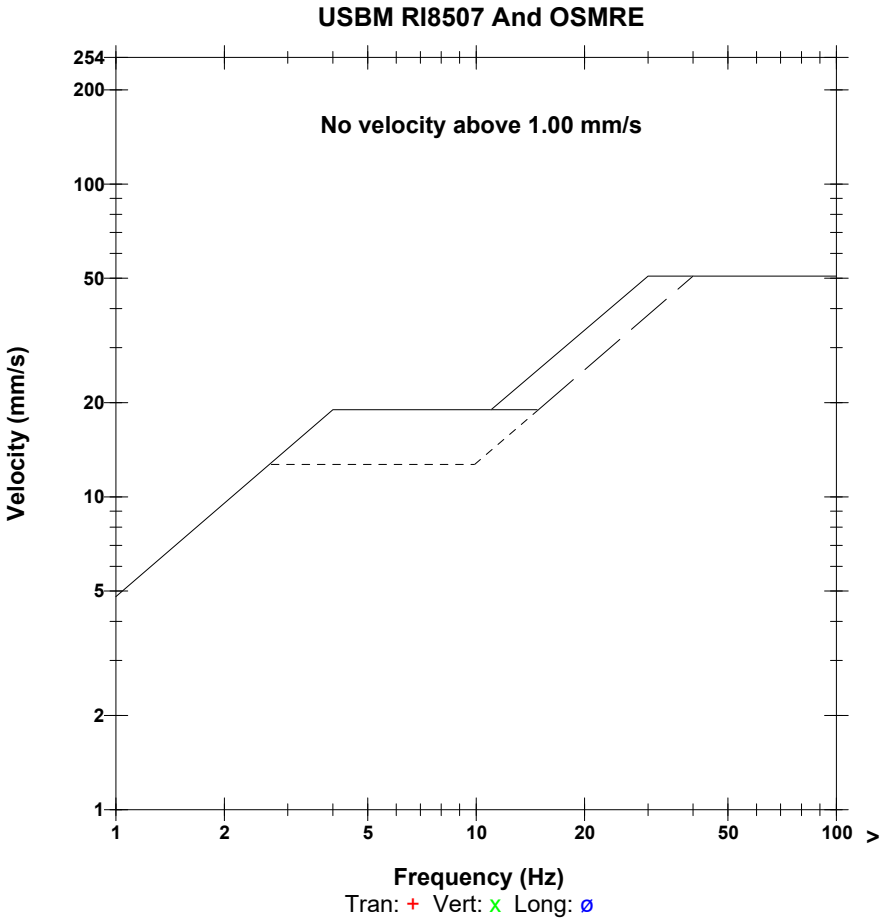
Extended Notes

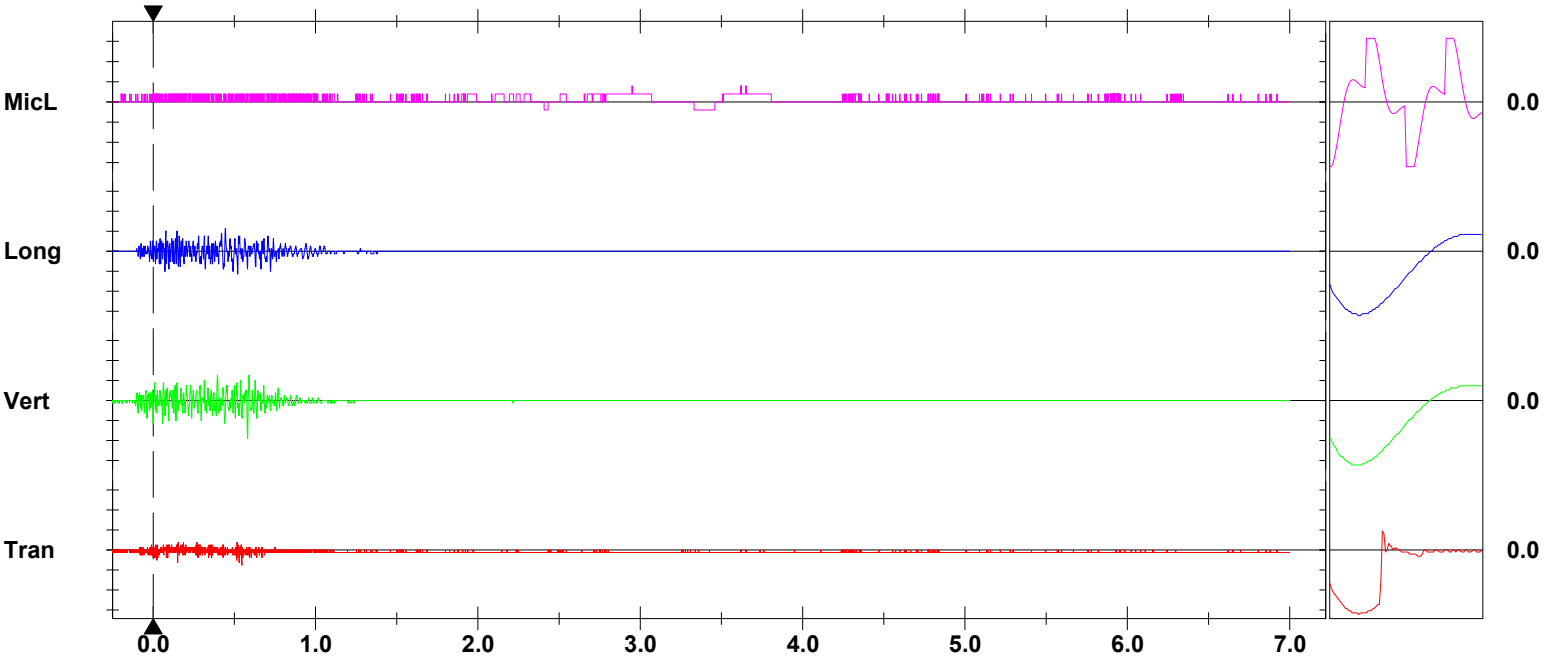
Microphone Linear Weighting
PSPL 106.0 dB(L) 4.000 pa.(L) at 2.951 sec
ZC Freq 2.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 286 mv)

	Tran	Vert	Long	
PPV	0.381	0.953	0.572	mm/s
PPV	42.62	50.58	46.14	dB
ZC Freq	N/A	57	51	Hz
Time (Rel. to Trig)	0.547	0.583	0.444	sec
Peak Acceleration	0.027	0.033	0.033	g
Peak Displacement	0.000	0.003	0.002	mm
Sensor Check	Check	Passed	Passed	
Frequency	6542.6	7.7	7.6	Hz
Overswing Ratio	10.9	4.1	3.9	

Peak Vector Sum 1.032 mm/s at 0.583 sec
N/A: Not Applicable

Serial Number 5487 V 2.61 MiniMate
Battery Level 6.0 Volts
Unit Calibration January 16, 2023 by Instantel
File Name G487K85Y.TC0
Post Event Notes
Location: 50 Myron Road (PW-15)
Blast No.: 2023-33
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time	Long at 13:00:51 October 3, 2023
Trigger Source	Geo: 0.900 mm/s, Mic: 120.0 dB(L)
Range	Geo: 254.0 mm/s
Record Time	7.0 sec at 1024 sps
Operator/Setup:	Operator/factory.MMB

Notes
Location:
Client:
User Name:
General:

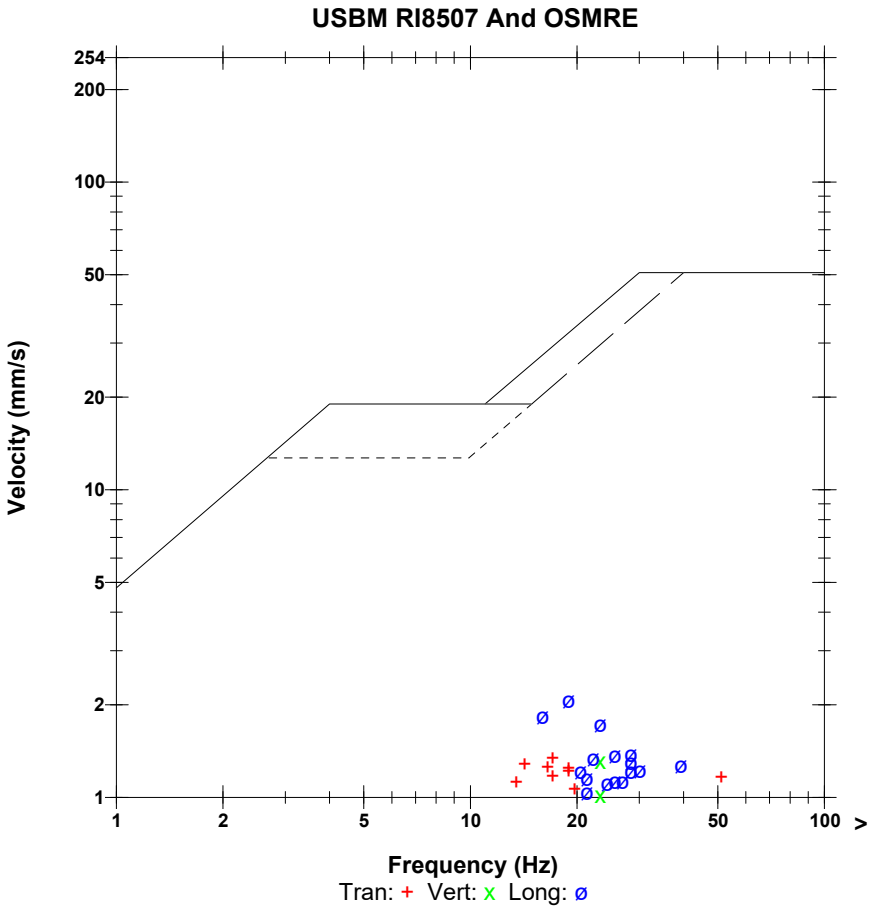
Serial Number	UM18187 V 10-90GC Micromate ISEE
Battery Level	3.8 Volts
Unit Calibration	May 12, 2023 by Instantel
File Name	UM18187_20231003130051.IDFW

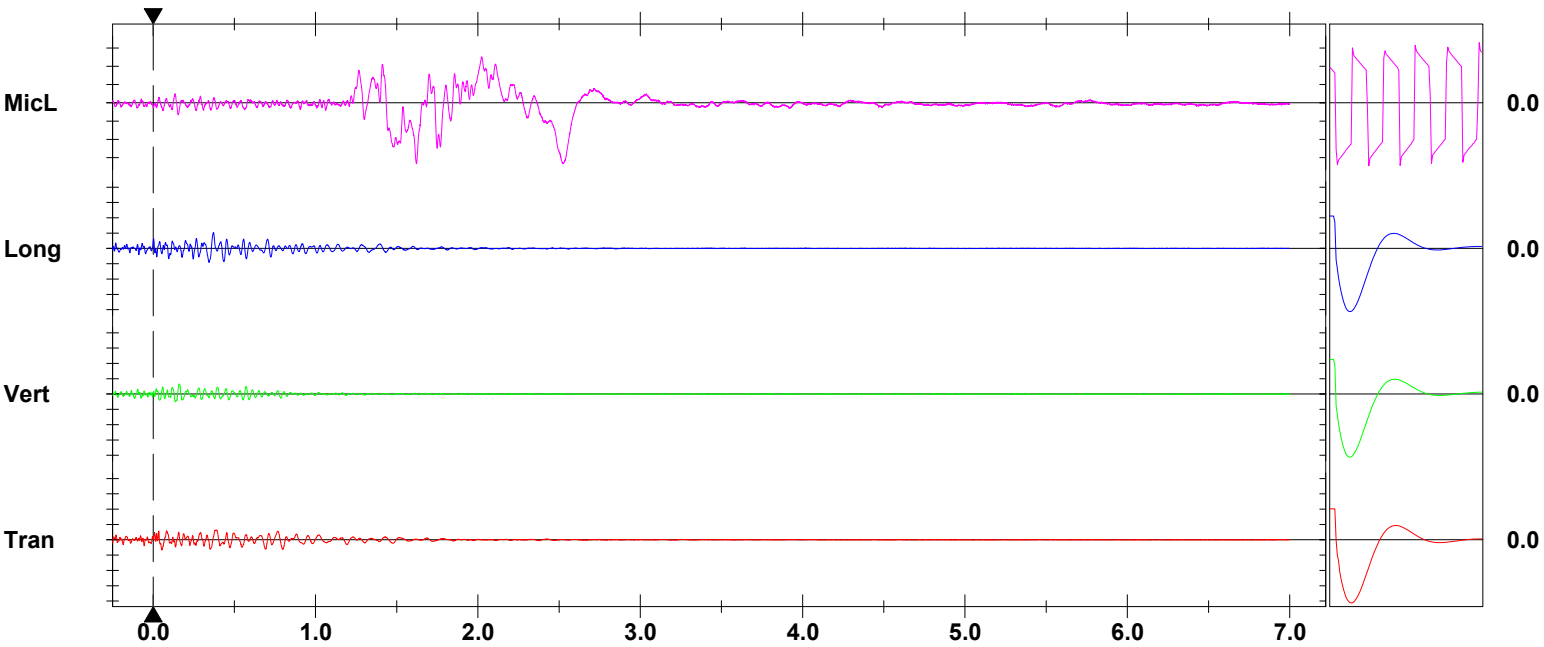
Post Event Notes
Location: 86 Myron Road (PW-16)
Blast No.: 2023-33
Project No: 234601.00

Microphone	Linear Weighting
PSPL	104.4 dB(L) 3.336 pa.(L) at 1.621 sec
ZC Freq	2.2 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 1258 mv)

	Tran	Vert	Long	
PPV	1.348	1.316	2.081	mm/s
PPV	53.59	53.39	57.36	dB
ZC Freq	17	23	19	Hz
Time (Rel. to Trig)	0.054	0.161	0.372	sec
Peak Acceleration	0.057	0.037	0.052	g
Peak Displacement	0.016	0.009	0.018	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.5	7.5	Hz
Overswing Ratio	4.4	4.3	4.2	

Peak Vector Sum 2.139 mm/s at 0.372 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 13:00:31 October 3, 2023
Trigger Source Geo: 0.492 mm/s
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

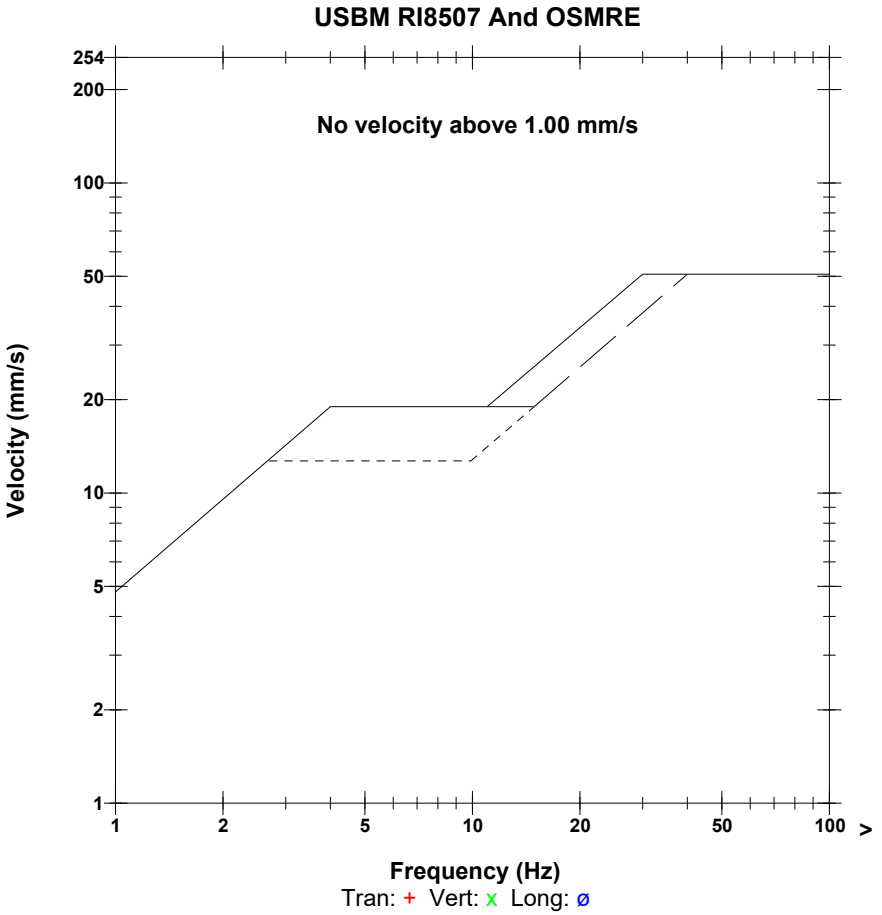
Notes
Location:
Client: UUUUUUUUUUUUUU
User Name: UU
Converted: October 3, 2023 15:20:25 (V10.72.1)

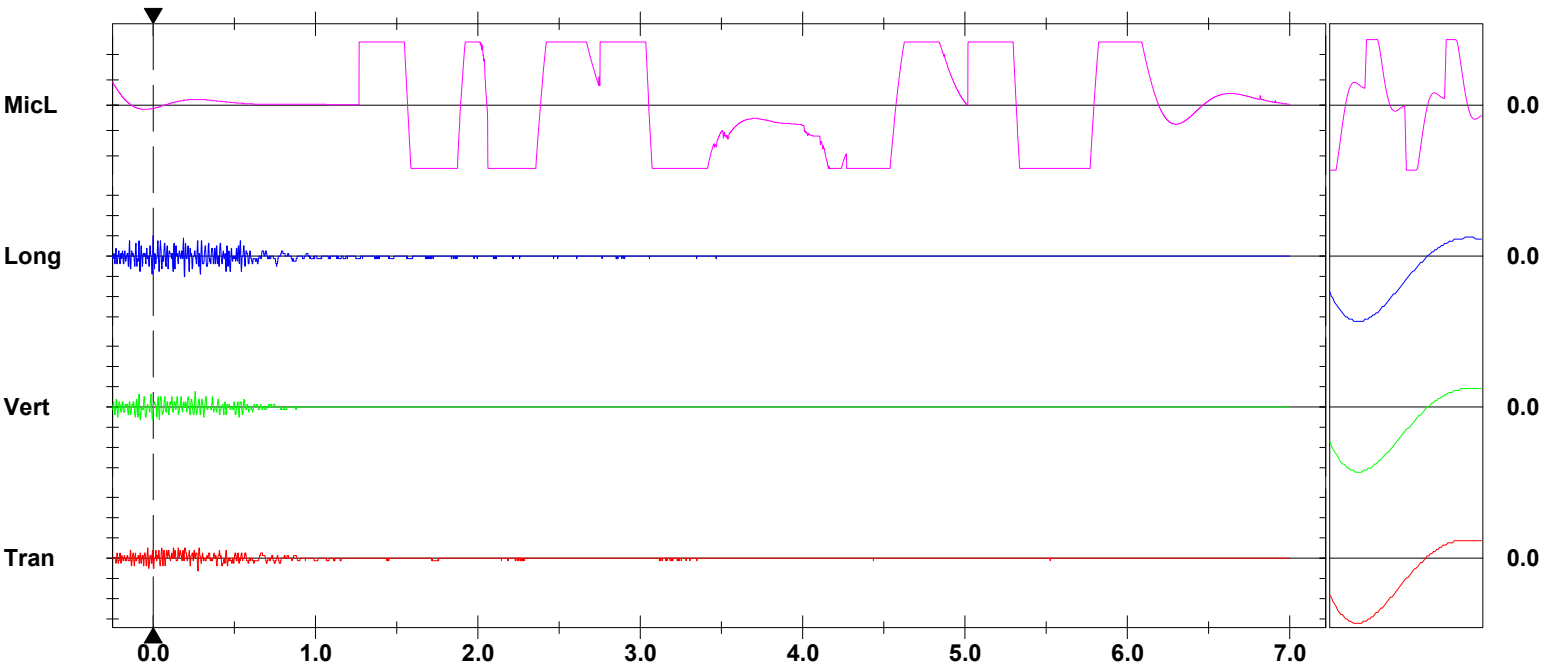
Serial Number 5673 V 2.61 MiniMate
Battery Level 6.1 Volts
Unit Calibration April 25, 2023 by Instantel
File Name G673K85Y.SV0
Post Event Notes
Location: 4140 Route 111 (PW-12)
Blast No.: 2023-33
Project No: 234601.00

Microphone Linear Weighting
PSPL *** dB(L) at 1.270 sec
ZC Freq N/A
Channel Test Passed (Freq = 20.0 Hz Amp = 374 mv)

	Tran	Vert	Long	
PPV	0.318	0.381	0.508	mm/s
PPV	41.03	42.62	45.12	dB
ZC Freq	73	57	85	Hz
Time (Rel. to Trig)	0.276	0.259	0.001	sec
Peak Acceleration	0.020	0.013	0.027	g
Peak Displacement	0.001	0.001	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	7.8	8.0	Hz
Overswing Ratio	3.8	3.7	3.6	

Peak Vector Sum 0.540 mm/s at 0.001 sec
N/A: Not Applicable * : Out of Range**





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 100.00 pa.(L)/div Sensor Check
Trigger =

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October 16, 2023

Project No.: 234601.00

Mr. Daniel Guest
Hammond River Holdings
Via email: Guest.Daniel@AtlanticWallboard.com

Re: Blast Vibration Monitoring – Blast No. 2023-34 – Upham East Gypsum Quarry, Upham, N.B.

Following are the results of the vibration monitoring carried out on behalf of Hammond River Holdings for the blast detonated by Gulf Operators Ltd. at 13:23 on October 16, 2023. For the monitoring we positioned eleven (11) digital seismographs in the area. The location of each monitoring point is noted in the following table.

Blast No. 2023-34 – October 16, 2023

Seismograph Location	Time	Approx. dist. from shot to seismograph (m)	Maximum Velocity (mm/s)	Sound Pressure (dB(L))	Remarks
1. Civic No. 4079 Route 111 (PW-09)	13:23	1,414 m S	< 0.5 mm/s	<120	Units were not triggered
2. Civic No. 4126 Route 111 (PW-10)		1,044 m S	< 0.5 mm/s	<120	
3. Civic No. 4150 Route 111 (PW-13)		913 m SE	< 0.5 mm/s	<120	
4. Civic No. 2447 Route 820 (PW-07)		1,018 m NE	< 0.5 mm/s	<120	
5. PW-03 - Cottage Route 820		609 m N	< 0.5 mm/s	<120	
6. Civic No. 2341 Route 820 (PW-05)		554 m N	1.51 mm/s @ 51 Hz	101	-
7. Civic No. 50 Myron Road (PW-15)		729 m NW	0.76 mm/s @ 73 Hz	106	-
8. Civic No. 86 Myron Road (PW-16)		639 m W	0.51 mm/s @ 15 Hz	110	-
9. Civic No. 220 Myron Road (PW-01)		1,371 m S	< 0.5 mm/s	<120	Units were not triggered
10. Civic No. 2337 Route 820 (PW-04)		593 m N	< 0.5 mm/s	<120	
11. Civic No. 4140 Route 111 (PW-12)		972 m S	< 0.5 mm/s	<120	
maximum limits as per Approval to Operate			**12.5 mm/s**	**128 dB**	

The monitors did not detect any vibrations that exceeded the maximum allowable peak particle velocity of 12.5 mm/s (1.25 cm/s) or the maximum air overpressure of 128 dB(L) as established in the Approval to Operate (I-10936).

We trust this information is sufficient at this time. If you have any questions, please do not hesitate to contact us.

Best regards,
CBCL Limited

Robert Y. Cyr, M.A.Sc., P.Eng.
Senior Technical Specialist

Attachments: Blast Record
Blast and Seismograph Location Plan
Blast Event Reports

Project No: 234601.00

Attachment A

Blast Record

BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

IDENTIFICATION:

Blasting Contractor:	Gulf Operators Ltd.		
Blaster's Certification No.:	1318	**Blaster's Name:**	Daniel Blanchard
Blast Location:	N 45º28'54.9" W 65º38'09.7" (see attached sketch)		
Type of Rock:	Anhydrate/Gypsum	**Est. Vol. or Tonnage:**	13,640 tonnes
Weather at time of Blast:	Overcast	**Air Temp.:**	11ºC
Est. Wind Speed :	≈ 10 km/h	**Wind Direction:**	NW
Cloud Cover:	Yes – overcast	**Precipitation:**	Light rain

BLAST DESIGN:

Total No. Holes:	110	**Hole Diameter:**	4.5"
Average Depth:	5.0 m – 6.2 m	**Spacing:**	11 ft x 11 ft
No. Holes per Delay:	3	**Collar Length:**	7 ft
Delay between Holes:	25 ms	**Delay between Rows:**	42 & 67 ms
Initiation Method:	Non-Electric		
Weight of Explosives per Delay:	Max.: 69 kg		
Type and weight of Explosives for Blast:	3,538 kg – Titan XL-1000		

Sketch of shot location, hole layout, timing sequence, free face etc. if available.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

BLAST MONITORING

Distance to the Nearest Structure:	554 m
Direction to the Nearest Structure:	North
Structure Type:	House
Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):	66.7

SAFETY:

Type of Warning Signal Used:	Siren
Blasting Mats Used (yes or no):	No
Airblast Measurement (yes or no):	Yes
Vibration Measurement (yes or no):	Yes
Warning Signs Posted (yes or no):	Yes
Accesses Guarded (yes or no):	Yes
Flyrock Damage (yes or no):	No
If Yes, Describe:	
Misfire (yes or no):	No

Reviewed By: Robert Y. Cyr, M.A.Sc., P.Eng.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #1

Make, Model and Serial # of unit:	Instantel Micromate, Serial #20203
Calibration Date:	May 30, 2023
Location of seismograph:	Civic Number 4079 Route 111 (PW-09)
Distance and Direction from Blast:	1,414 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #2

Make, Model and Serial # of unit:	Instantel Micromate, Serial #21696
Calibration Date:	July 10, 2023
Location of seismograph:	Civic Number 4126 Route 111 (PW-10)
Distance and Direction from Blast:	1,044 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #3

Make, Model and Serial # of unit:	Instantel Micromate, Serial #20205
Calibration Date:	May 30, 2023
Location of seismograph:	Civic Number 4150 Route 111 (PW-13)
Distance and Direction from Blast:	913 m Southeast
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #4

Make, Model and Serial # of unit:	Instantel Micromate, Serial #21832
Calibration Date:	July 10, 2023
Location of seismograph:	Civic Number 2447 Route 820 (PW-07)
Distance and Direction from Blast:	1,018 m Northeast
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #5

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5487
Calibration Date:	January 16, 2023
Location of seismograph:	Cottage - PW-03 - Route 820
Distance and Direction from Blast:	609 m North
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #6

Make, Model and Serial # of unit:	Instantel Micromate, Serial #20204
Calibration Date:	June 12, 2023
Location of seismograph:	Civic Number 2341 Route 820 (PW-05)
Distance and Direction from Blast:	554 m North
Transverse Particle Velocity:	0.88 mm/s @ 43 Hz
Vertical Particle Velocity:	1.51 mm/s @ 51 Hz
Longitudinal Particle Velocity:	0.96 mm/s @ 39 Hz
Peak Particle Velocity:	1.51 mm/s @ 51 Hz
Maximum Airblast:	101 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #7

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5635
Calibration Date:	March 8, 2023
Location of seismograph:	Civic Number 50 Myron Road (PW-15)
Distance and Direction from Blast:	729 m Northwest
Transverse Particle Velocity:	0.70 mm/s @ 73 Hz
Vertical Particle Velocity:	0.76 mm/s @ 73 Hz
Longitudinal Particle Velocity:	0.57 mm/s @ 51 Hz
Peak Particle Velocity:	0.76 mm/s @ 73 Hz
Maximum Airblast:	106 dB(L)

Data Collection – Seismometer #8

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5489
Calibration Date:	May 5, 2023
Location of seismograph:	Civic Number 86 Myron Road (PW-16)
Distance and Direction from Blast:	639 m West
Transverse Particle Velocity:	0.45 mm/s @ 34 Hz
Vertical Particle Velocity:	0.38 mm/s @ 28 Hz
Longitudinal Particle Velocity:	0.51 mm/s @ 15 Hz
Peak Particle Velocity:	0.51 mm/s @ 15 Hz
Maximum Airblast:	110 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #9

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5372
Calibration Date:	February 28 2023
Location of seismograph:	Civic Number 220 Myron Road (PW-01)
Distance and Direction from Blast:	1,371 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #10

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5632
Calibration Date:	November 16, 2022
Location of seismograph:	Civic Number 2337 Route 820 (PW-04)
Distance and Direction from Blast:	593 m North
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 16, 2023
Project No.:	234601.00	**Time of Blast:**	13:23
Inspector:	I. Villegas	**Blast No.:**	2023-34
Client:	Hammond River Holdings		

Data Collection – Seismometer #11

Make, Model and Serial # of unit:	Instantel Micromate, Serial #20206
Calibration Date:	June 9, 2023
Location of seismograph:	Civic Number 4140 Route 111 (PW-12)
Distance and Direction from Blast:	972 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Attachment B

Blast and Seismograph Location Plan

Blast and Seismograph Location Plan
Blast No: 2023-34
Upham East Gypsum Quarry, Upham, NB

Date: October 16, 2023
Project No.: 234601.00

Attachment C

Blast Event Reports

Event Report

Date/Time Vert at 13:23:51 October 16, 2023
Trigger Source Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 7.0 sec at 1024 sps
Operator/Setup: Operator/UPHAM.MMB

Notes

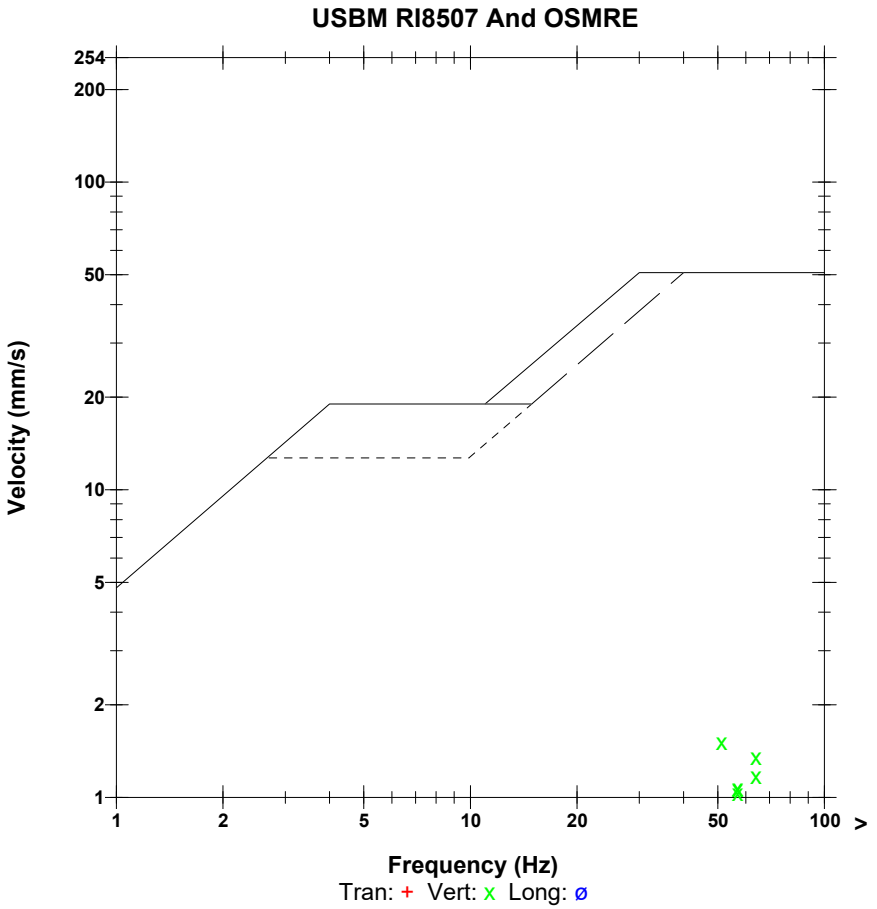
Serial Number UM20204 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration June 12, 2023 by Instantel
File Name UM20204_20231016132351.IDFW

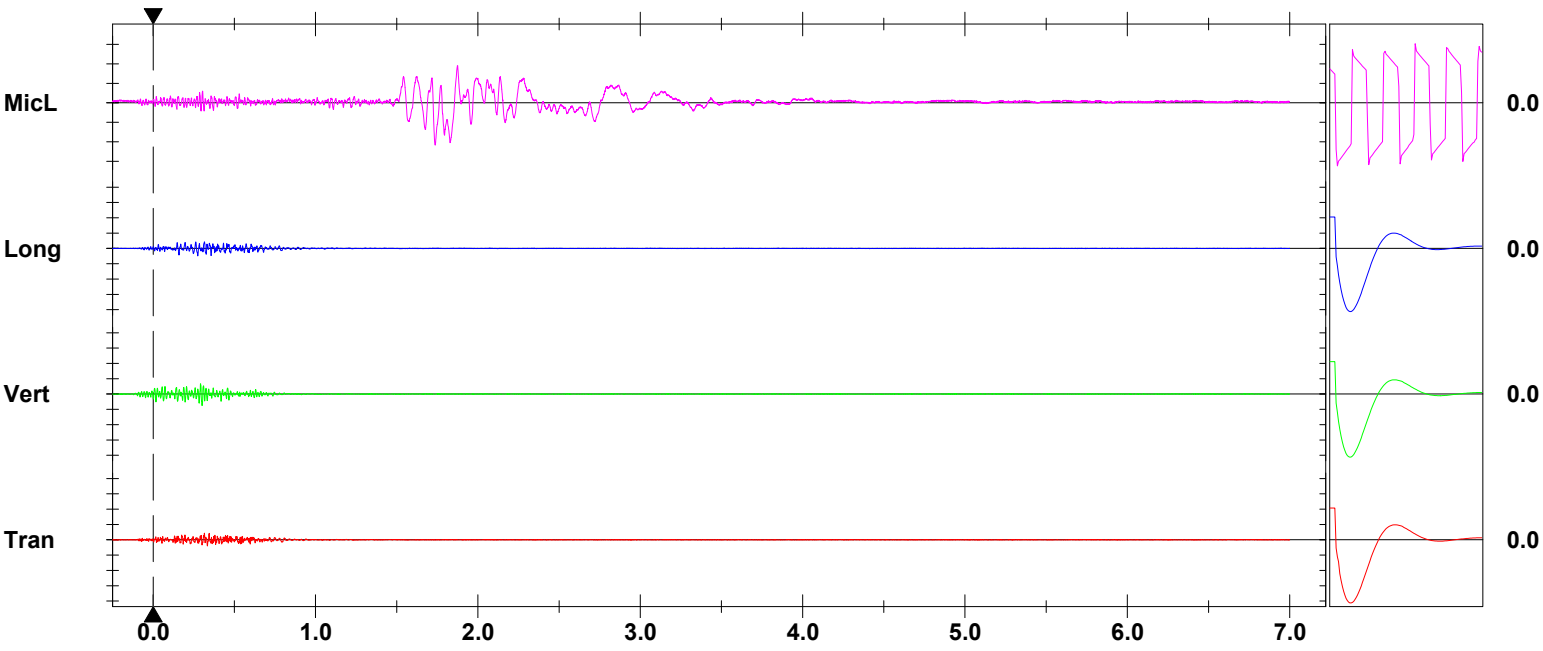
Post Event Notes
Location: 2341 Route 820 (PW-05)
Blast No.: 2023-34
Project No: 234601.00

Microphone Linear Weighting
PSPL 100.7 dB(L) 2.172 pa.(L) at 1.736 sec
ZC Freq 13 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 1517 mv)

	Tran	Vert	Long	
PPV	0.875	1.513	0.962	mm/s
PPV	49.84	54.60	50.66	dB
ZC Freq	43	51	39	Hz
Time (Rel. to Trig)	0.315	0.301	0.274	sec
Peak Acceleration	0.067	0.123	0.068	g
Peak Displacement	0.003	0.005	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.2	4.4	4.1	

Peak Vector Sum 1.659 mm/s at 0.301 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Vert at 13:23:57 October 16, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 16, 2023 16:34:56 (V10.72.1)

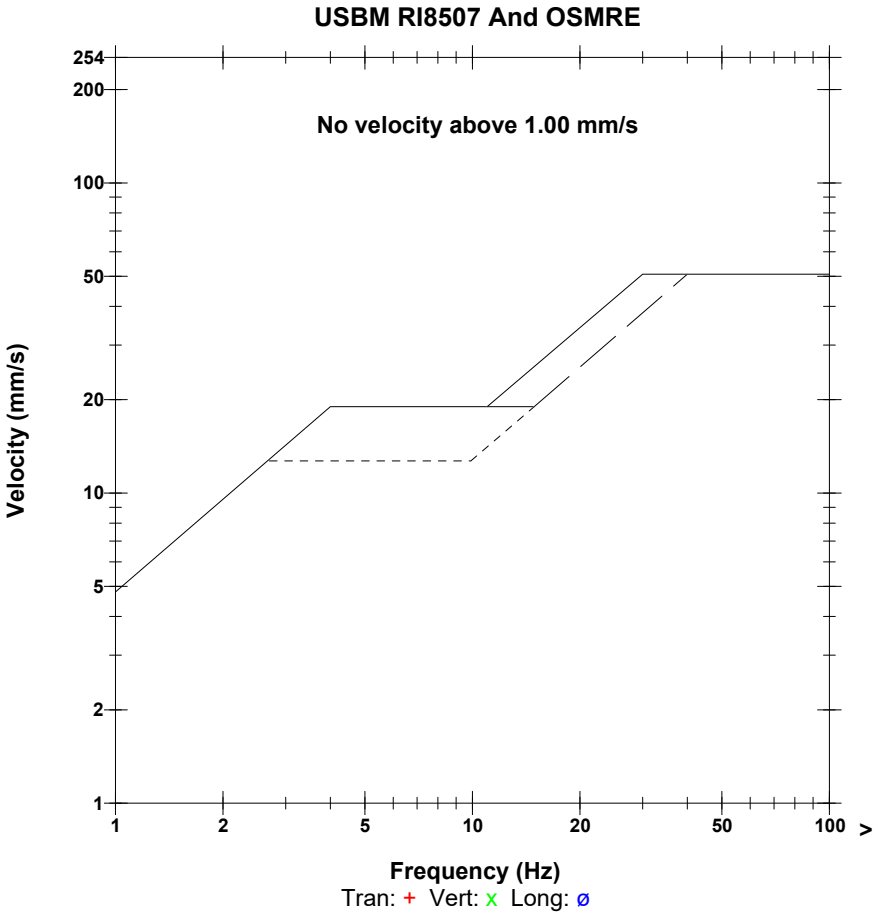
Extended Notes

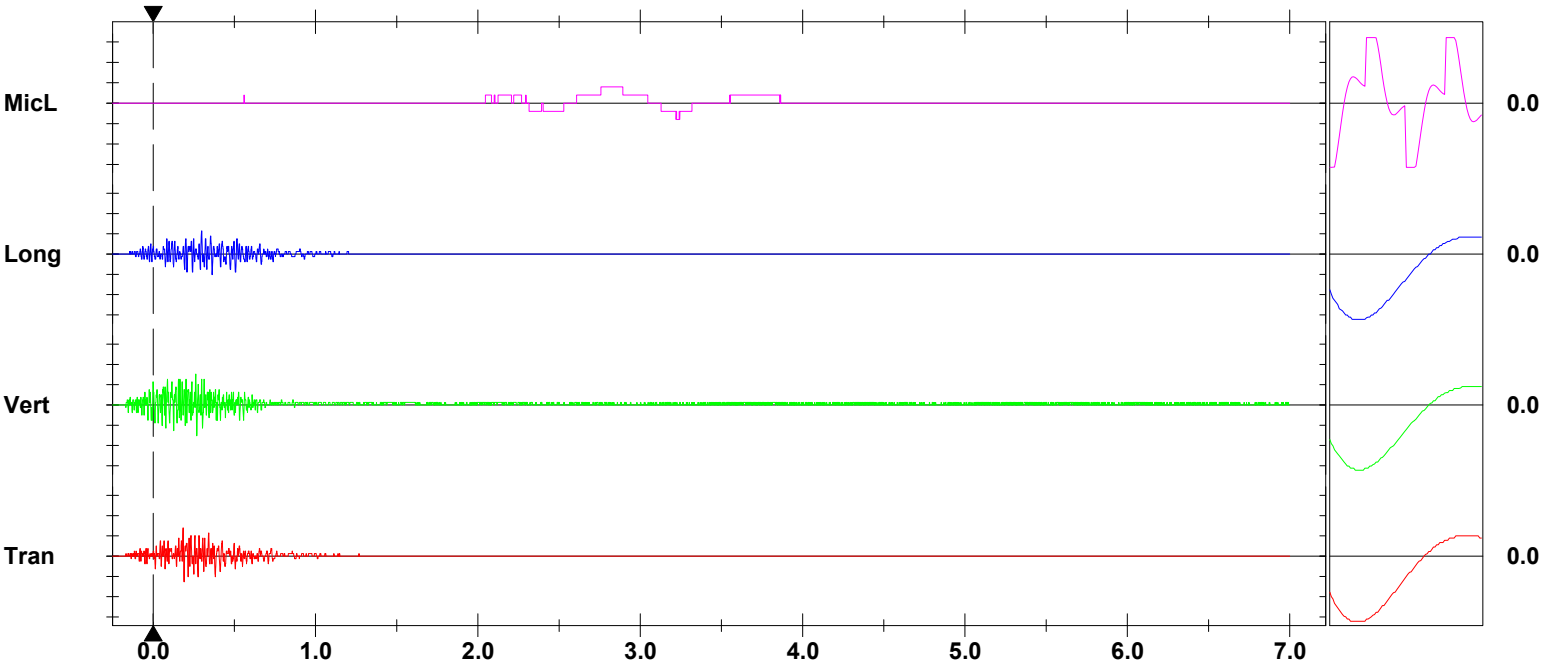
Microphone Linear Weighting
PSPL 106.0 dB(L) 4.000 pa.(L) at 2.759 sec
ZC Freq N/A
Channel Test Passed (Freq = 20.0 Hz Amp = 296 mv)

	Tran	Vert	Long	
PPV	0.699	0.762	0.572	mm/s
PPV	47.88	48.64	46.14	dB
ZC Freq	73	73	51	Hz
Time (Rel. to Trig)	0.185	0.263	0.299	sec
Peak Acceleration	0.033	0.040	0.027	g
Peak Displacement	0.002	0.002	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.2	7.8	7.7	Hz
Overswing Ratio	3.1	3.7	3.9	

Peak Vector Sum 0.857 mm/s at 0.300 sec
N/A: Not Applicable

Serial Number 5635 V 2.61 MiniMate
Battery Level 6.1 Volts
Unit Calibration March 8, 2023 by Instantel
File Name G635K8U2.JX0
Post Event Notes
Location: 50 Myron Road (PW-15)
Blast No.: 2023-34
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 13:23:57 October 16, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 16, 2023 16:30:55 (V10.72.1)

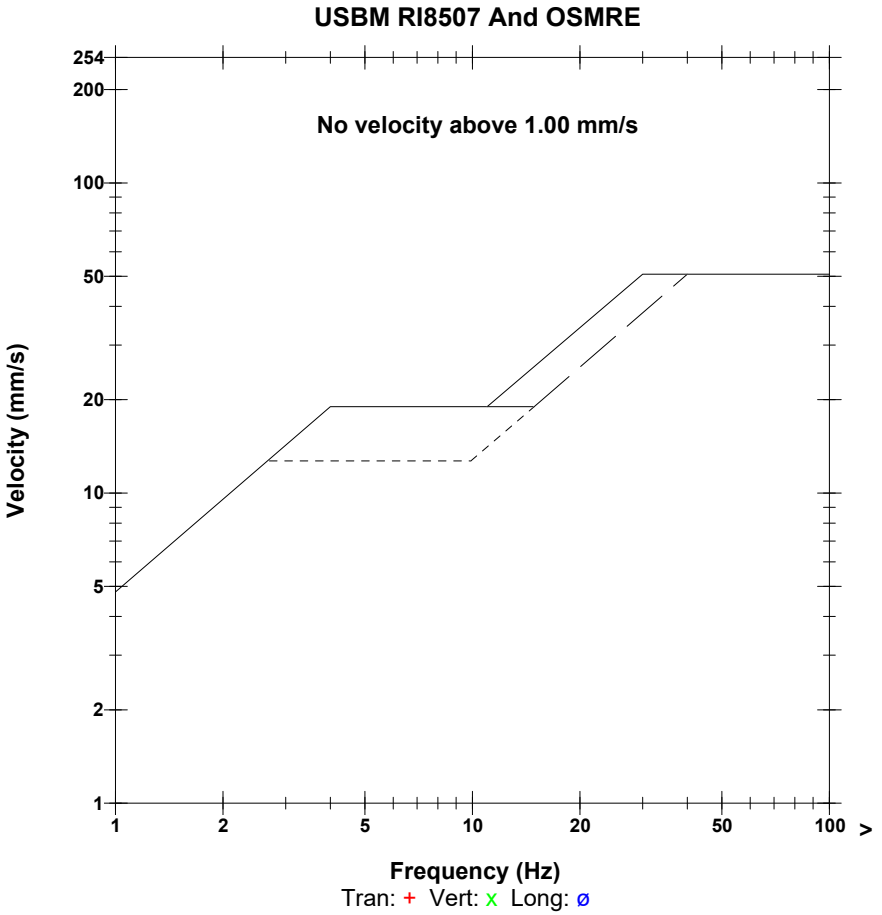
Extended Notes

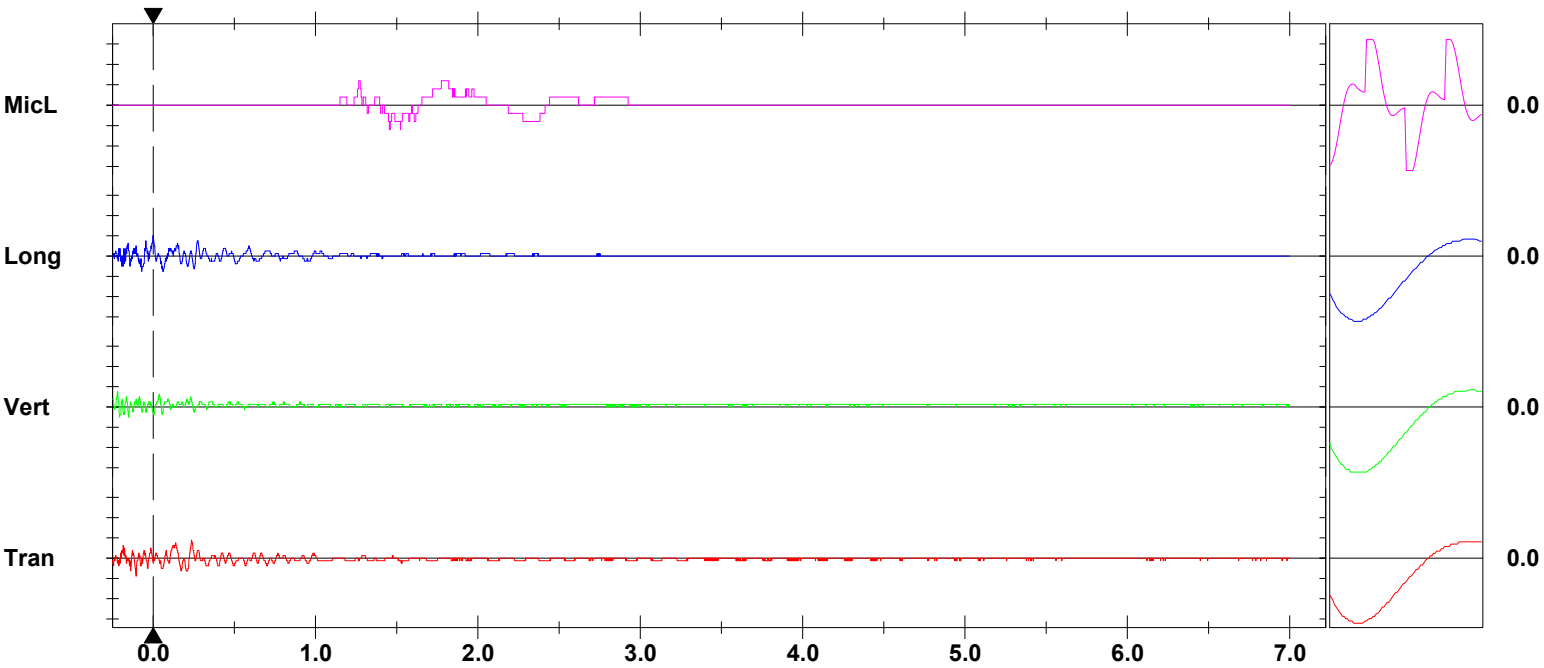
Microphone Linear Weighting
PSPL 109.5 dB(L) 6.000 pa.(L) at 1.267 sec
ZC Freq 10 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 281 mv)

	Tran	Vert	Long	
PPV	0.445	0.381	0.508	mm/s
PPV	43.96	42.62	45.12	dB
ZC Freq	34	28	15	Hz
Time (Rel. to Trig)	-0.104	-0.218	0.000	sec
Peak Acceleration	0.013	0.013	0.020	g
Peak Displacement	0.005	0.001	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.8	7.7	7.8	Hz
Overswing Ratio	3.8	3.6	3.9	

Peak Vector Sum 0.540 mm/s at -0.104 sec

Serial Number 5489 V 2.61 MiniMate
Battery Level 6.1 Volts
Unit Calibration May 5, 2023 by Instantel
File Name G489K8U2.JX0
Post Event Notes
Location: 86 Myron Road (PW-16)
Blast No.: 2023-34
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

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October 26, 2023

Project No.: 234601.00

Mr. Daniel Guest
Hammond River Holdings
Via email: Guest.Daniel@AtlanticWallboard.com

Re: Blast Vibration Monitoring – Blast No. 2023-35 – Upham East Gypsum Quarry, Upham, N.B.

Following are the results of the vibration monitoring carried out on behalf of Hammond River Holdings for the blast detonated by Gulf Operators Ltd. at 14:59 on October 25, 2023. For the monitoring we positioned eleven (11) digital seismographs in the area. The location of each monitoring point is noted in the following table.

Blast No. 2023-35 – October 25, 2023

Seismograph Location	Time	Approx. dist. from shot to seismograph (m)	Maximum Velocity (mm/s)	Sound Pressure (dB(L))	Remarks
1. Civic No. 4079 Route 111 (PW-09)	14:59	1,297 m S	< 0.5 mm/s	<120	Unit was not triggered
2. Civic No. 4126 Route 111 (PW-10)		870 m S	1.21 mm/s @ 51 Hz	100	-
3. Civic No. 4150 Route 111 (PW-13)		700 m SE	1.08 mm/s @ 57 Hz	106	-
4. Civic No. 2447 Route 820 (PW-07)		928 m NE	0.70 mm/s @ 51 Hz	119	-
5. PW-03 - Cottage Route 820		685 m N	0.57 mm/s @ 26 Hz	114	-
6. Civic No. 2341 Route 820 (PW-05)		725 m N	0.76 mm/s @ 47 Hz	112	-
7. Civic No. 50 Myron Road (PW-15)		975 m NW	0.53 mm/s @ 57 Hz	109	-
8. Civic No. 86 Myron Road (PW-16)		850 m W	1.43 mm/s @ 51 Hz	103	-
9. Civic No. 220 Myron Road (PW-01)		1,350 m S	< 0.5 mm/s	<120	Unit was not triggered
10. Civic No. 2337 Route 820 (PW-04)		800 m NW	0.51 mm/s @ 15 Hz	110	-
11. Civic No. 4140 Route 111 (PW-12)		790 m S	1.46 mm/s @ 64 Hz	114	-
maximum limits as per Approval to Operate			**12.5 mm/s**	**128 dB**	

The monitors did not detect any vibrations that exceeded the maximum allowable peak particle velocity of 12.5 mm/s (1.25 cm/s) or the maximum air overpressure of 128 dB(L) as established in the Approval to Operate (I-10936).

We trust this information is sufficient at this time. If you have any questions, please do not hesitate to contact us.

Best regards,
CBCL Limited

Robert Y. Cyr, M.A.Sc., P.Eng.
Senior Technical Specialist

Attachments: Blast Record
Blast and Seismograph Location Plan
Blast Event Reports

Project No: 234601.00

Attachment A

Blast Record

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

IDENTIFICATION:

Blasting Contractor:	Gulf Operators Ltd.		
Blaster's Certification No.:	1318	**Blaster's Name:**	Daniel Blanchard
Blast Location:	N 45º28.865' W 65º37.972' (see attached sketch)		
Type of Rock:	Anhydrate/Gypsum	**Est. Vol. or Tonnage:**	18,014 tonnes
Weather at time of Blast:	Overcast	**Air Temp.:**	13ºC
Est. Wind Speed :	≈ 15 km/h	**Wind Direction:**	N
Cloud Cover:	Yes – overcast	**Precipitation:**	No

BLAST DESIGN:

Total No. Holes:	119	**Hole Diameter:**	4.5"
Average Depth:	5.0 m – 8.0 m	**Spacing:**	12 ft x 12 ft
No. Holes per Delay:	4	**Collar Length:**	7 ft
Delay between Holes:	25 ms	**Delay between Rows:**	67 & 84 ms
Initiation Method:	Non-Electric		
Weight of Explosives per Delay:	Max.: 139 kg		
Type and weight of Explosives for Blast:	4,157 kg – Titan XL-1000		

Sketch of shot location, hole layout, timing sequence, free face etc. if available.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

BLAST MONITORING

Distance to the Nearest Structure:	685 m
Direction to the Nearest Structure:	North
Structure Type:	Cottage
Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):	58.1

SAFETY:

Type of Warning Signal Used:	Siren
Blasting Mats Used (yes or no):	No
Airblast Measurement (yes or no):	Yes
Vibration Measurement (yes or no):	Yes
Warning Signs Posted (yes or no):	Yes
Accesses Guarded (yes or no):	Yes
Flyrock Damage (yes or no):	No
If Yes, Describe:	
Misfire (yes or no):	No

Reviewed By: Robert Y. Cyr, M.A.Sc., P.Eng.

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #1

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5673
Calibration Date:	May 5, 2023
Location of seismograph:	Civic Number 4079 Route 111 (PW-09)
Distance and Direction from Blast:	1,297 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #2

Make, Model and Serial # of unit:	Instantel Micromate, Serial #21832
Calibration Date:	July 10, 2023
Location of seismograph:	Civic Number 4126 Route 111 (PW-10)
Distance and Direction from Blast:	870 m South
Transverse Particle Velocity:	0.87 mm/s @ 57 Hz
Vertical Particle Velocity:	1.21 mm/s @ 51 Hz
Longitudinal Particle Velocity:	0.58 mm/s @ 47 Hz
Peak Particle Velocity:	1.21 mm/s @ 51 Hz
Maximum Airblast:	100 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #3

Make, Model and Serial # of unit:	Instantel Micromate, Serial #21696
Calibration Date:	July 10, 2023
Location of seismograph:	Civic Number 4150 Route 111 (PW-13)
Distance and Direction from Blast:	700 m Southeast
Transverse Particle Velocity:	0.80 mm/s @ 57 Hz
Vertical Particle Velocity:	0.75 mm/s @ 64 Hz
Longitudinal Particle Velocity:	1.08 mm/s @ 57 Hz
Peak Particle Velocity:	1.08 mm/s @ 57 Hz
Maximum Airblast:	106 dB(L)

Data Collection – Seismometer #4

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5372
Calibration Date:	February 28, 2023
Location of seismograph:	Civic Number 2447 Route 820 (PW-07)
Distance and Direction from Blast:	928 m Northeast
Transverse Particle Velocity:	0.57 mm/s @ 43 Hz
Vertical Particle Velocity:	0.38 mm/s @ 47 Hz
Longitudinal Particle Velocity:	0.70 mm/s @ 51 Hz
Peak Particle Velocity:	0.70 mm/s @ 51 Hz
Maximum Airblast:	119 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #5

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5632
Calibration Date:	November 16, 2022
Location of seismograph:	Cottage - PW-03 - Route 820
Distance and Direction from Blast:	685 m North
Transverse Particle Velocity:	0.45 mm/s @ 34 Hz
Vertical Particle Velocity:	0.32 mm/s @ 34 Hz
Longitudinal Particle Velocity:	0.57 mm/s @ 26 Hz
Peak Particle Velocity:	0.57 mm/s @ 26 Hz
Maximum Airblast:	114 dB(L)

Data Collection – Seismometer #6

Make, Model and Serial # of unit:	Instantel Minimate, Serial #21348
Calibration Date:	July 25, 2023
Location of seismograph:	Civic Number 2341 Route 820 (PW-05)
Distance and Direction from Blast:	725 m North
Transverse Particle Velocity:	0.51 mm/s @ 47 Hz
Vertical Particle Velocity:	0.76 mm/s @ 43 Hz
Longitudinal Particle Velocity:	0.76 mm/s @ 47 Hz
Peak Particle Velocity:	0.76 mm/s @ 47 Hz
Maximum Airblast:	112 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #7

Make, Model and Serial # of unit:	Instantel Micromate, Serial #18187
Calibration Date:	May 12, 2023
Location of seismograph:	Civic Number 50 Myron Road (PW-15)
Distance and Direction from Blast:	975 m Northwest
Transverse Particle Velocity:	0.42 mm/s @ 43 Hz
Vertical Particle Velocity:	0.53 mm/s @ 57 Hz
Longitudinal Particle Velocity:	0.42 mm/s @ 24 Hz
Peak Particle Velocity:	0.53 mm/s @ 57 Hz
Maximum Airblast:	109 dB(L)

Data Collection – Seismometer #8

Make, Model and Serial # of unit:	Instantel Micromate, Serial #18193
Calibration Date:	May 12, 2023
Location of seismograph:	Civic Number 86 Myron Road (PW-16)
Distance and Direction from Blast:	850 m West
Transverse Particle Velocity:	1.26 mm/s @ 28 Hz
Vertical Particle Velocity:	0.97 mm/s @ 39 Hz
Longitudinal Particle Velocity:	1.43 mm/s @ 51 Hz
Peak Particle Velocity:	1.43 mm/s @ 51 Hz
Maximum Airblast:	103 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #9

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5487
Calibration Date:	January 16, 2023
Location of seismograph:	Civic Number 220 Myron Road (PW-01)
Distance and Direction from Blast:	1,350 m South
Transverse Particle Velocity:	<0.5 mm/s – Unit was not triggered
Vertical Particle Velocity:	<0.5 mm/s – Unit was not triggered
Longitudinal Particle Velocity:	<0.5 mm/s – Unit was not triggered
Peak Particle Velocity:	N/A
Maximum Airblast:	<120 dB(L) – Unit was not triggered

Data Collection – Seismometer #10

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5635
Calibration Date:	March 8, 2023
Location of seismograph:	Civic Number 2337 Route 820 (PW-04)
Distance and Direction from Blast:	800 m Northwest
Transverse Particle Velocity:	0.32 mm/s @ 9 Hz
Vertical Particle Velocity:	0.25 mm/s @ 18 Hz
Longitudinal Particle Velocity:	0.51 mm/s @ 15 Hz
Peak Particle Velocity:	0.51 mm/s @ 15 Hz
Maximum Airblast:	110 dB(L)

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BLAST RECORD

Project Name:	Upham Gypsum Quarry	**Date of Blast:**	October 25, 2023
Project No.:	234601.00	**Time of Blast:**	14:59
Inspector:	M. MacLeaod	**Blast No.:**	2023-35
Client:	Hammond River Holdings		

Data Collection – Seismometer #11

Make, Model and Serial # of unit:	Instantel Minimate, Serial #5489
Calibration Date:	May 5, 2023
Location of seismograph:	Civic Number 4140 Route 111 (PW-12)
Distance and Direction from Blast:	790 m South
Transverse Particle Velocity:	0.83 mm/s @ 51 Hz
Vertical Particle Velocity:	0.83 mm/s @ 51 Hz
Longitudinal Particle Velocity:	1.46 mm/s @ 64 Hz
Peak Particle Velocity:	1.46 mm/s @ 64 Hz
Maximum Airblast:	114 dB(L)

Attachment B

Blast and Seismograph Location Plan

Blast and Seismograph Location Plan
Blast No: 2023-35
Upham East Gypsum Quarry, Upham, NB

Date: October 25, 2023
Project No.: 234601.00

Attachment C

Blast Event Reports

Event Report

Date/Time	Vert at 14:59:47 October 25, 2023
Trigger Source	Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range	Geo: 254.0 mm/s
Record Time	7.0 sec at 1024 sps
Operator/Setup:	Operator/UPHAM.MMB

Notes
Location
Client
Company
General Notes

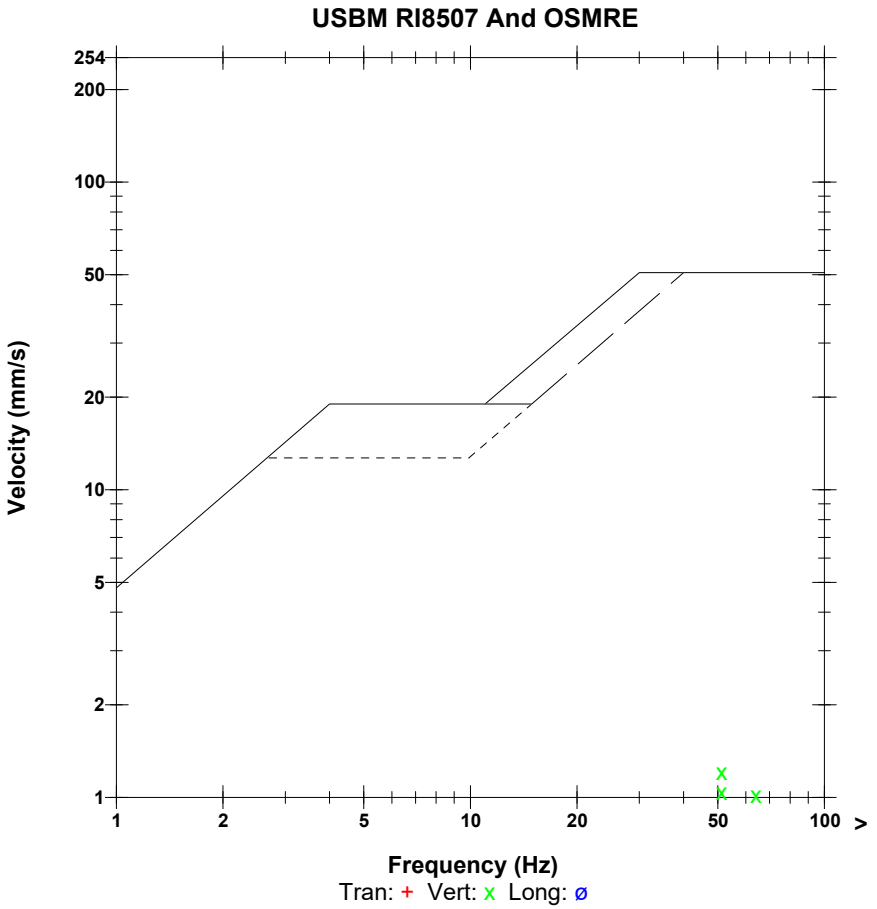
Serial Number	UM21832 V 10-90GC Micromate ISEE
Battery Level	3.8 Volts
Unit Calibration	July 10, 2023 by Instantel
File Name	UM21832_20231025145947.IDFW

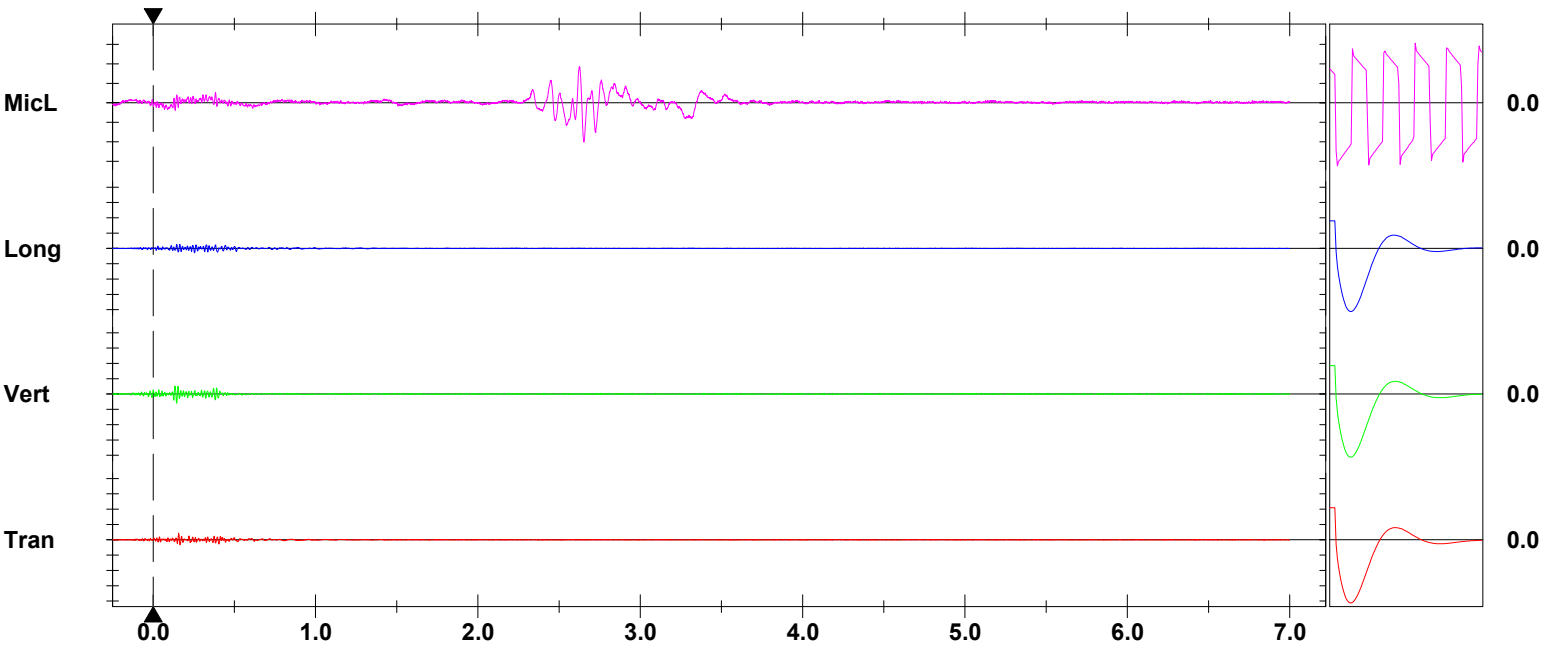
Post Event Notes
Location: 4126 Route 111 (PW-10)
Blast No.: 2023-35
Project No: 234601.00

Microphone	Linear Weighting
PSPL	100.1 dB(L) 2.017 pa.(L) at 2.653 sec
ZC Freq	16 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 1507 mv)

	Tran	Vert	Long	
PPV	0.867	1.206	0.583	mm/s
PPV	49.76	52.63	46.32	dB
ZC Freq	57	51	47	Hz
Time (Rel. to Trig)	0.157	0.146	0.256	sec
Peak Acceleration	0.055	0.046	0.028	g
Peak Displacement	0.002	0.004	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.3	7.3	Hz
Overswing Ratio	5.2	5.0	4.8	

Peak Vector Sum 1.317 mm/s at 0.146 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time	Long at 14:59:55 October 25, 2023
Trigger Source	Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range	Geo: 254.0 mm/s
Record Time	7.0 sec at 1024 sps
Operator/Setup:	Operator/UPHAM.MMB

Notes
Location
Client
Company
General Notes

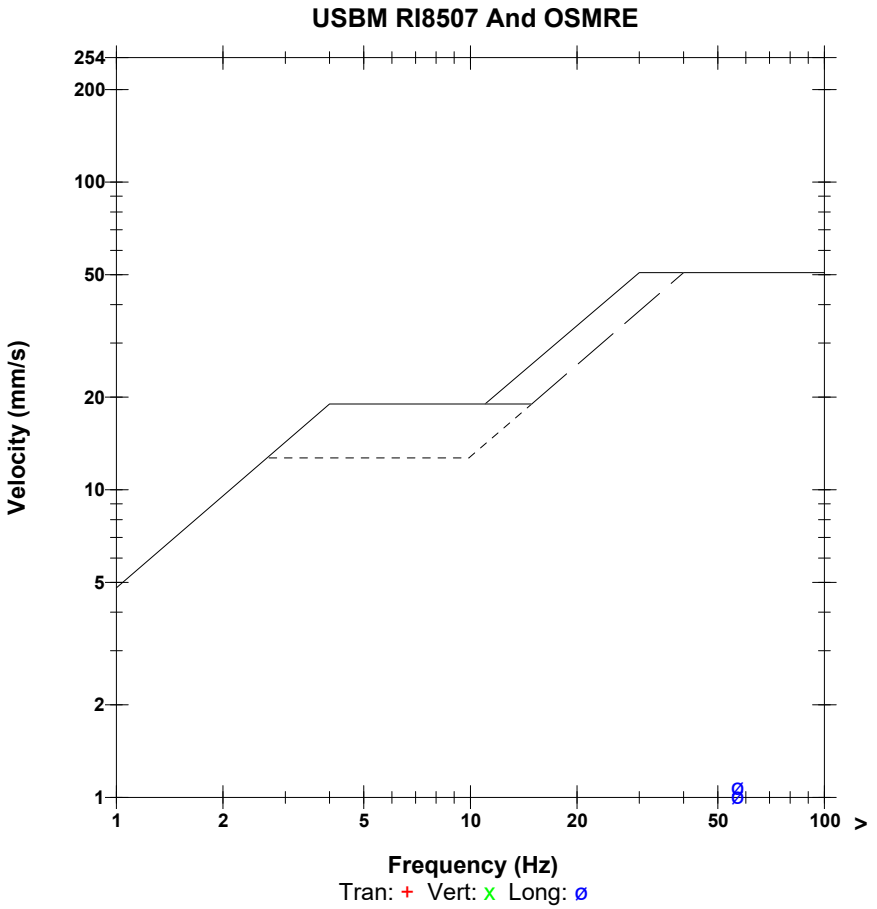
Serial Number	UM21696 V 10-90GC Micromate ISEE
Battery Level	3.8 Volts
Unit Calibration	July 10, 2023 by Instantel
File Name	UM21696_20231025145955.IDFW

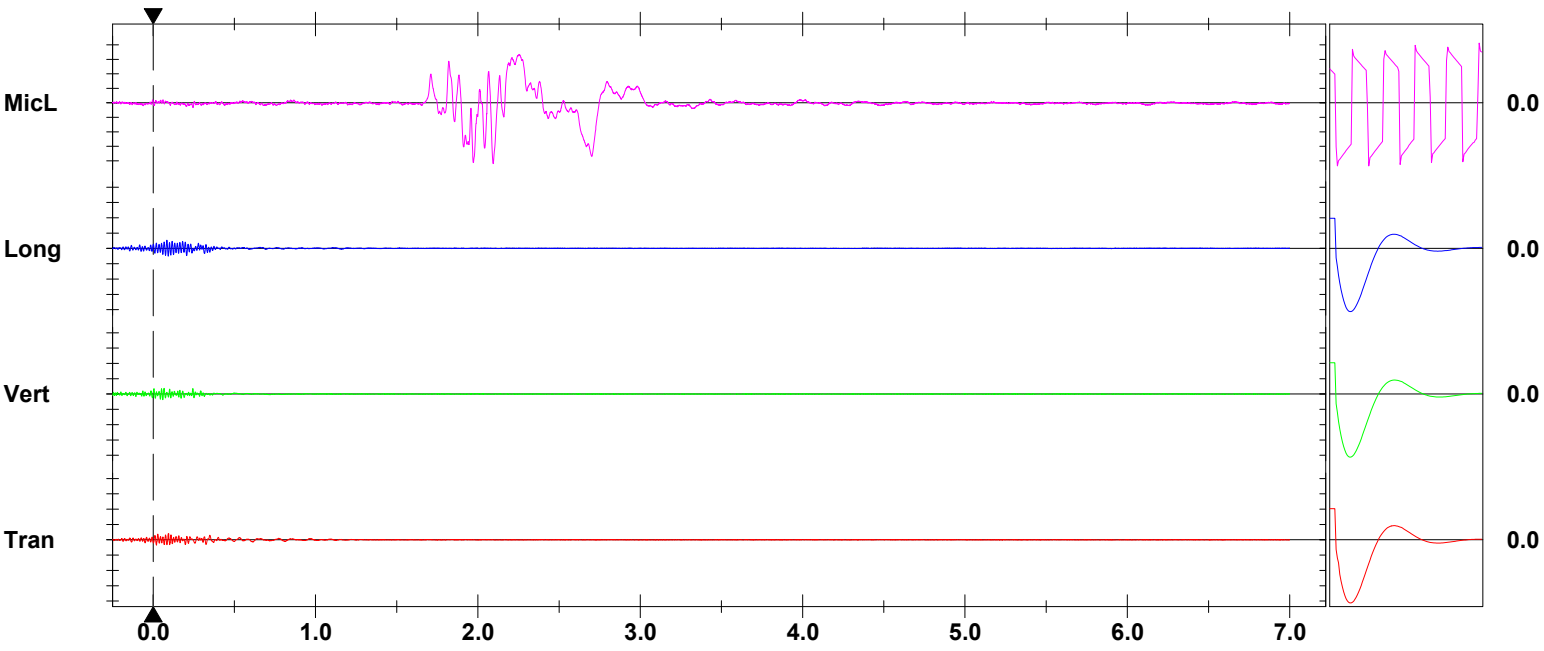
Post Event Notes
Location: 4150 Route 111 (PW-13)
Blast No.: 2023-35
Project No: 234601.00

Microphone	Linear Weighting
PSPL	106.4 dB(L) 4.189 pa.(L) at 2.094 sec
ZC Freq	12 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 1470 mv)

	Tran	Vert	Long	
PPV	0.804	0.749	1.080	mm/s
PPV	49.10	48.49	51.67	dB
ZC Freq	57	64	57	Hz
Time (Rel. to Trig)	0.094	0.060	0.084	sec
Peak Acceleration	0.049	0.052	0.050	g
Peak Displacement	0.003	0.002	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.5	4.5	4.5	

Peak Vector Sum 1.335 mm/s at 0.093 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 15:00:10 October 25, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 25, 2023 17:28:20 (V10.72.1)

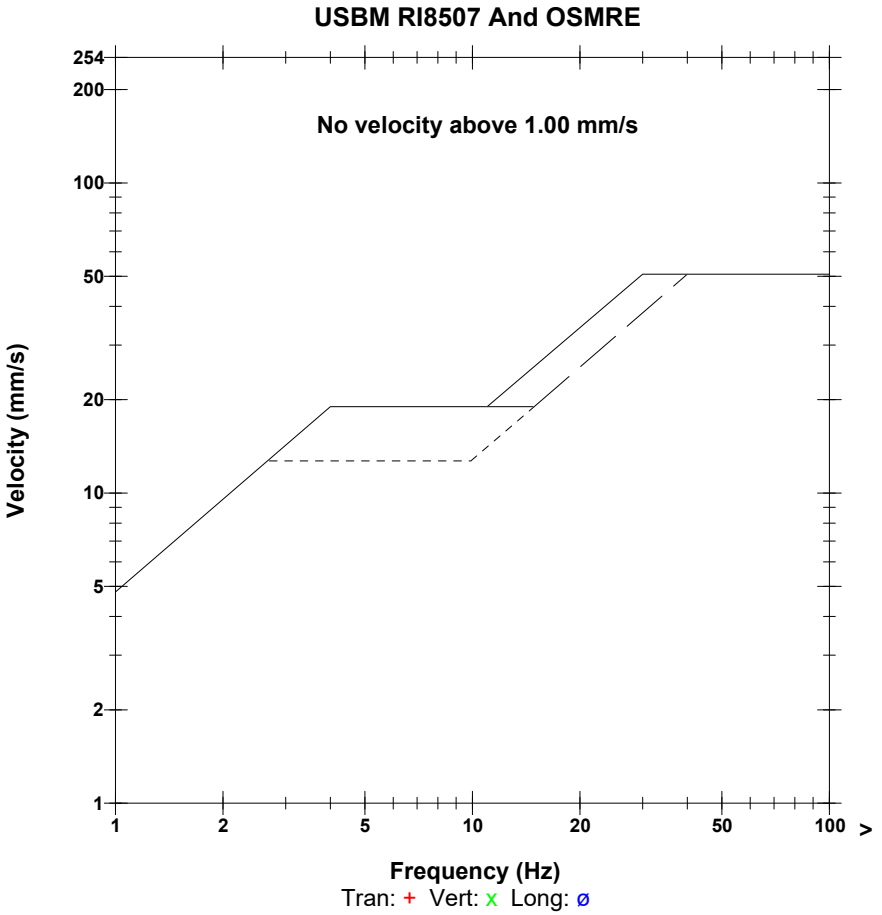
Extended Notes

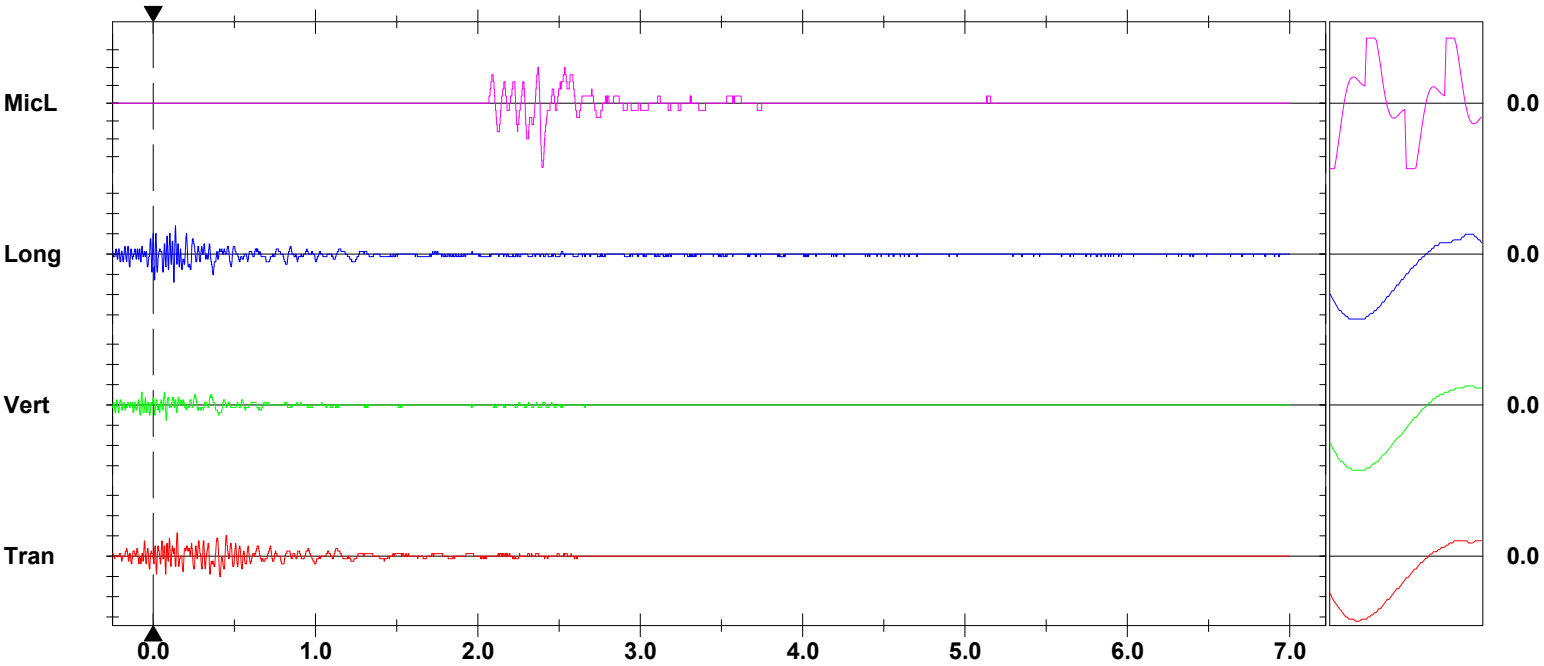
Microphone Linear Weighting
PSPL 119.1 dB(L) 18.00 pa.(L) at 2.395 sec
ZC Freq 8.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 292 mv)

	Tran	Vert	Long	
PPV	0.572	0.381	0.699	mm/s
PPV	46.14	42.62	47.88	dB
ZC Freq	43	47	51	Hz
Time (Rel. to Trig)	0.147	0.081	0.128	sec
Peak Acceleration	0.020	0.013	0.027	g
Peak Displacement	0.003	0.001	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.8	8.0	8.0	Hz
Overswing Ratio	3.7	3.3	3.0	

Peak Vector Sum 0.762 mm/s at 0.139 sec

Serial Number 5372 V 2.61 MiniMate
Battery Level 6.3 Volts
Unit Calibration February 28, 2023 by Instantel
File Name G372K9AV.0A0
Post Event Notes
Location: 2447 Route 820 (PW-07)
Blast No.: 2023-35
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 19:30:53 October 22, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 25, 2023 17:34:01 (V10.72.1)

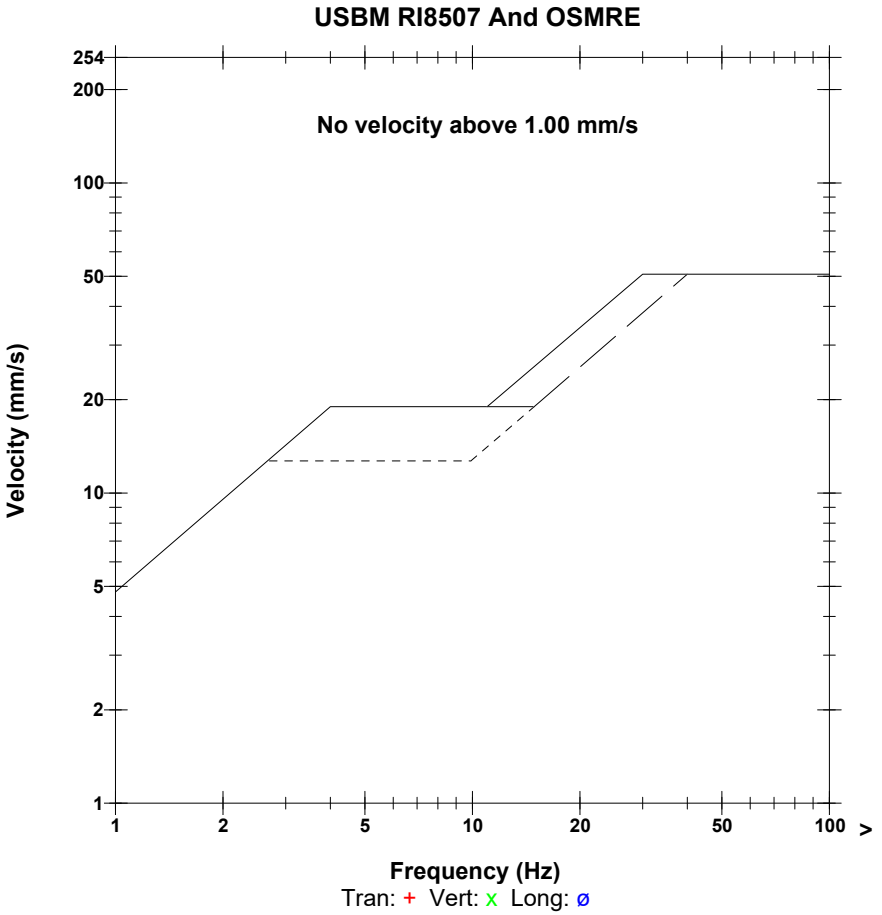
Extended Notes

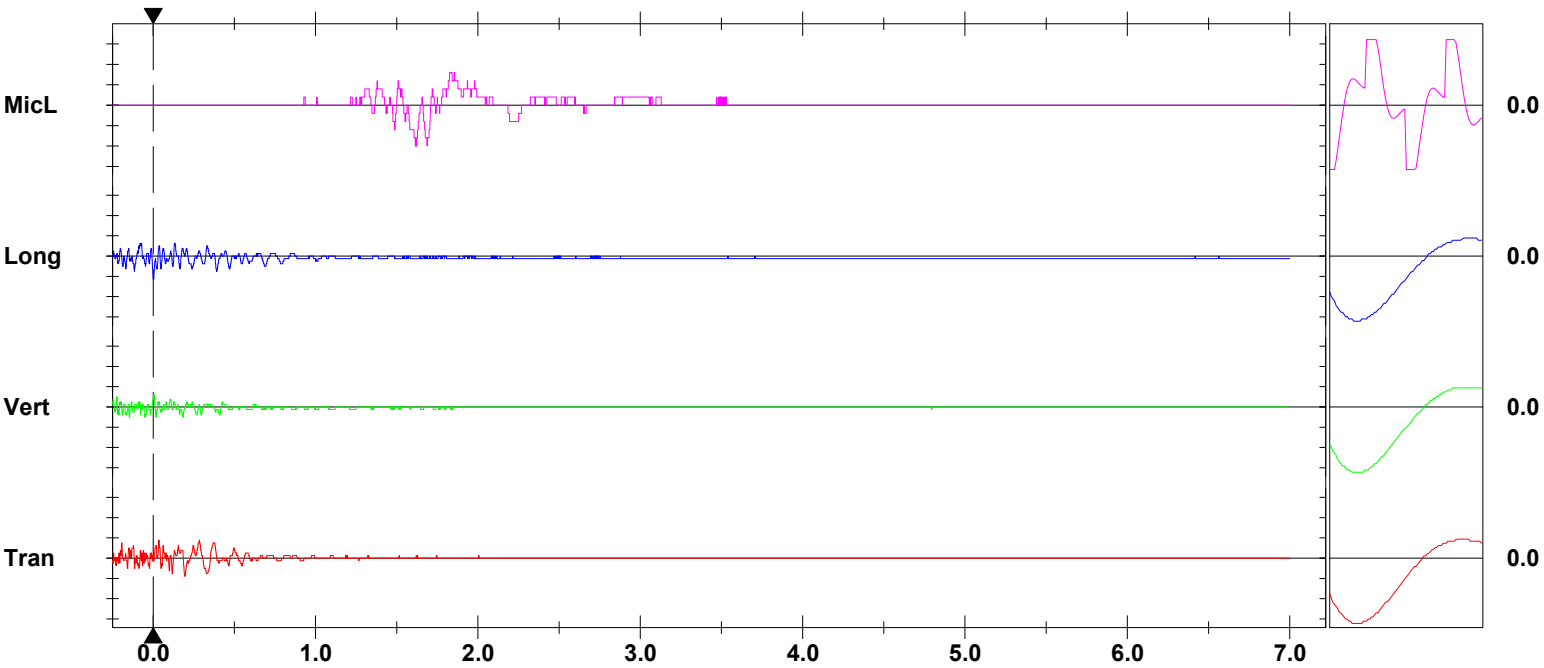
Microphone Linear Weighting
PSPL 114.0 dB(L) 10.000 pa.(L) at 1.615 sec
ZC Freq 7.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 297 mv)

	Tran	Vert	Long	
PPV	0.445	0.318	0.572	mm/s
PPV	43.96	41.03	46.14	dB
ZC Freq	34	34	26	Hz
Time (Rel. to Trig)	0.036	0.006	0.004	sec
Peak Acceleration	0.013	0.013	0.013	g
Peak Displacement	0.005	0.001	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.3	8.2	8.0	Hz
Overswing Ratio	3.6	3.3	3.7	

Peak Vector Sum 0.651 mm/s at 0.004 sec

Serial Number 5632 V 2.61 MiniMate
Battery Level 6.4 Volts
Unit Calibration November 16, 2022 by Instantel
File Name G632K95N.JH0
Post Event Notes
Location: Cottage - off Route 820 (PW-03)
Blast No.: 2023-35
Project No: 234601.00
DATE & TIME WERE NOT PROPERLY SET





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time	Vert at 14:53:25 October 25, 2023
Trigger Source	Geo: 0.510 mm/s, Mic: 120.0 dB(L)
Range	Geo: 254.0 mm/s
Record Time	7.0 sec at 1024 sps
Job Number:	1

Serial Number	BE21348 V 10.72-1.1 Minimate Blaster
Battery Level	6.4 Volts
Unit Calibration	July 25, 2023 by Instantel
File Name	W348K990.110

Notes
Location:
Client:
User Name:
General:

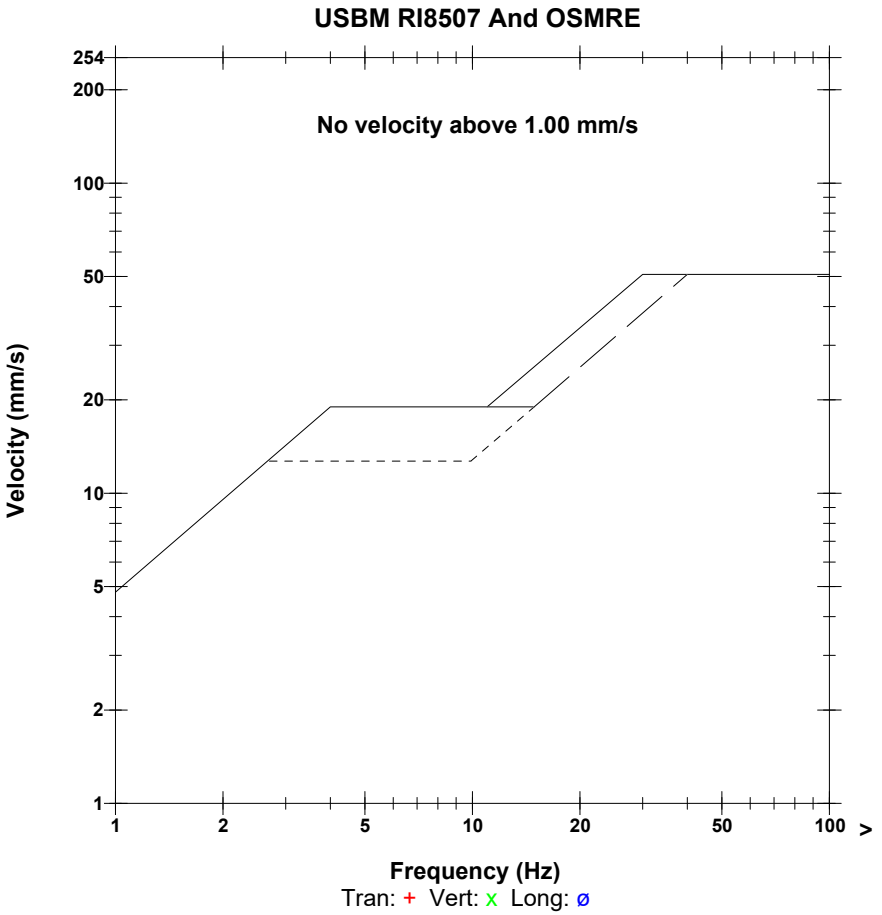
Post Event Notes
Location: 2341 Route 820 (PW-05)
Blast No.: 2023-35
Project No: 234601.00

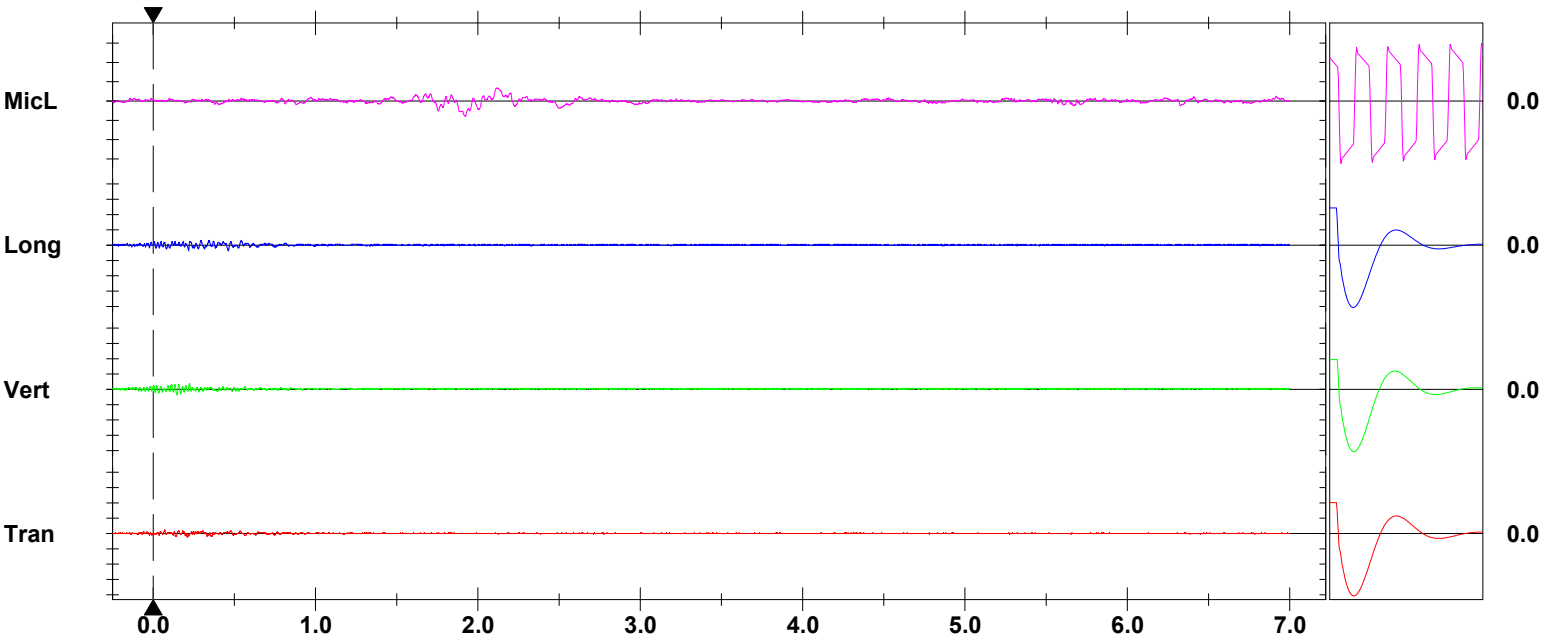
Extended Notes

Microphone	Linear Weighting
PSPL	112.0 dB(L) 8.000 pa.(L) at 1.921 sec
ZC Freq	5.4 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 586 mv)

	Tran	Vert	Long	
PPV	0.508	0.762	0.762	mm/s
PPV	45.12	48.64	48.64	dB
ZC Freq	47	43	47	Hz
Time (Rel. to Trig)	0.071	0.148	0.218	sec
Peak Acceleration	0.027	0.027	0.027	g
Peak Displacement	0.002	0.003	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.4	7.7	7.4	Hz
Overswing Ratio	3.6	3.4	4.1	

Peak Vector Sum 0.916 mm/s at 0.225 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 10.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Vert at 14:59:57 October 25, 2023
Trigger Source Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 7.0 sec at 1024 sps
Operator/Setup: Operator/BAYSIDE.MMB

Notes
Location:
Client:
User Name:
General:

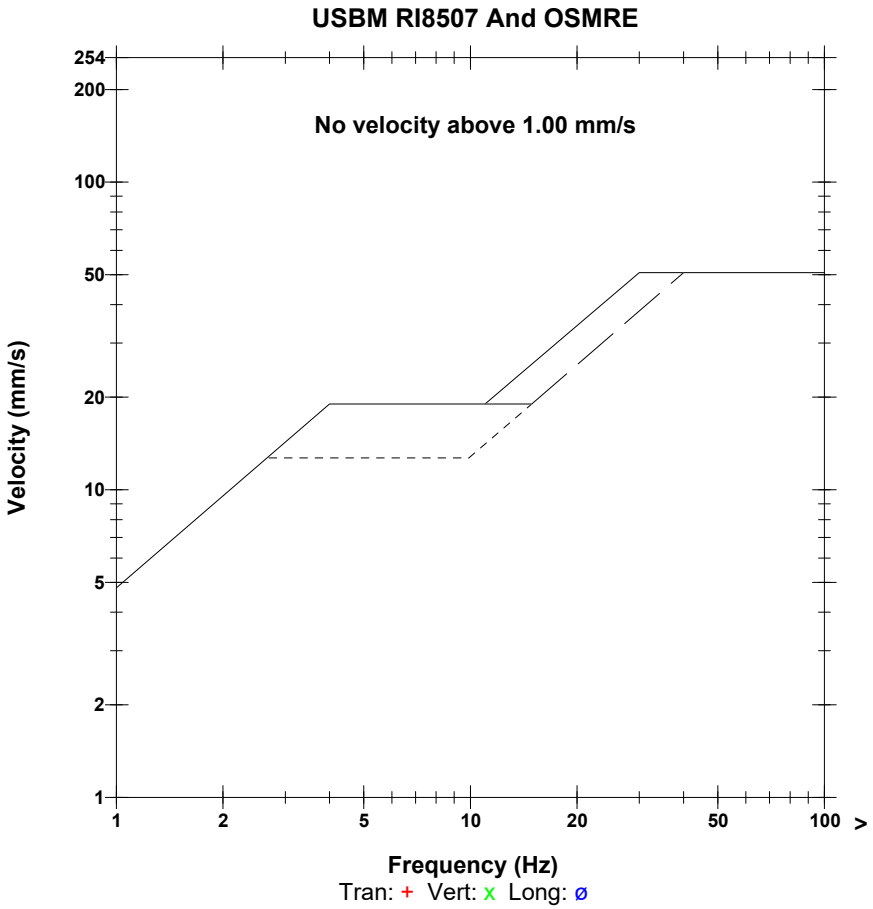
Serial Number UM18187 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration May 12, 2023 by Instantel
File Name UM18187_20231025145957.IDFW

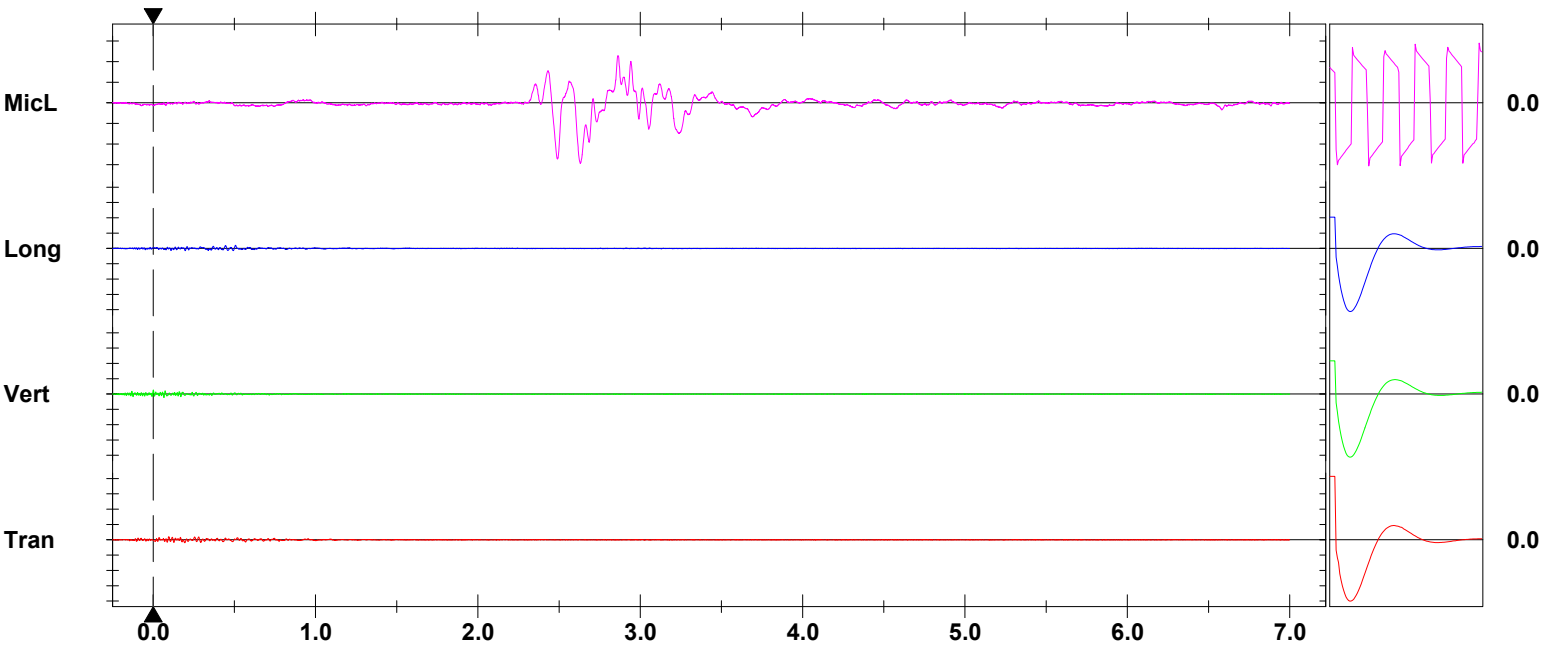
Post Event Notes
Location: 50 Myron Road (PW-15)
Blast No.: 2023-35
Project No: 234601.00

Microphone Linear Weighting
PSPL 109.4 dB(L) 5.896 pa.(L) at 2.631 sec
ZC Freq 4.7 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 1471 mv)

	Tran	Vert	Long	
PPV	0.418	0.528	0.418	mm/s
PPV	43.42	45.45	43.42	dB
ZC Freq	43	57	24	Hz
Time (Rel. to Trig)	0.097	0.001	0.507	sec
Peak Acceleration	0.024	0.023	0.016	g
Peak Displacement	0.002	0.001	0.003	mm
Sensor Check	Check	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.3	4.4	4.3	

Peak Vector Sum 0.545 mm/s at 0.001 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 2.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 14:59:43 October 25, 2023
Trigger Source Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 7.0 sec at 1024 sps
Operator/Setup: Operator/UPHAM.MMB

Notes
Location:
Client:
User Name:
General:

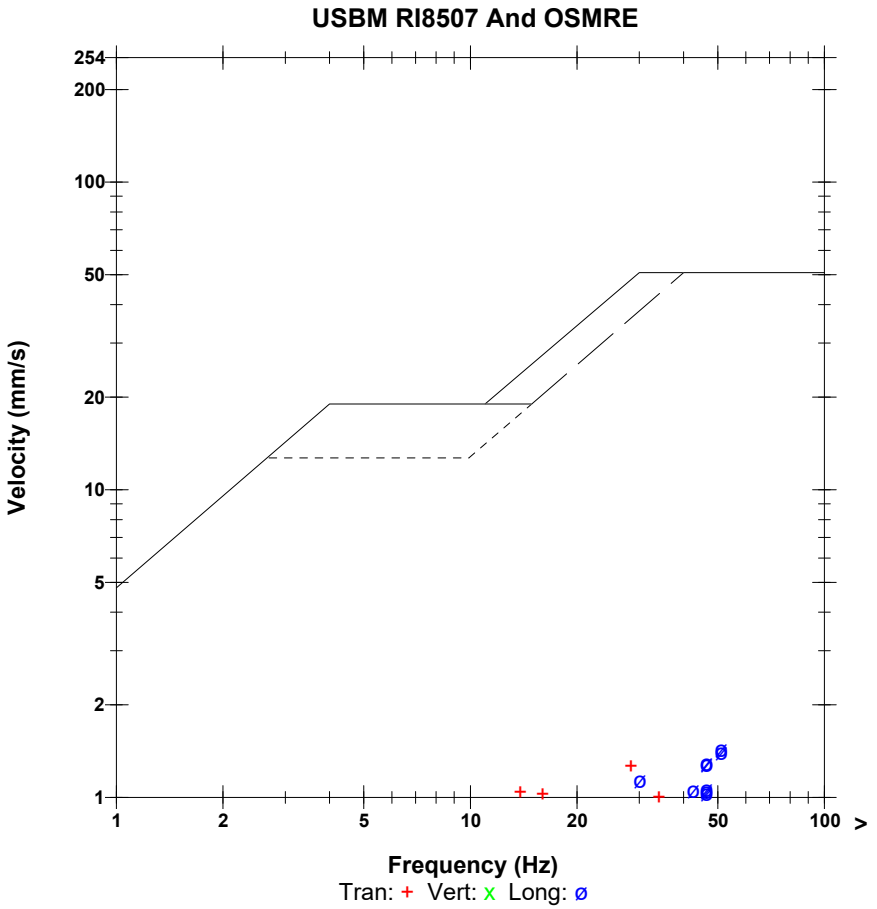
Serial Number UM18193 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration May 12, 2023 by Instantel
File Name UM18193_20231025145943.IDFW

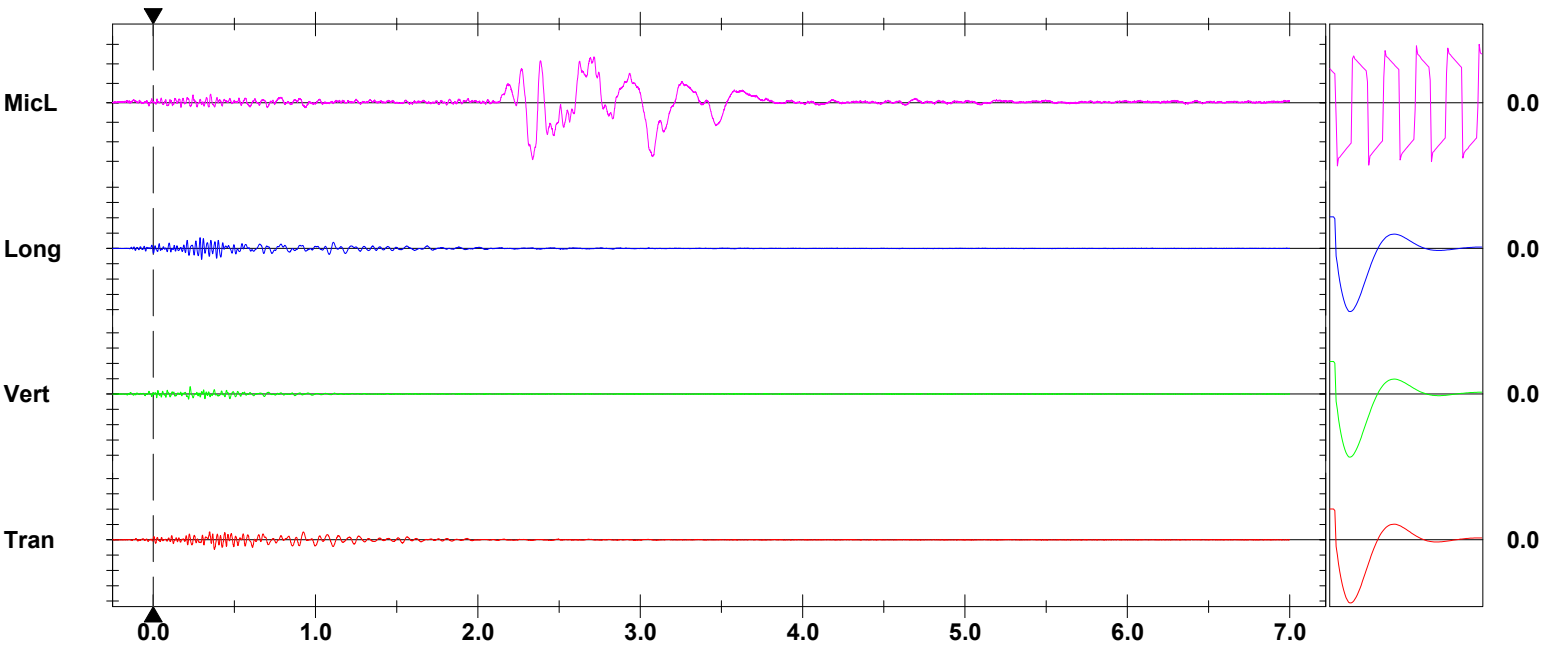
Post Event Notes
Location: 86 Myron Road (PW-16)
Blast No.: 2023-35
Project No: 234601.00

Microphone Linear Weighting
PSPL 103.3 dB(L) 2.917 pa.(L) at 2.337 sec
ZC Freq 6.7 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 1430 mv)

	Tran	Vert	Long	
PPV	1.261	0.969	1.434	mm/s
PPV	53.01	50.73	54.13	dB
ZC Freq	28	39	51	Hz
Time (Rel. to Trig)	0.377	0.228	0.299	sec
Peak Acceleration	0.055	0.027	0.064	g
Peak Displacement	0.010	0.004	0.010	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.1	4.2	4.4	

Peak Vector Sum 1.533 mm/s at 0.379 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 14:59:59 October 25, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 25, 2023 17:32:09 (V10.72.1)

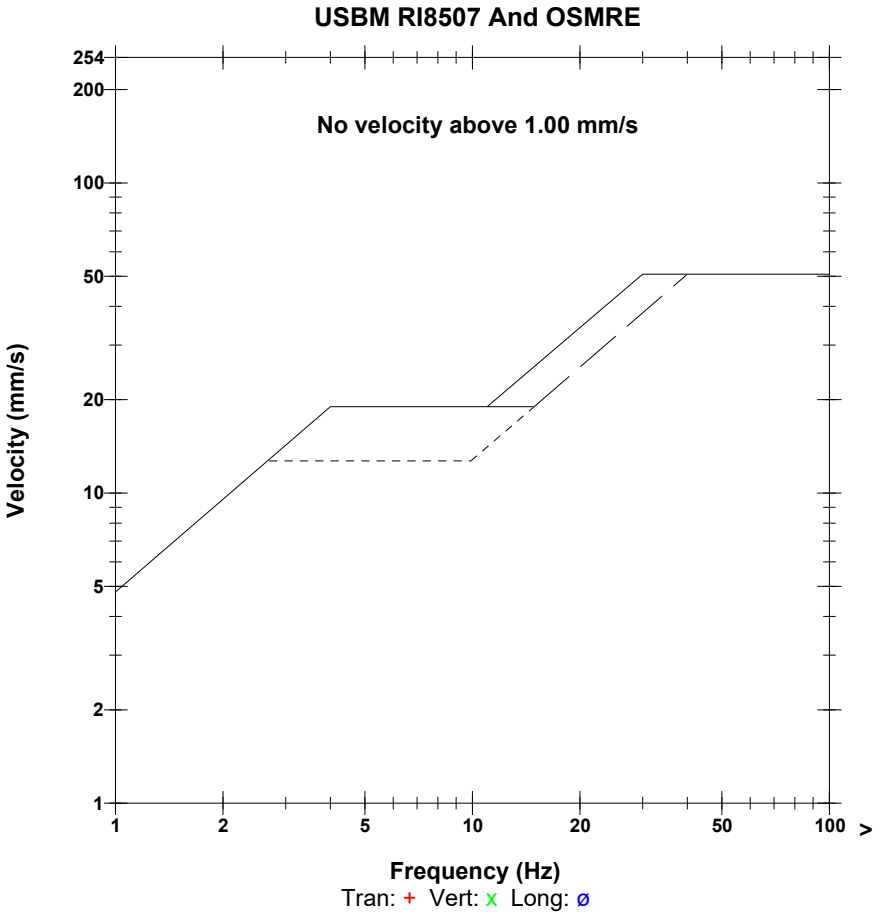
Serial Number 5635 V 2.61 MiniMate
Battery Level 6.0 Volts
Unit Calibration March 8, 2023 by Instantel
File Name G635K9AU.ZZ0
Post Event Notes
Location: 2337 Route 820 (PW-04)
Blast No.: 2023-35
Project No: 234601.00

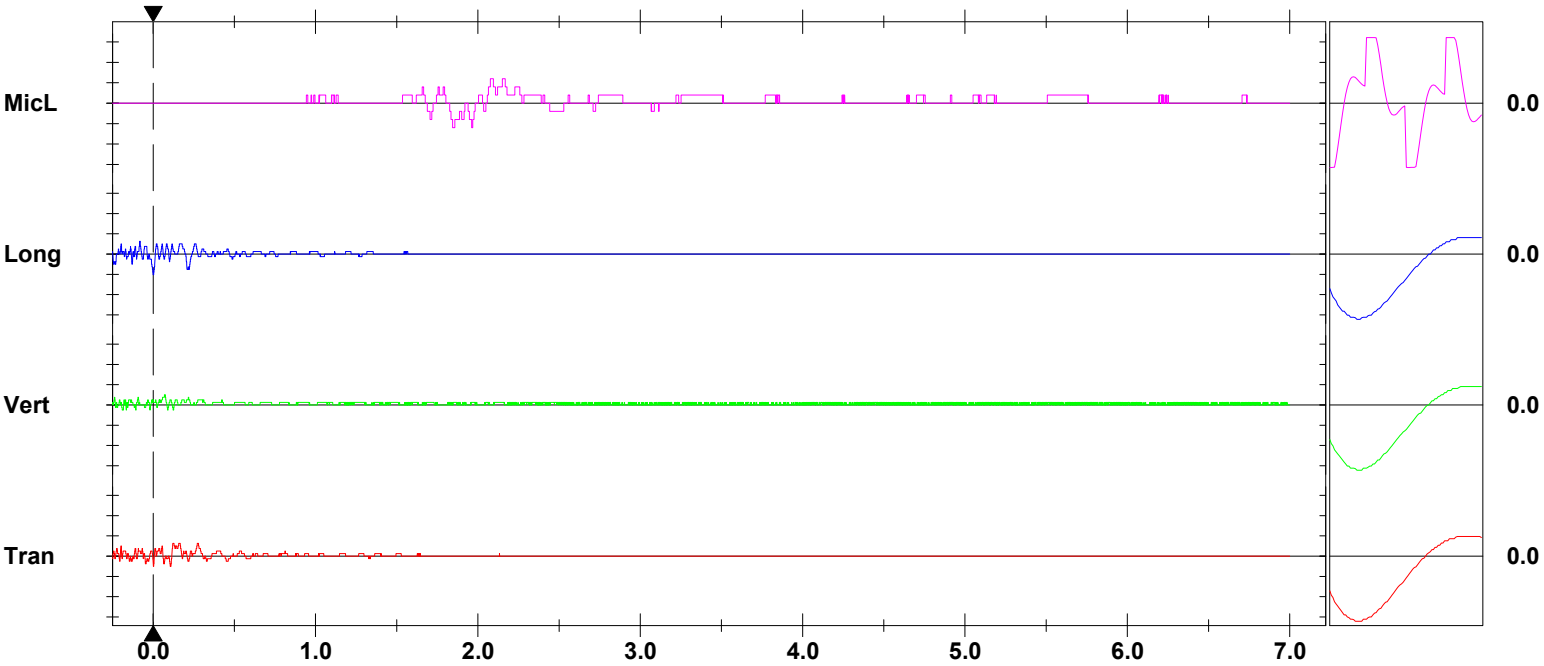
Extended Notes

Microphone Linear Weighting
PSPL 109.5 dB(L) 6.000 pa.(L) at 1.845 sec
ZC Freq 5.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 297 mv)

	Tran	Vert	Long	
PPV	0.318	0.254	0.508	mm/s
PPV	41.03	39.10	45.12	dB
ZC Freq	9.0	18	15	Hz
Time (Rel. to Trig)	0.121	0.070	0.003	sec
Peak Acceleration	0.007	0.007	0.007	g
Peak Displacement	0.005	0.001	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	7.8	7.7	Hz
Overswing Ratio	3.2	3.7	4.0	

Peak Vector Sum 0.587 mm/s at 0.002 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Event Report

Date/Time Long at 14:59:53 October 25, 2023
Trigger Source Geo: 0.492 mm/s, Mic: 119.6 dB(L)
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Notes
Location:
Client:
User Name:
Converted: October 25, 2023 17:43:41 (V10.72.1)

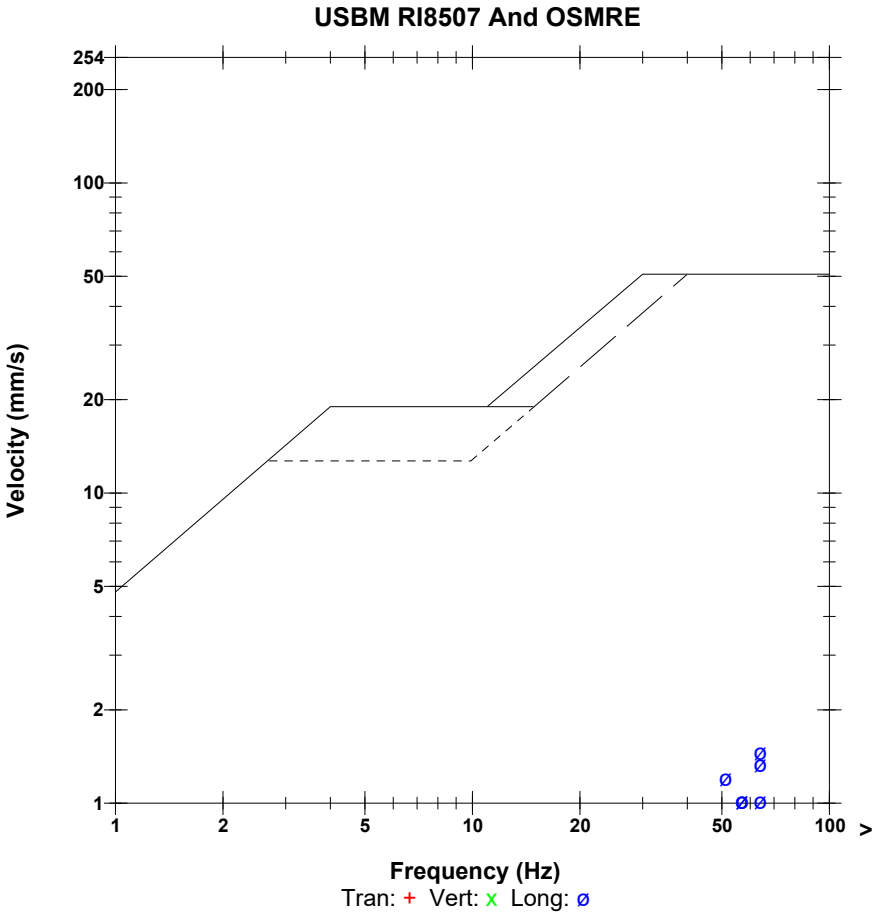
Extended Notes

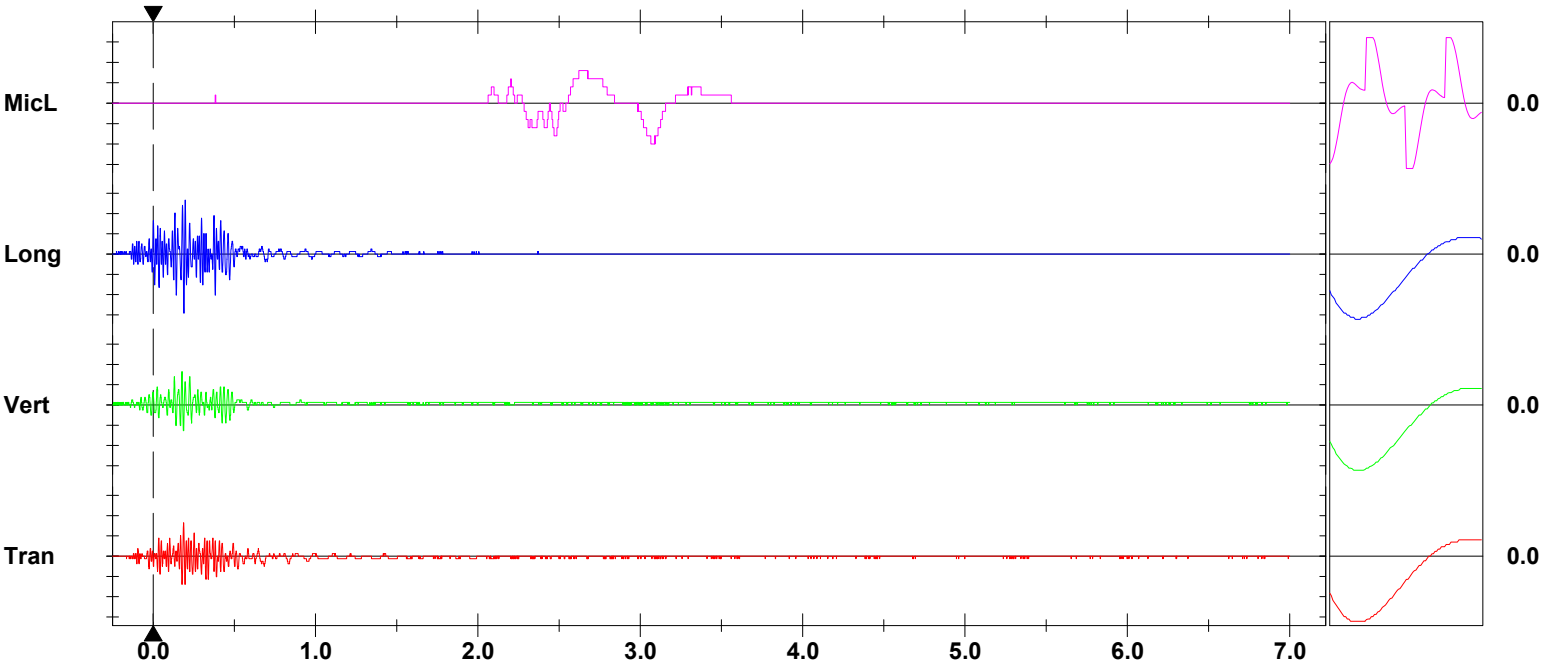
Microphone Linear Weighting
PSPL 114.0 dB(L) 10.000 pa.(L) at 3.066 sec
ZC Freq 3.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 283 mv)

	Tran	Vert	Long	
PPV	0.826	0.826	1.461	mm/s
PPV	49.33	49.33	54.29	dB
ZC Freq	51	51	64	Hz
Time (Rel. to Trig)	0.188	0.178	0.189	sec
Peak Acceleration	0.027	0.027	0.060	g
Peak Displacement	0.002	0.003	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.7	8.0	Hz
Overswing Ratio	3.8	4.0	4.0	

Peak Vector Sum 1.746 mm/s at 0.189 sec

Serial Number 5489 V 2.61 MiniMate
Battery Level 6.4 Volts
Unit Calibration May 5, 2023 by Instantel
File Name G489K9AU.ZT0
Post Event Notes
Location: 4140 Route 111 (PW-12)
Blast No.: 2023-35
Project No: 234601.00





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 5.000 pa.(L)/div Sensor Check
Trigger =

Attachment E

Spill Report

SPILL REPORT FORM

IDENTIFICATION

Spill Date: October 4th		**Time:** 9 am	
Location: Quarry	:	At top of pit	
Civic Address of Incident: 4119 Route 111 Upperton NB			
Field Contact: Adam Sullivan		**Phone Number:** (506) 832-2102	

SPILL NOTIFICATION

☒ **Supervisor** (During working hours) - **Name (specify):**
☒ **Department of Environment** (During working hours) **Saint John Region – 506.658.2558**
☐ **Coast Guard – 800.565.1633**

SPILL INFORMATION

Product Spilled:	☐ Transformer Oil	Quantity (L): Transmission fluid <1L	
	☐ Hydraulic Fluid	Quantity (L): Transmission fluid <1L	
	☒ Other (specify):	Quantity (L): Transmission fluid <1L	
Equipment:	☐ Pole-top transformer	**Serial / ID1 Number:**	
	☒ Heavy Equipment	FT9468	
	☐ Vehicle	***Year of Manufacture:**	
	☐ Other (specify):		
Environmental Impact:		**YES**	**NO**
	Watercourse within 100 m	☐	☑
	Domestic well within 100 m	☐	☑
Cause and additional detail:	Leaking transmission fluid from rock truck spilled over sides of secondary containment. Absorbant pads were put down once spill noticed. Soil was excavated and removed by Gulf Operators. Rock truck fixed.		

Samples sent to RPC laboratory for analysis (Address: 921 College Hill Rd, Fredericton, 506.452.1212)

☐ Oil (from equipment): _____ ppm
☐ Soil (unable to sample equipment): _____ ppm
☐ Other (watercourse): _____ ppm

ADDITIONAL INFORMATION

	YES	NO
Is source of spill stopped?	☑	☐
Is spill contained?	☑	☐
Is spill cleaned-up?	☑	☐

EXTERNAL RESOURCES / INSPECTORS (if applicable)

	YES	NO	If "yes", indicate Name, Date and Time
Environment Inspector on-site	☐	☑	
Contractor used for clean-up	☑	☐	Gulf Operators
Site Professional used for remediation support	☐	☑	

APPROVAL AND REVIEW

Initiator Meghan Dammeier	Signature:	Date Prepared: 10/04/2023
Supervisor/Manager DANIEL GUEST	Signature:	Date Reviewed: 10/10/2023
	Comments:	
	Spill kit and spill response supplies replenished?	■ YES ☐ NO
EMS Coordinator	Signature:	Date Completed: