

**To:** Mike Cormier, P.Eng. – Director, Authorizations Branch, New Brunswick Department of Environment and Local Government

**From:** Daniel Guest, Hammond River Holdings Ltd.

**Date:** August 31, 2023

**Subject:** Monthly Monitoring Report – Upham East Gypsum Quarry – July 2023

**Our File:** File # 21-3049

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## Introduction

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This monthly report details activities associated with the Upham East Gypsum Quarry operations for the month of July 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 June 2023.

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## Surface Water Sampling

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

- Week 1: July 2, 2023
- Week 2: July 6, 2023
- Week 3: July 20, 2023
- Week 4: July 26 and July 28, 2023

Three additional monitoring events were conducted on July 4, July 18 (confirm this date), and July 28, 2023 due to heavy rain events, defined as 25 mm of rain or more within 24 hours.

### 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 100 m downstream from PDP-1

Surface water samples were collected using laboratory-supplied bottles. The samples were submitted to the Research Productivity Council (RPC) in Fredericton, NB. RPC is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for each of the laboratory analytical methods utilized and has 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). One duplicate sample was collected during the July water sampling program. The RPD results could not be calculated due to both of the results being below the laboratory detection limit. Therefore, the data satisfies the quality objectives of the monitoring program.

#### **Water Level Monitoring**

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Water levels were downloaded on July 13, 2023. The data retrieved from the dataloggers are depicted on a time series plot in **Figure 3**. The dataloggers allow for continuous coverage of water levels in the wells.

#### **Methodology**

Data loggers were retrieved via Solinst Levellogger Software 4.6.1 the dataloggers were then reset to continue to record the water level every 60 minutes. Following consistency within water level monitoring the interval of recording was decreased to a 60-minute interval from the previous 5-minute interval.

### **Water Level Results**

The data for perimeter monitoring wells (**Figure 4**) and potable monitoring wells (**Figures 5, 6, and 7**) 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 July 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**

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There were no reported environmental accidents or malfunctions during the July 2023 monitoring period.

### **Ambient Air Quality Monitoring – Total Suspended Particulate**

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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 July, there were 5 air quality monitoring events, July 1, 7, 13, 19, 25, and 31, 2023. The results are provided in **Table 3**. There were no exceedances of the 120 µg/m<sup>3</sup> 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**

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Three blasts occurred during the July 2023 monitoring period, occurring on July 11, 21 and 27, 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**

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There were no public complaints during the July 2023 monitoring period.

## Summary

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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 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

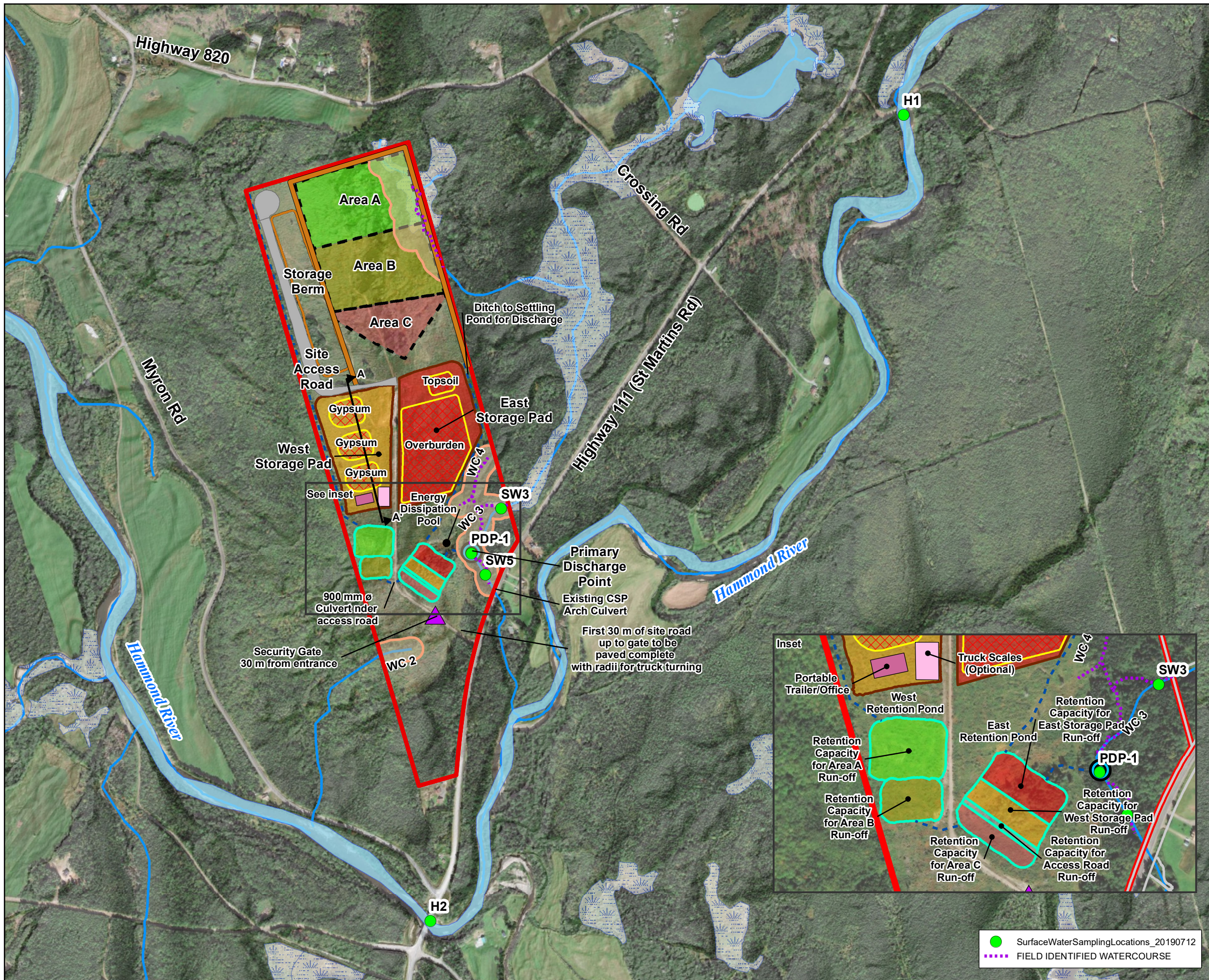
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Canadian Council of Ministers of the Environment (CCME). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment: Volume 1 Guidance Manual. Canadian environmental quality guidelines.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

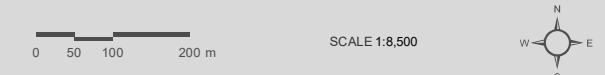
## *Figures*



HAMMOND RIVER HOLDINGS LIMITED  
PROPOSED UPHAM EAST GYPSUM QUARRY

**SURFACE WATER SAMPLING LOCATIONS**  
FIGURE 1

- PROPERTY BOUNDARY
  - PROJECT DEVELOPMENT AREA
  - WATERBODY
  - WATERCOURSE
  - REGULATED WETLAND
  - 30 METRE WETLAND/WATERCOURSE BUFFER
- PROPOSED SITE FEATURES**
- DITCH
  - TRUCK SCALE (OPTIONAL)
  - SITE AREAS
  - DISCHARGE POINT
  - ▲ SECURITY GATE
  - PORTABLE TRAILER/OFFICE
  - ACCESS ROAD
  - STORAGE PAD
  - STOCKPILE
  - RETENTION POND
  - CROSS SECTION
  - QUARRY BERM CONSTRUCTED FROM TOPSOIL AND OVERBURDEN (OFFSET MINIMUM 7m FROM PROPERTY BOUNDARY)
  - HATCHING INDICATES MATERIAL STOCKPILE AREA ON TOP OF STORAGE PAD



MAP DRAWING INFORMATION:  
 DATA PROVIDED BY DILLON CONSULTING LIMITED, CANVEC SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY  
 MAP CREATED BY: JH  
 MAP REVISED BY: JO  
 MAP CHECKED BY: GA  
 MAP PROJECTION: NAD\_1983\_CSRS\_NEW\_BRUNSWICK\_STEREOGRAPHIC

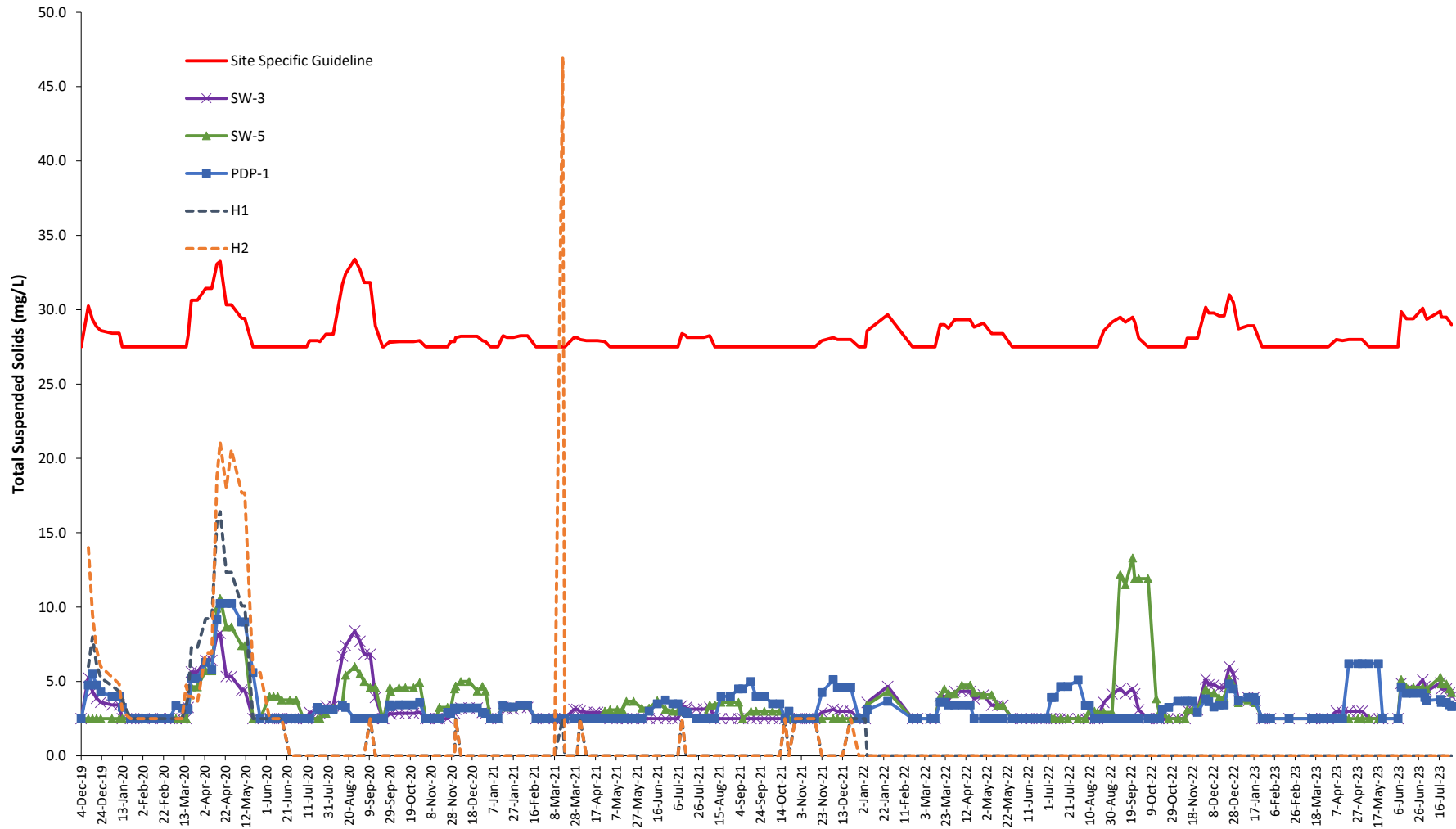
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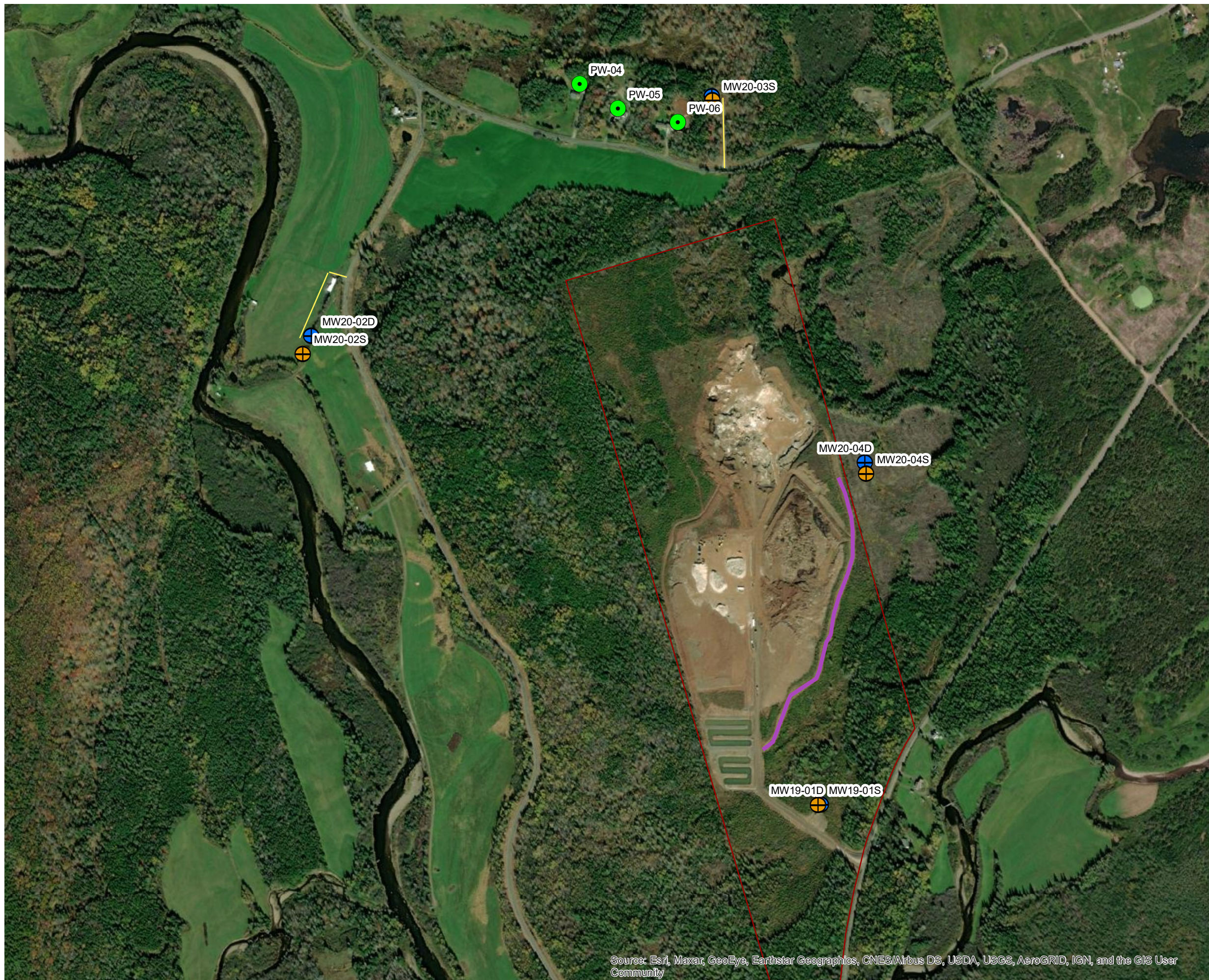
- SurfaceWaterSamplingLocations\_20190712
- ⋯ FIELD IDENTIFIED WATERCOURSE



PROJECT: 18-8346  
 STATUS: DRAFT  
 DATE: 2020/01/06

Figure 2: TSS Monthly Average





HAMMOND RIVER HOLDINGS  
UPHAM EAST GYPSUM QUARRY

**GROUNDWATER MONITORING LOCATIONS**  
FIGURE 3

- Potable Well Leveloggers
- Deep
- Shallow
- Upham Outline

SCALE 1:XXX



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNR

MAP CREATED BY: JTO  
MAP CHECKED BY: GA  
MAP PROJECTION: NB DOUBLE STEREOGRAPHIC

FILE LOCATION: \\DILLON\CAD\DILLON\_DFS\LONDON\LONDON CAD\GIS\VISUAL COMMUNICATIONS DIMXD TEMPLATES\BEIGE - 11X17 LANDSCAPE - LEGEND RIGHT.MXD



PROJECT: 18-8346  
STATUS: DRAFT  
DATE: 06/15/2021



Figure 4: Upham East - Perimeter Monitoring Water Levels

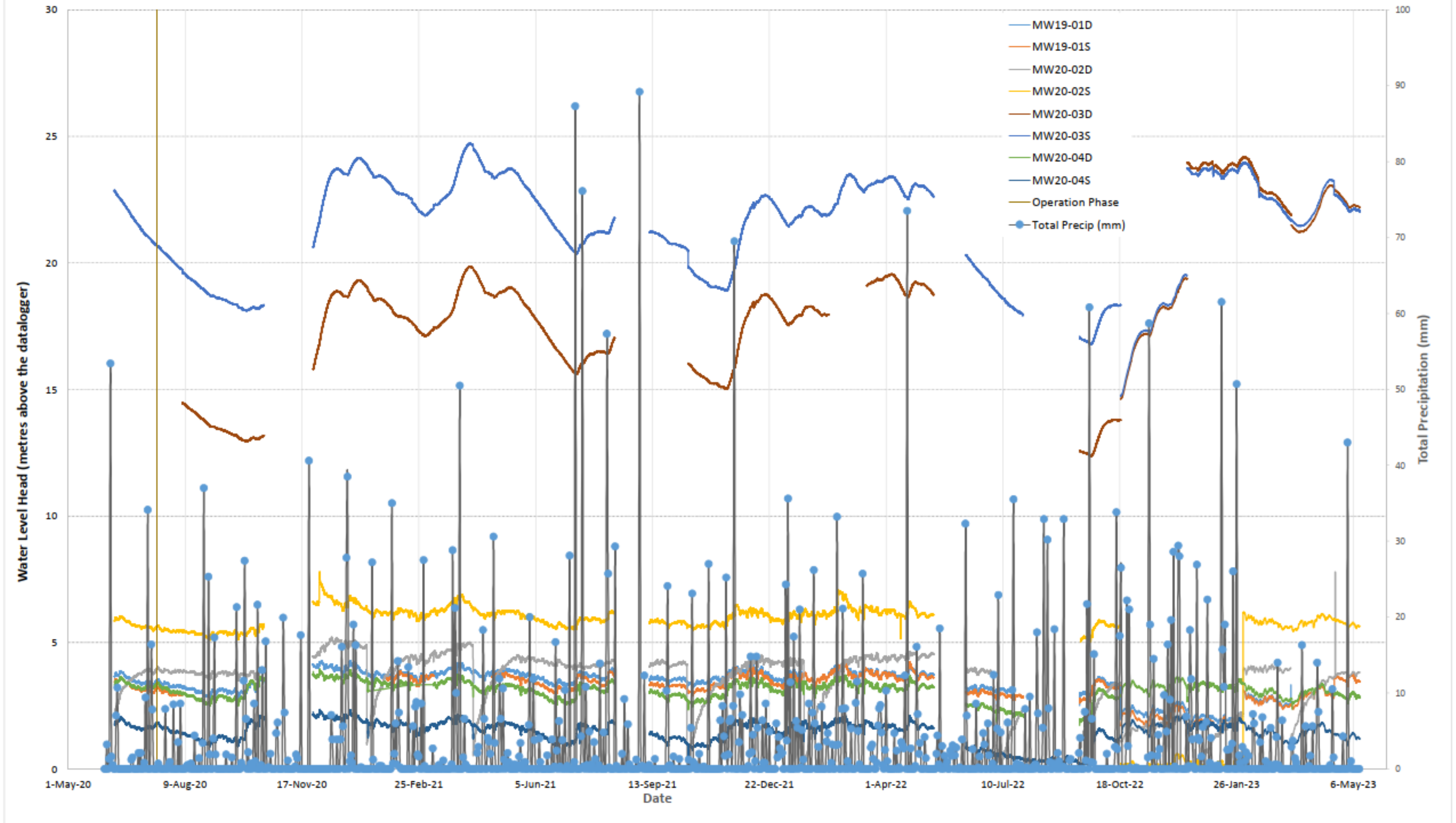


Figure 5: PW-04 Water Levels

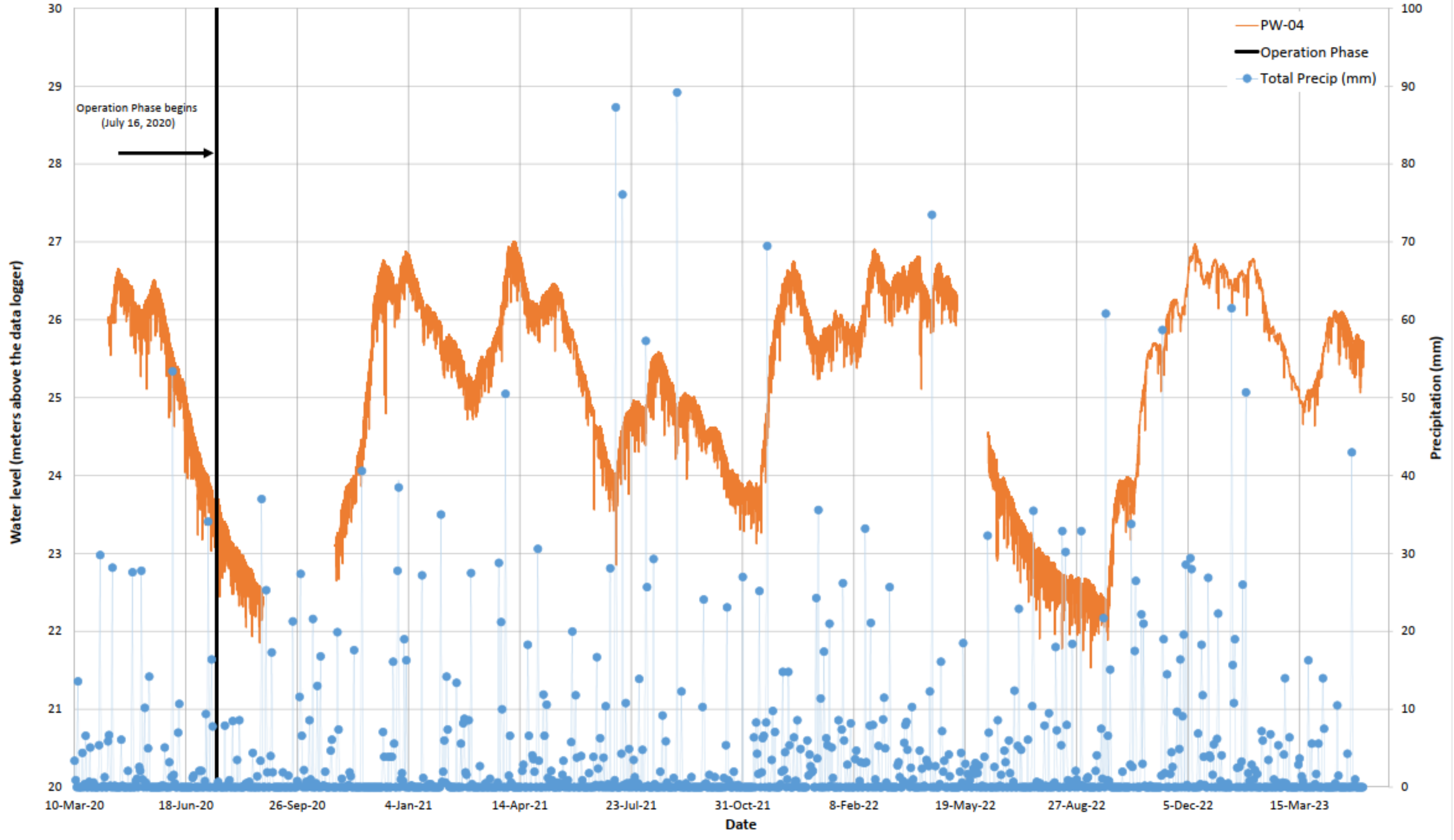


Figure 6: PW-06 Water Levels

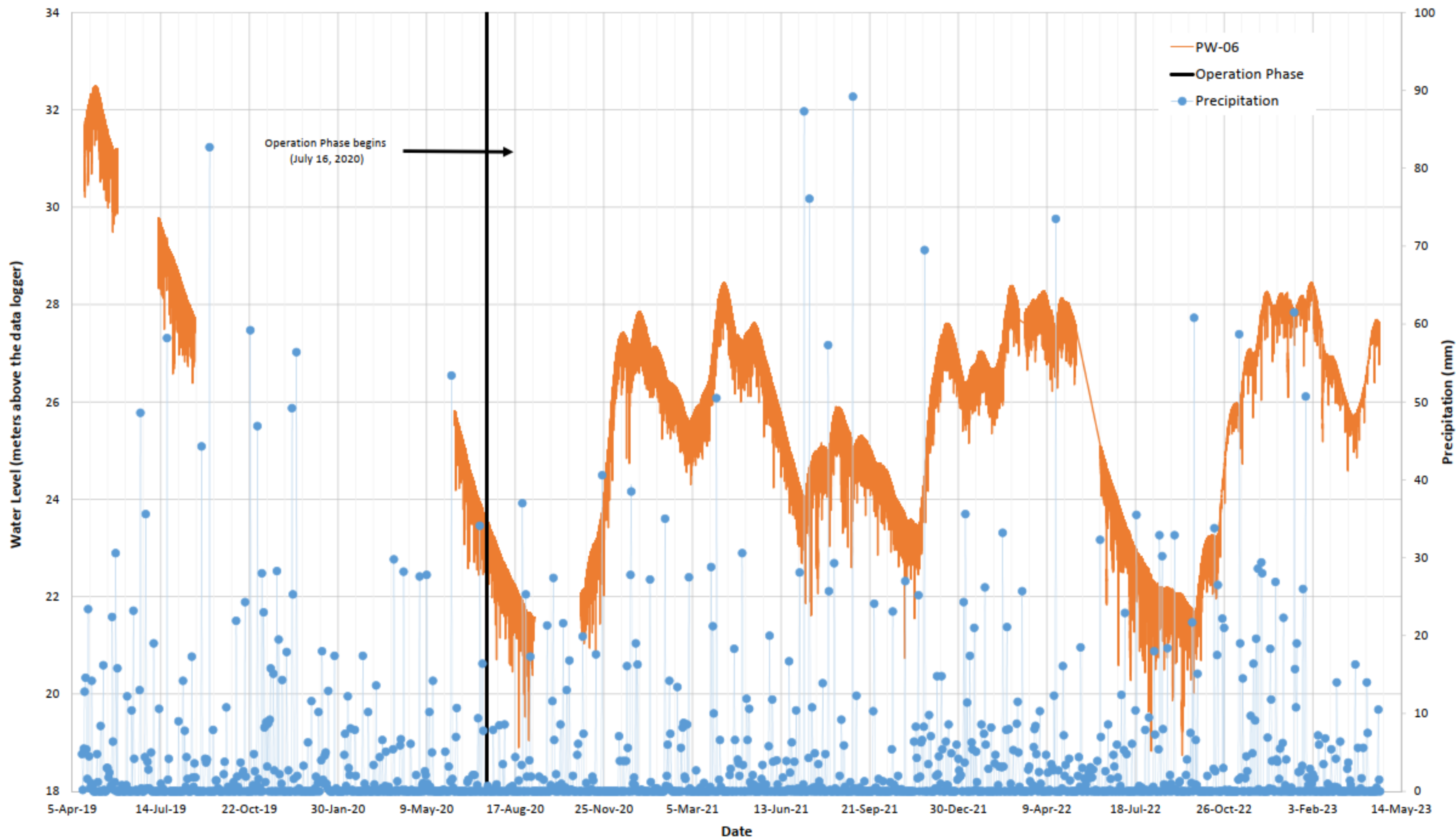
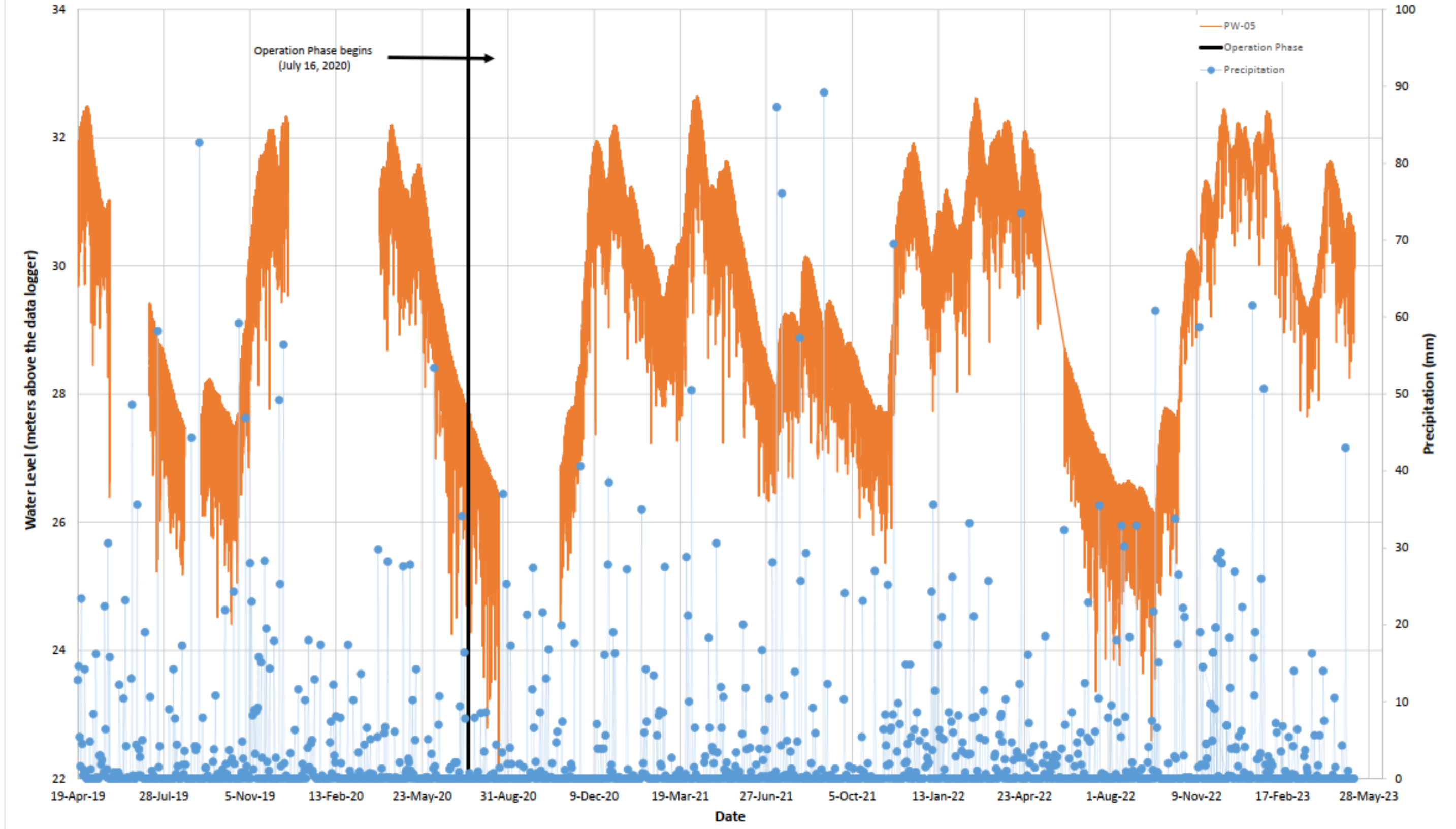


Figure 7: PW-05 Water Levels



# Attachment B

## *Tables*

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

Parameter		Ambient Air Temperature <sup>a</sup>	Precipitation 48 hours prior to sample collection <sup>b</sup>	Water Temperature	Specific Conductivity	Turbidity	Total Suspended Solids <sup>c</sup>
				°C	mS/cm	NTU	mg/L
Units		°C	mm	°C	mS/cm	NTU	mg/L
SW3	7-2-23 11:01	18.8	26.1	19.1	310	1.77	<5
PDP-1	7-2-23 11:10			19.1	363	1.70	<5
SW5	7-2-23 11:20			19.1	364	2.00	<5
SW3	7-4-23 11:12	23.8	46.5	19.1	205	4.24	<5
PDP-1	7-4-23 11:20			19.0	589	3.73	<5
SW5	7-4-23 11:30			19.0	623	3.55	6
SW3	7-17-23 13:48	25.2	0.0	23.0	1422	0.69	11
PDP-1	7-17-23 13:48			23.6	1531	1.02	9
SW5	7-17-23 13:48			23.6	1522	1.31	13
SW3	7-18-23 11:20	17.9	86.0	19.4	71	12.50	<5
PDP-1	7-18-23 11:26			19.3	110	14.10	<5
SW5	7-18-23 11:34			19.3	229	16.80	<5
SW3	7-20-23 9:07	25.3	20.0	21.0	340	1.21	<5
PDP-1	7-20-23 9:15			20.9	452	2.93	<5
SW5	7-20-23 9:20			20.8	449	2.03	<5
SW3	7-26-23 8:55	21.5	0.0	21.0	522	1.02	<5
PDP-1	7-26-23 9:05			20.6	674	0.51	<5
PDP-1 D	7-26-23 9:07			20.6	673	0.47	<5
SW5	7-26-23 9:12			20.5	672	0.23	<5
SW3	7-28-23 11:52	26.4	50.1	19.7	164	6.19	<5
PDP-1	7-28-23 12:02			20.3	450	6.37	<5
SW5	7-28-23 12:07			20.5	460	6.80	<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](https://climate.weather.gc.ca/historical_data/search_historic_data_e.html)

b) Precipitation 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](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

**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
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



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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

**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-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

**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
2-Jun-23		-	-			
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
18-Jun-23		-	-			
21-Jun-23	30.1	-	-	2.5	2.5	2.5
28-Jun-23		-	-			
30-Jun-23	30.1	-	-	6.0	2.5	2.5
2-Jul-23	29.7	-	-	4.7	3.9	4.3
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

**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**.

**Table 3**  
**Air Quality Reporting**  
**Upham East Gypsum Quarry**  
**Upham, New Brunswick**  
**Project No. 21-3049**

Test Start	Duration	Flow Rate	Air Volume	Pressure	Temperature	Initial Filter Weight	Final Filter Weight	TSP Mass	TSP	Site Guideline
		(L/min)	(m <sup>3</sup> )	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
2020-07-22	24 hours	16.70	24.05	752	20.3	14.842	14.865	23000	39.85	120
2020-07-28	24 hours	16.46	23.70	747	24.4	14.826	14.828	1700	2.99	120
2020-08-04	24 hours	16.66	23.99	753	22.8	14.826	14.830	3100	5.38	120
2020-08-09	24 hours	16.74	24.10	752	21.2	14.842	14.844	2200	3.80	120
2020-08-15	24 hours	16.88	24.30	754	19.8	14.824	14.836	11600	19.89	120
2020-08-21	24 hours	16.87	24.30	749	17.9	14.839	14.842	2100	3.60	120
2020-08-27	24 hours	17.06	24.57	743	12.4	14.823	14.845	21700	36.80	120
2020-09-02	24 hours	16.75	24.12	747	18.8	14.842	14.861	19700	34.03	120
2020-09-08	24 hours	17.02	24.51	759	19.1	14.859	14.871	12100	20.57	120
2020-09-14	24 hours	17.62	25.37	756	8.0	14.828	14.837	9300	15.27	120
2020-09-20	24 hours	18.03	25.97	764	4.8	14.835	14.852	17100	27.44	120
2020-09-26	24 hours	17.10	24.62	753	15.3	14.856	14.859	3300	5.59	120
2020-10-02	24 hours	14.43	25.10	753	9.6	14.972	14.959	-12800	-21.25	120
2020-10-08	24 hours	17.69	25.48	748	3.8	14.861	14.889	28800	47.10	120
2020-10-14	24 hours	17.56	25.29	753	7.8	14.883	14.891	8300	13.68	120
2020-10-20	19:31	17.63	20.66	760	9.1	14.875	14.858	-17100	-34.49	120
2020-10-23	21:55	17.34	22.82	750	10.1	14.859	14.865	5600	11.20	120
2020-10-26	21:02	17.71	22.35	752	4.8	14.854	14.864	10100	21.52	120
2020-11-01	24 hours	17.19	24.75	732	5.9	14.873	14.880	7300	12.29	120
2020-11-07	24 hours	17.84	25.68	759	5.9	14.869	14.872	3100	5.03	120
2020-11-13	24 hours	17.79	25.62	748	1.9	14.860	14.861	600	0.98	120
2020-11-19	24 hours	17.63	25.22	756	7.3	14.848	14.850	2200	3.64	120
2020-11-25	24 hours	17.83	25.68	756	4.4	14.850	14.856	6700	10.87	120
2020-12-01	24 hours	17.48	25.18	748	7.0	14.843	14.861	18300	30.28	120
2020-12-07	24 hours	17.88	25.75	740	-2.1	14.834	14.836	1900	3.07	120
2020-12-13	24 hours	17.98	25.90	746	-1.3	14.831	14.839	8300	13.35	120
2020-12-19	24 hours	18.37	26.45	756	-3.6	14.837	14.843	5700	8.98	120
2020-12-25	24 hours	17.34 <sup>a</sup>	22.82 <sup>a</sup>	753 <sup>a</sup>	12.3 <sup>a</sup>	14.840	14.850	10000	18.26	120
2020-12-31	24 hours	18.58	26.76	759	-5.8	14.845	14.850	4800	7.47	120
2021-01-06	24 hours	18.00	24.73	744	-2.7	14.836	14.852	16300	27.46	120
2021-01-12	24 hours	16.70	24.74	749	-6.7	14.854	14.872	18200	30.65	120
2021-01-18	24 hours	17.52	25.52	737	-0.8	14.868	14.877	8600	14.04	120
2021-01-24	24 hours	16.70	24.03	737	-8.0	14.823	14.827	4200	7.28	120
2021-01-30	24 hours	16.70	24.03	750	-11.2	14.829	14.833	3600	6.24	120
2021-02-05	24 hours	17.90	25.80	744	-0.9	14.850	14.866	15800	25.52	120
2021-02-11	24 hours	16.70	24.05	750	-12.6	14.829	14.834	5300	9.18	120
2021-02-17	24 hours	16.70	24.05	755	-9.9	14.818	14.821	2800	4.85	120
2021-02-23	24 hours	17.70	25.49	737	-0.6	14.891	14.897	6000	9.81	120
2021-03-01	24 hours	17.87	25.74	741	-1.6	14.858	14.866	7700	12.46	120
2021-03-07	24 hours	16.70	24.05	753	-8.9	14.840	14.851	11800	20.44	120
2021-03-13	24 hours	17.92	25.81	743	-1.3	14.828	14.835	6900	11.14	120
2021-03-19	24 hours	16.70	24.05	750	-5.3	14.819	14.823	4600	7.97	120
2021-03-25	24 hours	17.52	24.23	754	8.9	14.820	14.826	6100	10.49	120
2021-03-31	24 hours	16.70	24.05	756	6.8	14.823	14.831	8600	14.90	120

**Table 3**  
**Air Quality Reporting**  
**Upham East Gypsum Quarry**  
**Upham, New Brunswick**  
**Project No. 21-3049**

Test Start	Duration	Flow Rate	Air Volume	Pressure	Temperature	Initial Filter Weight	Final Filter Weight	TSP Mass	TSP	Site Guideline
		(L/min)	(m <sup>3</sup> )	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
2021-04-06	24 hours	16.70	24.05	746	4.1	14.822	14.835	13400	23.22	120
2021-04-12	24 hours	17.64	25.55	749	5.2	14.812	14.817	5100	8.32	120
2021-04-18	24 hours	16.70	24.05	742	2.6	14.815	14.825	10000	17.33	120
2021-04-24	24 hours	17.27	24.05	743	8.8	14.815	14.826	10400	18.02	120
2021-04-30	24 hours	17.24	24.82	735	6.4	14.814	14.921	107000	11.75	120
2021-05-06 <sup>b</sup>	21.08	17.42	21.08	750	8.8	14.840	14.850	10100	19.96	120
2021-05-12 <sup>b</sup>	-	17.49	25.19	748	7.1	14.822	14.830	7800	12.90	120
2021-05-18 <sup>b</sup>	19.21	17.53	20.35	757	9.8	14.830	14.838	8700	17.81	120
2021-05-27 <sup>c</sup>	-	-	-	-	-	-	-	-	-	120
2021-05-31	24 hours	16.70	24.05	753	14.2	14.829	14.835	5800	10.05	120
2021-06-04	33.46	16.79	34.02	746	18.1	14.831	14.839	7900	9.68	120
2021-06-10	24 hours	17.42	25.09	754	10.4	14.840	14.844	4300	7.14	120
2021-06-16	24 hours	17.48	25.18	743	5.6	14.849	14.854	5600	9.27	120
2021-06-22 <sup>d</sup>	24 hours	17.23	24.82	744	9.7	14.870	14.879	9100	15.28	120
2021-06-24	24 hours	17.94	25.83	762	5.4	14.846	14.847	1200	1.94	120
2021-06-30	24 hours	17.01	24.29	746	14.4	14.885	14.889	4200	7.20	120
2021-07-06	24 hours	17.30	24.91	746	9.3	14.866	14.868	1700	2.84	120
2021-07-12	24 hours	17.60	24.05	759	9.5	14.848	14.851	3000	5.20	120
2021-07-18	24 hours	16.70	24.05	753	11.8	14.847	14.852	5200	9.01	120
2021-07-24	24 hours	17.51	25.21	753	8.8	14.831	14.838	6900	11.40	120
2021-07-30	24 hours	17.43	25.10	742	5.6	14.830	14.840	10000	16.60	120
2021-08-05	24 hours	17.47	25.15	755	10.0	14.821	14.835	13900	23.03	120
2021-08-10	24 hours	17.21	24.78	753	13.5	14.822	14.830	8100	13.62	120
2021-08-11	24 hours	17.18	23.42	752	13.6	14.878	14.890	12000	21.35	120
2021-08-17	24 hours	17.43	24.05	756	11.2	14.825	14.836	10200	17.67	120
2021-08-23	24 hours	17.19	24.75	750	12.4	14.844	14.859	14500	24.41	120
2021-08-29	24 hours	17.49	25.18	755	9.8	14.824	14.830	6100	10.09	120
2021-09-04	24 hours	16.70	24.05	745	3.1	14.822	14.832	10600	18.36	120
2021-09-09	24 hours	17.15	24.70	747	11.9	14.818	14.824	5600	9.45	120
2021-09-16	24 hours	18.05	24.05	759	2.7	14.844	14.859	15700	27.20	120
2021-09-22	24 hours	18.68	25.46	757	7.4	14.821	14.832	11700	19.15	120
2021-09-28	24 hours	17.45	25.13	746	7.2	14.821	14.830	9100	15.09	120
2021-10-04	24 hours	18.30	26.35	755	-2.6	14.820	14.824	3700	5.85	120
2021-10-10	24 hours	17.98	25.89	757	2.7	14.818	14.823	5000	8.05	120
2021-10-16	24 hours	17.16	24.70	747	12.1	14.815	14.822	6600	11.13	120
2021-10-22	24 hours	17.10	24.63	747	13.2	14.816	14.820	3200	5.41	120
2021-10-28	24 hours	17.61	25.36	749	5.8	14.837	14.838	1200	1.97	120
2021-11-03	24 hours	18.17	26.17	754	-1.1	14.825	14.835	10000	15.92	120
2021-11-09	24 hours	17.76	25.58	751	3.6	14.821	14.836	14400	23.46	120
2021-11-15	24 hours	17.67	25.45	739	0.8	14.831	14.837	5700	9.33	120
2021-11-21	24 hours	17.06	25.72	756	3.9	14.834	14.838	3800	6.16	120
2021-11-27	24 hours	17.98	25.90	737	-4.7	14.839	14.846	7400	11.90	120
2021-12-03	24 hours	18.26	26.29	742	-6.8	14.840	14.849	9800	15.53	120
2021-12-09	24 hours	19.23	27.69	755	-15.9	14.823	14.824	1000	1.50	120
2021-12-15	24 hours	18.55	26.72	760	-4.7	14.626	14.841	215300	<b>335.73<sup>e</sup></b>	120
2021-12-17	24 hours	17.98	25.89	748	-0.6	14.819	14.829	9600	15.45	120
2021-12-23	24 hours	18.90	27.22	747	-14.2	14.835	14.839	3800	5.82	120
2021-12-29	24 hours	18.23	26.25	750	-3.6	14.842	14.850	7700	12.22	120

**Table 3**  
**Air Quality Reporting**  
**Upham East Gypsum Quarry**  
**Upham, New Brunswick**  
**Project No. 21-3049**

Test Start	Duration	Flow Rate	Air Volume	Pressure	Temperature	Initial Filter Weight	Final Filter Weight	TSP Mass	TSP	Site Guideline
		(L/min)	(m <sup>3</sup> )	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
2022-01-04	24 hours	18.89	27.20	755	-11.2	14.843	14.853	10300	15.78	120
2022-01-10	24 hours	19.19	27.63	749	-17.2	14.825	14.831	6600	9.95	120
2022-01-16	24 hours	18.70	26.08	755	-19.9	14.842	14.865	23300	37.23	120
2022-01-22	24 hours	19.18	25.97	752	-15.5	14.829	14.851	21300	34.17	120
2022-01-28	24 hours	18.59	26.78	753	-7.8	14.833	14.861	28600	44.50	120
2022-02-03	24 hours	18.24	26.26	755	-1.7	14.894	14.940	45300	71.88	120
2022-02-09	24 hours	18.11	26.07	748	-2.5	14.856	14.858	2100	3.36	120
2022-02-15	24 hours	19.70	28.37	762	-19.5	14.843	14.844	1700	2.50	120
2022-02-21 <sup>c</sup>	9.5 hours	-	-	-	-	-	-	-	-	120
2022-02-23	24 hours	18.41	26.51	749	-6.4	14.837	14.844	7100	11.16	120
2022-03-01	24 hours	18.43	26.28	751	-5.9	14.827	14.831	3300	5.23	120
2022-03-08	24 hours	18.37	26.45	748	-6.2	14.834	14.834	500	0.79	120
2022-03-14	24 hours	18.11	26.08	756	0.2	14.814	14.818	4300	6.87	120
2022-03-20	24 hours	17.53	25.24	741	3.9	14.830	14.833	3800	6.27	120
2022-03-26	24 hours	17.51	25.22	735	2.0	14.839	14.847	7500	12.39	120
2022-04-01	24 hours	17.34	24.98	735	4.4	14.847	14.852	5200	8.67	120
2022-04-07	24 hours	17.77	25.59	753	4.4	14.848	14.849	200	0.33	120
2022-04-13	24 hours	17.59	25.53	752	6.6	14.855	14.856	600	0.98	120
2022-04-19	24 hours	17.69	25.47	746	3.4	14.840	14.872	31700	51.86	120
2022-04-25	24 hours	17.65	25.42	757	7.8	14.831	14.845	14800	24.26	120
2022-05-01	24 hours	17.84	25.70	754	3.7	14.825	14.848	22700	36.80	120
2022-05-07	24 hours	17.82	25.67	755	4.4	14.823	14.832	9600	15.58	120
2022-05-13	24 hours	17.06	24.57	754	16.3	14.821	14.857	36200	61.39	120
2022-05-19	24 hours	17.20	24.77	749	12.0	14.816	14.829	13300	22.37	120
2022-05-25	24 hours	17.44	25.11	760	12.4	14.828	14.829	700	1.16	120
2022-05-31	24 hours	17.46	25.14	751	8.8	14.850	14.851	900	1.49	120
2022-06-06	24 hours	17.39	25.04	753	10.5	14.813	14.826	13800	22.96	120
2022-06-12	24 hours	16.92	24.36	752	18.3	14.825	14.833	7200	12.32	120
2022-06-18	24 hours	16.81	24.21	739	15.2	14.843	14.848	5600	9.64	120
2022-06-24	24 hours	16.93	24.38	751	17.4	14.828	14.858	30300	51.78	120
2022-06-30	24 hours	16.95	24.41	752	18.0	14.826	14.839	12900	22.02	120
2022-07-06	24 hours	17.10	24.63	747	13.0	14.829	14.829	400	0.68	120
2022-07-12	24 hours	16.59	24.29	750	17.7	14.826	14.836	9200	15.78	120
2022-07-18	24 hours	16.57	23.85	746	22.1	14.821	14.840	18500	32.32	120
2022-07-24	24 hours	16.70	24.05	749	24.4	14.861	14.862	1500	2.60	120
2022-07-30	24 hours	16.73	24.10	749	20.4	14.831	14.832	1000	1.73	120
2022-08-05	24 hours	16.66	24	755	23.9	14.8283	14.8427	14400	25.00	120
2022-08-11	24 hours	16.76	24.13	750	19.9	14.8321	14.8358	3700	6.39	120
2022-08-17	24 hours	16.95	24.41	749	16.5	14.8601	14.8771	17000	29.02	120
2022-08-23	24 hours	16.89	24.33	749	17.2	14.8649	14.8726	7700	13.19	120
2022-08-29	24 hours	16.7	24.05	753	17.3	14.8706	14.8811	10500	18.19	120

**Table 3**  
**Air Quality Reporting**  
**Upham East Gypsum Quarry**  
**Upham, New Brunswick**  
**Project No. 21-3049**

Test Start	Duration	Flow Rate	Air Volume	Pressure	Temperature	Initial Filter Weight	Final Filter Weight	TSP Mass	TSP	Site Guideline
		(L/min)	(m <sup>3</sup> )	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
2022-09-04	24 hours	17.11	24.64	755	16.2	14.8635	14.8653	1800	3.04	120
2022-09-10	24 hours	17.03	24.52	755	17.6	14.8454	14.8544	9000	15.29	120
2022-09-16	24 hours	17.32	24.95	749	10.3	14.8614	14.8654	4000	6.68	120
2022-09-22	24 hours	16.93	24.38	741	13.6	14.8603	14.8822	21900	37.43	120
2022-09-28	24 hours	17.12	24.65	750	13.9	14.8503	14.8595	9200	15.55	120
2022-10-04	24 hours	17.89	25.76	757	4.3	14.8573	14.8668	9500	15.37	120
2022-10-10	24 hours	17.92	25.8	755	2.7	14.8456	14.8551	9500	15.34	120
2022-10-16	24 hours	17.04	24.54	749	14.8	14.8455	14.8589	13400	22.75	120
2022-10-22	24 hours	17.75	25.56	758	6.6	14.859	14.8611	2100	3.42	120
2022-10-28	24 hours	18.17	26.17	762	1.6	14.8436	14.8609	17300	27.54	120
2022-11-03	24 hours	17.95	25.85	758	3.8	14.8588	14.8684	9600	15.47	120
2022-11-09	24 hours	18.24	26.27	762	0.7	14.8484	14.857	8600	13.64	120
2022-11-15	24 hours	18.38	26.42	759	-2	14.8242	14.8295	5300	8.36	120
2022-11-21	24 hours	18.51	26.66	752	-7.2	14.8173	14.8216	4300	6.72	120
2022-11-27	24 hours	17.89	25.66	743	0.1	14.8212	14.8304	9200	14.94	120
2022-12-03	24 hours	18.02	25.95	756	1.9	14.8070	14.8185	11500	18.46	120
2022-12-09	24 hours	18.36	26.16	753	-1.5	14.8096	14.8232	13600	21.66	120
2022-12-15	24 hours	18.25	26.36	752	-3.2	14.8244	14.8284	4000	6.32	120
2022-12-21	24 hours	18.65	26.86	763	-5.4	14.8111	14.8211	10000	15.51	120
2022-12-27	24 hours	18.5	26.05	752	-8.1	14.8281	14.838	9900	15.83	120
2023-01-02	24 hours	18.14	26.12	749	-2.5	14.8257	14.8346	8900	14.1973	120
2023-01-08	24 hours	18.65	26.85	752	-9.2	14.8261	14.8401	14000	21.7256	120
2023-01-14	24 hours	18	25.05	745	-2.3	14.8136	14.8289	15300	25.4491	120
2023-01-20	24 hours	18.1	26.05	743	-4.2	14.8156	14.8251	9500	15.1951	120
2023-01-26	25 hours	17.76	25.57	740	-0.2	14.8216	14.8254	3800	6.1922	120
2023-02-01	26 hours	17.93	25.83	742	-17	14.8256	14.8318	6200	10.0013	120
2023-02-07	27 hours	18.05	26.86	756	-7.5	14.8227	14.8464	23700	36.7647	120
2023-02-13	28 hours	18.2	26.05	744	-5.3	14.8097	14.8137	4000	6.3980	120
2023-02-19	29 hours	18.43	26.53	757	-4	14.8066	14.8448	38200	59.9950	120
2022-02-25	30 hours	19.29	27.77	757	-15.8	14.8061	14.8096	3500	5.2515	120
2022-03-03	31 hours	18.29	26.33	745	-5.8	14.8121	14.8128	700	1.1077	120
2022-03-09	32 hours	18.15	26.13	750	-2.4	14.8113	14.8218	10500	16.7432	120
2022-03-15	33 hours	17.75	25.56	736	-1.1	14.8158	14.8232	7400	12.0631	120
2022-03-21	34 hours	18.14	26.12	755	-0.1	14.8191	14.821	1900	3.0309	120
2023-03-27	35 hours	17.97	25.87	750	0	14.8189	14.8275	8600	13.8513	120
2023-04-02	24 hours	16.7	26.05	739	0.9	14.8275	14.8327	5200	8.3173	120
2023-04-08	24 hours	18.27	26.34	756	-1.8	14.8468	14.8785	31700	50.1455	120
2023-04-14	24 hours	17.34	24.97	747	9.4	14.8419	14.8581	16200	27.0324	120
2023-04-20	24 hours	17.61	25.36	751	6.3	14.8514	14.8526	1200	1.9716	120
2023-04-26	24 hours	17.73	25.54	757	6.6	14.8493	14.8509	1600	2.6103	120
2023-05-02	24 hours	17.23	24.81	743	9.2	14.8552	14.8613	6100	10.2445	120
2023-05-08	24 hours	17.32	24.94	741	7.5	14.8542	14.8562	2000	3.3414	120
2023-05-14	24 hours	17.48	25.16	750	8.2	14.8438	14.8484	4600	7.6179	120
2023-05-20	24 hours	17.13	24.67	747	12.7	14.8406	14.8449	4300	7.2625	120
2023-05-26	24 hours	17.64	25.4	754	6.7	14.8725	14.8796	7100	11.6470	120



**Table 3**  
**Air Quality Reporting**  
**Upham East Gypsum Quarry**  
**Upham, New Brunswick**  
**Project No. 21-3049**

Test Start	Duration	Flow Rate	Air Volume	Pressure	Temperature	Initial Filter Weight	Final Filter Weight	TSP Mass	TSP	Site Guideline
		(L/min)	(m <sup>3</sup> )	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
2023-06-01	24 hours	16.67	24	751	22.9	14.8674	14.8721	4700	8.1597	120
2023-06-07	24 hours	17.05	24.55	738	10.4	14.8511	14.8617	10600	17.9905	120
2023-06-13	24 hours	16.48	23.74	746	23.7	14.8591	14.8636	4500	7.8981	120
2023-06-19	24 hours	17.31	24.92	752	17.6	14.8597	14.8645	4800	8.0257	120
2023-06-25	24 hours	16.59	23.85	747	21.9	14.8469	14.8647	17800	31.0971	120
2023-07-01	24 hours	16.87	24.29	756	20.1	14.8862	14.8999	13700	23.5008	120
2023-07-07	24 hours	16.53	23.81	749	23.9	14.8988	14.9014	2600	4.5499	120
2023-07-13	24 hours	16.58	23.07	751	23.9	14.8734	14.877	3600	6.5020	120
2023-07-19	24 hours	16.67	24	751	21.8	14.8770	14.8823	5300	9.2014	120
2023-07-25	24 hours	16.79	24.18	753	21	14.8780	14.8801	2100	3.6187	120
2023-07-31	24 hours	16.92	24.36	748	17	14.8673	14.8698	2500	4.2761	120

**Notes**

24 hour sample collected by BGI PQ-100 air sampler every sixth day for the duration of the quarry operation each year.

- a) Values were not recorded; temperature and pressure calculated based on Environment Canada data recorded at the Saint John airport weather station. Flow rate and Air Volume were approximated based on a previous day's recording with similar temperature and pressure.
- b) Battery was low in machine, full run was not completed.
- c) Run was not completed. Battery was replaced.
- d) 24 hour air sample recorded at 2349 Route 820, Upham, NB.
- e) Result was above the maximum allowable limit due to operator error. The sample was recollected on December 17, 2021.

# Attachment C

## *Analytical Certificates*

Report ID: 489000-IAS  
Report Date: 12-Jul-23  
Date Received: 05-Jul-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:	489000-1	489000-2	489000-3
Client Sample ID:	SW-3	SW-5	PDP-1
Date Sampled:	2-Jul-23	2-Jul-23	2-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>	
Solids - Total Suspended	mg/L	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: 489000-IAS  
Report Date: 12-Jul-23  
Date Received: 05-Jul-23

## CERTIFICATE OF ANALYSIS

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



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

### Methods

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

Report ID: 489003-IAS  
Report Date: 12-Jul-23  
Date Received: 05-Jul-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:	489003-1	489003-2	489003-3
Client Sample ID:	SW-3	SW-5	PDP-1
Date Sampled:	4-Jul-23	4-Jul-23	4-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>	
Solids - Total Suspended	mg/L	5	< 5      6      < 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: 489003-IAS  
Report Date: 12-Jul-23  
Date Received: 05-Jul-23

## CERTIFICATE OF ANALYSIS

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



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

### Methods

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

Report ID: 490711-IAS  
Report Date: 24-Jul-23  
Date Received: 18-Jul-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:	490711-1	490711-2	490711-3	490711-4
Client Sample ID:	SW3	SW5	PDP-1	PDP-1 Duplicate
Date Sampled:	18-Jul-23	18-Jul-23	18-Jul-23	18-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>		
Solids - Total Suspended	mg/L	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: 490711-IAS  
Report Date: 24-Jul-23  
Date Received: 18-Jul-23

## CERTIFICATE OF ANALYSIS

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



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

### Methods

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



Report ID: 491348-IAS  
Report Date: 27-Jul-23  
Date Received: 21-Jul-23

## CERTIFICATE OF ANALYSIS

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

**rpc**

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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:	491348-1	491348-2	491348-3
Client Sample ID:	SW-3	SW-5	PDP-1
Date Sampled:	20-Jul-23	20-Jul-23	20-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>	
Solids - Total Suspended	mg/L	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: 491348-IAS  
Report Date: 27-Jul-23  
Date Received: 21-Jul-23

## CERTIFICATE OF ANALYSIS

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



921 College Hill Rd  
Fredericton NB  
Canada E3B 6Z9  
Tel: 506.452.1212  
Fax: 506.452.0594  
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### Methods

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

Report ID: 492137-IAS  
Report Date: 02-Aug-23  
Date Received: 27-Jul-23

## CERTIFICATE OF ANALYSIS

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

**rpc**

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Fredericton NB  
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Tel: 506.452.1212  
Fax: 506.452.0594  
www.rpc.ca

Attention: Daniel Guest

**Project #: 17-5121**

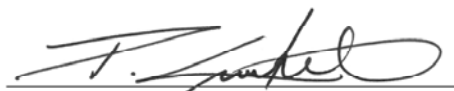
Location: Upham

### Analysis of Water

RPC Sample ID:	492137-1	492137-2	492137-3	492137-4
Client Sample ID:	SW-3	SW-5	PDP-1	PDP-1
Date Sampled:	26-Jul-23	26-Jul-23	26-Jul-23	Duplicate 26-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>		
Solids - Total Suspended	mg/L	5	< 5	< 5

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

RL = Reporting Limit



Peter Crowhurst, B.Sc., C.Chem.  
Director  
Inorganic Analytical Chemistry



Brannen Burhoe  
Supervisor  
Inorganic Analytical Services

Report ID: 492137-IAS  
Report Date: 02-Aug-23  
Date Received: 27-Jul-23

## CERTIFICATE OF ANALYSIS

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



921 College Hill Rd  
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www.rpc.ca

### Methods

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

Report ID: 492398-IAS  
Report Date: 04-Aug-23  
Date Received: 31-Jul-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:	492398-1	492398-2	492398-3
Client Sample ID:	SW-3	SW-5	PDP-1
Date Sampled:	28-Jul-23	28-Jul-23	28-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>	
Solids - Total Suspended	mg/L	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: 492398-IAS  
Report Date: 04-Aug-23  
Date Received: 31-Jul-23

## CERTIFICATE OF ANALYSIS

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



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

### Methods

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

Report ID: 490984-IAS  
Report Date: 24-Jul-23  
Date Received: 19-Jul-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:	490984-1	490984-2	490984-3
Client Sample ID:	SW3	SW5	PDP-1
Date Sampled:	17-Jul-23	17-Jul-23	17-Jul-23
<b>Analytes</b>	<b>Units</b>	<b>RL</b>	
Solids - Total Suspended	mg/L	5	11      13      9

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: 490984-IAS  
Report Date: 24-Jul-23  
Date Received: 19-Jul-23

## CERTIFICATE OF ANALYSIS

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



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

### Methods

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



# Attachment D

## *Blast Reports*

July 11, 2023

Project No.: 234601.00

Mr. Daniel Guest

**Hammond River Holdings**

Via email: [Guest.Daniel@AtlanticWallboard.com](mailto:Guest.Daniel@AtlanticWallboard.com)

**Re: Blast Vibration Monitoring – Blast No. 2023-22 – 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 14:25 on July 11, 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. 2023-22 – July 11, 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)	14:25	1,310 m S	< 0.5 mm/s	<120	Unit was not triggered
2. Civic No. 4126 Route 111 (PW-10)		882 m S	0.59 mm/s @ 73 Hz	115	-
3. Civic No. 4150 Route 111 (PW-13)		716 m SE	1.35 mm/s @ 73 Hz	111	-
4. Civic No. 2447 Route 820 (PW-07)		925 m NE	0.76 mm/s @ 34 Hz	117	-
5. PW-03 - Cottage Route 820		679 m N	< 0.5 mm/s	<120	Unit was not triggered
6. Civic No. 2341 Route 820 (PW-05)		690 m NW	0.68 mm/s @ >100 Hz	115	-
7. Civic No. 50 Myron Road (PW-15)		922 m NW	< 0.5 mm/s	<120	Unit was not triggered
8. Civic No. 86 Myron Road (PW-16)		833 m W	1.40 mm/s @ 57 Hz	114	-
9. Civic No. 220 Myron Road (PW-01)		1,330 m S	< 0.5 mm/s	<120	Units were not triggered
10. Civic No. 2337 Route 820 (PW-04)		779 m NW	< 0.5 mm/s	<120	
11. Civic No. 4140 Route 111 (PW-12)		807 m S	1.27 mm/s @ 73 Hz	112	-
<b>maximum limits as per Approval to Operate</b>			<b>12.5 mm/s</b>	<b>128 dB</b>	

*Mr. Daniel Guest - Hammond River Holdings*

*July 11, 2023*

*Project No.: 234601.00 - Blast No.: 2023-22*

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**

A handwritten signature in blue ink, appearing to read 'Robert Y. Cyr', with a stylized flourish at the end.

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

This document was prepared for the party indicated herein. The material and information in the document reflects CBCL Limited's opinion and best judgment based on the information available at the time of preparation. Any use of this document or reliance on its content by third parties is the responsibility of the third party. CBCL Limited accepts no responsibility for any damages suffered as a result of third party use of this document.

## Attachment A

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### *Blast Record*

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### IDENTIFICATION:

<b>Blasting Contractor:</b>	<u>Gulf Operators Ltd.</u>		
<b>Blaster's Certification No.:</b>	<u>1318</u>	<b>Blaster's Name:</b>	<u>Daniel Blanchard</u>
<b>Blast Location:</b>	<u>N 45°28'52.2" W 65°37'59.7" (see attached sketch)</u>		
<b>Type of Rock:</b>	<u>Anhydrate/Gypsum</u>	<b>Est. Vol. or Tonnage:</b>	<u>19,358 tonnes</u>
<b>Weather at time of Blast:</b>	<u>Cloudy</u>	<b>Air Temp.:</b>	<u>20°C</u>
<b>Est. Wind Speed :</b>	<u>≈ 10 km/h</u>	<b>Wind Direction:</b>	<u>NW</u>
<b>Cloud Cover:</b>	<u>Yes – overcast</u>	<b>Precipitation:</b>	<u>No</u>

### BLAST DESIGN:

<b>Total No. Holes:</b>	<u>124</u>	<b>Hole Diameter:</b>	<u>4.5"</u>
<b>Average Depth:</b>	<u>5.4 m – 6.7 m</u>	<b>Spacing:</b>	<u>12 ft x 12 ft</u>
<b>No. Holes per Delay:</b>	<u>3</u>	<b>Collar Length:</b>	<u>7 ft</u>
<b>Delay between Holes:</b>	<u>25 ms</u>	<b>Delay between Rows:</b>	<u>42 &amp; 84 ms</u>
<b>Initiation Method:</b>	<u>Non-Electric</u>		
<b>Weight of Explosives per Delay:</b>	<u>Max.: 160 kg</u>		
<b>Type and weight of Explosives for Blast:</b>	<u>5,847 kg – Titan XL-1000</u>		

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



### BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### BLAST MONITORING

<b>Distance to the Nearest Structure:</b>	<u>679 m</u>
<b>Direction to the Nearest Structure:</b>	<u>North</u>
<b>Structure Type:</b>	<u>Cottage</u>
<b>Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):</b>	<u>53.7</u>

### SAFETY:

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

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

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #1

Make, Model and Serial # of unit:	<u>InstanTel Minimate, Serial #5372</u>
Calibration Date:	<u>February 28, 2023</u>
Location of seismograph:	<u>Civic Number 4079 Route 111 (PW-09)</u>
Distance and Direction from Blast:	<u>1,310 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #2

Make, Model and Serial # of unit:	<u>InstanTel Micromate, Serial #20205</u>
Calibration Date:	<u>May 30, 2023</u>
Location of seismograph:	<u>Civic Number 4126 Route 111 (PW-10)</u>
Distance and Direction from Blast:	<u>882 m South</u>
Transverse Particle Velocity:	<u>0.47 mm/s @ 51 Hz</u>
Vertical Particle Velocity:	<u>0.59 mm/s @ 73 Hz</u>
Longitudinal Particle Velocity:	<u>0.36 mm/s @ 64 Hz</u>
Peak Particle Velocity:	<u>0.59 mm/s @ 73 Hz</u>
Maximum Airblast:	<u>115 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #3

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20204</u>
Calibration Date:	<u>June 12, 2023</u>
Location of seismograph:	<u>Civic Number 4150 Route 111 (PW-13)</u>
Distance and Direction from Blast:	<u>716 m Southeast</u>
Transverse Particle Velocity:	<u>0.85 mm/s @ 73 Hz</u>
Vertical Particle Velocity:	<u>0.89 mm/s @ 73 Hz</u>
Longitudinal Particle Velocity:	<u>1.35 mm/s @ 73 Hz</u>
Peak Particle Velocity:	<u>1.35 mm/s @ 73 Hz</u>
Maximum Airblast:	<u>111 dB(L)</u>

### Data Collection – Seismometer #4

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5673</u>
Calibration Date:	<u>April 5, 2023</u>
Location of seismograph:	<u>Civic Number 2447 Route 820 (PW-07)</u>
Distance and Direction from Blast:	<u>925 m Northeast</u>
Transverse Particle Velocity:	<u>0.76 mm/s @ 34 Hz</u>
Vertical Particle Velocity:	<u>0.32 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>0.51 mm/s @ 57 Hz</u>
Peak Particle Velocity:	<u>0.76 mm/s @ 34 Hz</u>
Maximum Airblast:	<u>117 dB(L)</u>



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #5

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18198</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Cottage - PW-03 - Route 820</u>
Distance and Direction from Blast:	<u>679 m North</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #6

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20203</u>
Calibration Date:	<u>May 30, 2023</u>
Location of seismograph:	<u>Civic Number 2341 Route 820 (PW-05)</u>
Distance and Direction from Blast:	<u>690 m Northwest</u>
Transverse Particle Velocity:	<u>0.68 mm/s @ &gt;100 Hz</u>
Vertical Particle Velocity:	<u>0.55 mm/s @ 51 Hz</u>
Longitudinal Particle Velocity:	<u>0.60 mm/s @ 32 Hz</u>
Peak Particle Velocity:	<u>0.68 mm/s @ &gt;100 Hz</u>
Maximum Airblast:	<u>115 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #7

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18187</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Civic Number 50 Myron Road (PW-15)</u>
Distance and Direction from Blast:	<u>922 m Northwest</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #8

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5676</u>
Calibration Date:	<u>March 8, 2023</u>
Location of seismograph:	<u>Civic Number 86 Myron Road (PW-16)</u>
Distance and Direction from Blast:	<u>833 m West</u>
Transverse Particle Velocity:	<u>1.40 mm/s @ 57 Hz</u>
Vertical Particle Velocity:	<u>1.14 mm/s @ 64 Hz</u>
Longitudinal Particle Velocity:	<u>1.33 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>1.40 mm/s @ 57 Hz</u>
Maximum Airblast:	<u>114 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #9

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5371</u>
Calibration Date:	<u>July 27, 2022</u>
Location of seismograph:	<u>Civic Number 220 Myron Road (PW-01)</u>
Distance and Direction from Blast:	<u>1,330 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #10

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20206</u>
Calibration Date:	<u>June 9, 2023</u>
Location of seismograph:	<u>Civic Number 2337 Route 820 (PW-04)</u>
Distance and Direction from Blast:	<u>779 m Northwest</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 11, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>14:25</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-22</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #11

Make, Model and Serial # of unit:	<u>InstanTEL Minimate, Serial #21348</u>
Calibration Date:	<u>July 23, 2022</u>
Location of seismograph:	<u>Civic Number 4140 Route 111 (PW-12)</u>
Distance and Direction from Blast:	<u>807 m South</u>
Transverse Particle Velocity:	<u>1.14 mm/s @ 64 Hz</u>
Vertical Particle Velocity:	<u>1.27 mm/s @ 73 Hz</u>
Longitudinal Particle Velocity:	<u>0.89 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>1.27 mm/s @ 73 Hz</u>
Maximum Airblast:	<u>112 dB(L)</u>

## Attachment B

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### *Blast and Seismograph Location Plan*

**Blast and Seismograph Location Plan**  
**Blast No: 2023-22**  
Upham East Gypsum Quarry, Upham, NB



Date: July 11, 2023  
Project No.: 234601.00



## Attachment C

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### *Blast Event Reports*

**Date/Time** Vert at 14:25:49 July 11, 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/factory.MMB

**Serial Number** UM20205 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** May 30, 2023 by InstanTel  
**File Name** UM20205\_20230711142549.IDFW

**Post Event Notes**

Location: Civic Number 4126 Route 111 (PW-10)  
 Blast No.: 2023-22  
 Project No: 234601.00

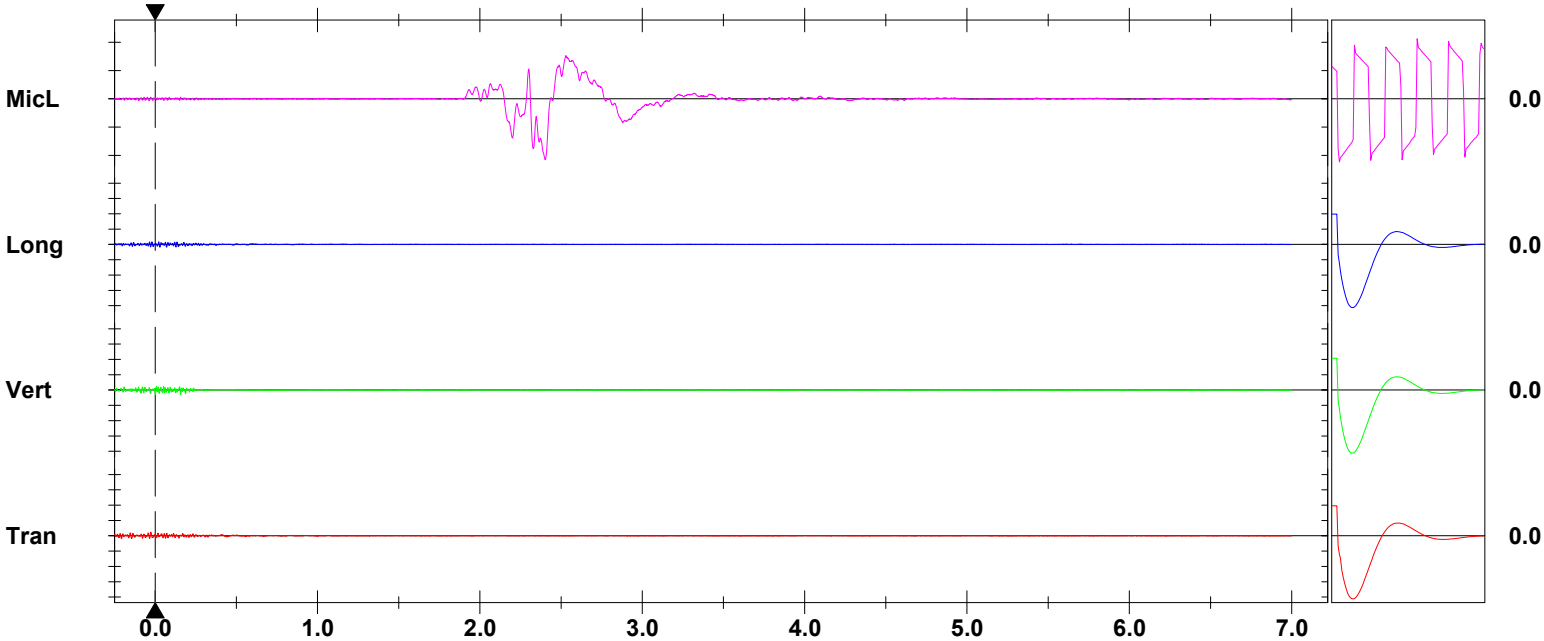
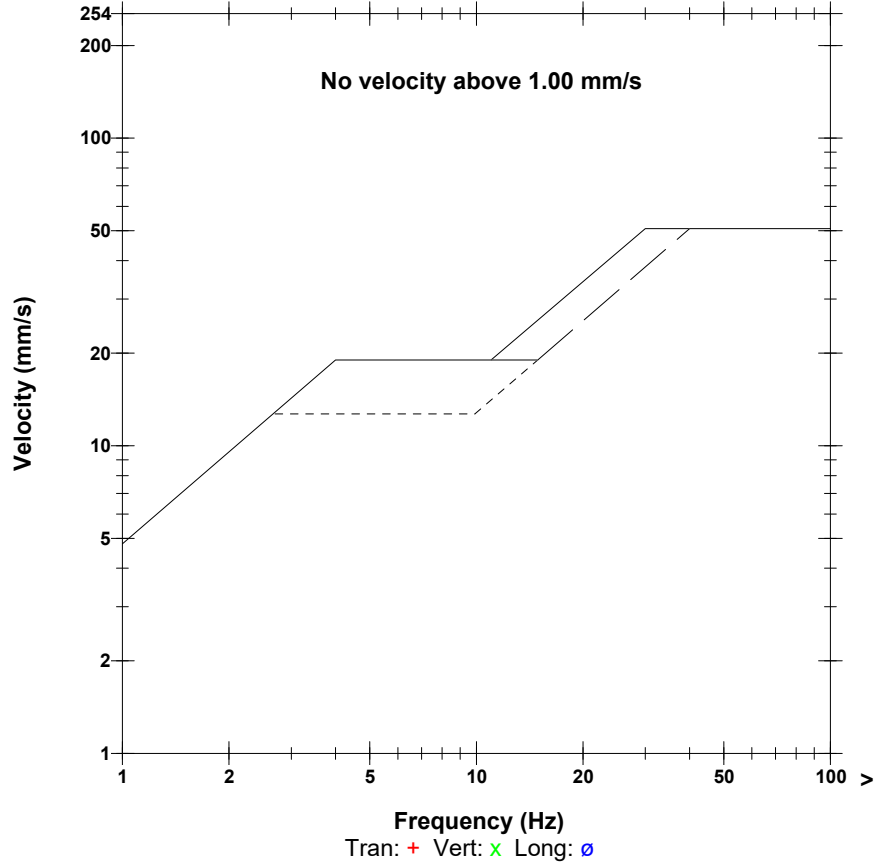
**Notes**  
 Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 114.6 dB(L) 10.75 pa.(L) at 2.400 sec  
**ZC Freq** 4.0 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1447 mv )

	Tran	Vert	Long	
PPV	0.473	0.591	0.363	mm/s
PPV	44.50	46.43	42.19	dB
ZC Freq	51	73	64	Hz
Time (Rel. to Trig)	-0.027	0.001	0.029	sec
Peak Acceleration	0.030	0.030	0.017	g
Peak Displacement	0.002	0.001	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.3	7.3	Hz
Overswing Ratio	5.0	4.8	4.9	

**Peak Vector Sum** 0.646 mm/s at -0.027 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check



**Date/Time** Long at 14:25:12 July 11, 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

**Serial Number** 5673 V 2.61 MiniMate  
**Battery Level** 6.1 Volts  
**Unit Calibration** April 25, 2023 by Instatel  
**File Name** G673K3UI.Q00

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 11, 2023 16:03:35 (V10.72.1)

**Post Event Notes**  
 Location: Civic Number 2447 Route 820 (PW-07)  
 Blast No.: 2023-22  
 Project No: 234601.00

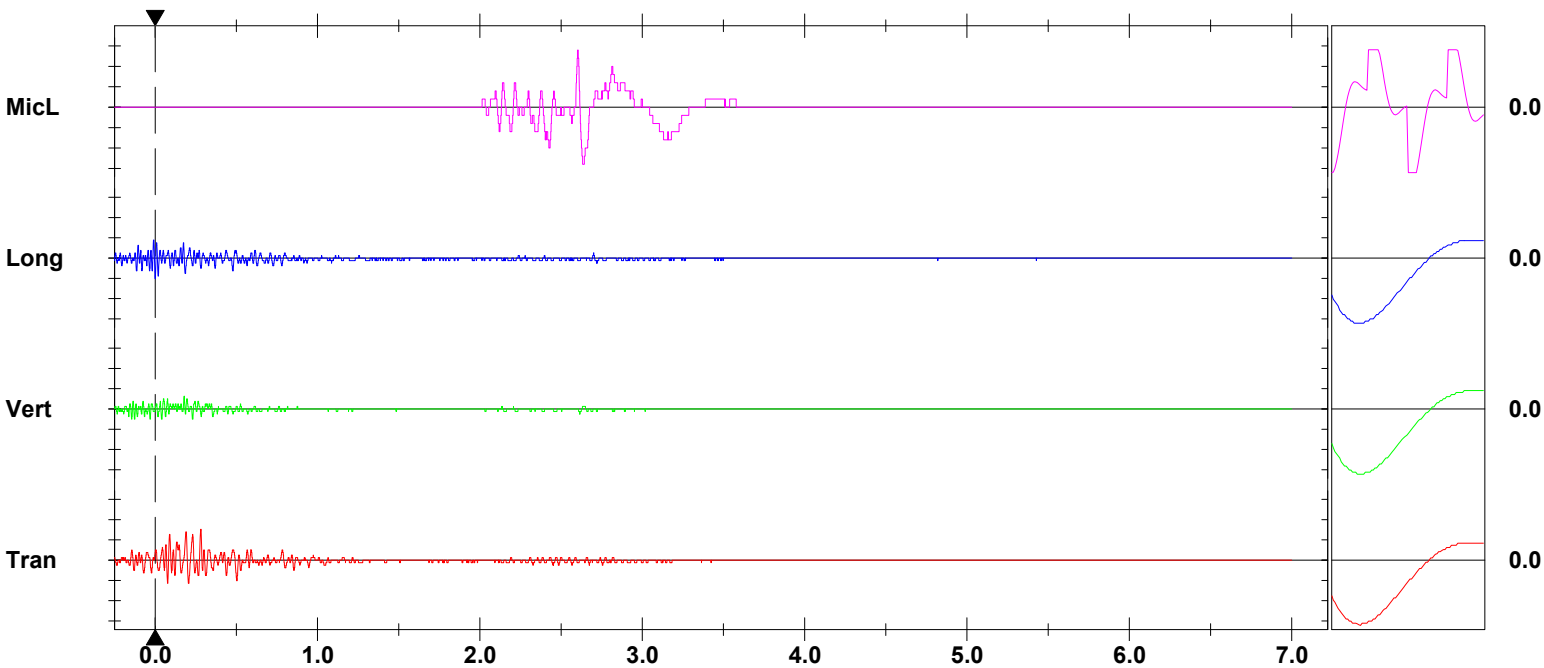
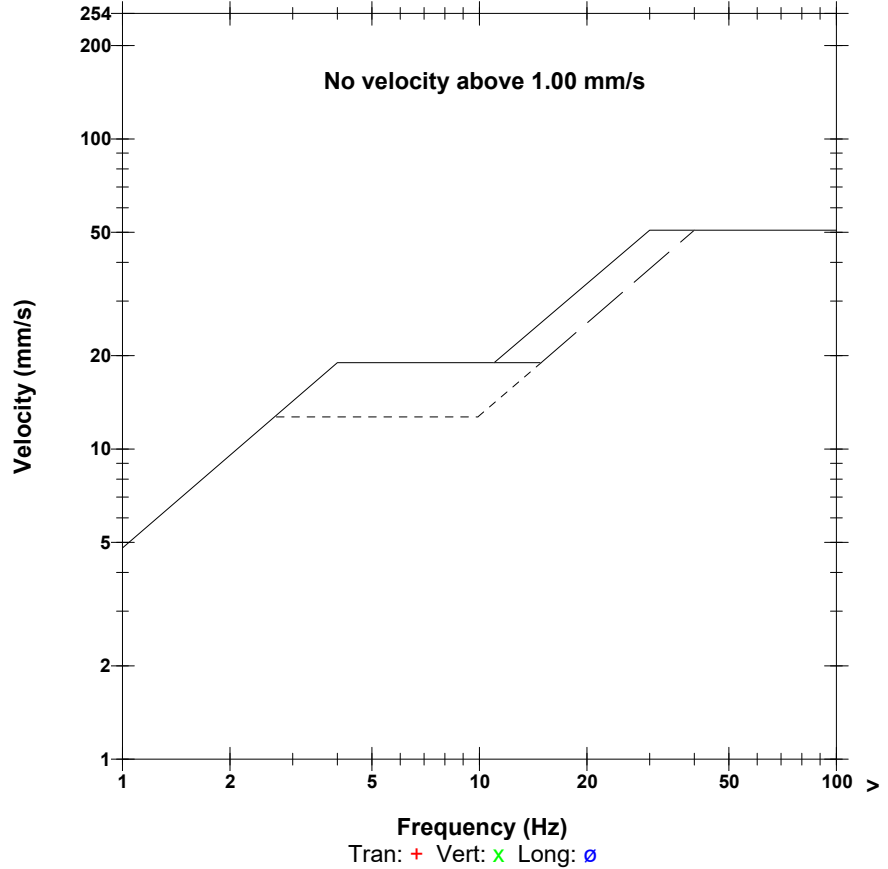
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 116.9 dB(L) 14.00 pa.(L) at 2.602 sec  
**ZC Freq** 20 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 308 mv )

	Tran	Vert	Long	
PPV	0.762	0.318	0.508	mm/s
PPV	48.64	41.03	45.12	dB
ZC Freq	34	57	57	Hz
Time (Rel. to Trig)	0.281	0.179	0.001	sec
Peak Acceleration	0.020	0.013	0.020	g
Peak Displacement	0.004	0.001	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.0	7.8	8.0	Hz
Overswing Ratio	3.9	3.7	3.8	

**Peak Vector Sum** 0.826 mm/s at 0.283 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

**Date/Time** Vert at 14:25:52 July 11, 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/GAYTON.MMB

**Serial Number** UM20204 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** June 12, 2023 by InstanTel  
**File Name** UM20204\_20230711142552.IDFW

**Post Event Notes**

Location: Civic Number 4150 Route 111 (PW-13)  
 Blast No.: 2023-22  
 Project No: 234601.00

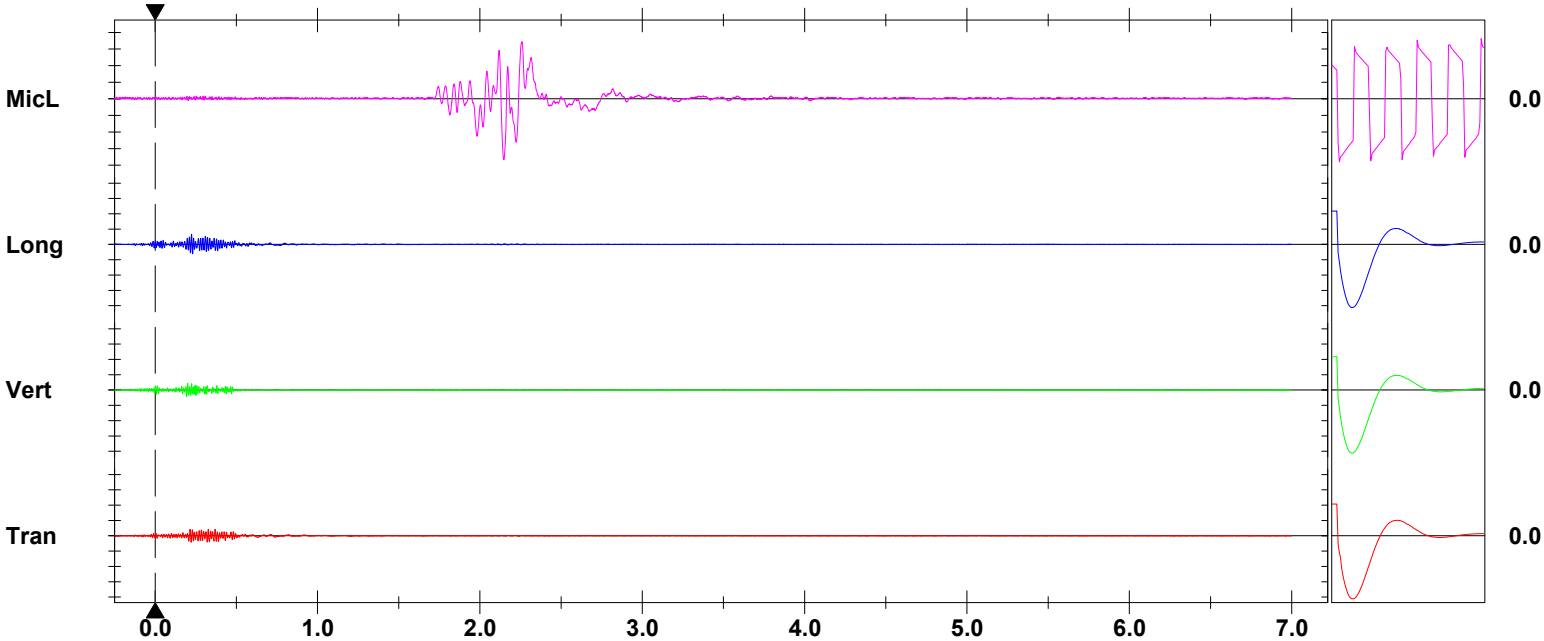
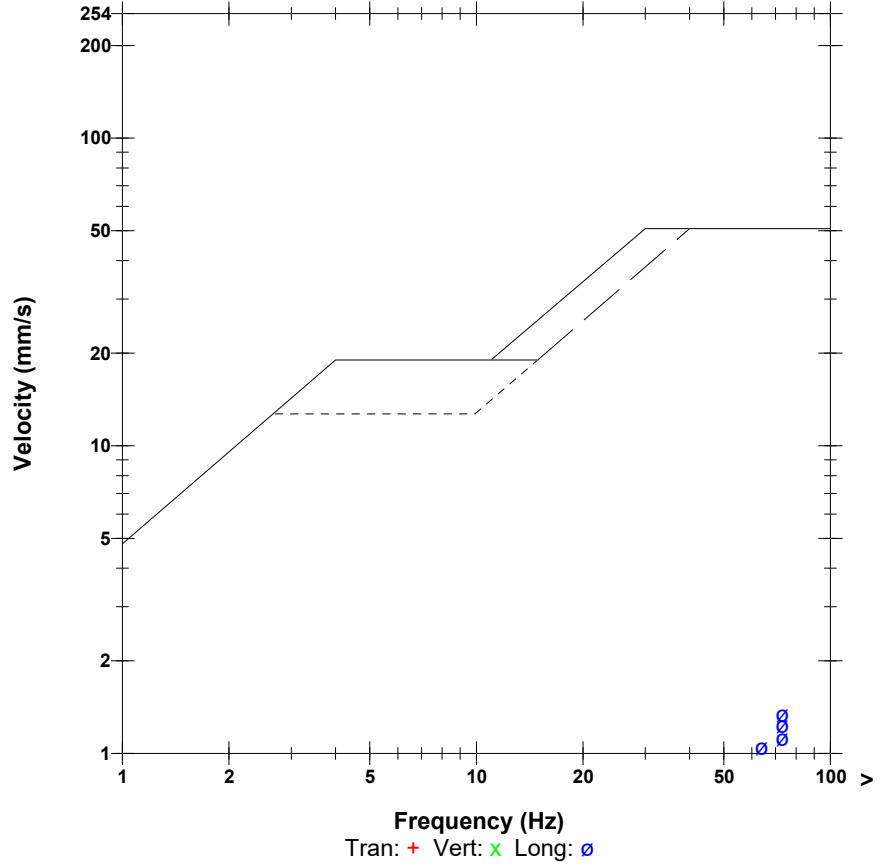
**Notes**

**Microphone** Linear Weighting  
**PSPL** 111.3 dB(L) 7.323 pa.(L) at 2.146 sec  
**ZC Freq** 15 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1373 mv )

	Tran	Vert	Long	
PPV	0.851	0.891	1.348	mm/s
PPV	49.60	49.99	53.59	dB
ZC Freq	73	73	73	Hz
Time (Rel. to Trig)	0.214	0.200	0.224	sec
Peak Acceleration	0.078	0.063	0.081	g
Peak Displacement	0.002	0.002	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.7	Hz
Overswing Ratio	4.1	4.3	4.0	

**Peak Vector Sum** 1.611 mm/s at 0.224 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

**Date/Time** Tran at 14:25:51 July 11, 2023  
**Trigger Source** Geo: 0.500 mm/s, Mic: 121.0 dB(L)  
**Range** Geo: 254.0 mm/s  
**Record Time** 7.0 sec at 1024 sps  
**Operator/Setup:** Operator/factory.MMB

**Serial Number** UM20203 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** May 30, 2023 by InstanTel  
**File Name** UM20203\_20230711142551.IDFW

**Post Event Notes**

Location: Civic Number 2341 Route 820 (PW-05)  
 Blast No.: 2023-22  
 Project No: 234601.00

**Notes**

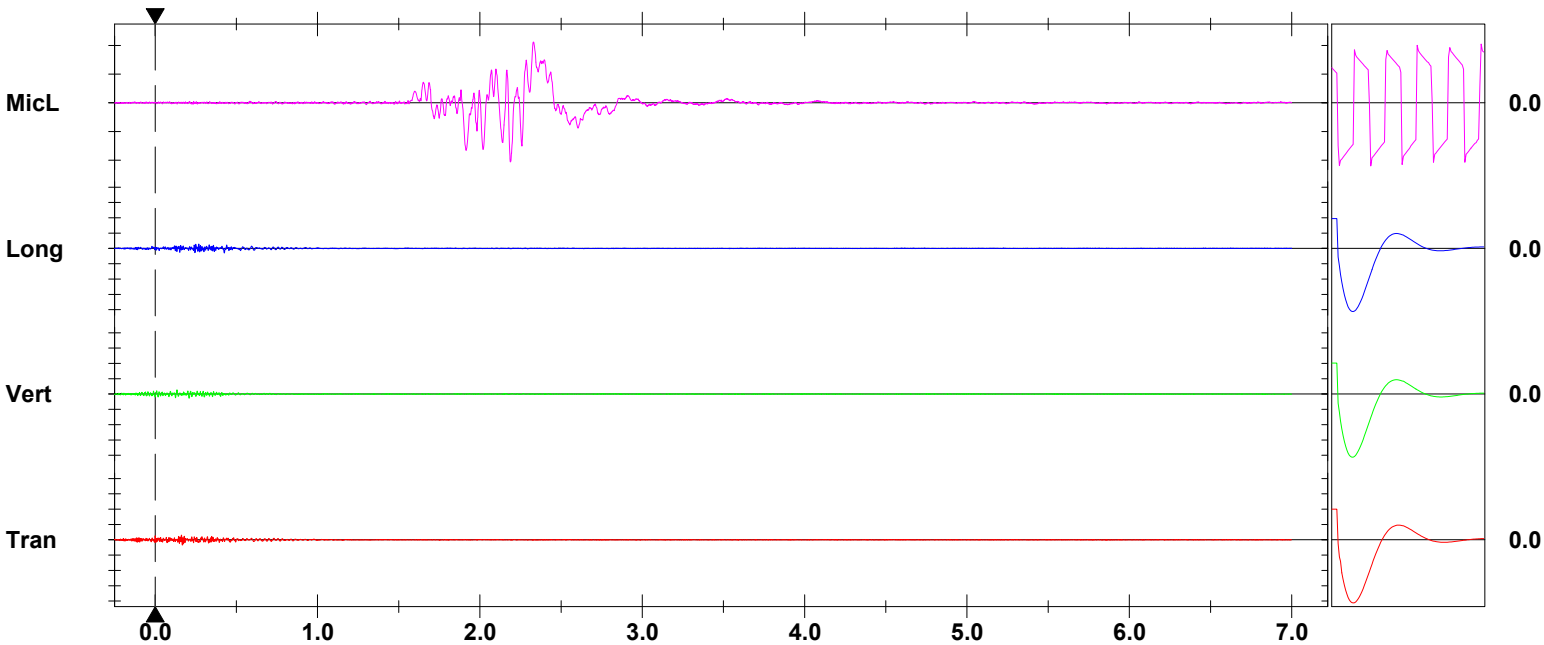
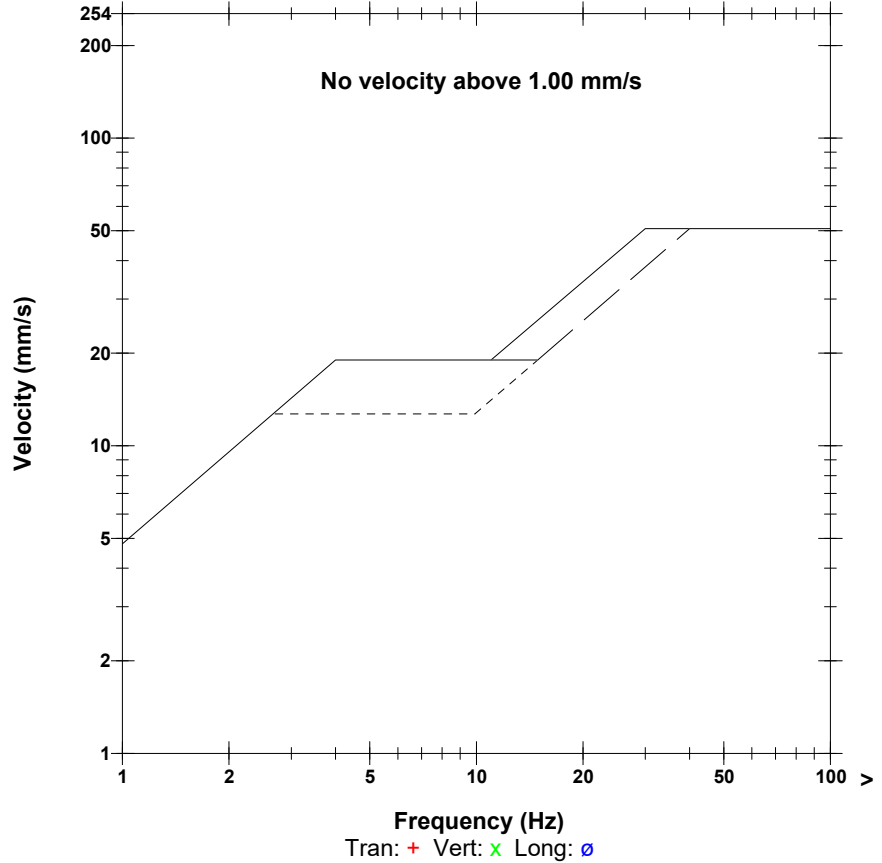
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 114.5 dB(L) 10.60 pa.(L) at 2.331 sec  
**ZC Freq** 2.7 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1367 mv )

	Tran	Vert	Long	
PPV	0.678	0.552	0.599	mm/s
PPV	47.62	45.83	46.55	dB
ZC Freq	>100	51	32	Hz
Time (Rel. to Trig)	0.167	0.135	0.426	sec
Peak Acceleration	0.063	0.027	0.051	g
Peak Displacement	0.002	0.002	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.5	7.5	Hz
Overswing Ratio	4.3	4.4	4.2	

**Peak Vector Sum** 0.686 mm/s at 0.168 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Long at 14:25:55 July 11, 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

**Serial Number** 5676 V 2.61 MiniMate  
**Battery Level** 6.1 Volts  
**Unit Calibration** March 8, 2023 by InstanTel  
**File Name** G676K3UI.R70

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 11, 2023 15:56:08 (V10.72.1)

**Post Event Notes**  
 Location: Civic Number 86 Myron Road (PW-16)  
 Blast No.: 2023-22  
 Project No: 234601.00

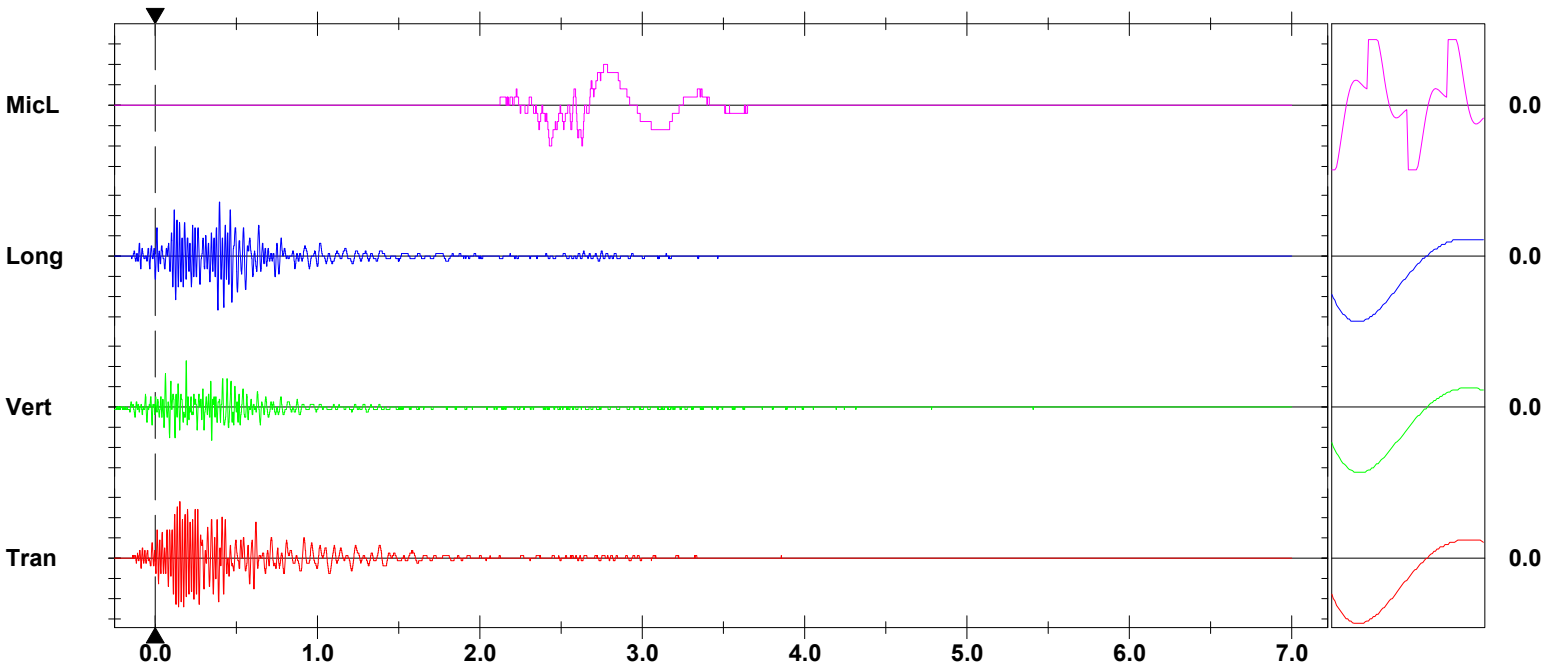
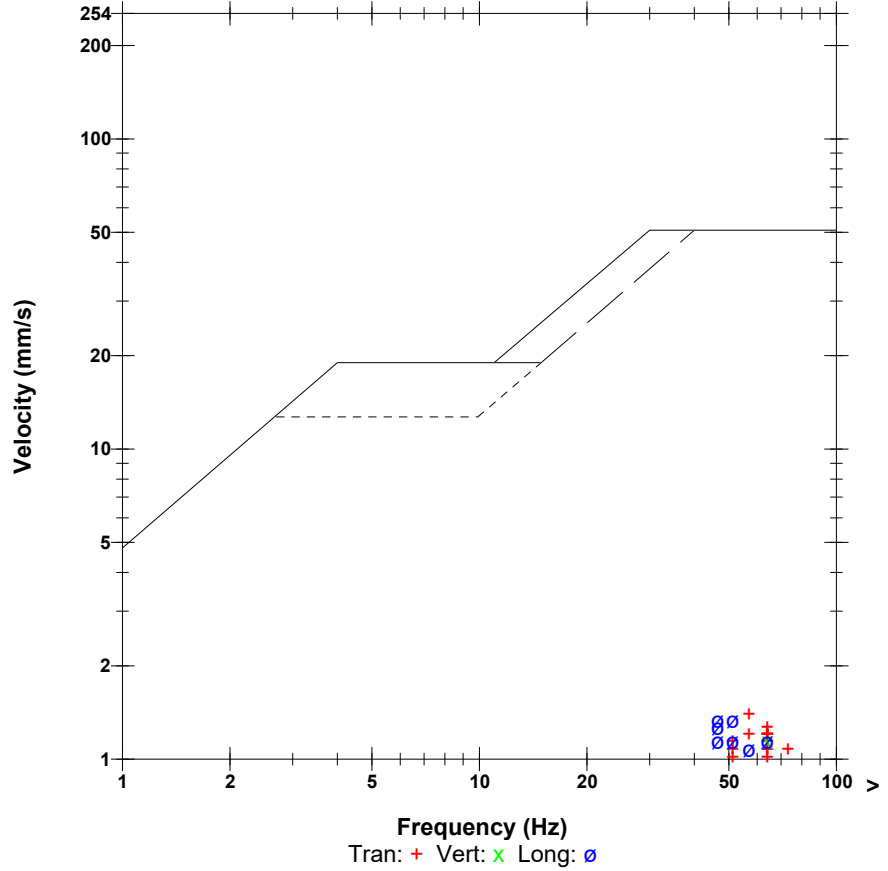
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 114.0 dB(L) 10.000 pa.(L) at 2.429 sec  
**ZC Freq** 5.0 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 301 mv )

	Tran	Vert	Long	
PPV	1.397	1.143	1.334	mm/s
PPV	53.90	52.16	53.50	dB
ZC Freq	57	64	51	Hz
Time (Rel. to Trig)	0.153	0.192	0.388	sec
Peak Acceleration	0.053	0.040	0.046	g
Peak Displacement	0.004	0.003	0.005	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	8.1	8.1	Hz
Overswing Ratio	3.7	3.6	3.8	

**Peak Vector Sum** 1.619 mm/s at 0.153 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

**Date/Time** Vert at 14:25:14 July 11, 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

**Serial Number** BE21348 V 10.72-1.1 Minimate Blaster  
**Battery Level** 6.4 Volts  
**Unit Calibration** July 21, 2022 by InstanTel  
**File Name** W348K3SO.220

**Notes**

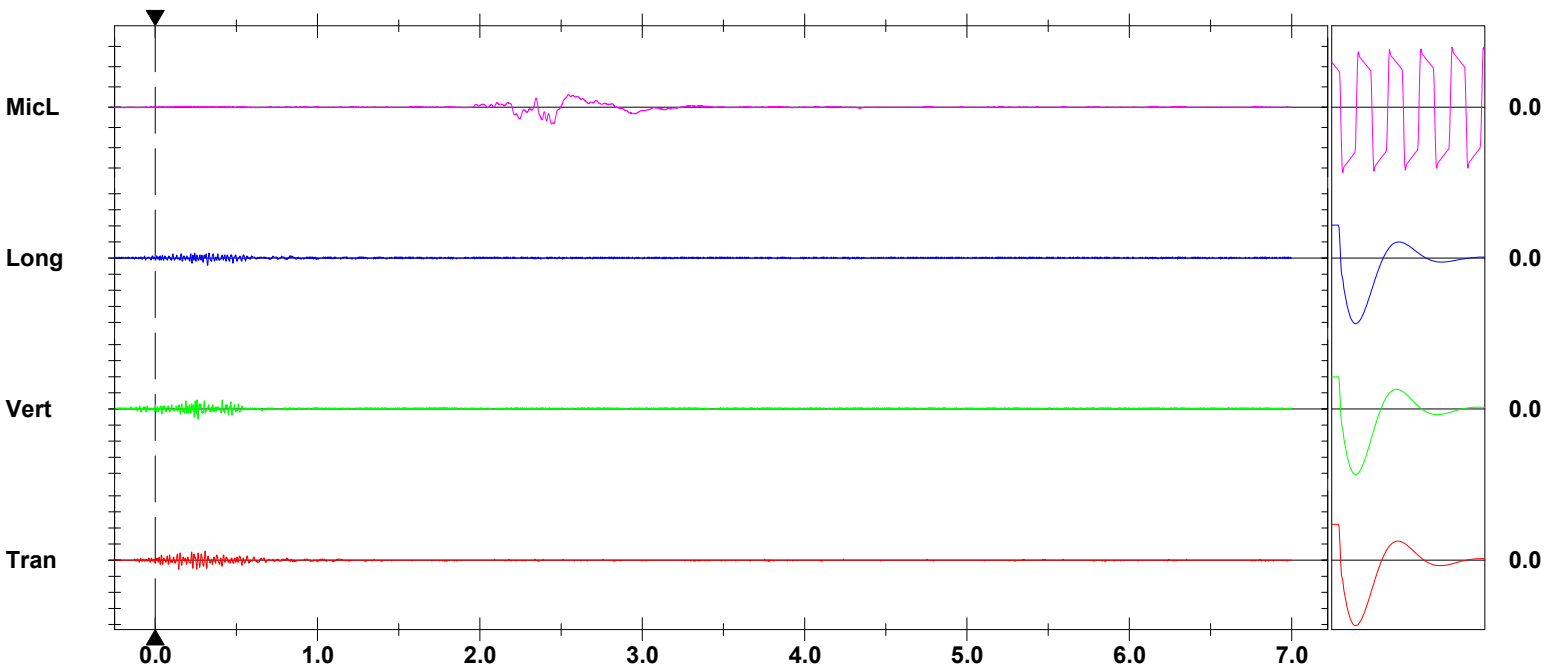
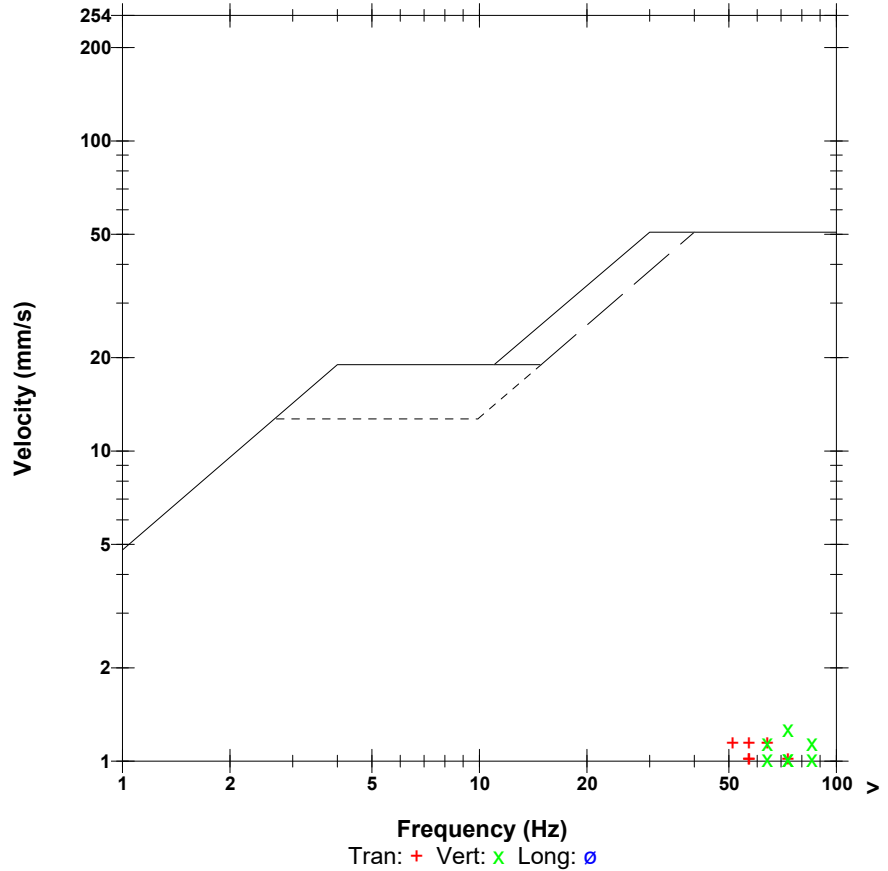
**Post Event Notes**  
 Location: Civic Number 4140 Route 111 (PW-12)  
 Blast No.: 2023-22  
 Project No: 234601.00

**Microphone** Linear Weighting  
**PSPL** 112.3 dB(L) 8.250 pa.(L) at 2.439 sec  
**ZC Freq** 3.7 Hz  
**Channel Test** Passed (Freq = 19.7 Hz Amp = 559 mv )

	Tran	Vert	Long	
PPV	1.143	1.270	0.889	mm/s
PPV	52.16	53.08	49.98	dB
ZC Freq	64	73	51	Hz
Time (Rel. to Trig)	0.146	0.264	0.321	sec
Peak Acceleration	0.053	0.066	0.027	g
Peak Displacement	0.003	0.003	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.7	7.3	Hz
Overswing Ratio	3.4	3.4	4.1	

**Peak Vector Sum** 1.576 mm/s at 0.257 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

July 21, 2023

Project No.: 234601.00

Mr. Daniel Guest

**Hammond River Holdings**

Via email: [Guest.Daniel@AtlanticWallboard.com](mailto:Guest.Daniel@AtlanticWallboard.com)

**Re: Blast Vibration Monitoring – Blast No. 2023-23 – 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 July 21, 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. 2023-23 – July 21, 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	1,360 m S	< 0.5 mm/s	<120	Unit was not triggered
2. Civic No. 4126 Route 111 (PW-10)		968 m SE	0.95 mm/s @ 57 Hz	117	-
3. Civic No. 4150 Route 111 (PW-13)		828 m SE	0.52 mm/s @ 47 Hz	118	-
4. Civic No. 2447 Route 820 (PW-07)		981 m NE	0.57 mm/s @ 39 Hz	118	-
5. PW-03 - Cottage Route 820		641 m N	0.64 mm/s @ 57 Hz	125	-
6. Civic No. 2341 Route 820 (PW-05)		610 m N	2.40 mm/s @ 51 Hz	<88	-
7. Civic No. 50 Myron Road (PW-15)		794 m NW	< 0.5 mm/s	<120	Unit was not triggered
8. Civic No. 86 Myron Road (PW-16)		706 m W	NA	NA	Memory full of false triggers
9. Civic No. 220 Myron Road (PW-01)		1,340 m S	< 0.5 mm/s	<120	Unit was not triggered
10. Civic No. 2337 Route 820 (PW-04)		687 m N	0.80 mm/s @ 51 Hz	116	-
11. Civic No. 4140 Route 111 (PW-12)		908 m SE	0.79 mm/s @ 47 Hz	116	-
<b>maximum limits as per Approval to Operate</b>			<b>12.5 mm/s</b>	<b>128 dB</b>	

*Mr. Daniel Guest - Hammond River Holdings*

*July 21, 2023*

*Project No.: 234601.00 - Blast No.: 2023-23*

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**

A handwritten signature in blue ink, appearing to read 'Robert Y. Cyr', with a stylized flourish at the end.

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

This document was prepared for the party indicated herein. The material and information in the document reflects CBCL Limited's opinion and best judgment based on the information available at the time of preparation. Any use of this document or reliance on its content by third parties is the responsibility of the third party. CBCL Limited accepts no responsibility for any damages suffered as a result of third party use of this document.

## Attachment A

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### *Blast Record*



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### IDENTIFICATION:

<b>Blasting Contractor:</b>	<u>Gulf Operators Ltd.</u>		
<b>Blaster's Certification No.:</b>	<u>1318</u>	<b>Blaster's Name:</b>	<u>Daniel Blanchard</u>
<b>Blast Location:</b>	<u>N 45°28'53.5" W 65°38'06.2" (see attached sketch)</u>		
<b>Type of Rock:</b>	<u>Anhydrate/Gypsum</u>	<b>Est. Vol. or Tonnage:</b>	<u>3,634 tonnes</u>
<b>Weather at time of Blast:</b>	<u>Rain</u>	<b>Air Temp.:</b>	<u>21°C</u>
<b>Est. Wind Speed :</b>	<u>≈ 10 km/h</u>	<b>Wind Direction:</b>	<u>NW</u>
<b>Cloud Cover:</b>	<u>Yes – overcast</u>	<b>Precipitation:</b>	<u>Yes</u>

### BLAST DESIGN:

<b>Total No. Holes:</b>	<u>37</u>	<b>Hole Diameter:</b>	<u>4.5"</u>
<b>Average Depth:</b>	<u>5.6 m – 6.0 m</u>	<b>Spacing:</b>	<u>10 ft x10 ft</u>
<b>No. Holes per Delay:</b>	<u>3</u>	<b>Collar Length:</b>	<u>7 ft</u>
<b>Delay between Holes:</b>	<u>25 ms</u>	<b>Delay between Rows:</b>	<u>17, 34 42 &amp; 84 ms</u>
<b>Initiation Method:</b>	<u>Non-Electric</u>		
<b>Weight of Explosives per Delay:</b>	<u>Max.: 145 kg</u>		
<b>Type and weight of Explosives for Blast:</b>	<u>2,225 kg – Titan XL-1000</u>		

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



### BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### BLAST MONITORING

<b>Distance to the Nearest Structure:</b>	<u>610 m</u>
<b>Direction to the Nearest Structure:</b>	<u>North</u>
<b>Structure Type:</b>	<u>House</u>
<b>Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):</b>	<u>50.7</u>

### SAFETY:

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

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

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #1

Make, Model and Serial # of unit:	<u>InstanTel Minimate, Serial #5632</u>
Calibration Date:	<u>November 16, 2022</u>
Location of seismograph:	<u>Civic Number 4079 Route 111 (PW-09)</u>
Distance and Direction from Blast:	<u>1,360 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #2

Make, Model and Serial # of unit:	<u>InstanTel Minimate, Serial #5489</u>
Calibration Date:	<u>May 5, 2023</u>
Location of seismograph:	<u>Civic Number 4126 Route 111 (PW-10)</u>
Distance and Direction from Blast:	<u>968 m Southeast</u>
Transverse Particle Velocity:	<u>0.45 mm/s @ 31 Hz</u>
Vertical Particle Velocity:	<u>0.95 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>0.32 mm/s @ 85 Hz</u>
Peak Particle Velocity:	<u>0.95 mm/s @ 57 Hz</u>
Maximum Airblast:	<u>117 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #3

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18187</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Civic Number 4150 Route 111 (PW-13)</u>
Distance and Direction from Blast:	<u>828 m Southeast</u>
Transverse Particle Velocity:	<u>0.52 mm/s @ 47 Hz</u>
Vertical Particle Velocity:	<u>0.34 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>0.36 mm/s @ 47 Hz</u>
Peak Particle Velocity:	<u>0.52 mm/s @ 47 Hz</u>
Maximum Airblast:	<u>118 dB(L)</u>

### Data Collection – Seismometer #4

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5487</u>
Calibration Date:	<u>January 16, 2023</u>
Location of seismograph:	<u>Civic Number 2447 Route 820 (PW-07)</u>
Distance and Direction from Blast:	<u>981 m Northeast</u>
Transverse Particle Velocity:	<u>0.57 mm/s @ 39 Hz</u>
Vertical Particle Velocity:	<u>0.32 mm/s @ 64 Hz</u>
Longitudinal Particle Velocity:	<u>0.45 mm/s @ 39 Hz</u>
Peak Particle Velocity:	<u>0.57 mm/s @ 39 Hz</u>
Maximum Airblast:	<u>118 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #5

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5673</u>
Calibration Date:	<u>April 25, 2023</u>
Location of seismograph:	<u>Cottage - PW-03 - Route 820</u>
Distance and Direction from Blast:	<u>641 m North</u>
Transverse Particle Velocity:	<u>0.64 mm/s @ 57 Hz</u>
Vertical Particle Velocity:	<u>0.57 mm/s @ &gt;100 Hz</u>
Longitudinal Particle Velocity:	<u>0.51 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>0.64 mm/s @ 57 Hz</u>
Maximum Airblast:	<u>125 dB(L)</u>

### Data Collection – Seismometer #6

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #21832</u>
Calibration Date:	<u>July 10, 2023</u>
Location of seismograph:	<u>Civic Number 2341 Route 820 (PW-05)</u>
Distance and Direction from Blast:	<u>610 m North</u>
Transverse Particle Velocity:	<u>1.16 mm/s @ 43 Hz</u>
Vertical Particle Velocity:	<u>2.40 mm/s @ 51 Hz</u>
Longitudinal Particle Velocity:	<u>2.27 mm/s @ &gt;100 Hz</u>
Peak Particle Velocity:	<u>2.40 mm/s @ 51 Hz</u>
Maximum Airblast:	<u>&lt;88 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #7

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18193</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Civic Number 50 Myron Road (PW-15)</u>
Distance and Direction from Blast:	<u>794 m Northwest</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #8

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5371</u>
Calibration Date:	<u>July 27, 2022</u>
Location of seismograph:	<u>Civic Number 86 Myron Road (PW-16)</u>
Distance and Direction from Blast:	<u>706 m West</u>
Transverse Particle Velocity:	<u>NA</u>
Vertical Particle Velocity:	<u>NA</u>
Longitudinal Particle Velocity:	<u>NA</u>
Peak Particle Velocity:	<u>NA – memory full by false triggers</u>
Maximum Airblast:	<u>NA</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #9

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5372</u>
Calibration Date:	<u>February 28, 2023</u>
Location of seismograph:	<u>Civic Number 220 Myron Road (PW-01)</u>
Distance and Direction from Blast:	<u>1,340 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #10

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #21696</u>
Calibration Date:	<u>July 10, 2023</u>
Location of seismograph:	<u>Civic Number 2337 Route 820 (PW-04)</u>
Distance and Direction from Blast:	<u>687 m North</u>
Transverse Particle Velocity:	<u>0.39 mm/s @ 43 Hz</u>
Vertical Particle Velocity:	<u>0.39 mm/s @ 73 Hz</u>
Longitudinal Particle Velocity:	<u>0.80 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>0.80 mm/s @ 51 Hz</u>
Maximum Airblast:	<u>116 dB(L)</u>



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 21, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>13:23</u>
<b>Inspector:</b>	<u>J. Yuzda</u>	<b>Blast No.:</b>	<u>2023-23</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #11

Make, Model and Serial # of unit:	<u>InstanTEL Micromate, Serial #20206</u>
Calibration Date:	<u>June 9, 2022</u>
Location of seismograph:	<u>Civic Number 4140 Route 111 (PW-12)</u>
Distance and Direction from Blast:	<u>908 m Southeast</u>
Transverse Particle Velocity:	<u>0.51 mm/s @ 47 Hz</u>
Vertical Particle Velocity:	<u>0.79 mm/s @ 47 Hz</u>
Longitudinal Particle Velocity:	<u>0.61 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>0.79 mm/s @ 47 Hz</u>
Maximum Airblast:	<u>116 dB(L)</u>



## Attachment B

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### *Blast and Seismograph Location Plan*

**Blast and Seismograph Location Plan**  
**Blast No: 2023-23**  
Upham East Gypsum Quarry, Upham, NB

FLS-CADD Overlay



**Legend**

- ★ Blast 2023-23
- Seismograph Location

Google Earth  
Image © 2023 Airbus

**Date:** July 21, 2023  
**Project No.:** 234601.00



## Attachment C

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### *Blast Event Reports*

**Date/Time** Vert at 13:23:37 July 21, 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

**Serial Number** 5489 V 2.61 MiniMate  
**Battery Level** 6.3 Volts  
**Unit Calibration** May 5, 2023 by InstanTel  
**File Name** G489K4CY.JD0

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 21, 2023 15:00:43 (V10.72.1)

**Post Event Notes**  
 Location: Civic Number 4126 Route 111 (PW-10)  
 Blast No.: 2023-23  
 Project No: 234601.00

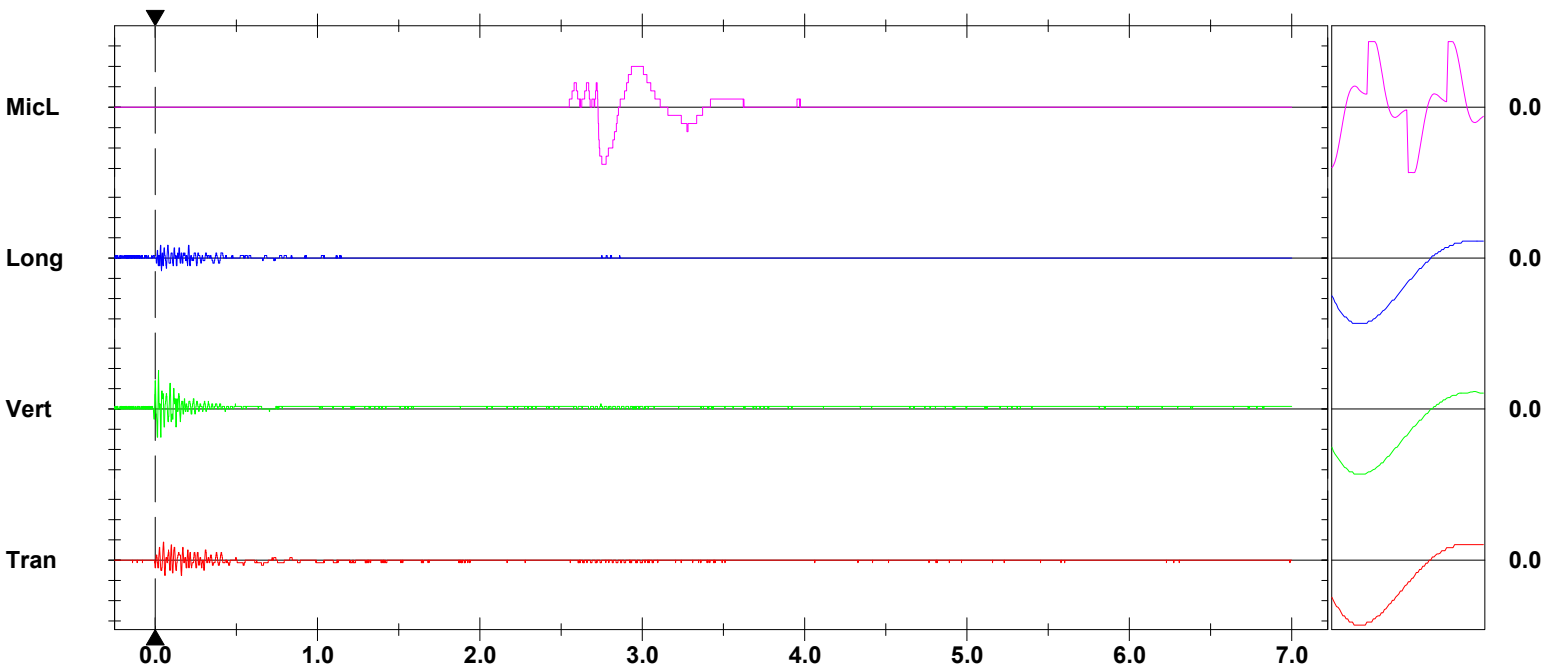
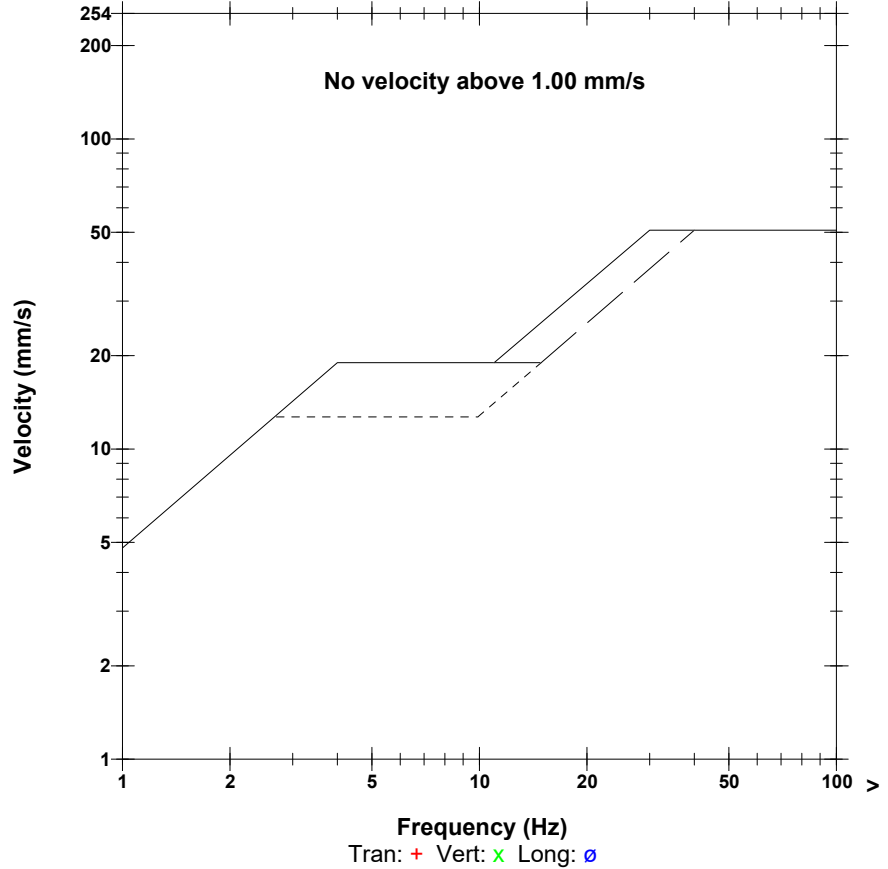
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 116.9 dB(L) 14.00 pa.(L) at 2.752 sec  
**ZC Freq** 4.0 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 283 mv )

	Tran	Vert	Long	
PPV	0.445	0.953	0.318	mm/s
PPV	43.96	50.58	41.03	dB
ZC Freq	51	57	85	Hz
Time (Rel. to Trig)	0.052	0.021	0.034	sec
Peak Acceleration	0.020	0.040	0.020	g
Peak Displacement	0.001	0.002	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.8	7.7	7.8	Hz
Overswing Ratio	3.8	3.7	3.9	

**Peak Vector Sum** 0.968 mm/s at 0.021 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

**Date/Time** Tran at 13:23:51 July 21, 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/factory.MMB

**Serial Number** UM18187 V 10-90GC Micromate ISEE  
**Battery Level** 3.7 Volts  
**Unit Calibration** May 12, 2023 by InstanTel  
**File Name** UM18187\_20230721132351.IDFW

**Post Event Notes**

Location: Civic Number 4150 Route 111 (PW-13)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Notes**

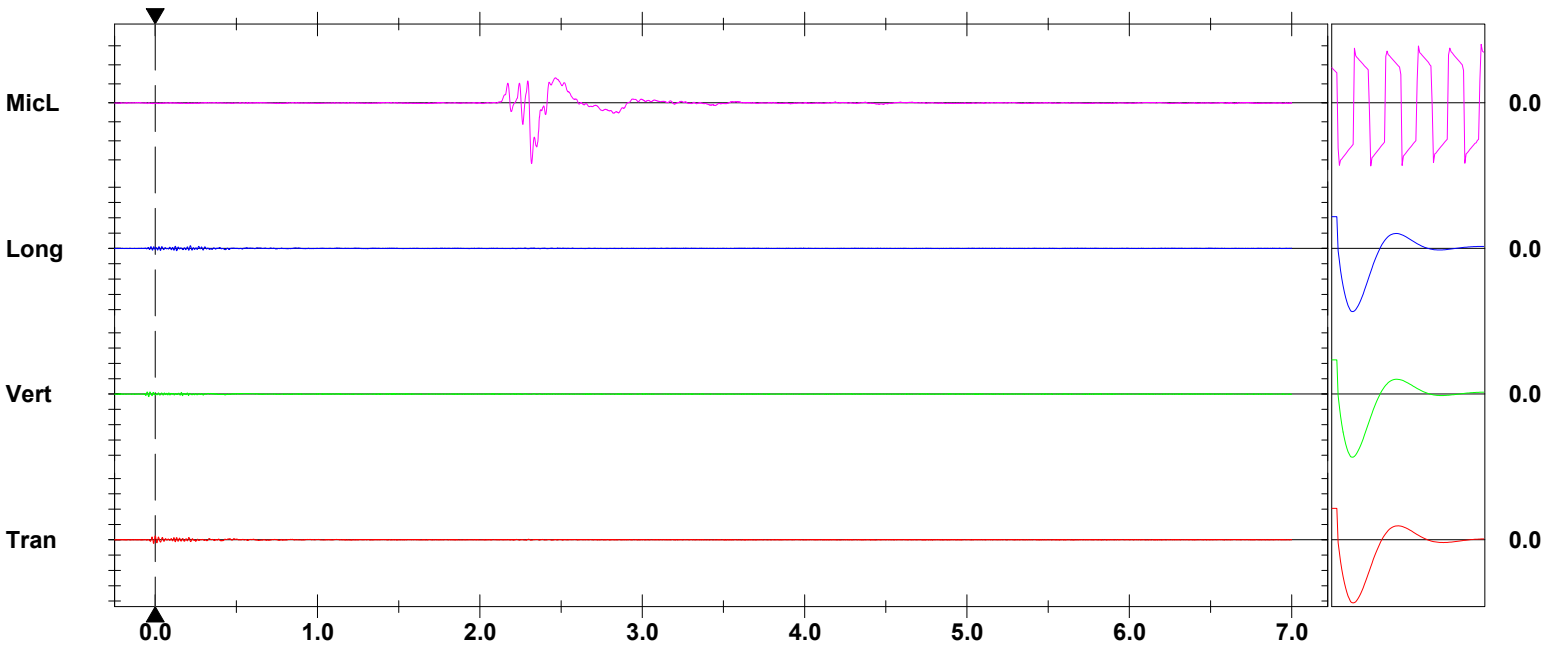
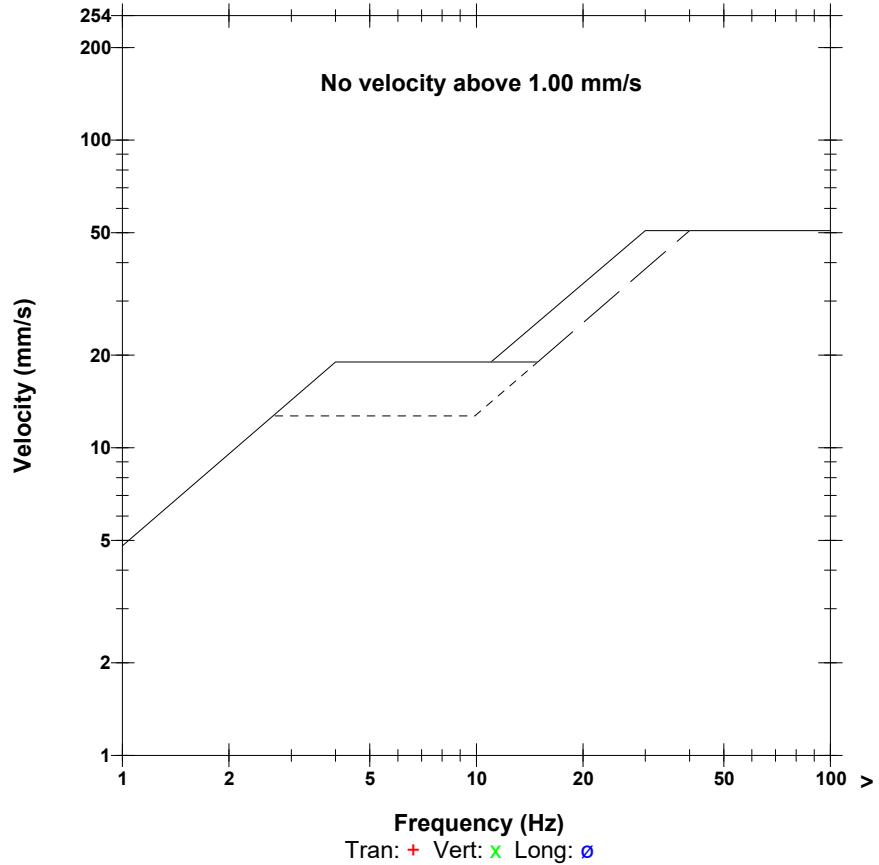
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 118.0 dB(L) 15.97 pa.(L) at 2.318 sec  
**ZC Freq** 4.6 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1378 mv )

	Tran	Vert	Long	
PPV	0.520	0.339	0.363	mm/s
PPV	45.32	41.60	42.19	dB
ZC Freq	47	57	47	Hz
Time (Rel. to Trig)	0.000	-0.039	0.217	sec
Peak Acceleration	0.026	0.019	0.019	g
Peak Displacement	0.002	0.002	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.5	7.5	Hz
Overswing Ratio	4.5	4.3	4.2	

**Peak Vector Sum** 0.531 mm/s at 0.000 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Tran at 13:23:48 July 21, 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

**Serial Number** 5487 V 2.61 MiniMate  
**Battery Level** 6.1 Volts  
**Unit Calibration** January 16, 2023 by InstanTel  
**File Name** G487K4CY.J00  
**Post Event Notes**  
 Location: Civic Number 2447 Route 820 (PW-07)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 21, 2023 15:17:39 (V10.72.1)

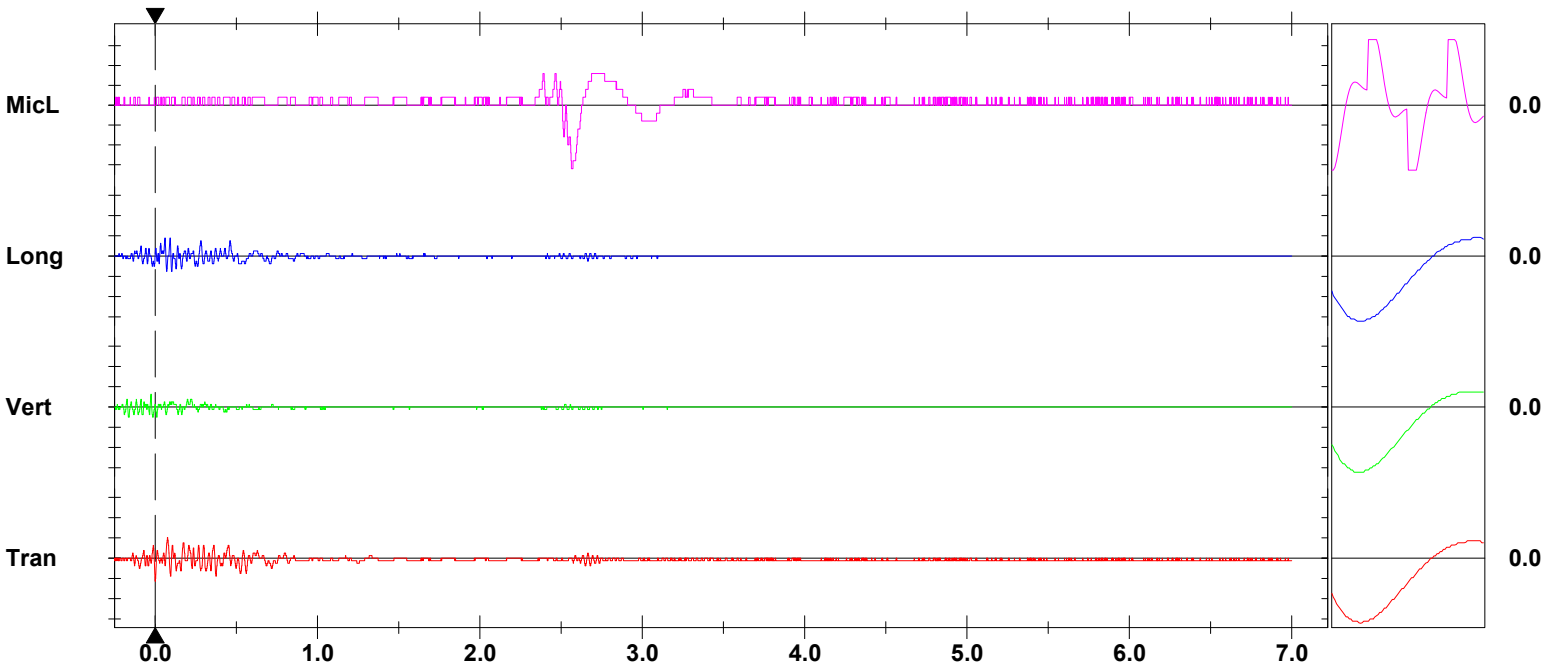
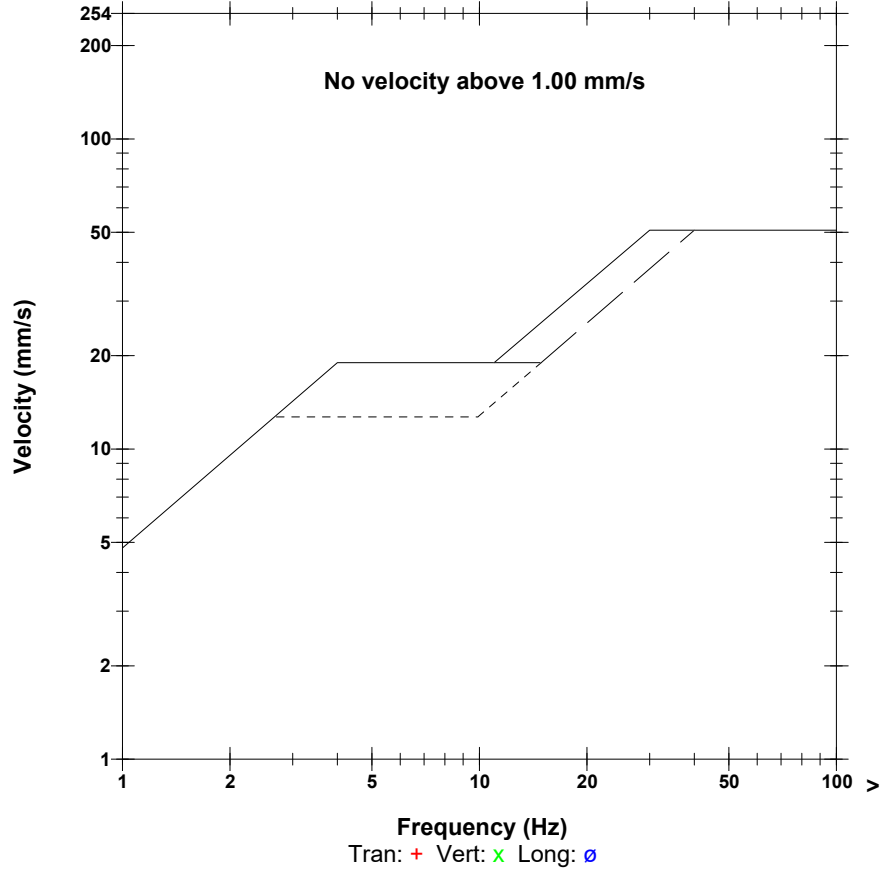
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 118.1 dB(L) 16.00 pa.(L) at 2.564 sec  
**ZC Freq** 5.0 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 287 mv )

	Tran	Vert	Long	
PPV	0.572	0.318	0.445	mm/s
PPV	46.14	41.03	43.96	dB
ZC Freq	39	64	39	Hz
Time (Rel. to Trig)	0.001	-0.024	0.061	sec
Peak Acceleration	0.013	0.013	0.013	g
Peak Displacement	0.003	0.001	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.8	7.6	Hz
Overswing Ratio	3.4	3.8	4.0	

**Peak Vector Sum** 0.587 mm/s at 0.093 sec

**USBM RI8507 And OSMRE**



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

Sensor Check

**Date/Time** Vert at 13:23:54 July 21, 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

**Serial Number** 5673 V 2.61 MiniMate  
**Battery Level** 6.4 Volts  
**Unit Calibration** April 25, 2023 by InstanTel  
**File Name** G673K4CY.JU0  
**Post Event Notes**  
 Location: Cottage - Route 820 (PW-03)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 21, 2023 15:11:05 (V10.72.1)

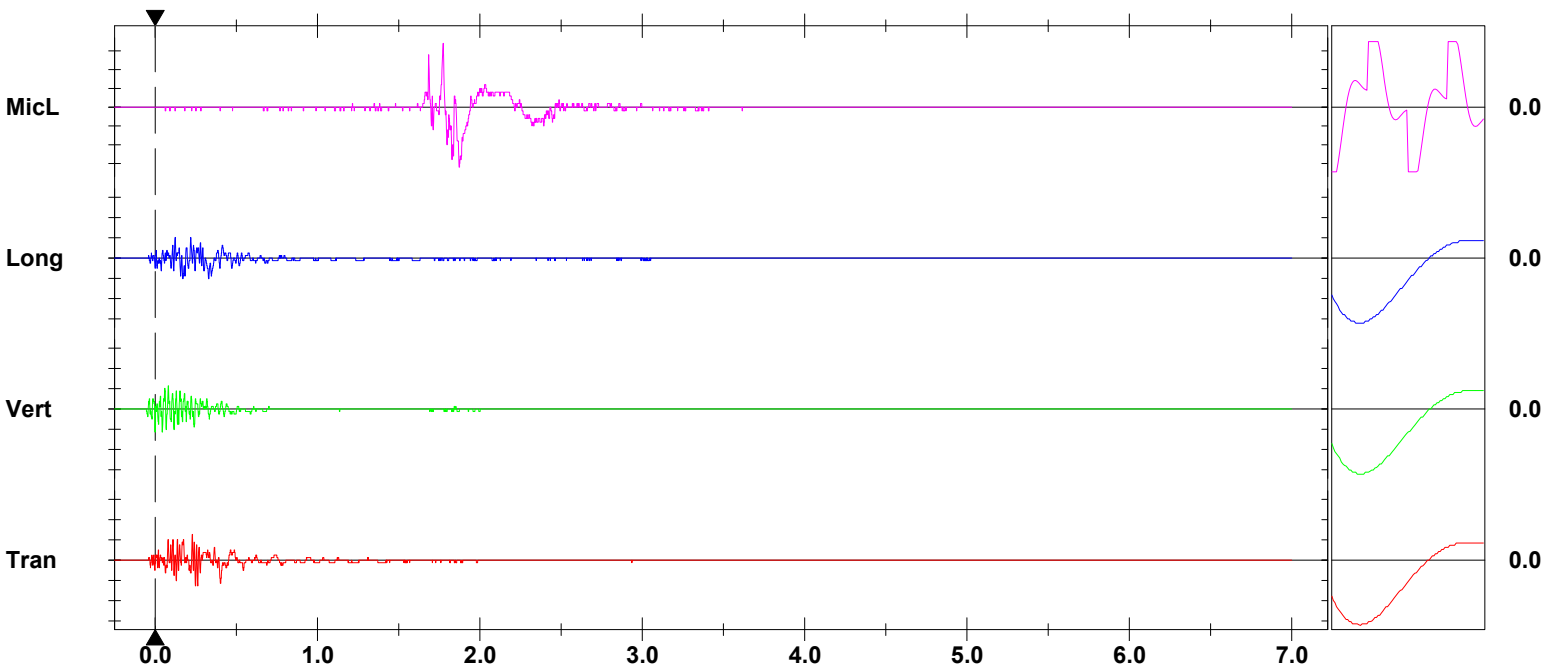
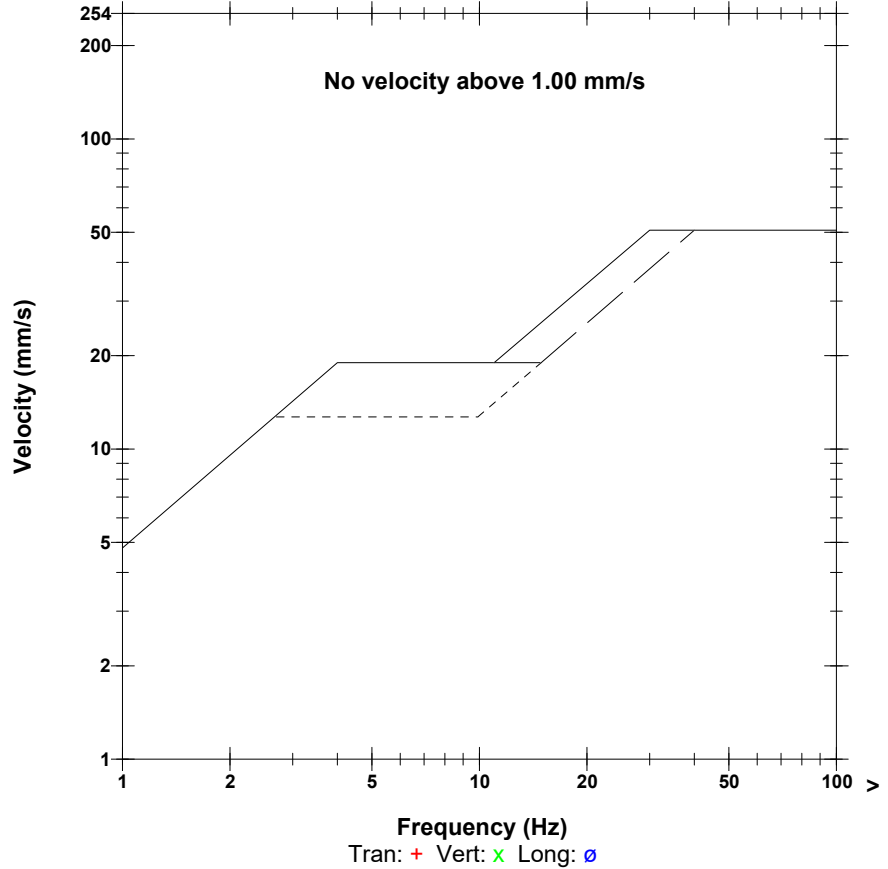
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 124.6 dB(L) 34.00 pa.(L) at 1.774 sec  
**ZC Freq** 14 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 296 mv )

	Tran	Vert	Long	
PPV	0.635	0.572	0.508	mm/s
PPV	47.06	46.14	45.12	dB
ZC Freq	57	>100	51	Hz
Time (Rel. to Trig)	0.229	0.000	0.123	sec
Peak Acceleration	0.027	0.027	0.020	g
Peak Displacement	0.003	0.002	0.005	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.0	7.8	8.0	Hz
Overswing Ratio	3.8	3.7	3.8	

**Peak Vector Sum** 0.778 mm/s at 0.081 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 10.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Vert at 13:23:52 July 21, 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/Micromate min trigger mmb.MMB

**Serial Number** UM21832 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** July 10, 2023 by InstanTel  
**File Name** UM21832\_20230721132352.IDFW

**Notes**  
 Location  
 Client  
 Company  
 General Notes

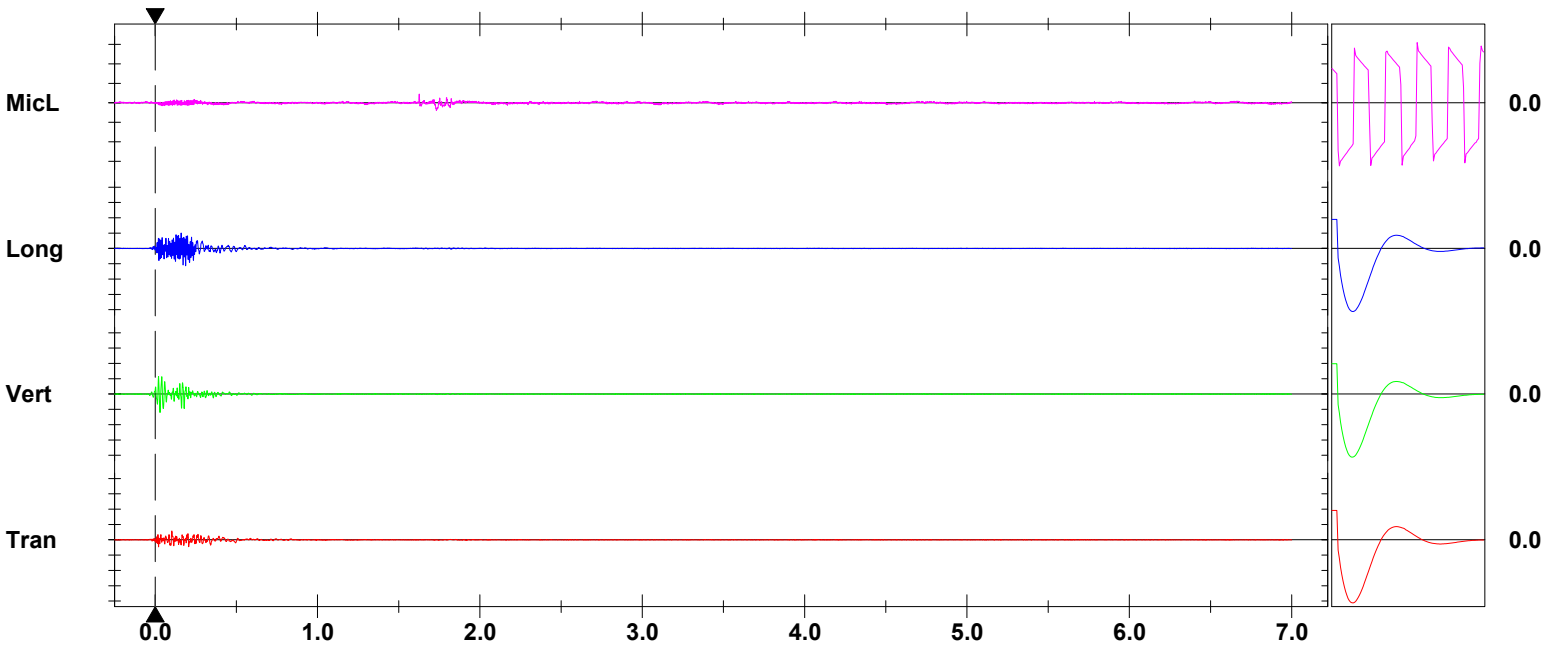
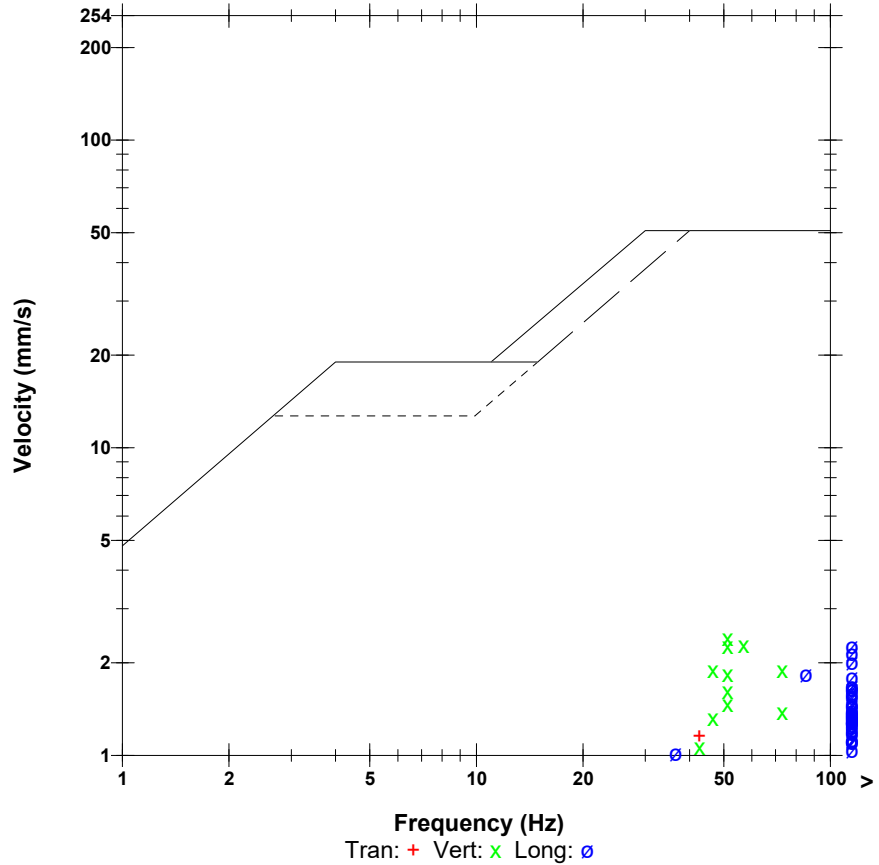
**Post Event Notes**  
 Location: Civic Number 2341 Route 820 (PW-05)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Microphone** Linear Weighting  
**PSPL** <88 dB(L) <0.500 pa.(L)  
**ZC Freq** 73 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1412 mv )

	Tran	Vert	Long	
PPV	1.159	2.404	2.270	mm/s
PPV	52.28	58.62	58.12	dB
ZC Freq	43	51	>100	Hz
Time (Rel. to Trig)	0.103	0.030	0.188	sec
Peak Acceleration	0.108	0.094	0.147	g
Peak Displacement	0.004	0.007	0.006	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.3	Hz
Overswing Ratio	4.8	5.0	4.8	

**Peak Vector Sum** 2.646 mm/s at 0.030 sec  
 N/A: Not Applicable

**USBM RI8507 And OSMRE**



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

Sensor Check



**Date/Time** Long at 13:23:53 July 21, 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/Micromate min trigger mmb.MMB

**Serial Number** UM21696 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** July 10, 2023 by InstanTel  
**File Name** UM21696\_20230721132353.IDFW

**Notes**  
 Location  
 Client  
 Company  
 General Notes

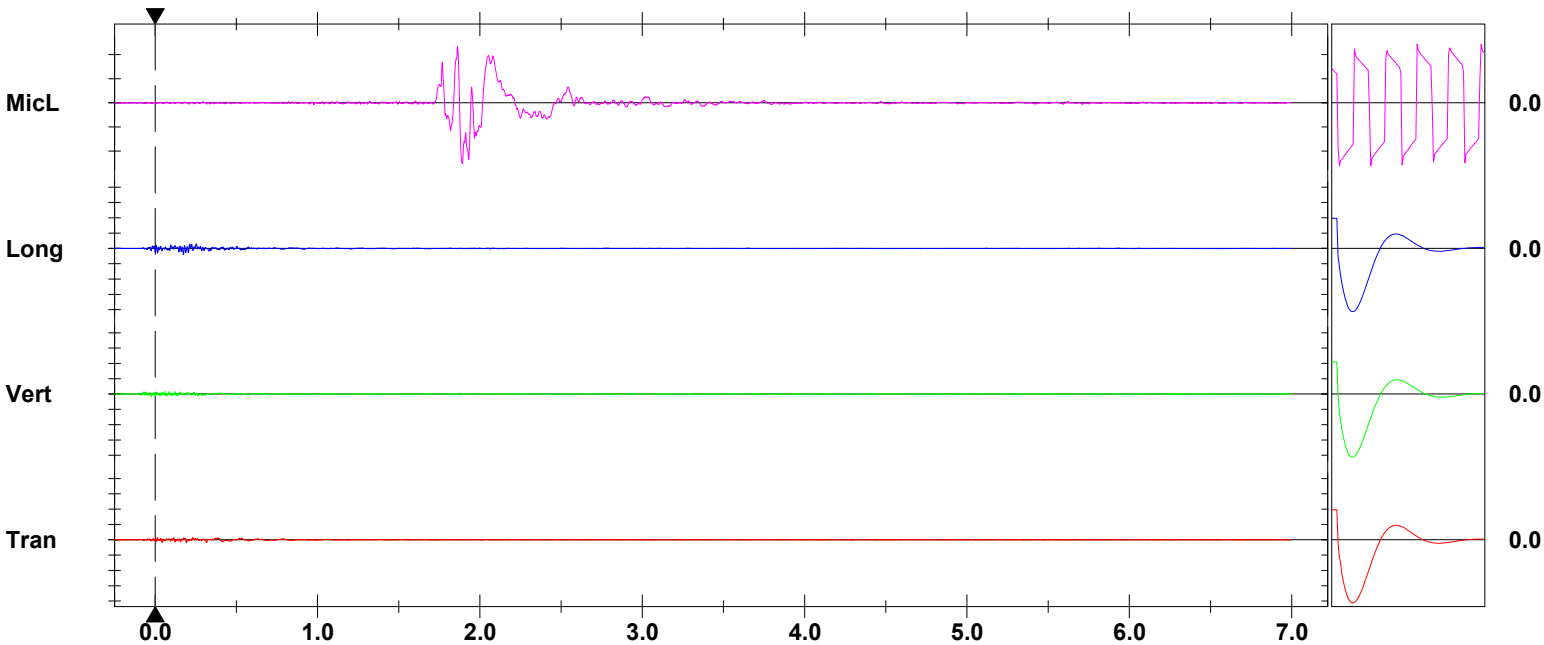
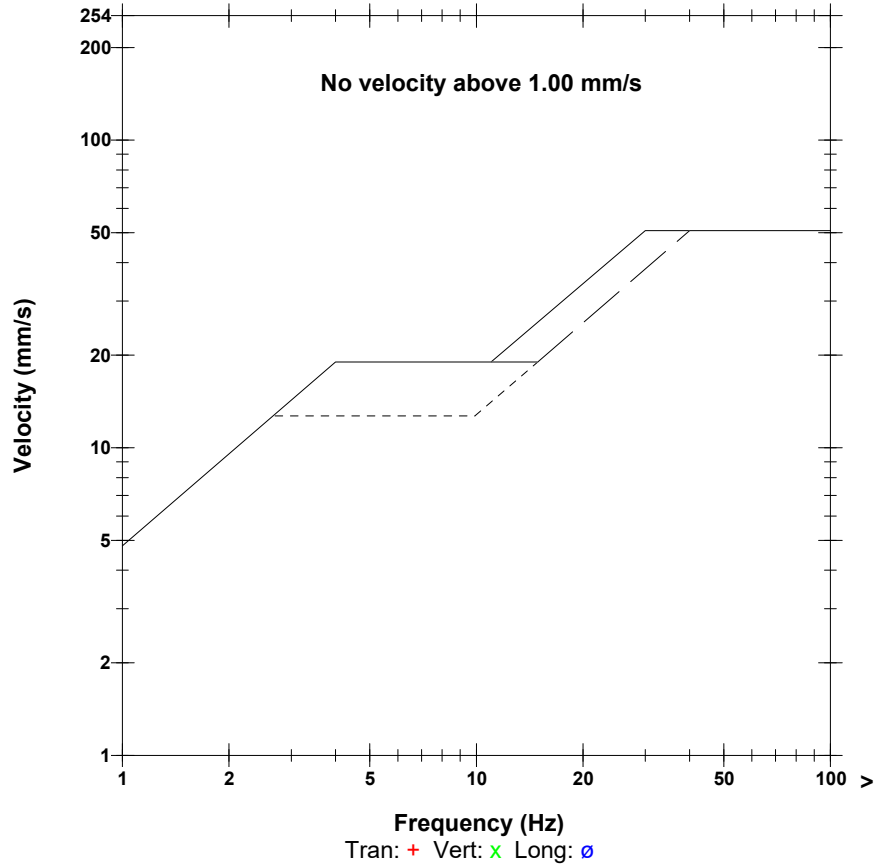
**Post Event Notes**  
 Location: Civic Number 2337 Route 820 (PW-04)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Microphone** Linear Weighting  
**PSPL** 116.0 dB(L) 12.60 pa.(L) at 1.892 sec  
**ZC Freq** 7.2 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1398 mv )

	Tran	Vert	Long	
PPV	0.386	0.394	0.804	mm/s
PPV	42.74	42.91	49.10	dB
ZC Freq	43	73	51	Hz
Time (Rel. to Trig)	0.191	-0.022	0.174	sec
Peak Acceleration	0.027	0.017	0.027	g
Peak Displacement	0.005	0.002	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.4	4.5	4.4	

**Peak Vector Sum** 0.840 mm/s at 0.174 sec

### USBM RI8507 And OSMRE



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Vert at 13:23:52 July 21, 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/factory.MMB

**Serial Number** UM20206 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** June 9, 2023 by InstanTel  
**File Name** UM20206\_20230721132352.IDFW

**Post Event Notes**

Location: Civic Number 4140 Route 111 (PW-12)  
 Blast No.: 2023-23  
 Project No: 234601.00

**Notes**

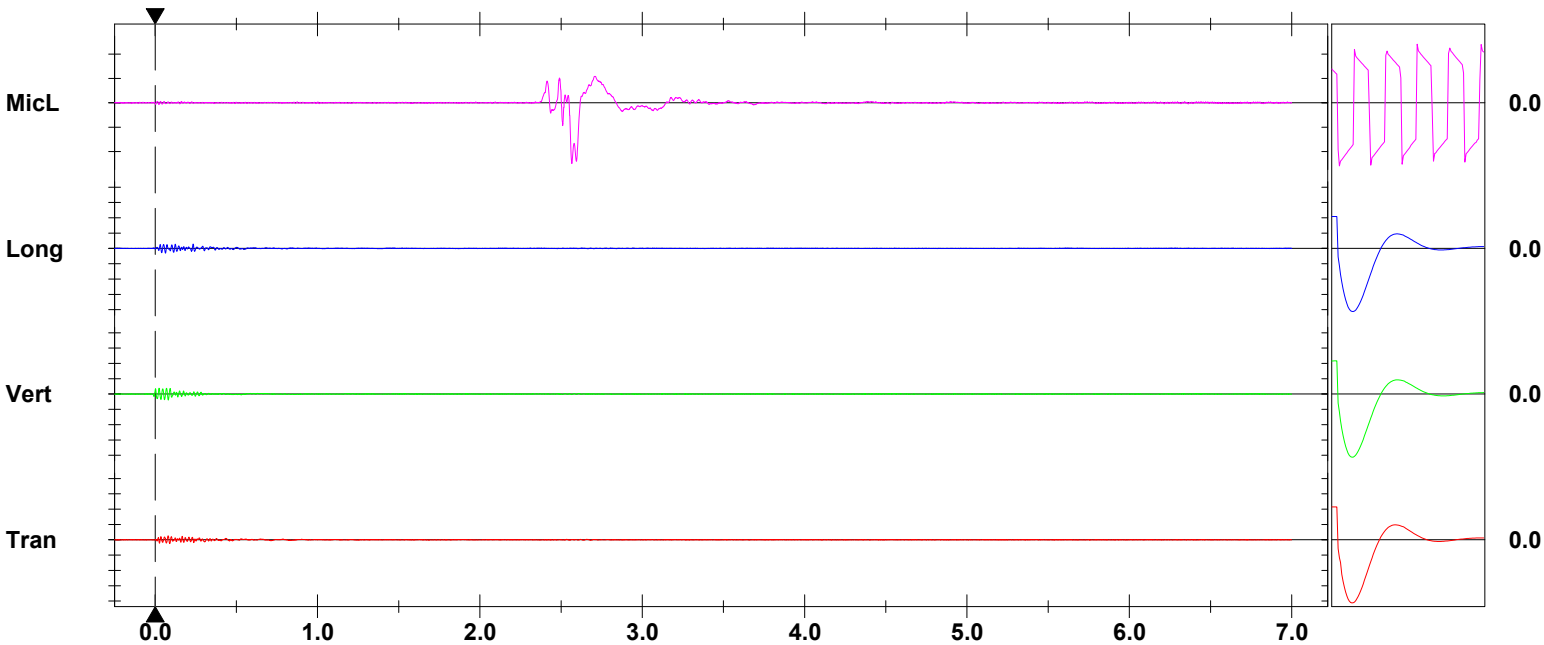
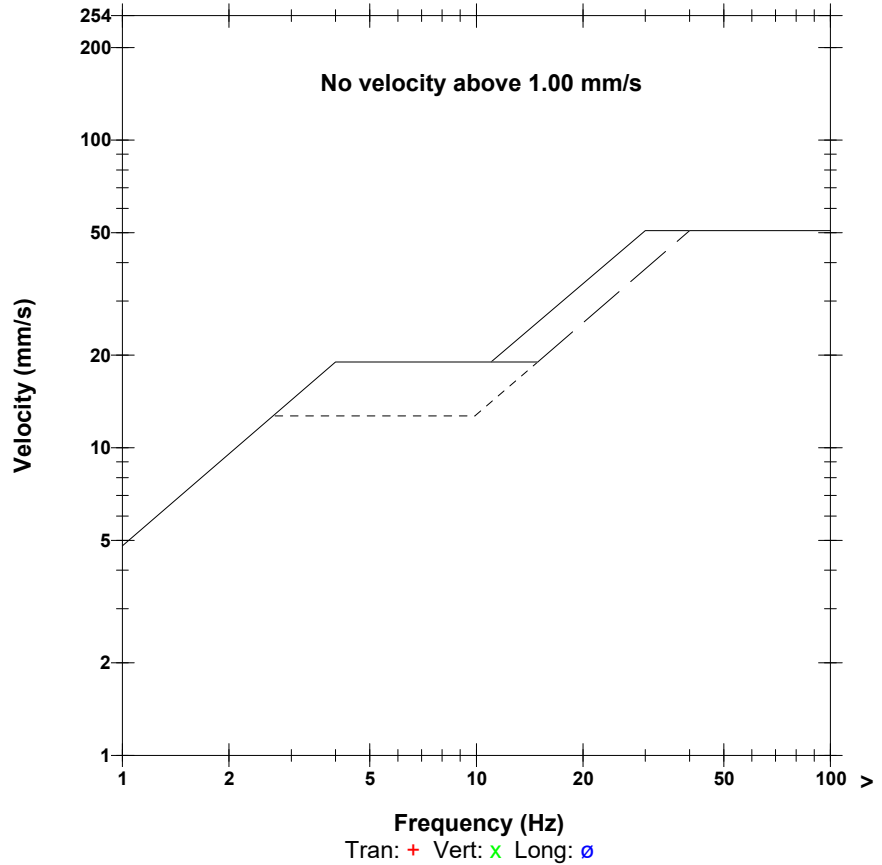
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 115.9 dB(L) 12.46 pa.(L) at 2.566 sec  
**ZC Freq** 7.3 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1401 mv )

	Tran	Vert	Long	
PPV	0.512	0.788	0.607	mm/s
PPV	45.19	48.93	46.66	dB
ZC Freq	47	47	51	Hz
Time (Rel. to Trig)	0.079	0.081	0.063	sec
Peak Acceleration	0.029	0.026	0.021	g
Peak Displacement	0.002	0.003	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.3	7.3	Hz
Overswing Ratio	4.2	4.4	4.3	

**Peak Vector Sum** 0.921 mm/s at 0.080 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

July 28, 2023

Project No.: 234601.00

Mr. Daniel Guest

**Hammond River Holdings**

Via email: [Guest.Daniel@AtlanticWallboard.com](mailto:Guest.Daniel@AtlanticWallboard.com)

**Re: Blast Vibration Monitoring – Blast No. 2023-24 – 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 15:33 on July 27, 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. 2023-24 – July 27, 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)	15:33	1,300 m S	< 0.5 mm/s	<120	Units were not triggered	
2. Civic No. 4126 Route 111 (PW-10)		914 m SE	< 0.5 mm/s	<120		
3. Civic No. 4150 Route 111 (PW-13)		791 m SE	< 0.5 mm/s	<120		
4. Civic No. 2447 Route 820 (PW-07)			981 m NE	0.75 mm/s @ 37 Hz	112	-
5. PW-03 - Cottage Route 820			675 m N	0.98 mm/s @ 85 Hz	118	-
6. Civic No. 2341 Route 820 (PW-05)			629 m N	1.36 mm/s @ 51 Hz	121	-
7. Civic No. 50 Myron Road (PW-15)			840 m NW	1.79 mm/s @ 57 Hz	111	-
8. Civic No. 86 Myron Road (PW-16)			620 m W	0.90 mm/s @ 10 Hz	115	-
9. Civic No. 220 Myron Road (PW-01)			1,280 m S	< 0.5 mm/s	<120	Unit was not triggered
10. Civic No. 2337 Route 820 (PW-04)			670 m N	0.70 mm/s @ 64 Hz	115	-
11. Civic No. 4140 Route 111 (PW-12)			849 m SE	0.51 mm/s @ 73 Hz	112	-
<b>maximum limits as per Approval to Operate</b>			<b>12.5 mm/s</b>	<b>128 dB</b>		

*Mr. Daniel Guest - Hammond River Holdings*

*July 28, 2023*

*Project No.: 234601.00 - Blast No.: 2023-24*

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**

A handwritten signature in blue ink, appearing to read "Robert Y. Cyr".

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

This document was prepared for the party indicated herein. The material and information in the document reflects CBCL Limited's opinion and best judgment based on the information available at the time of preparation. Any use of this document or reliance on its content by third parties is the responsibility of the third party. CBCL Limited accepts no responsibility for any damages suffered as a result of third party use of this document.

## Attachment A

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### *Blast Record*

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### IDENTIFICATION:

<b>Blasting Contractor:</b>	<u>Gulf Operators Ltd.</u>		
<b>Blaster's Certification No.:</b>	<u>1318</u>	<b>Blaster's Name:</b>	<u>Daniel Blanchard</u>
<b>Blast Location:</b>	<u>N 45°28'52.1" W 65°38'05.6" (see attached sketch)</u>		
<b>Type of Rock:</b>	<u>Anhydrate/Gypsum</u>	<b>Est. Vol. or Tonnage:</b>	<u>12,000 tonnes</u>
<b>Weather at time of Blast:</b>	<u>Cloudy</u>	<b>Air Temp.:</b>	<u>24°C</u>
<b>Est. Wind Speed :</b>	<u>≈ 15 km/h</u>	<b>Wind Direction:</b>	<u>NE</u>
<b>Cloud Cover:</b>	<u>Yes – ≈80%</u>	<b>Precipitation:</b>	<u>Light drizzle</u>

### BLAST DESIGN:

<b>Total No. Holes:</b>	<u>88</u>	<b>Hole Diameter:</b>	<u>4.5"</u>
<b>Average Depth:</b>	<u>3.7 m – 7.5 m</u>	<b>Spacing:</b>	<u>10 ft x10 ft</u>
<b>No. Holes per Delay:</b>	<u>2</u>	<b>Collar Length:</b>	<u>7 ft</u>
<b>Delay between Holes:</b>	<u>25 ms</u>	<b>Delay between Rows:</b>	<u>34 42 &amp; 84 ms</u>
<b>Initiation Method:</b>	<u>Non-Electric</u>		
<b>Weight of Explosives per Delay:</b>	<u>Max.: 100 kg</u>		
<b>Type and weight of Explosives for Blast:</b>	<u>3,850 kg – Titan XL-1000</u>		

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



### BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### BLAST MONITORING

<b>Distance to the Nearest Structure:</b>	<u>620 m</u>
<b>Direction to the Nearest Structure:</b>	<u>West</u>
<b>Structure Type:</b>	<u>House</u>
<b>Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):</b>	<u>62.0</u>

### SAFETY:

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

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

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #1

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5489</u>
Calibration Date:	<u>May 5, 2023</u>
Location of seismograph:	<u>Civic Number 4079 Route 111 (PW-09)</u>
Distance and Direction from Blast:	<u>1,300 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #2

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5372</u>
Calibration Date:	<u>February 28, 2023</u>
Location of seismograph:	<u>Civic Number 4126 Route 111 (PW-10)</u>
Distance and Direction from Blast:	<u>914 m Southeast</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #3

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5673</u>
Calibration Date:	<u>April 25, 2023</u>
Location of seismograph:	<u>Civic Number 4150 Route 111 (PW-13)</u>
Distance and Direction from Blast:	<u>791 m Southeast</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #4

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20204</u>
Calibration Date:	<u>June 12, 2023</u>
Location of seismograph:	<u>Civic Number 2447 Route 820 (PW-07)</u>
Distance and Direction from Blast:	<u>981 m Northeast</u>
Transverse Particle Velocity:	<u>0.37 mm/s @ 34 Hz</u>
Vertical Particle Velocity:	<u>0.14 mm/s @ 37 Hz</u>
Longitudinal Particle Velocity:	<u>0.75 mm/s @ 37 Hz</u>
Peak Particle Velocity:	<u>0.75 mm/s @ 37 Hz</u>
Maximum Airblast:	<u>112 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #5

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18187</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Cottage - PW-03 - Route 820</u>
Distance and Direction from Blast:	<u>675 m North</u>
Transverse Particle Velocity:	<u>0.98 mm/s @ 85 Hz</u>
Vertical Particle Velocity:	<u>0.43 mm/s @ 39 Hz</u>
Longitudinal Particle Velocity:	<u>0.91 mm/s @ 85 Hz</u>
Peak Particle Velocity:	<u>0.98 mm/s @ 85 Hz</u>
Maximum Airblast:	<u>118 dB(L)</u>

### Data Collection – Seismometer #6

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20205</u>
Calibration Date:	<u>May 30, 2023</u>
Location of seismograph:	<u>Civic Number 2341 Route 820 (PW-05)</u>
Distance and Direction from Blast:	<u>629 m North</u>
Transverse Particle Velocity:	<u>1.04 mm/s @ 47 Hz</u>
Vertical Particle Velocity:	<u>0.93 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>1.36 mm/s @ 51 Hz</u>
Peak Particle Velocity:	<u>1.36 mm/s @ 51 Hz</u>
Maximum Airblast:	<u>121 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #7

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20203</u>
Calibration Date:	<u>May 30, 2023</u>
Location of seismograph:	<u>Civic Number 50 Myron Road (PW-15)</u>
Distance and Direction from Blast:	<u>840 m Northwest</u>
Transverse Particle Velocity:	<u>1.79 mm/s @ 57 Hz</u>
Vertical Particle Velocity:	<u>0.76 mm/s @ 73 Hz</u>
Longitudinal Particle Velocity:	<u>1.05 mm/s @ 64 Hz</u>
Peak Particle Velocity:	<u>1.79 mm/s @ 57 Hz</u>
Maximum Airblast:	<u>111 dB(L)</u>

### Data Collection – Seismometer #8

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #21696</u>
Calibration Date:	<u>July 10, 2023</u>
Location of seismograph:	<u>Civic Number 86 Myron Road (PW-16)</u>
Distance and Direction from Blast:	<u>620 m West</u>
Transverse Particle Velocity:	<u>0.90 mm/s @ 10 Hz</u>
Vertical Particle Velocity:	<u>0.59 mm/s @ 20 Hz</u>
Longitudinal Particle Velocity:	<u>0.80 mm/s @ 16 Hz</u>
Peak Particle Velocity:	<u>0.90 mm/s @ 10 Hz</u>
Maximum Airblast:	<u>115 dB(L)</u>

## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #9

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20206</u>
Calibration Date:	<u>June 9, 2023</u>
Location of seismograph:	<u>Civic Number 220 Myron Road (PW-01)</u>
Distance and Direction from Blast:	<u>1,280 m South</u>
Transverse Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u>&lt;0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u>&lt;120 dB(L) – Unit was not triggered</u>

### Data Collection – Seismometer #10

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #18193</u>
Calibration Date:	<u>May 12, 2023</u>
Location of seismograph:	<u>Civic Number 2337 Route 820 (PW-04)</u>
Distance and Direction from Blast:	<u>670 m North</u>
Transverse Particle Velocity:	<u>0.70 mm/s @ 64 Hz</u>
Vertical Particle Velocity:	<u>0.58 mm/s @ 85 Hz</u>
Longitudinal Particle Velocity:	<u>0.55 mm/s @ 73 Hz</u>
Peak Particle Velocity:	<u>0.70 mm/s @ 64 Hz</u>
Maximum Airblast:	<u>115 dB(L)</u>



## BLAST RECORD

<b>Project Name:</b>	<u>Upham Gypsum Quarry</u>	<b>Date of Blast:</b>	<u>July 27, 2023</u>
<b>Project No.:</b>	<u>234601.00</u>	<b>Time of Blast:</b>	<u>15:33</u>
<b>Inspector:</b>	<u>S. Carroll</u>	<b>Blast No.:</b>	<u>2023-24</u>
<b>Client:</b>	<u>Hammond River Holdings</u>		

### Data Collection – Seismometer #11

Make, Model and Serial # of unit:	<u>InstanTEL Minimate, Serial #5676</u>
Calibration Date:	<u>March 8, 2023</u>
Location of seismograph:	<u>Civic Number 4140 Route 111 (PW-12)</u>
Distance and Direction from Blast:	<u>849 m Southeast</u>
Transverse Particle Velocity:	<u>0.38 mm/s @ 64 Hz</u>
Vertical Particle Velocity:	<u>0.45 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>0.51 mm/s @ 73 Hz</u>
Peak Particle Velocity:	<u>0.51 mm/s @ 73 Hz</u>
Maximum Airblast:	<u>112 dB(L)</u>

## Attachment B

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### *Blast and Seismograph Location Plan*

**Blast and Seismograph Location Plan**  
**Blast No: 2023-24**  
Upham East Gypsum Quarry, Upham, NB



**Date:** July 27, 2023  
**Project No.:** 234601.00



## Attachment C

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### *Blast Event Reports*



**Date/Time** Long at 15:33:58 July 27, 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/GAYTON.MMB

**Serial Number** UM20204 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** June 12, 2023 by InstanTel  
**File Name** UM20204\_20230727153358.IDFW

### Post Event Notes

Location: Civic Number 2447 Route 820 (PW-07)  
 Blast No.: 2023-24  
 Project No: 234601.00

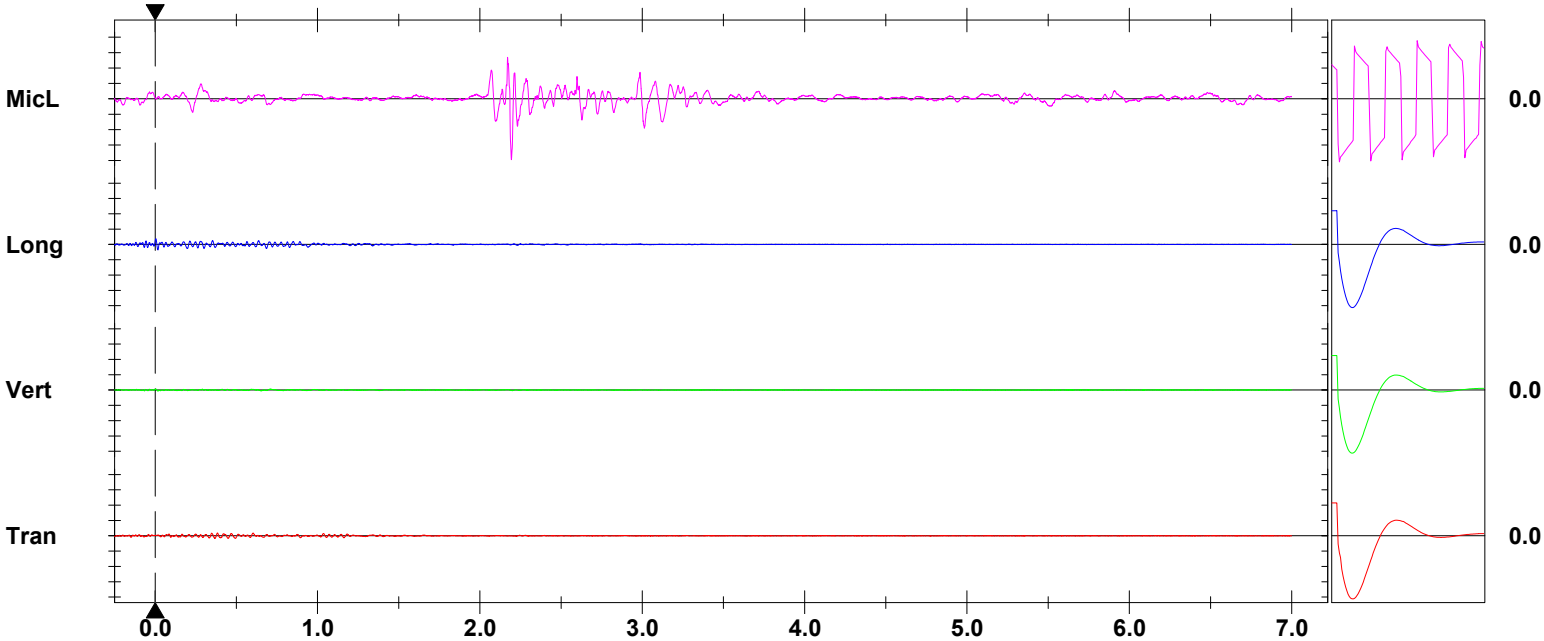
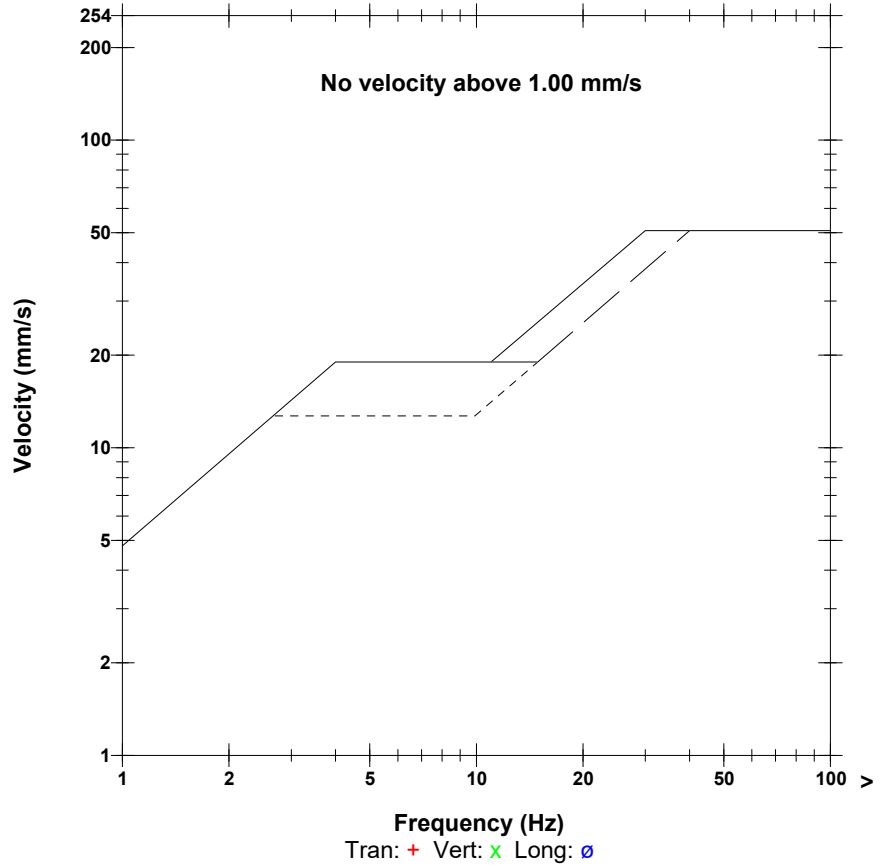
### Notes

**Microphone** Linear Weighting  
**PSPL** 111.9 dB(L) 7.897 pa.(L) at 2.194 sec  
**ZC Freq** 23 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1295 mv )

	Tran	Vert	Long	
PPV	0.370	0.142	0.749	mm/s
PPV	42.37	34.04	48.49	dB
ZC Freq	34	37	37	Hz
Time (Rel. to Trig)	0.384	0.017	0.004	sec
Peak Acceleration	0.016	0.007	0.021	g
Peak Displacement	0.002	0.002	0.005	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.7	Hz
Overswing Ratio	4.0	4.2	3.9	

**Peak Vector Sum** 0.759 mm/s at 0.004 sec

### USBM RI8507 And OSMRE



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

Sensor Check

**Date/Time** Long at 15:33:56 July 27, 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/factory.MMB

**Serial Number** UM18187 V 10-90GC Micromate ISEE  
**Battery Level** 3.7 Volts  
**Unit Calibration** May 12, 2023 by InstanTel  
**File Name** UM18187\_20230727153356.IDFW

**Post Event Notes**

Location: Cottage - Route 820 (PW-03)  
 Blast No.: 2023-24  
 Project No: 234601.00

**Notes**

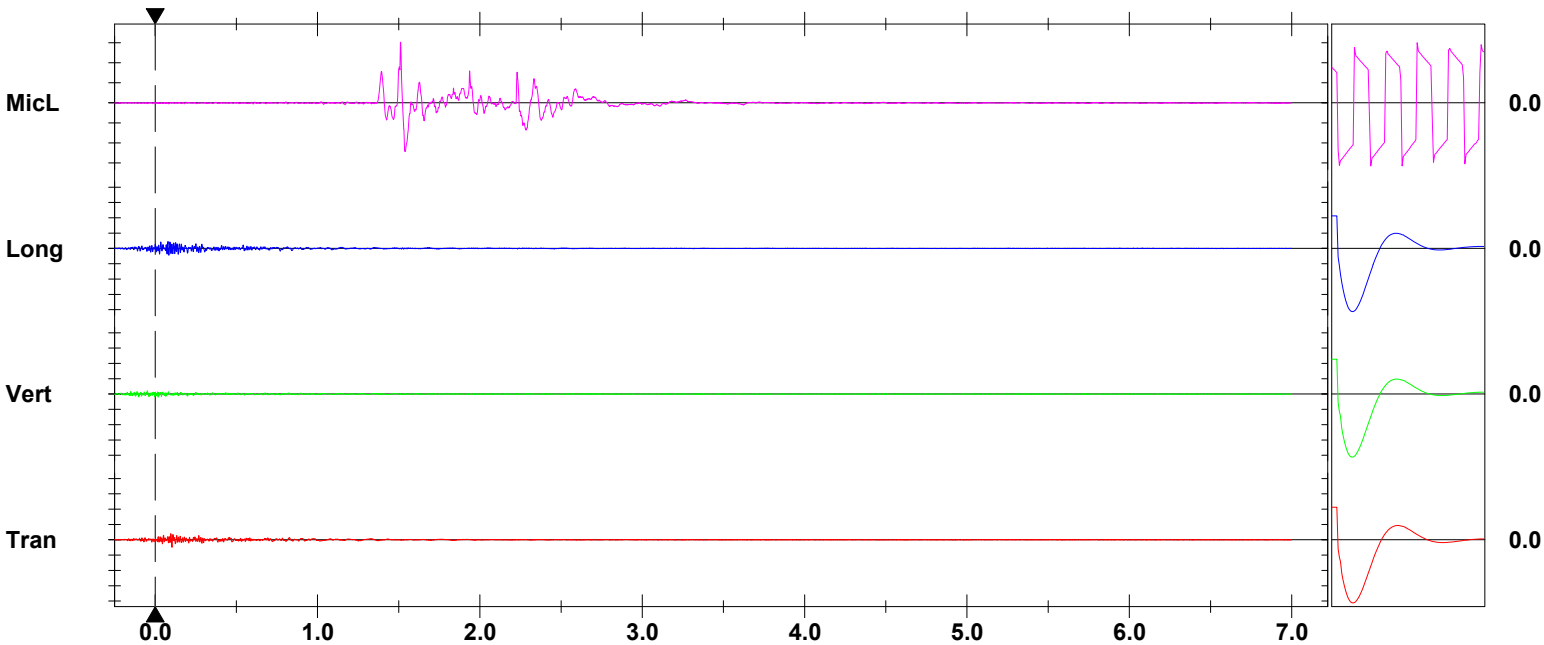
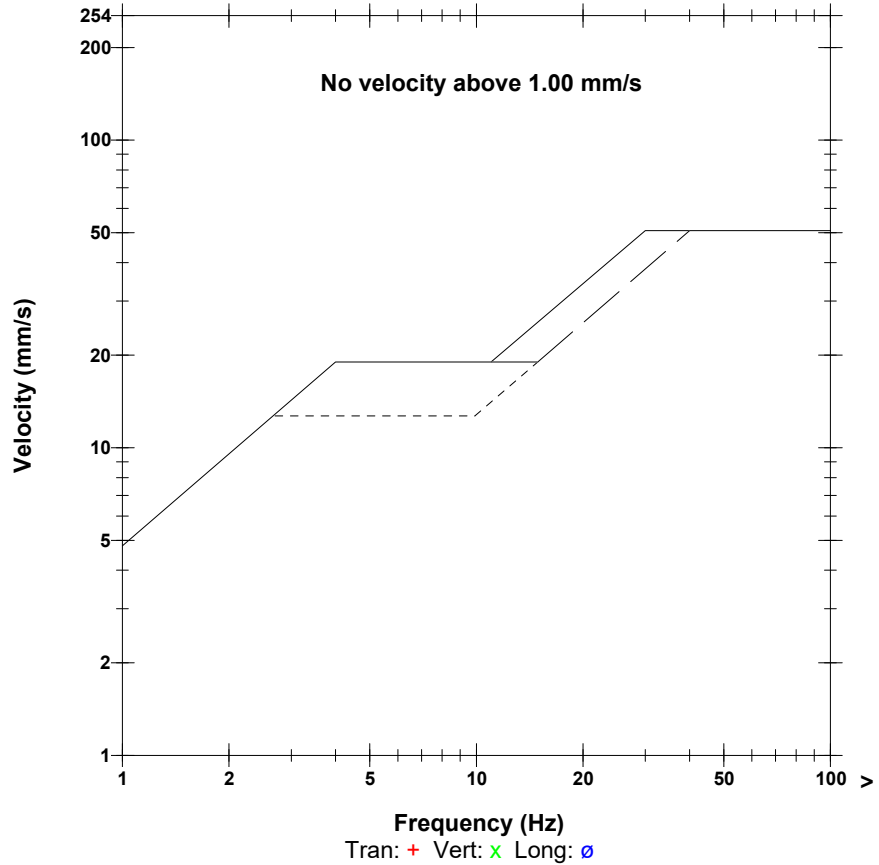
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 117.6 dB(L) 15.16 pa.(L) at 1.511 sec  
**ZC Freq** 16 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1325 mv )

	Tran	Vert	Long	
PPV	0.977	0.434	0.914	mm/s
PPV	50.80	43.74	50.22	dB
ZC Freq	85	39	85	Hz
Time (Rel. to Trig)	0.104	-0.049	0.079	sec
Peak Acceleration	0.081	0.029	0.075	g
Peak Displacement	0.003	0.001	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.5	7.5	Hz
Overswing Ratio	4.4	4.2	4.2	

**Peak Vector Sum** 1.126 mm/s at 0.104 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Tran at 15:33:54 July 27, 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/factory.MMB

**Serial Number** UM20205 V 10-90GC Micromate ISEE  
**Battery Level** 3.7 Volts  
**Unit Calibration** May 30, 2023 by InstanTel  
**File Name** UM20205\_20230727153354.IDFW

### Post Event Notes

Location: Civic Number 2341 Route 820 (PW-05)  
 Blast No.: 2023-24  
 Project No: 234601.00

### Notes

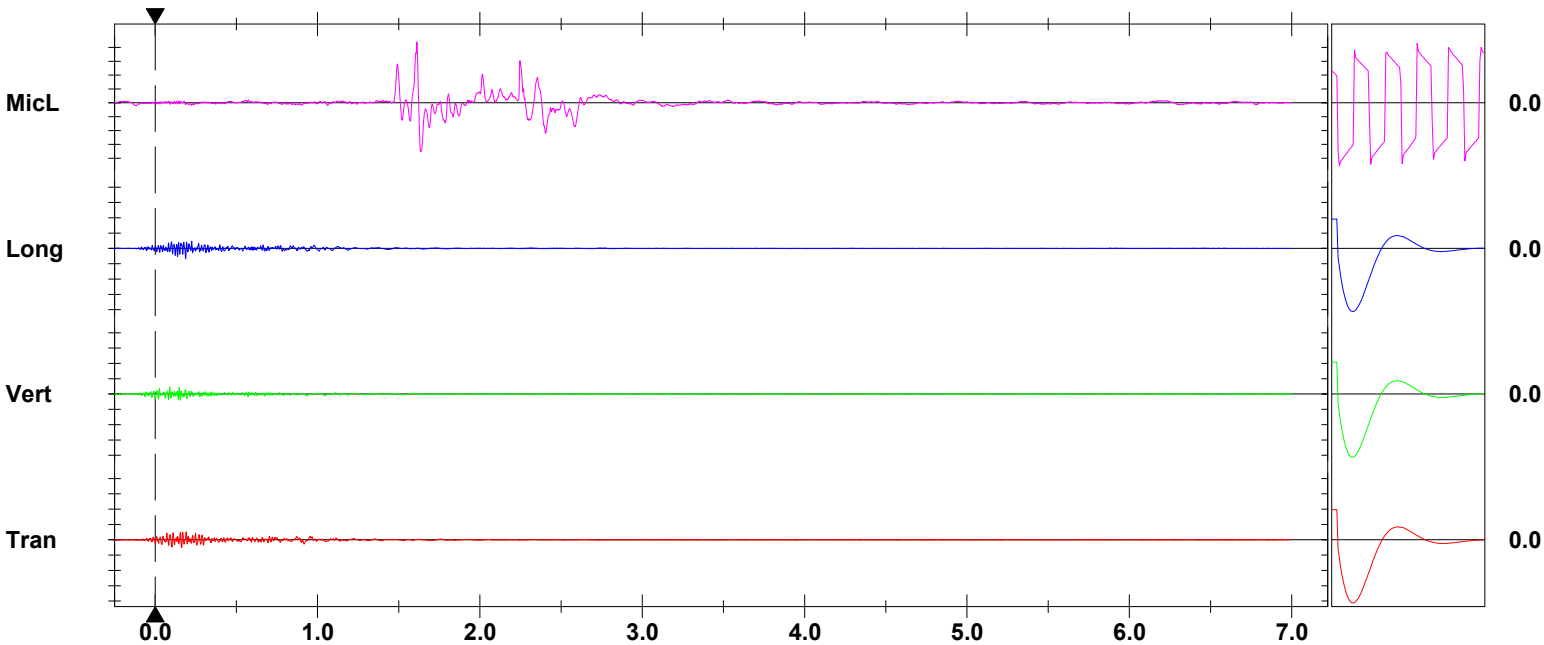
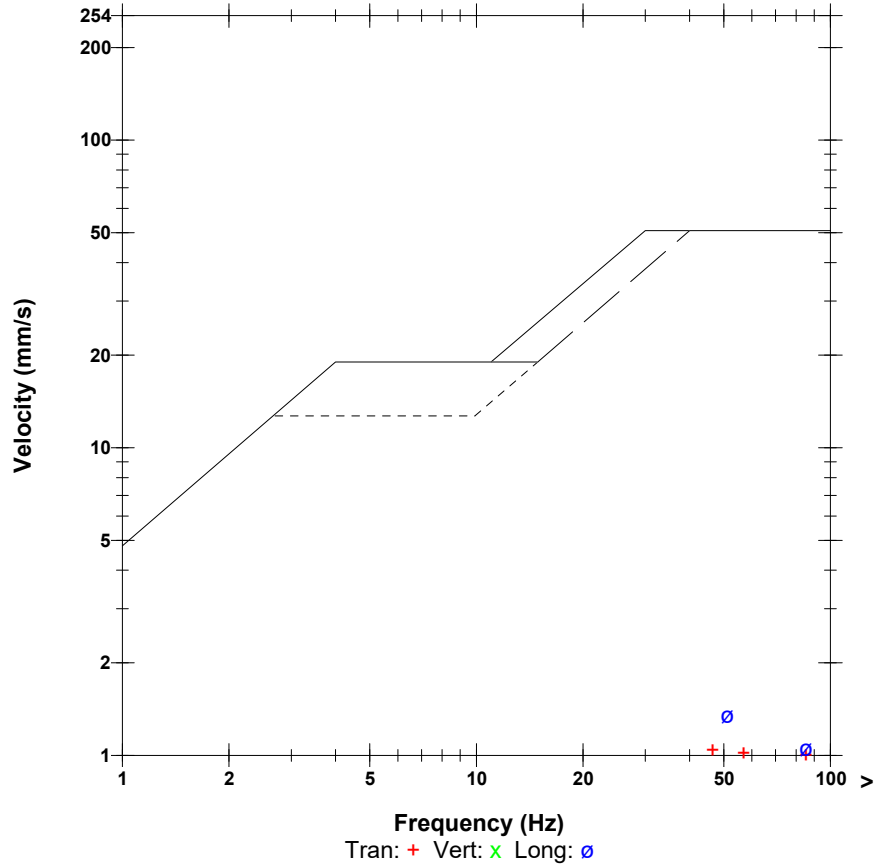
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 120.8 dB(L) 21.92 pa.(L) at 1.611 sec  
**ZC Freq** 12 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1384 mv )

	Tran	Vert	Long	
PPV	1.040	0.930	1.356	mm/s
PPV	51.34	50.37	53.64	dB
ZC Freq	47	57	51	Hz
Time (Rel. to Trig)	0.190	0.089	0.188	sec
Peak Acceleration	0.086	0.043	0.055	g
Peak Displacement	0.005	0.002	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.3	7.3	Hz
Overswing Ratio	4.9	4.8	4.9	

**Peak Vector Sum** 1.504 mm/s at 0.188 sec

### USBM RI8507 And OSMRE



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Tran at 15:33:56 July 27, 2023  
**Trigger Source** Geo: 0.500 mm/s, Mic: 121.0 dB(L)  
**Range** Geo: 254.0 mm/s  
**Record Time** 7.0 sec at 1024 sps  
**Operator/Setup:** Operator/factory.MMB

**Serial Number** UM20203 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** May 30, 2023 by Instatel  
**File Name** UM20203\_20230727153356.IDFW

**Post Event Notes**

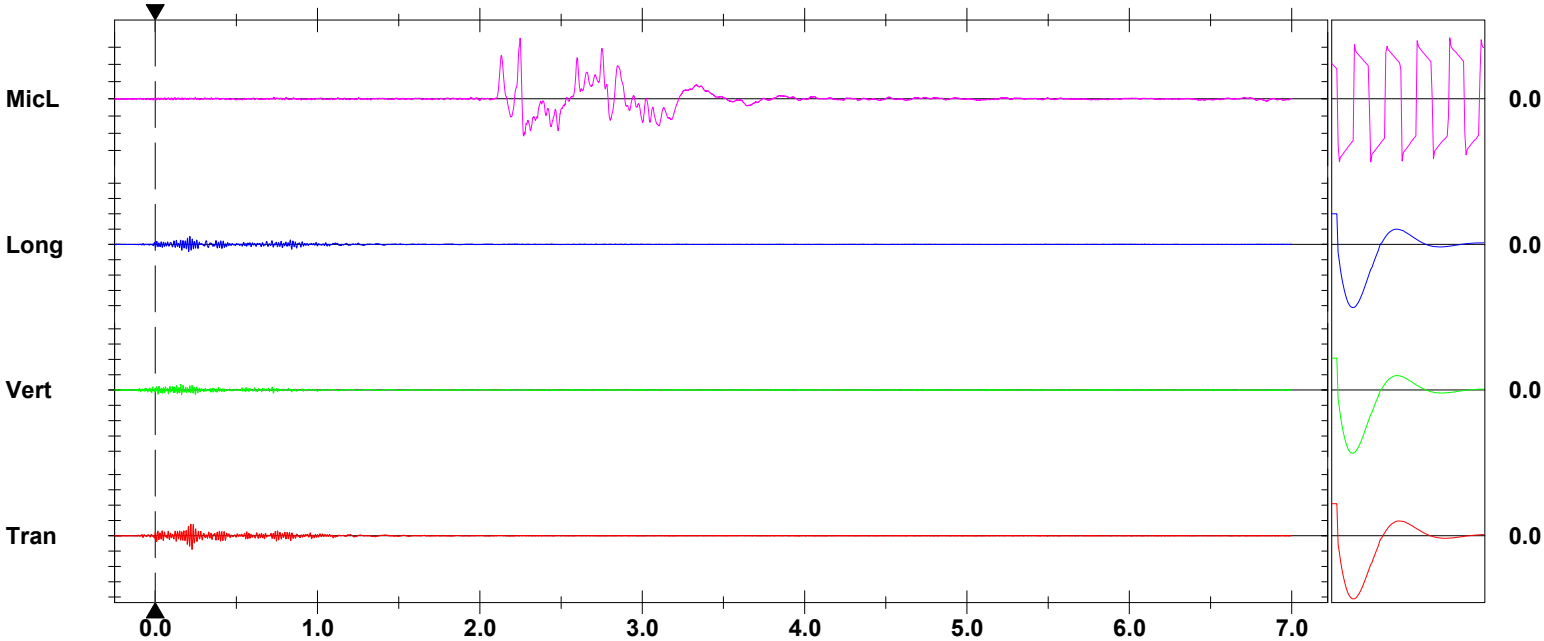
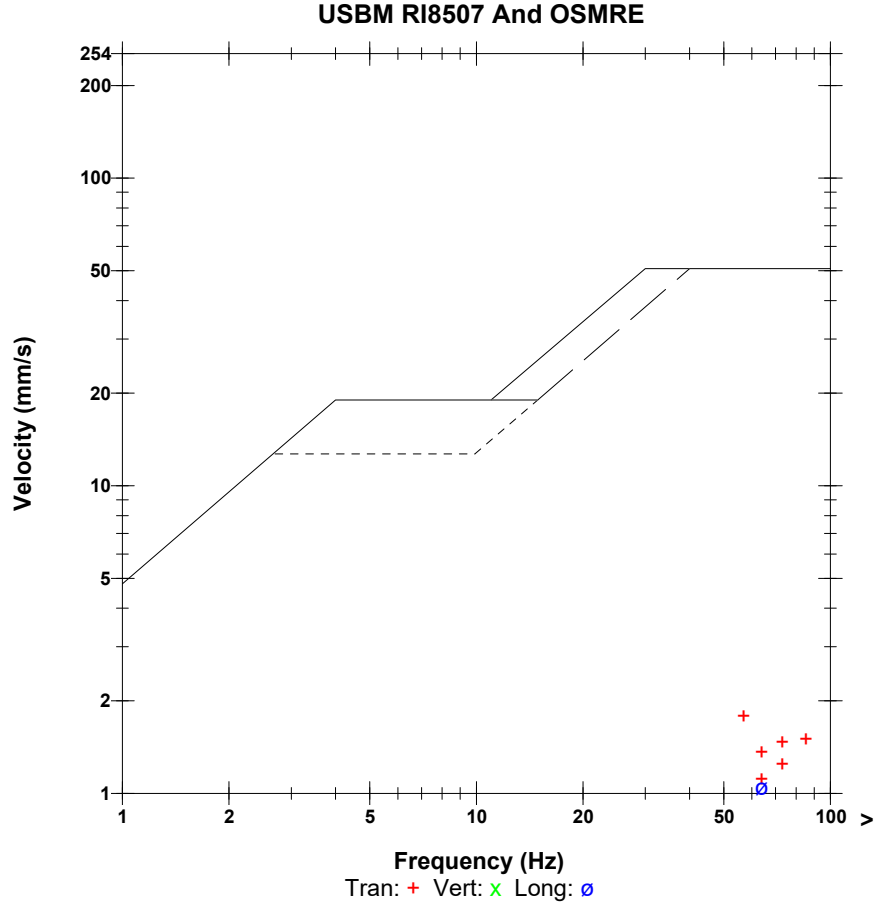
Location: Civic Number 50 Myron Road (PW-15)  
 Blast No.: 2023-24  
 Project No: 234601.00

**Notes**  
 Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 111.0 dB(L) 7.059 pa.(L) at 2.247 sec  
**ZC Freq** 11 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1310 mv )

	Tran	Vert	Long	
PPV	1.789	0.757	1.048	mm/s
PPV	56.05	48.58	51.41	dB
ZC Freq	57	73	64	Hz
Time (Rel. to Trig)	0.227	0.158	0.213	sec
Peak Acceleration	0.134	0.046	0.044	g
Peak Displacement	0.004	0.001	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.5	7.5	Hz
Overswing Ratio	4.3	4.4	4.1	

**Peak Vector Sum** 1.977 mm/s at 0.227 sec



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

Sensor Check

**Date/Time** Long at 15:33:58 July 27, 2023  
**Trigger Source** Geo: 0.500 mm/s, Mic: 100.00 dB(L)  
**Range** Geo: 254.0 mm/s  
**Record Time** 7.0 sec at 1024 sps  
**Operator/Setup:** Operator/Micromate min trigger mmb.MMB

**Serial Number** UM21696 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** July 10, 2023 by InstanTel  
**File Name** UM21696\_20230727153358.IDFW

**Notes**  
 Location  
 Client  
 Company  
 General Notes

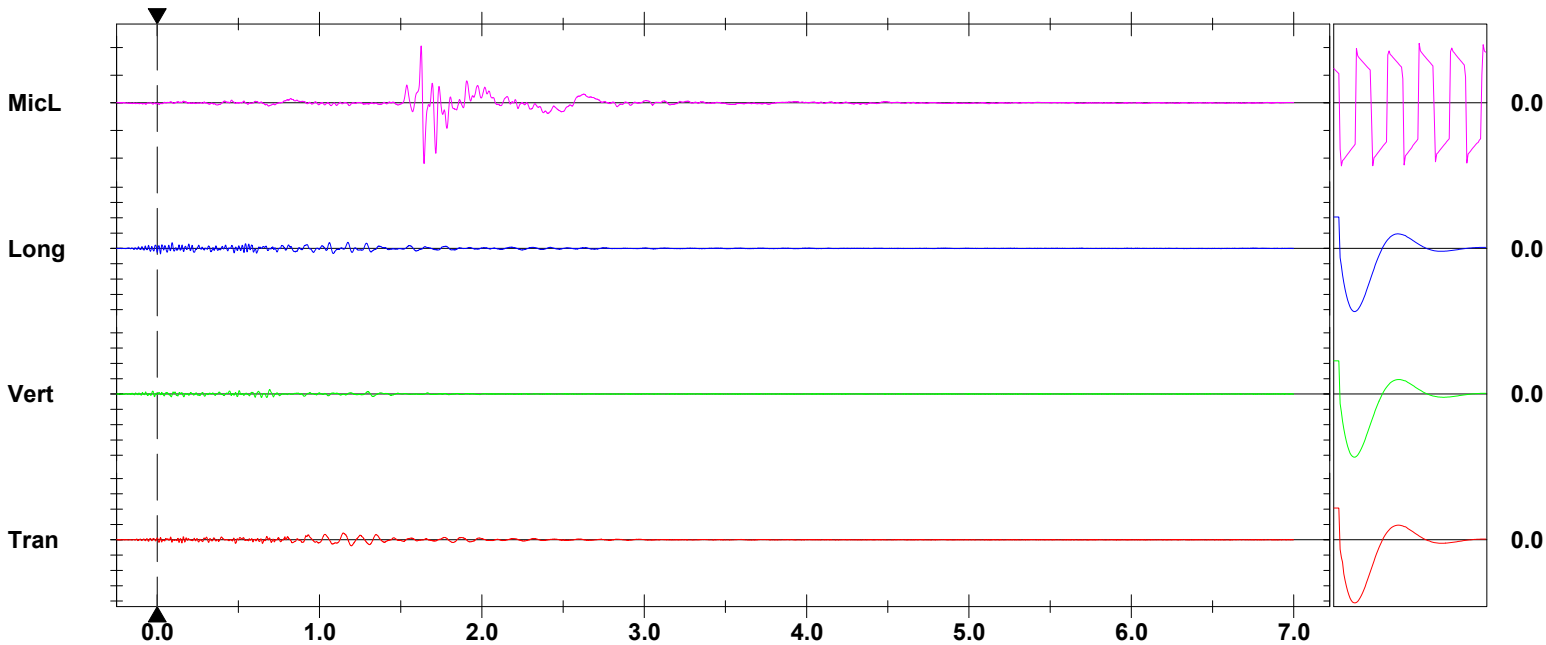
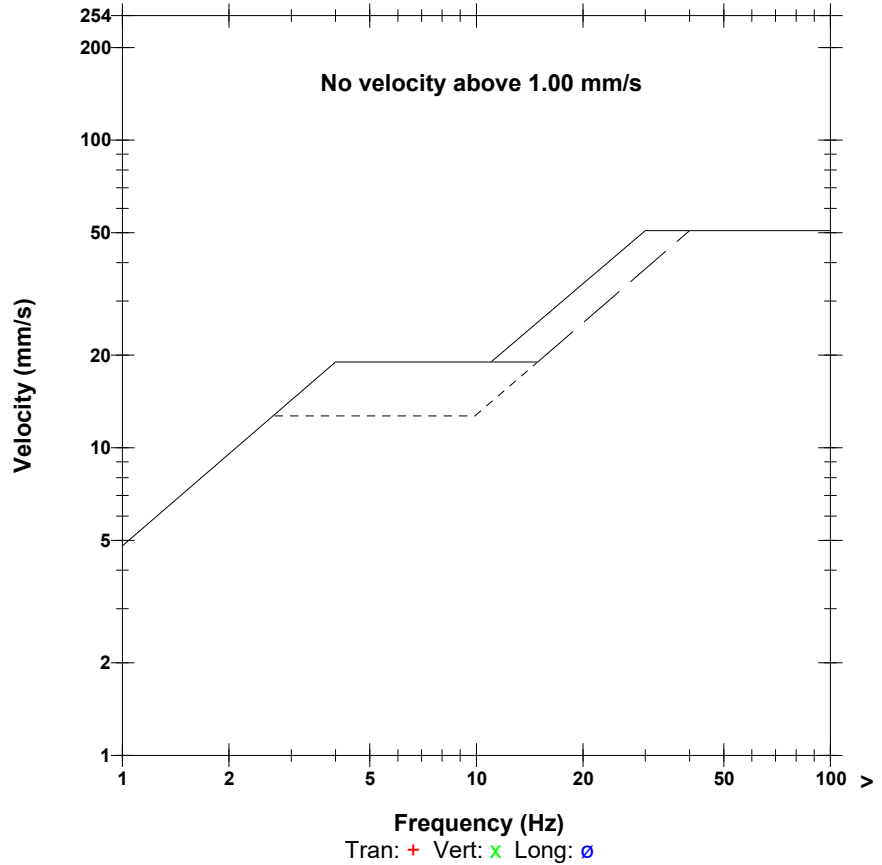
**Post Event Notes**  
 Location: Civic Number 86 Myron Road (PW-16)  
 Blast No.: 2023-24  
 Project No: 234601.00

**Microphone** Linear Weighting  
**PSPL** 114.8 dB(L) 11.00 pa.(L) at 1.644 sec  
**ZC Freq** 10 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1335 mv )

	Tran	Vert	Long	
PPV	0.899	0.591	0.796	mm/s
PPV	50.07	46.43	49.02	dB
ZC Freq	10	20	16	Hz
Time (Rel. to Trig)	1.146	0.694	1.175	sec
Peak Acceleration	0.021	0.016	0.033	g
Peak Displacement	0.014	0.004	0.008	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.3	4.3	4.3	

**Peak Vector Sum** 0.944 mm/s at 1.198 sec

### USBM RI8507 And OSMRE



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Tran at 15:33:52 July 27, 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/factory.MMB

**Serial Number** UM18193 V 10-90GC Micromate ISEE  
**Battery Level** 3.8 Volts  
**Unit Calibration** May 12, 2023 by InstanTel  
**File Name** UM18193\_20230727153352.IDFW

**Post Event Notes**

Location: Civic Number 2337 Route 820 (PW-04)  
 Blast No.: 2023-24  
 Project No: 234601.00

**Notes**

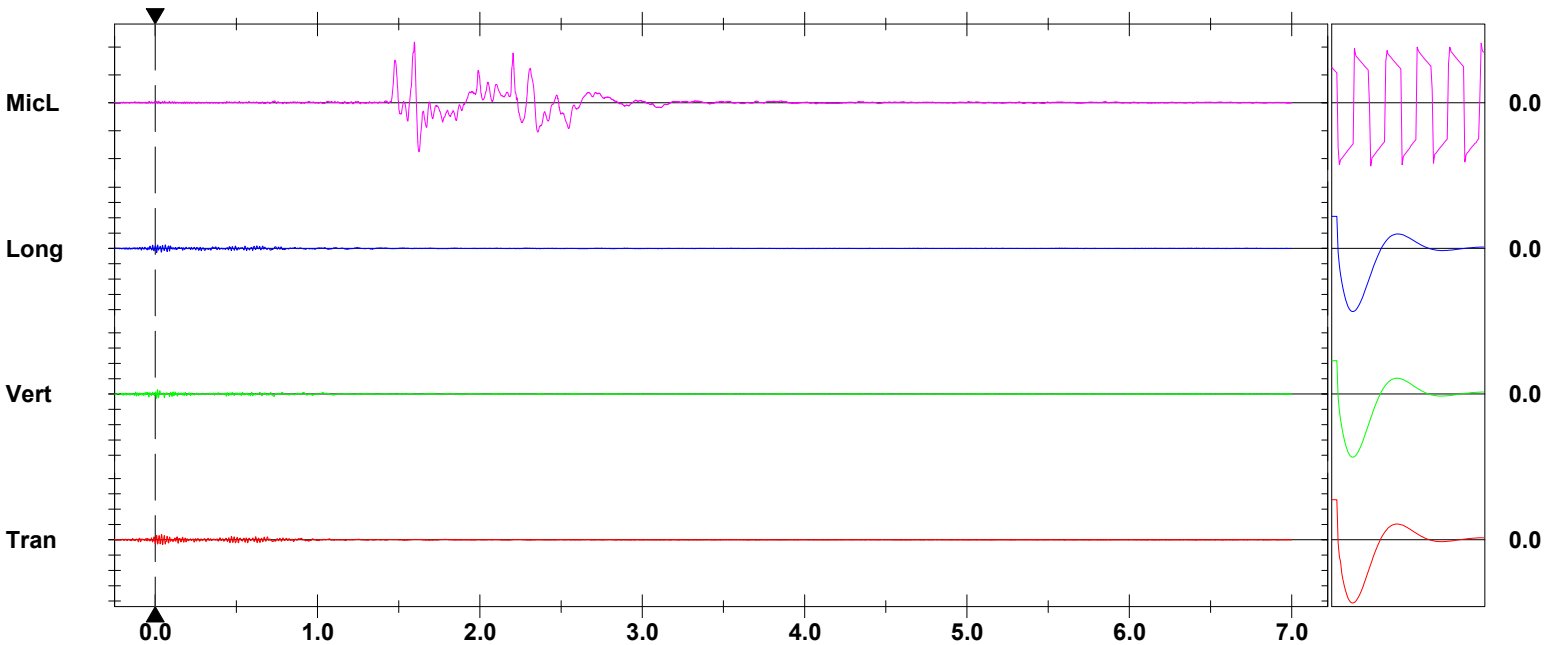
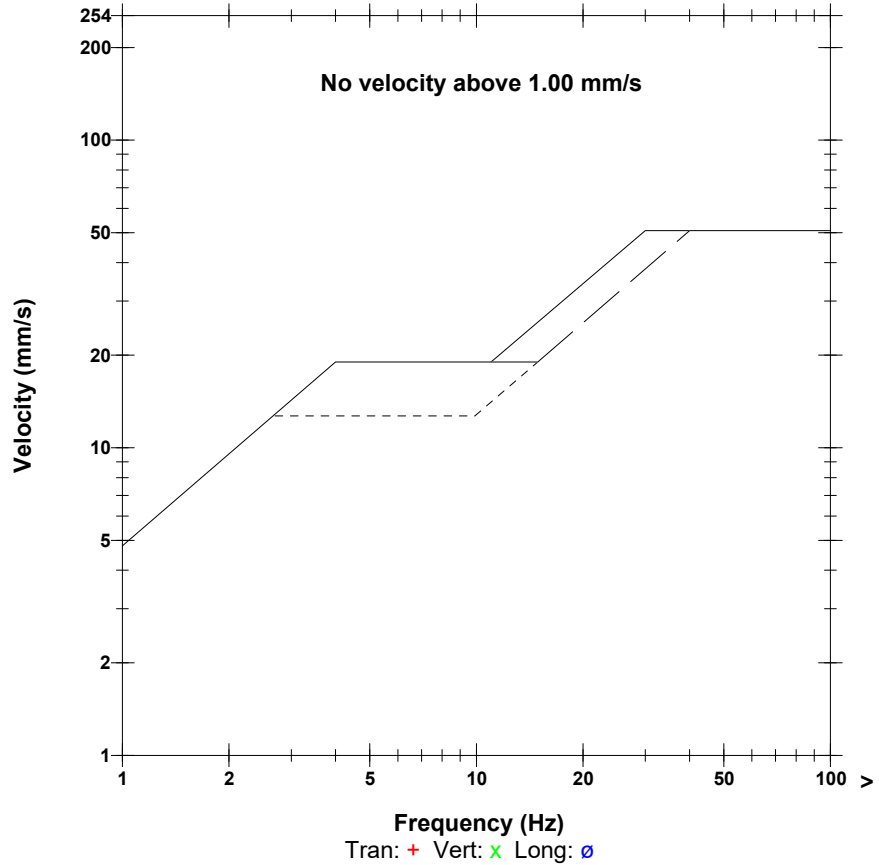
Location:  
 Client:  
 User Name:  
 General:

**Microphone** Linear Weighting  
**PSPL** 114.7 dB(L) 10.91 pa.(L) at 1.597 sec  
**ZC Freq** 12 Hz  
**Channel Test** Passed (Freq = 20.5 Hz Amp = 1294 mv )

	Tran	Vert	Long	
PPV	0.701	0.575	0.552	mm/s
PPV	47.92	46.20	45.83	dB
ZC Freq	64	85	73	Hz
Time (Rel. to Trig)	0.040	0.014	0.009	sec
Peak Acceleration	0.065	0.030	0.034	g
Peak Displacement	0.002	0.002	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.3	Hz
Overswing Ratio	4.0	4.0	4.4	

**Peak Vector Sum** 0.927 mm/s at 0.009 sec

**USBM RI8507 And OSMRE**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Long at 15:33:55 July 27, 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

**Serial Number** 5676 V 2.61 MiniMate  
**Battery Level** 6.3 Volts  
**Unit Calibration** March 8, 2023 by InstanTel  
**File Name** G676K4O8.KJO

**Notes**  
 Location:  
 Client:  
 User Name:  
 Converted: July 27, 2023 17:54:28 (V10.72.1)

**Post Event Notes**  
 Location: Civic Number 4140 Route 111 (PW-12)  
 Blast No.: 2023-24  
 Project No: 234601.00

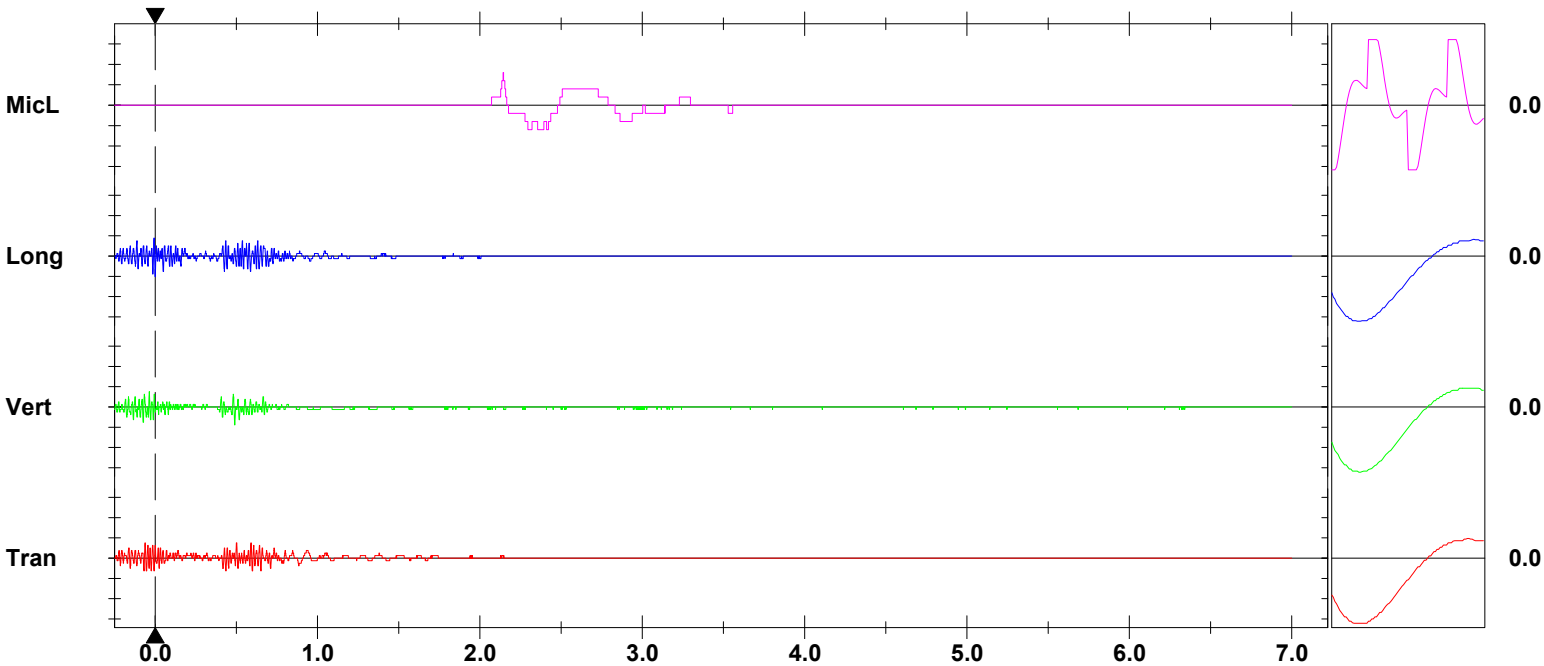
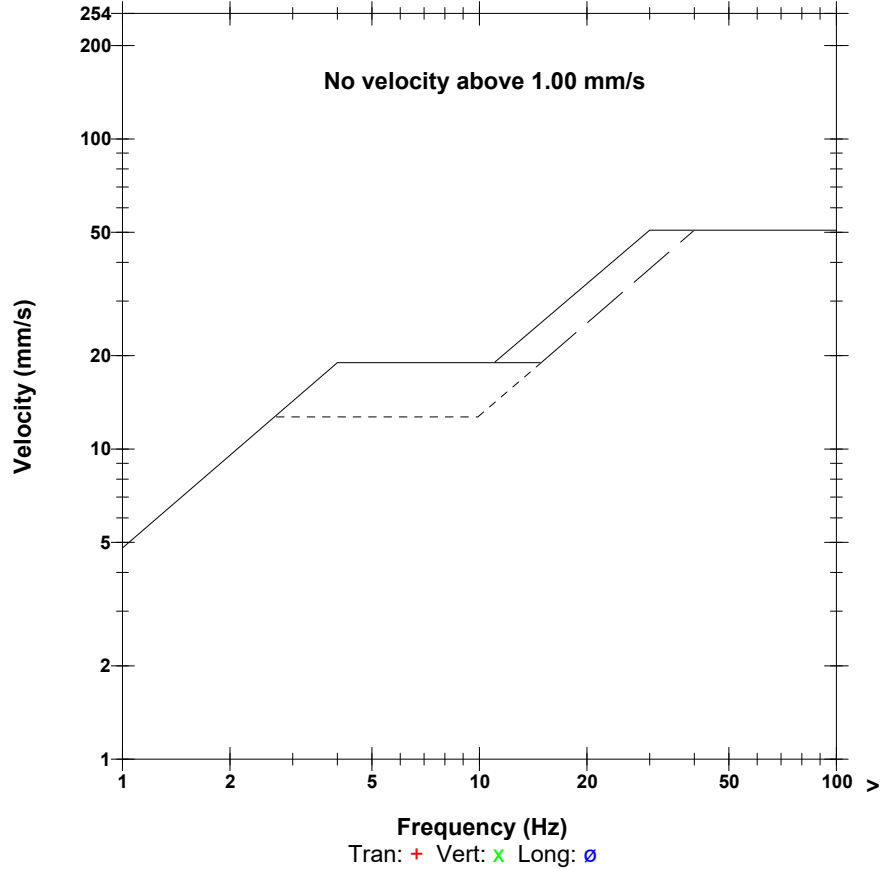
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 112.0 dB(L) 8.000 pa.(L) at 2.144 sec  
**ZC Freq** 5.0 Hz  
**Channel Test** Passed (Freq = 20.0 Hz Amp = 301 mv )

	Tran	Vert	Long	
PPV	0.381	0.445	0.508	mm/s
PPV	42.62	43.96	45.12	dB
ZC Freq	64	57	73	Hz
Time (Rel. to Trig)	-0.061	0.491	0.001	sec
Peak Acceleration	0.020	0.020	0.020	g
Peak Displacement	0.001	0.001	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	8.1	7.7	Hz
Overswing Ratio	3.5	3.6	3.8	

**Peak Vector Sum** 0.619 mm/s at 0.001 sec

**USBM RI8507 And OSMRE**



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

Sensor Check