

To: Mike Cormier, P.Eng. – Director, Authorizations Branch, New Brunswick Department of Environment and Local Government
From: Daniel Guest, Hammond River Holdings Ltd.
Date: December 14, 2023
Subject: Monthly Monitoring Report – Upham East Gypsum Quarry – November 2023
Our File: 21-3049

Introduction

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

Surface Water Sampling

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

- Week 1: November 2, 2023
- Week 2: November 8, 2023
- Week 3: November 15, 2023
- Week 4: November 19, 2023
- Week 5: November 29, 2023

One additional monitoring event was conducted on November 23, 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; and
- SW5 was collected within the unnamed tributary approximately 100m downstream from PDP-1.

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

Compliance Monitoring Results

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

A QA/QC program was implemented to evaluate whether the data collected was of suitable quality to characterize the surface water conditions observed. This program required the collection of field duplicates and the calculation of the relative percent difference (RPD). The calculation method and acceptance level of 40% are discussed in CCME (2016). Two duplicate sample was collected during the November 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

Water levels were downloaded on November 8, 2023. The data retrieved from the dataloggers are depicted on a time series plots. The dataloggers allow for continuous coverage of water levels in the wells.

Methodology

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

Water Level Results

The data for perimeter monitoring wells (Figure 3) and potable monitoring wells (Figures 4, 5, and 6) are presented as time series plots. Total precipitation (mm) is also presented within each figure, representing periods of recharge. The overall trend in 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 November 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

On November 3, an accidental release of diesel occurred in the Upham East Gypsum Quarry. The capacity of the tank was 150 litres; fuel remained in the tank after the release. Thus, the spill was under 150 litres. At the time of the release, the pump was placed at the edge of the sump within the quarry. Thus, the fuel released from the pump entered the sump. The pump was not operating at the time of the release. Therefore, the spill was contained within the sump.

A full report on the spill will be provided to the New Brunswick Department of Environment and Local Government in January 2024.

Ambient Air Quality Monitoring

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 August, there were 5 air quality monitoring events, November 4, 10, 16, 22, and 28, 2023. The results are provided in Table 3. There were no exceedances of the 120 µg/m³ 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

Two blasts occurred during the November 2023 monitoring period, occurring on November 17, 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

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

Summary

Since extraction activities began in July 2020 at the Upham East Gypsum Quarry, the water chemistry at the discharge point into the unnamed tributary has remained comparable to background, groundwater

measured in the perimeter monitoring wells remains comparable to pre-operation conditions, air quality monitoring has remained below guidelines, and decibel levels have remained generally below guidelines.

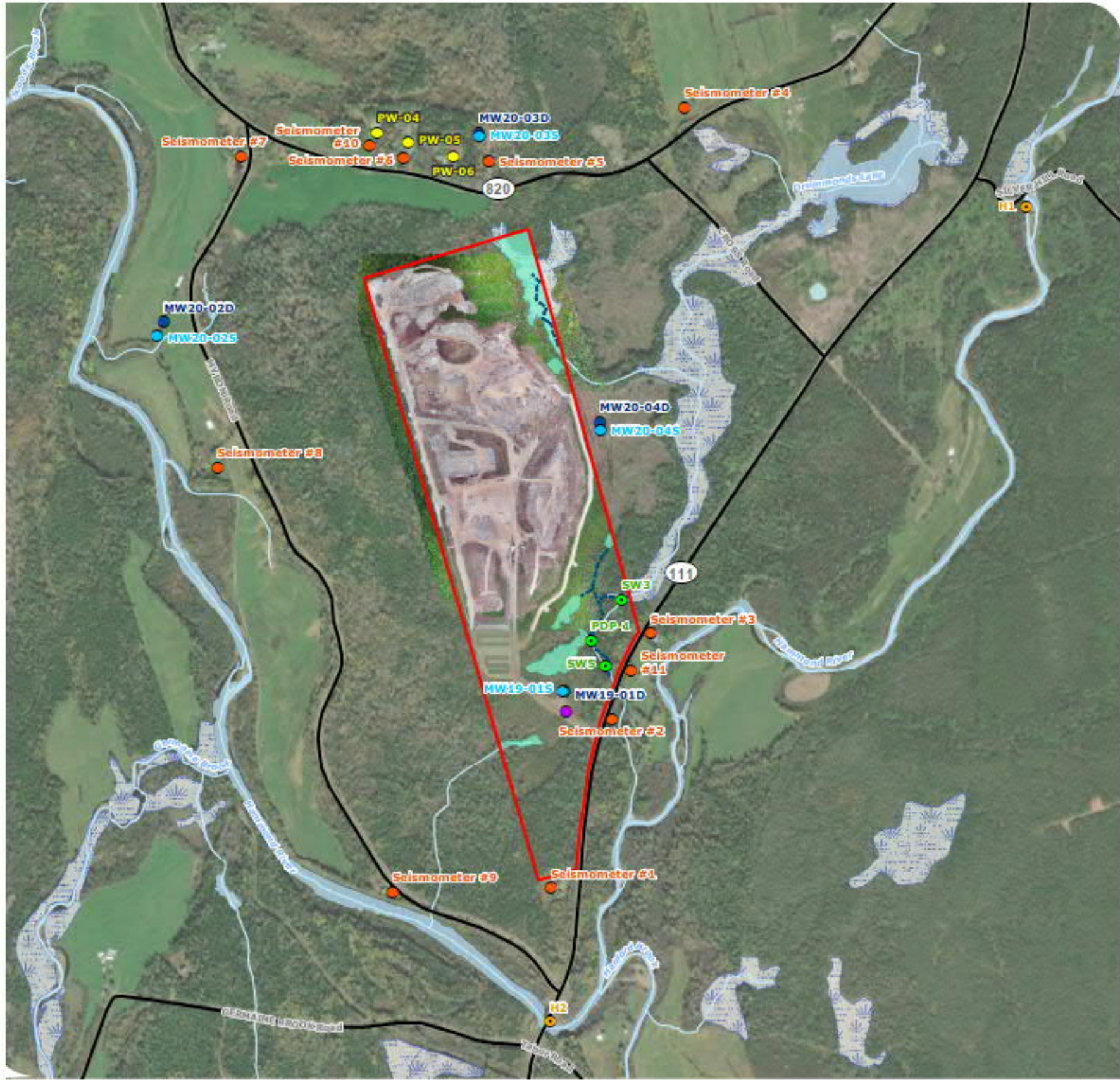
References

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

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

Attachment A

Figures



HAMMOND RIVER HOLDINGS

UPHAM EAST GYPSUM QUARRY

MONITORING LOCATIONS FIGURE 1

- Project Development Area
- Air Quality Monitor
- Blast Monitor Locations
- Groundwater Monitoring**
- Shallow Perimeter Monitoring Well
- Deep Perimeter Monitoring Well
- Potable Well Data Loggers
- Surface Water Sampling Locations**
- Weekly Samples
- Quarterly Samples
- Field Delineated Watercourse
- Road
- Watercourse
- Field Delineated Wetlands
- GNB Mapped Wetlands
- Waterbody

Site Imagery is from June 2023

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED

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



SCALE 1:14,000

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

FILE LOCATION: K:\2021\213049\product\client\Month\reports\MonitoringLocations_2023.mxd

Figure 2: TSS Monthly Average

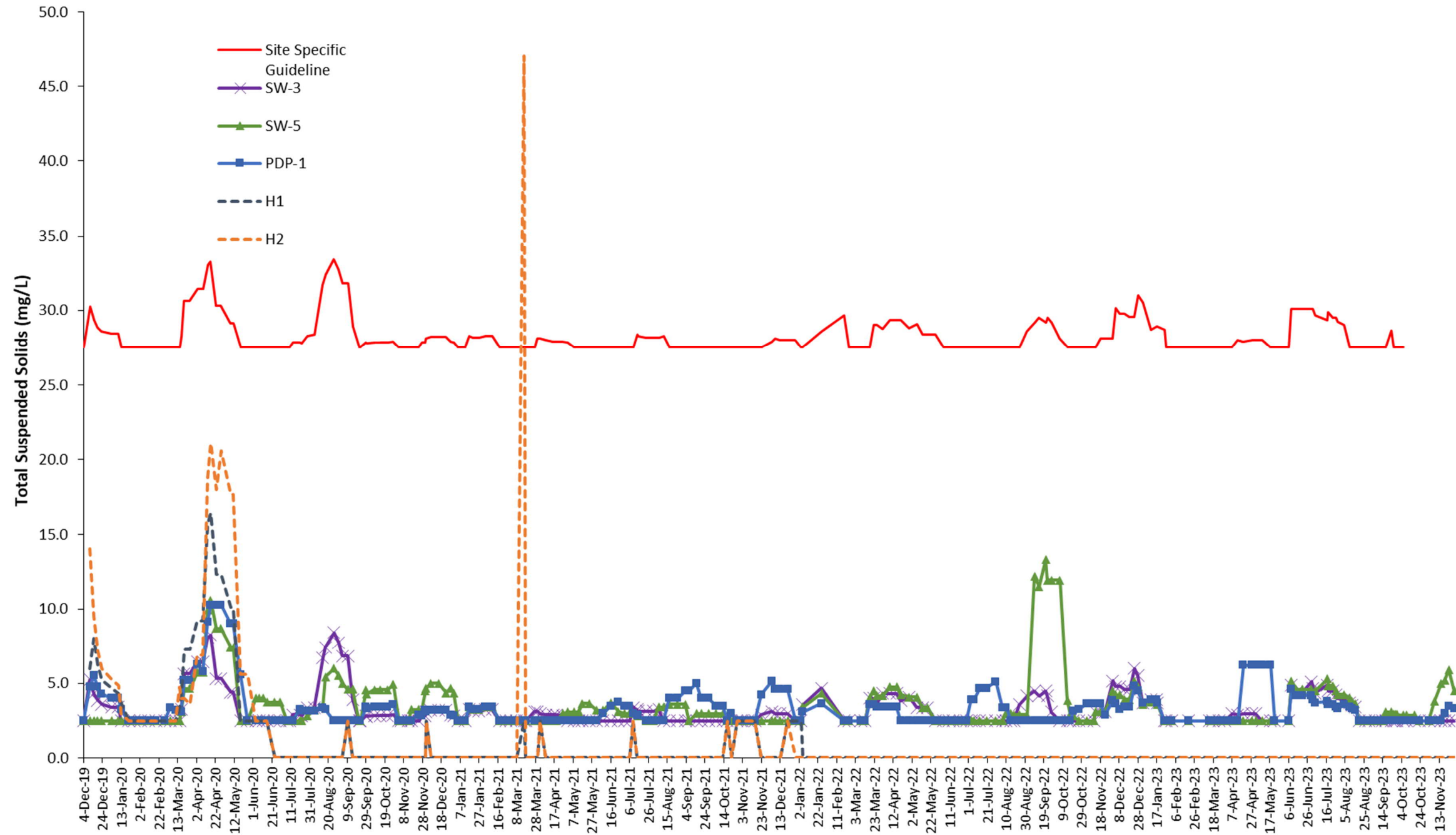


Figure 3: Upham East - Perimeter Monitoring Water Levels

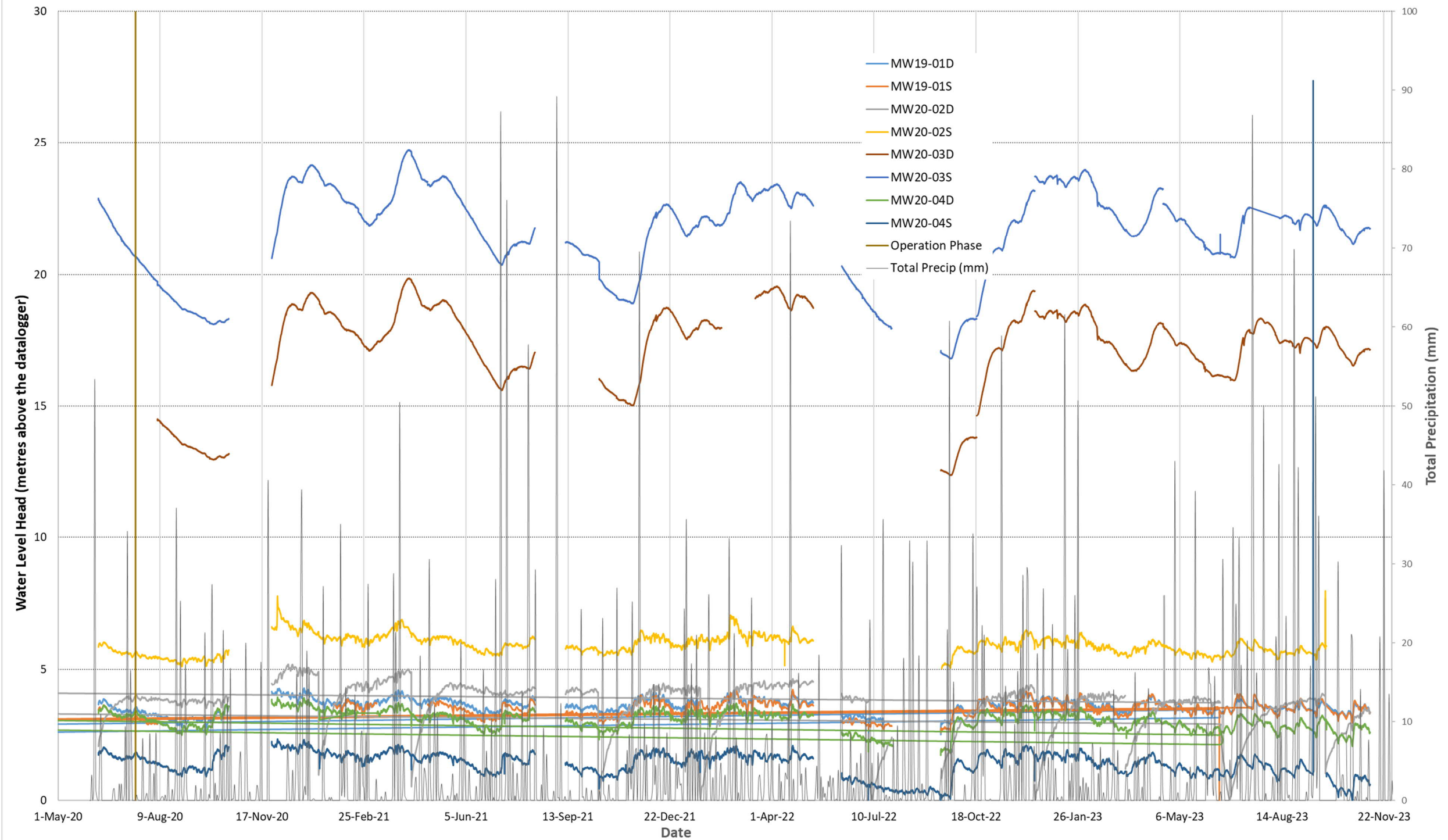


Figure 4: PW-04 Water Levels

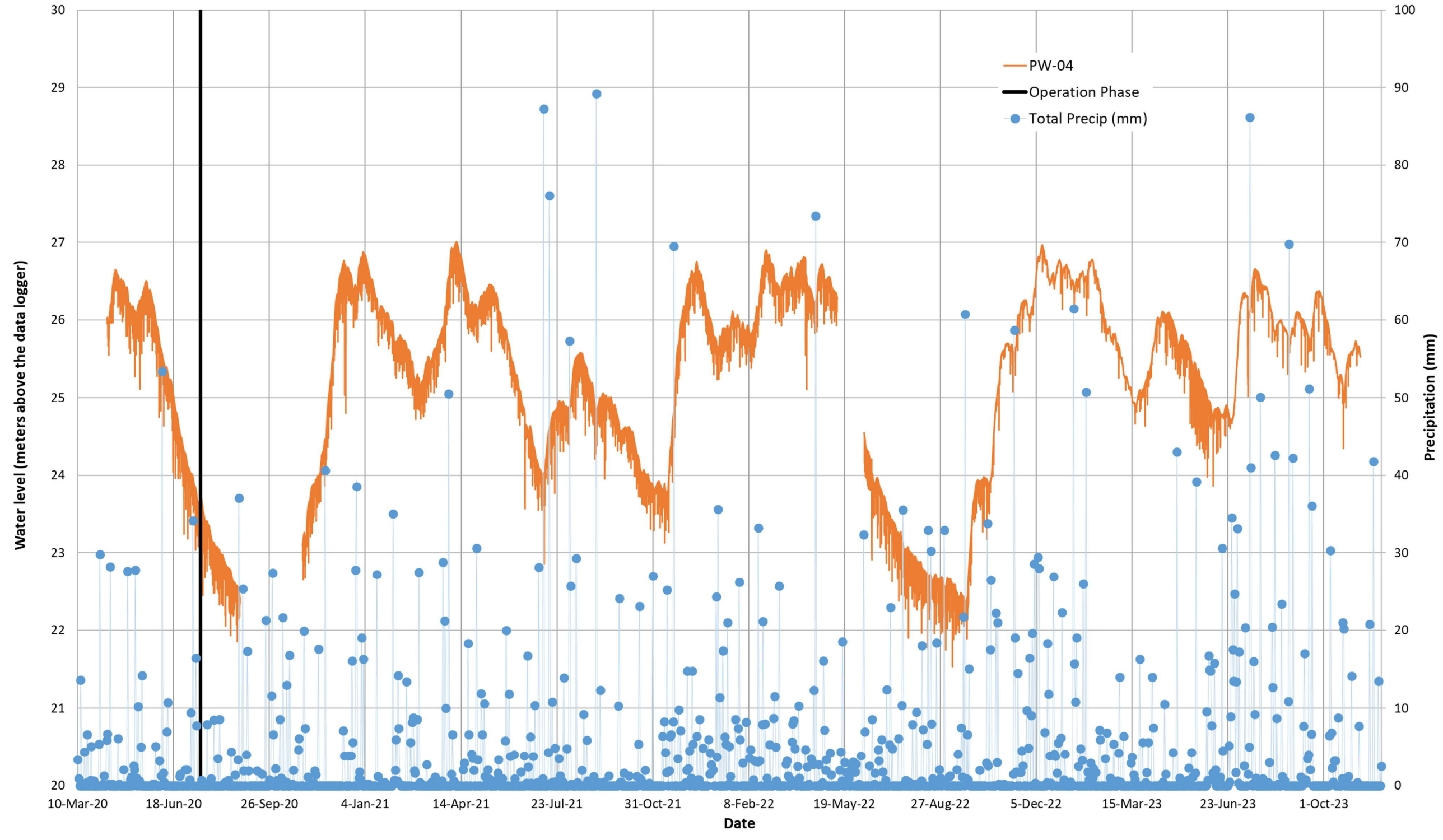


Figure 5: PW-05 Water Levels

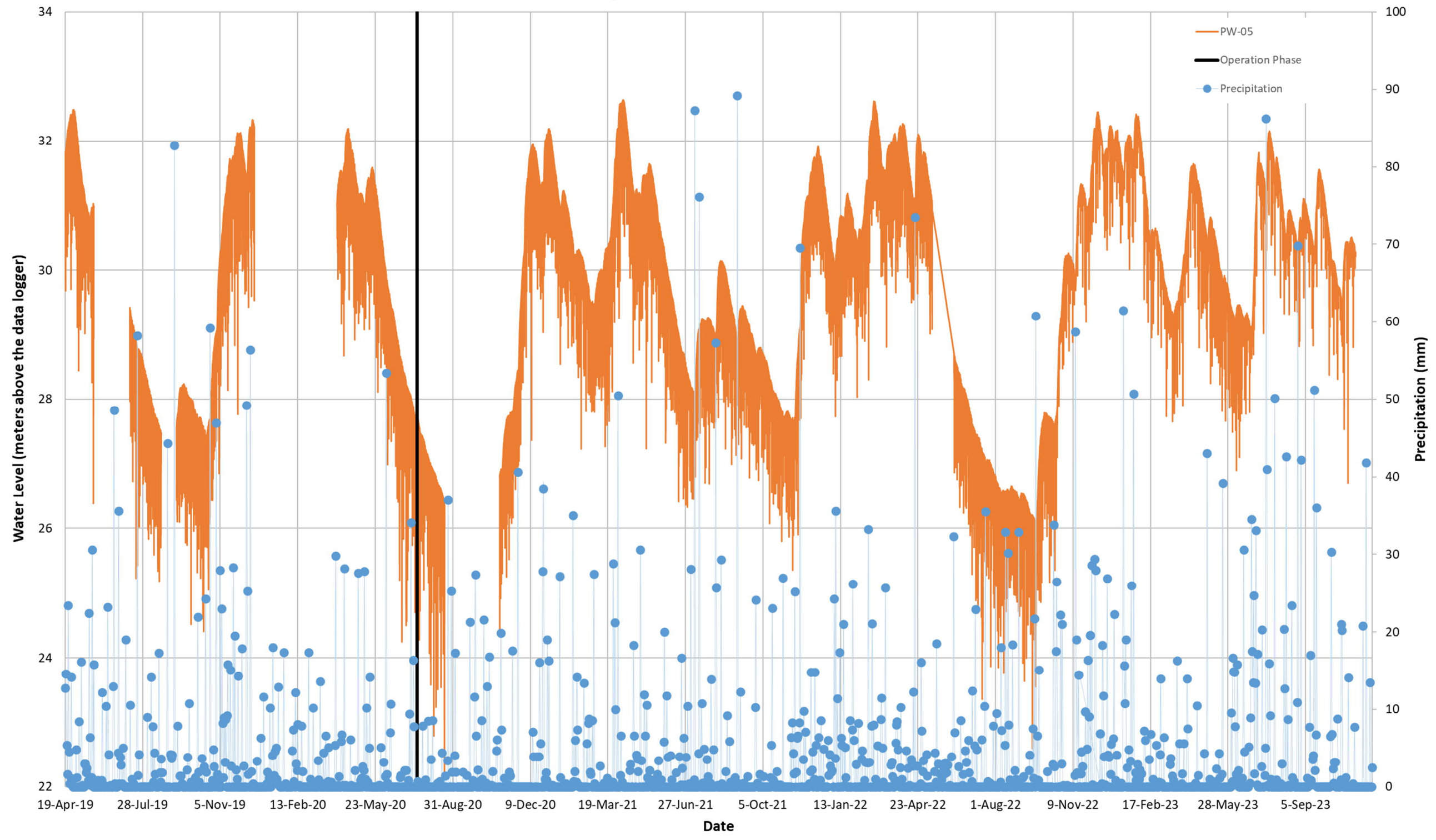
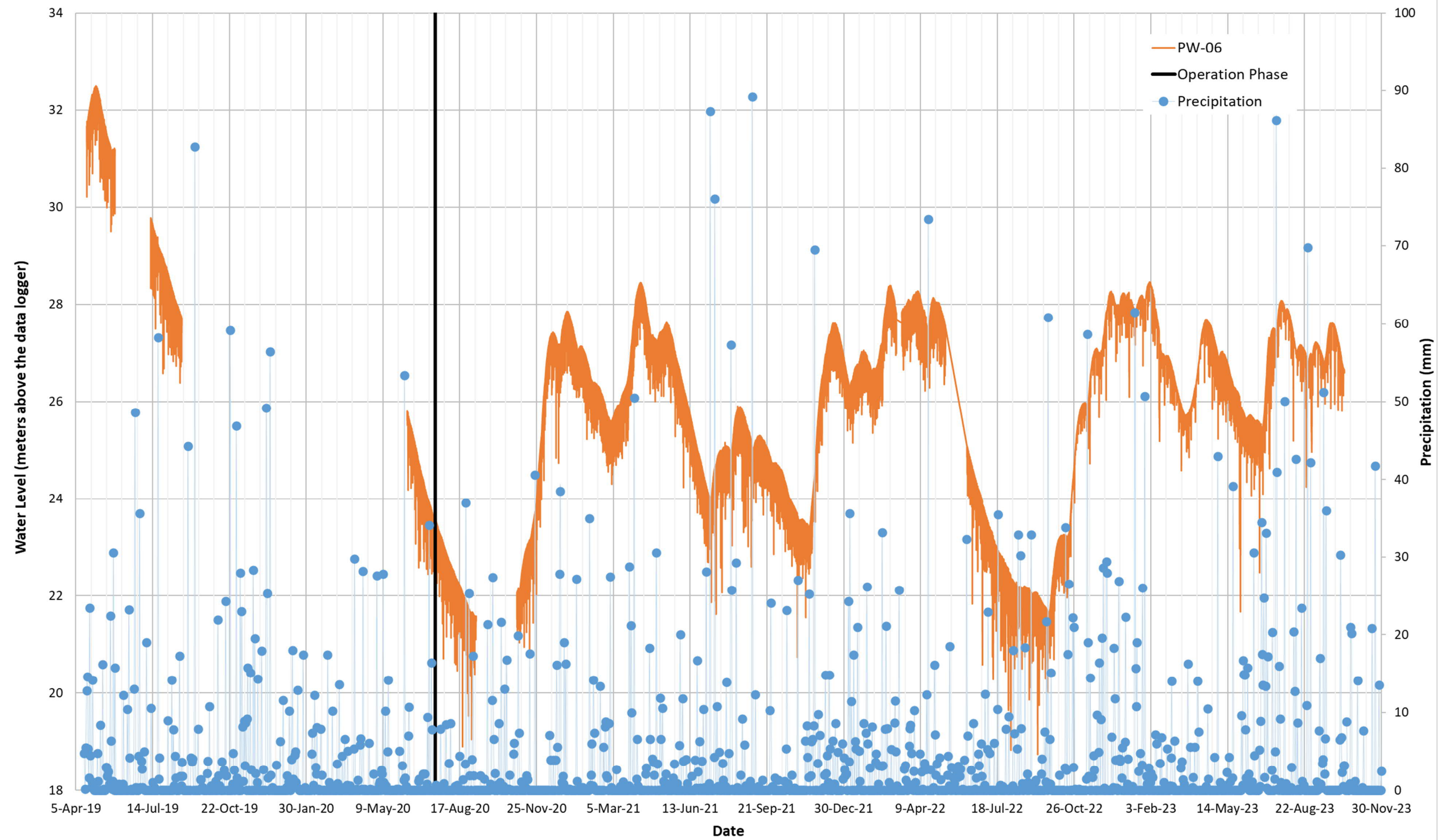


Figure 6: PW-06 Water Levels



Attachment B

Tables

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

Parameter		Ambient Air Temperature ^a	Precipitation 48 hours prior to sample collection ^b	Water Temperature	Specific Conductivity	Turbidity	Total Suspended Solids ^c
				°C	mS/cm	NTU	mg/L
Units		°C	mm	°C	mS/cm	NTU	mg/L
SW3	02-Nov-23	2.4	0	3.9	299	2.62	<5
PDP-1	02-Nov-23			3.4	488	1.92	<5
SW5	02-Nov-23			3.0	486	2.18	9
SW3	08-Nov-23	1.4	7.7	6.0	280	2.41	<5
PDP-1	08-Nov-23			5.4	370	0.96	<5
SW5	08-Nov-23			5.0	377	1.17	6
SW3	15-Nov-23	2	0	2.5	714	0.69	<5
PDP-1	15-Nov-23			1.5	856	1.07	<5
PDP-1 Dup	15-Nov-23			1.5	854	1.31	<5
SW5	15-Nov-23			1.5	853	1.56	<5
SW3	19-Nov-23	2.7	20.8	6.1	103	5.78	<5
PDP-1	19-Nov-23			5.1	257	5.61	5
SW5	19-Nov-23			4.9	261	7.13	6
SW3	23-Nov-23	4.7	41.8	4.3	98	6.99	<5
PDP-1	23-Nov-23			2.9	216	5.77	5
SW5	23-Nov-23			3.0	218	6.29	6
SW3	29-Nov-23	-2.6	0	2.4	320	4.80	<5
PDP-1	29-Nov-23			1.7	756	2.37	<5
PDP-1 Dup	29-Nov-23			1.7	758	2.34	<5
SW5	29-Nov-23			1.7	707	4.62	<5

a) Temperature based on data from the climate station at the Saint John airport. Temperature is the value recorded at 12:00pm on the day of sampling. Data available at:

https://climate.weather.gc.ca/historical_data/search_historic_data_e.html

b) 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

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

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

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

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

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

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

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

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

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

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
14-Jun-23	30.1	-	-	2.5	2.5	2.5
21-Jun-23	30.1	-	-	2.5	2.5	2.5
30-Jun-23	30.1	-	-	6.0	2.5	2.5
2-Jul-23	29.7	-	-	4.7	3.9	4.3
4-Jul-23	29.4	-	-	4.4	3.7	4.5
17-Jul-23	29.9	-	-	4.9	3.8	5.3
18-Jul-23	29.5	-	-	4.5	3.6	4.8
23-Jul-23	29.5	-	-	4.5	3.6	4.8
26-Jul-23	29.2	-	-	4.2	3.4	4.5
28-Jul-23	29.0	-	-	4.0	3.3	4.3
4-Aug-23	27.5	-	-	2.5	2.5	2.5
10-Aug-23	27.5	-	-	2.5	2.5	2.5
12-Aug-23	27.5	-	-	2.5	2.5	2.5
16-Aug-23	27.5	-	-	2.5	2.5	2.5
20-Aug-23	27.5	-	-	2.5	2.5	2.5
27-Aug-23	27.5	-	-	2.5	2.5	2.5
30-Aug-23	27.5	-	-	2.5	2.5	2.5
6-Sep-23	27.5	-	-	2.5	2.5	2.5
14-Sep-23	27.5	-	-	2.5	2.5	2.5
17-Sep-23	28.7	-	-	2.5	2.5	6.0
20-Sep-23	27.5	-	-	2.5	2.5	2.5
26-Sep-23	27.5	2.5	2.5	2.5	2.5	2.5
27-Sep-23	27.5	-	-	2.5	2.5	2.5
29-Sep-23	27.5	-	-	2.5	2.5	2.5
6-Oct-23	27.5	-	-	2.5	2.5	2.5
9-Oct-23	27.5	-	-	2.5	2.5	2.5
18-Oct-23	27.5	-	-	2.5	2.5	2.5
23-Oct-23	27.5	-	-	2.5	2.5	2.5
02-Nov-23	27.5	-	-	2.5	2.5	3.8
08-Nov-23	27.5	-	-	2.5	2.5	5.0
15-Nov-23	27.5	-	-	2.5	2.5	5.2
19-Nov-23	27.5	-	-	2.5	3.0	5.9
23-Nov-23	27.5	-	-	2.5	3.5	4.5
29-Nov-23	27.5	-	-	2.5	3.3	5.3

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
Proejct 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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
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 ^a	22.82 ^a	753 ^a	12.3 ^a	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

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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
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
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 ^b	21.08	17.42	21.08	750	8.8	14.840	14.850	10100	19.96	120
2021-05-12 ^b	-	17.49	25.19	748	7.1	14.822	14.830	7800	12.90	120
2021-05-18 ^b	19.21	17.53	20.35	757	9.8	14.830	14.838	8700	17.81	120
2021-05-27 ^c	-	-	-	-	-	-	-	-	-	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 ^d	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

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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
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	335.73 ^e	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
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 ^c	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

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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
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
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	14.20	120
2023-01-08	24 hours	18.65	26.85	752	-9.2	14.8261	14.8401	14000	21.73	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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
2023-01-14	24 hours	18	25.05	745	-2.3	14.8136	14.8289	15300	25.45	120
2023-01-20	24 hours	18.1	26.05	743	-4.2	14.8156	14.8251	9500	15.20	120
2023-01-26	25 hours	17.76	25.57	740	-0.2	14.8216	14.8254	3800	6.19	120
2023-02-01	26 hours	17.93	25.83	742	-17	14.8256	14.8318	6200	10.00	120
2023-02-07	27 hours	18.05	26.86	756	-7.5	14.8227	14.8464	23700	36.76	120
2023-02-13	28 hours	18.2	26.05	744	-5.3	14.8097	14.8137	4000	6.40	120
2023-02-19	29 hours	18.43	26.53	757	-4	14.8066	14.8448	38200	59.99	120
2022-02-25	30 hours	19.29	27.77	757	-15.8	14.8061	14.8096	3500	5.25	120
2022-03-03	31 hours	18.29	26.33	745	-5.8	14.8121	14.8128	700	1.11	120
2022-03-09	32 hours	18.15	26.13	750	-2.4	14.8113	14.8218	10500	16.74	120
2022-03-15	33 hours	17.75	25.56	736	-1.1	14.8158	14.8232	7400	12.06	120
2022-03-21	34 hours	18.14	26.12	755	-0.1	14.8191	14.821	1900	3.03	120
2023-03-27	35 hours	17.97	25.87	750	0	14.8189	14.8275	8600	13.85	120
2023-04-02	24 hours	16.7	26.05	739	0.9	14.8275	14.8327	5200	8.32	120
2023-04-08	24 hours	18.27	26.34	756	-1.8	14.8468	14.8785	31700	50.15	120
2023-04-14	24 hours	17.34	24.97	747	9.4	14.8419	14.8581	16200	27.03	120
2023-04-20	24 hours	17.61	25.36	751	6.3	14.8514	14.8526	1200	1.97	120
2023-04-26	24 hours	17.73	25.54	757	6.6	14.8493	14.8509	1600	2.61	120
2023-05-02	24 hours	17.23	24.81	743	9.2	14.8552	14.8613	6100	10.24	120
2023-05-08	24 hours	17.32	24.94	741	7.5	14.8542	14.8562	2000	3.34	120
2023-05-14	24 hours	17.48	25.16	750	8.2	14.8438	14.8484	4600	7.62	120
2023-05-20	24 hours	17.13	24.67	747	12.7	14.8406	14.8449	4300	7.26	120
2023-05-26	24 hours	17.64	25.4	754	6.7	14.8725	14.8796	7100	11.65	120
2023-06-01	24 hours	16.67	24	751	22.9	14.8674	14.8721	4700	8.16	120
2023-06-07	24 hours	17.05	24.55	738	10.4	14.8511	14.8617	10600	17.99	120
2023-06-13	24 hours	16.48	23.74	746	23.7	14.8591	14.8636	4500	7.90	120
2023-06-19	24 hours	17.31	24.92	752	17.6	14.8597	14.8645	4800	8.03	120
2023-06-25	24 hours	16.59	23.85	747	21.9	14.8469	14.8647	17800	31.10	120
2023-07-01	24 hours	16.87	24.29	756	20.1	14.8862	14.8999	13700	23.50	120
2023-07-07	24 hours	16.53	23.81	749	23.9	14.8988	14.9014	2600	4.55	120
2023-07-13	24 hours	16.58	23.07	751	23.9	14.8734	14.877	3600	6.50	120
2023-07-19	24 hours	16.67	24	751	21.8	14.8770	14.8823	5300	9.20	120
2023-07-25	24 hours	16.79	24.18	753	21	14.8780	14.8801	2100	3.62	120
2023-07-31	24 hours	16.92	24.36	748	17	14.8673	14.8698	2500	4.28	120
2023-08-06	24 hours	16.76	24.14	748	19.5	14.8652	14.8662	1000	1.73	120
2023-08-12	24 hours	16.87	24.29	748	17.5	14.852	14.8770	25000	42.88	120
2023-08-18	24 hours	16.73	24.09	748	19.5	14.845	14.8730	28000	48.43	120
2023-08-24	24 hours	17.06	24.56	753	16.6	14.828	14.8620	34000	57.68	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 ³)	(mm Hg)	(°C)	(g)	(g)	(µg)	(µg/m ³)	(µg/m ³)
2023-08-30	24 hours	16.75	24.12	744	17.8	14.832	14.8540	22000	38.00	120
2023-09-05	24 hours	16.77	24.14	748	19.4	14.823	14.8550	32000	55.23	120
2023-09-11	24 hours	16.85	24.26	753	19.8	14.85	14.8840	34000	58.40	120
2023-09-17	24 hours	16.81	24.21	742	16.3	14.877	14.8990	22000	37.86	120
2023-09-23	24 hours	17.5	25.19	753	10.9	14.877	14.8910	14000	23.16	120
2023-09-29	24 hours	17.57	25.29	758	9.7	14.858	14.8820	24000	39.54	120
2023-10-05	24 hours	17.51	25.21	754	11	14.837	14.8500	13000	21.49	120
2023-10-11	24 hours	17.35	24.98	749	9.4	14.852	14.8610	9000	15.01	120
2023-10-17	24 hours	17.53	25.24	747	5.7	14.863	14.8860	23000	37.97	120
2023-10-23	24 hours	17.67	25.45	749	4.2	14.849	14.8660	17000	27.83	120
2023-10-29	24 hours	17.88	25.25	753	2.5	14.86	14.8700	10000	16.50	120
2023-11-04	24 hours	17.56	25.29	753	7.7	14.838	14.8440	6000	9.89	120
2023-11-10	24 hours	17.88	25.24	747	0.2	14.847	14.8590	12000	19.81	120
2023-11-16	24 hours	17.96	25.96	753	1.3	14.834	14.8450	11000	17.66	120
2023-11-22	24 hours	18.28	26.32	753	-3.6	14.828	14.8460	18000	28.50	120
2023-11-28	24 hours	18	25.85	738	-4.2000	14.816	14.84	20000	32.24	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: 504329-IAS
Report Date: 10-Nov-23
Date Received: 03-Nov-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:	504329-1	504329-2	504329-3
Client Sample ID:	SW3	SW5	PDP-1
Date Sampled:	2-Nov-23	2-Nov-23	2-Nov-23
Analytes	Units	RL	
Solids - Total Suspended	mg/L	5	< 5 9 < 5

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

RL = Reporting Limit



Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry



Lisa Ferrish
Supervisor
Inorganic Analytical Services

Report ID: 504329-IAS
Report Date: 10-Nov-23
Date Received: 03-Nov-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: 504914-IAS
Report Date: 14-Nov-23
Date Received: 09-Nov-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:	504914-1	504914-2	504914-3
Client Sample ID:	SW3	SW5	PDP-1
Date Sampled:	8-Nov-23	8-Nov-23	8-Nov-23
Analytes	Units	RL	
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: 504914-IAS
Report Date: 14-Nov-23
Date Received: 09-Nov-23

CERTIFICATE OF ANALYSIS

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



921 College Hill Rd
Fredericton NB
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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: 505688-IAS
Report Date: 22-Nov-23
Date Received: 16-Nov-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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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:	505688-1	505688-2	505688-3	505688-4
Client Sample ID:	SW3	SW5	PDP-1	PDP-1 DUPLICATE
Date Sampled:	15-Nov-23	15-Nov-23	15-Nov-23	15-Nov-23
Analytes	Units	RL		
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: 505688-IAS
Report Date: 22-Nov-23
Date Received: 16-Nov-23

CERTIFICATE OF ANALYSIS

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



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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: 505954-IAS
Report Date: 28-Nov-23
Date Received: 21-Nov-23

CERTIFICATE OF ANALYSIS

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

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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:	505954-1	505954-2	505954-3
Client Sample ID:	SW3	SW5	PDP-1
Date Sampled:	19-Nov-23	19-Nov-23	19-Nov-23
Analytes	Units	RL	
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: 505954-IAS
Report Date: 28-Nov-23
Date Received: 21-Nov-23

CERTIFICATE OF ANALYSIS

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



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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: 506499-IAS
Report Date: 01-Dec-23
Date Received: 24-Nov-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:	506499-1	506499-2	506499-3
Client Sample ID:	SW3	SW5	PDP-1
Date Sampled:	23-Nov-23	23-Nov-23	23-Nov-23
Analytes	Units	RL	
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: 506499-IAS
Report Date: 01-Dec-23
Date Received: 24-Nov-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: 507097-IAS
Report Date: 04-Dec-23
Date Received: 01-Dec-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

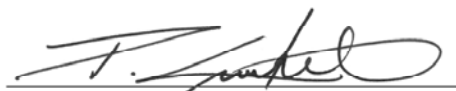
Location: Upham

Analysis of Water

RPC Sample ID:	507097-1	507097-2	507097-3	507097-4
Client Sample ID:	SW3	SW5	PDP-1	PDP-1 Duplicate
Date Sampled:	29-Nov-23	29-Nov-23	29-Nov-23	29-Nov-23
Analytes	Units	RL		
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: 507097-IAS
Report Date: 04-Dec-23
Date Received: 01-Dec-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

November 20, 2023

Project No.: 234601.00

Mr. Daniel Guest

Hammond River Holdings

Via email: Guest.Daniel@AtlanticWallboard.com

Re: Blast Vibration Monitoring – Blast No. 2023-36 – 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 13:18 on November 17, 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. 2023-36 – November 17, 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)	13:18	1,381 m S	< 0.5 mm/s	<120	Units were not triggered
2. Civic No. 4126 Route 111 (PW-10)		1,012 m S	< 0.5 mm/s	<120	
3. Civic No. 4150 Route 111 (PW-13)		885 m SE	< 0.5 mm/s	<120	
4. Civic No. 2447 Route 820 (PW-07)		1,038 m NE	< 0.5 mm/s	<120	
5. PW-03 - Cottage Route 820		639 m N	< 0.5 mm/s	<120	
6. Civic No. 2341 Route 820 (PW-05)		587 m N	1.25 mm/s @ 51 Hz	110	-
7. Civic No. 50 Myron Road (PW-15)		758 m NW	0.70 mm/s @ 51 Hz	110	-
8. Civic No. 86 Myron Road (PW-16)		631 m W	< 0.5 mm/s	<120	Units were not triggered
9. Civic No. 220 Myron Road (PW-01)		1,338 m S	< 0.5 mm/s	<120	
10. Civic No. 2337 Route 820 (PW-04)		626 m N	< 0.5 mm/s	<120	
11. Civic No. 4140 Route 111 (PW-12)		942 m SE	< 0.5 mm/s	<120	
maximum limits as per Approval to Operate			12.5 mm/s	128 dB	

Mr. Daniel Guest – Hammond River Holdings
November 20, 2023
Project No.: 234601.00 – Blast No.: 2023-36

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

Blast Record

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

IDENTIFICATION:

Blasting Contractor:	<u>Gulf Operators Ltd.</u>		
Blaster's Certification No.:	<u>1318</u>	Blaster's Name:	<u>Daniel Blanchard</u>
Blast Location:	<u>N 45°28.'53.9" W 65°38'09.5" (see attached sketch)</u>		
Type of Rock:	<u>Anhydrate/Gypsum</u>	Est. Vol. or Tonnage:	<u>10,044 tonnes</u>
Weather at time of Blast:	<u>Mostly cloudy</u>	Air Temp.:	<u>10°C</u>
Est. Wind Speed :	<u>≈ 25 km/h</u>	Wind Direction:	<u>N</u>
Cloud Cover:	<u>Yes – approx. 60%</u>	Precipitation:	<u>No</u>

BLAST DESIGN:

Total No. Holes:	<u>81</u>	Hole Diameter:	<u>4.5"</u>
Average Depth:	<u>5.0 m – 6.2 m</u>	Spacing:	<u>11 ft x 11 ft</u>
No. Holes per Delay:	<u>1</u>	Collar Length:	<u>7 ft</u>
Delay between Holes:	<u>25 ms</u>	Delay between Rows:	<u>84 ms</u>
Initiation Method:	<u>Non-Electric</u>		
Weight of Explosives per Delay:	<u>Max.: 37 kg</u>		
Type and weight of Explosives for Blast:	<u>2,743 kg – Titan XL-1000</u>		

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



BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

BLAST MONITORING

Distance to the Nearest Structure:	<u>587 m</u>
Direction to the Nearest Structure:	<u>North</u>
Structure Type:	<u>House</u>
Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):	<u>96.5</u>

SAFETY:

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

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

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #1

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 4079 Route 111 (PW-09)</u>
Distance and Direction from Blast:	<u>1,381 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #2

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 4126 Route 111 (PW-10)</u>
Distance and Direction from Blast:	<u>1,012 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #3

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 4150 Route 111 (PW-13)</u>
Distance and Direction from Blast:	<u>885 m Southeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #4

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 2447 Route 820 (PW-07)</u>
Distance and Direction from Blast:	<u>1,038 m Northeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #5

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5371</u>
Calibration Date:	<u>August 3, 2023</u>
Location of seismograph:	<u>Cottage - PW-03 - Route 820</u>
Distance and Direction from Blast:	<u>639 m North</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #6

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 2341 Route 820 (PW-05)</u>
Distance and Direction from Blast:	<u>587 m North</u>
Transverse Particle Velocity:	<u>1.16 mm/s @ 64 Hz</u>
Vertical Particle Velocity:	<u>1.25 mm/s @ 51 Hz</u>
Longitudinal Particle Velocity:	<u>0.70 mm/s @ 43 Hz</u>
Peak Particle Velocity:	<u>1.25 mm/s @ 51 Hz</u>
Maximum Airblast:	<u>110 dB(L)</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #7

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 50 Myron Road (PW-15)</u>
Distance and Direction from Blast:	<u>758 m Northwest</u>
Transverse Particle Velocity:	<u>0.70 mm/s @ 51 Hz</u>
Vertical Particle Velocity:	<u>0.70 mm/s @ 64 Hz</u>
Longitudinal Particle Velocity:	<u>0.70 mm/s @ 57 Hz</u>
Peak Particle Velocity:	<u>0.70 mm/s @ 51 Hz</u>
Maximum Airblast:	<u>110 dB(L)</u>

Data Collection – Seismometer #8

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 86 Myron Road (PW-16)</u>
Distance and Direction from Blast:	<u>631 m West</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #9

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 220 Myron Road (PW-01)</u>
Distance and Direction from Blast:	<u>1,338 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #10

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 2337 Route 820 (PW-04)</u>
Distance and Direction from Blast:	<u>626 m North</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 17, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>13:18</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-36</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #11

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 4140 Route 111 (PW-12)</u>
Distance and Direction from Blast:	<u>942 m Southeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Attachment B

Blast and Seismograph Location Plan

Blast and Seismograph Location Plan
Blast No: 2023-36
Upham East Gypsum Quarry, Upham, NB

PLS-CADD Overlay

Legend

- ★ Blast 2023-36
- Seismograph Location



Date: November 17, 2023
Project No.: 234601.00



Attachment C

Blast Event Reports

Date/Time Vert at 13:18:31 November 17, 2023
Trigger Source Geo: 0.500 mm/s, Mic: 120.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 7.0 sec at 1024 sps
Operator/Setup: Operator/UPHAM.MMB

Serial Number UM18193 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration May 12, 2023 by InstanTel
File Name UM18193_20231117131831.IDFW

Notes
 Location:
 Client:
 User Name:
 General:

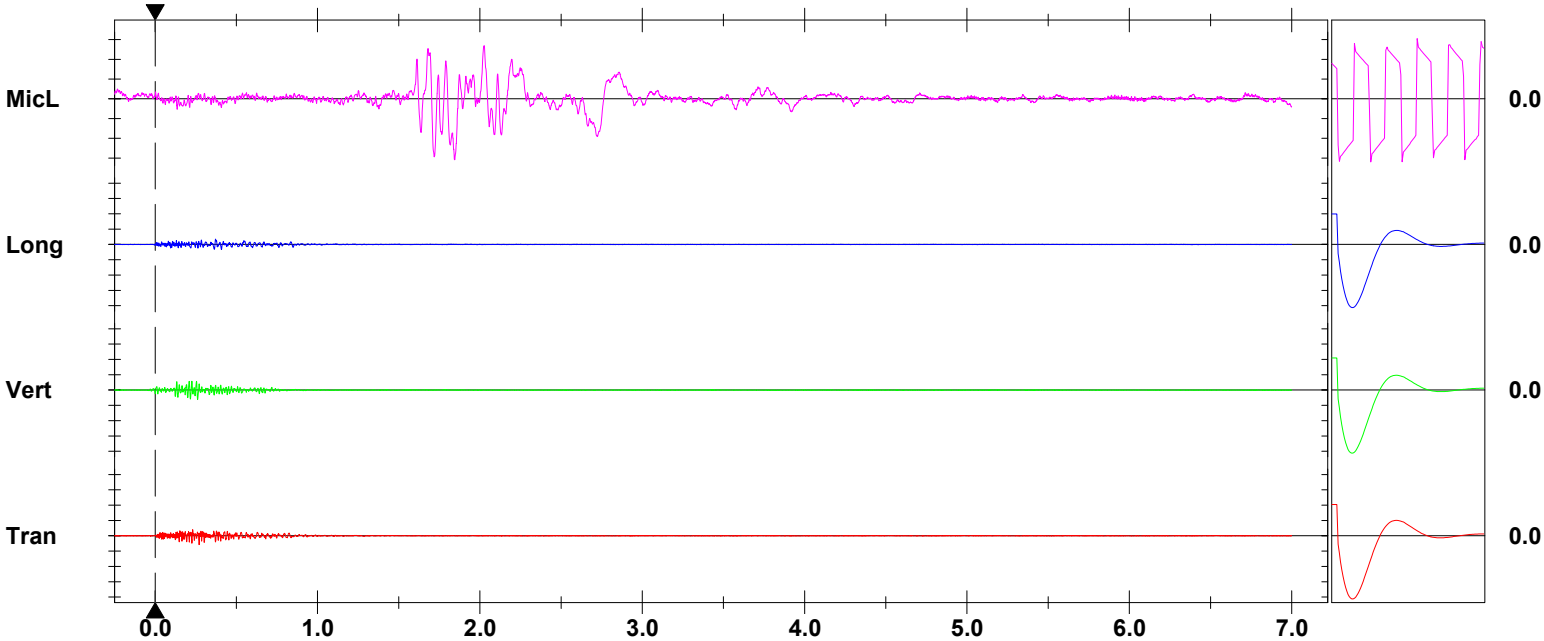
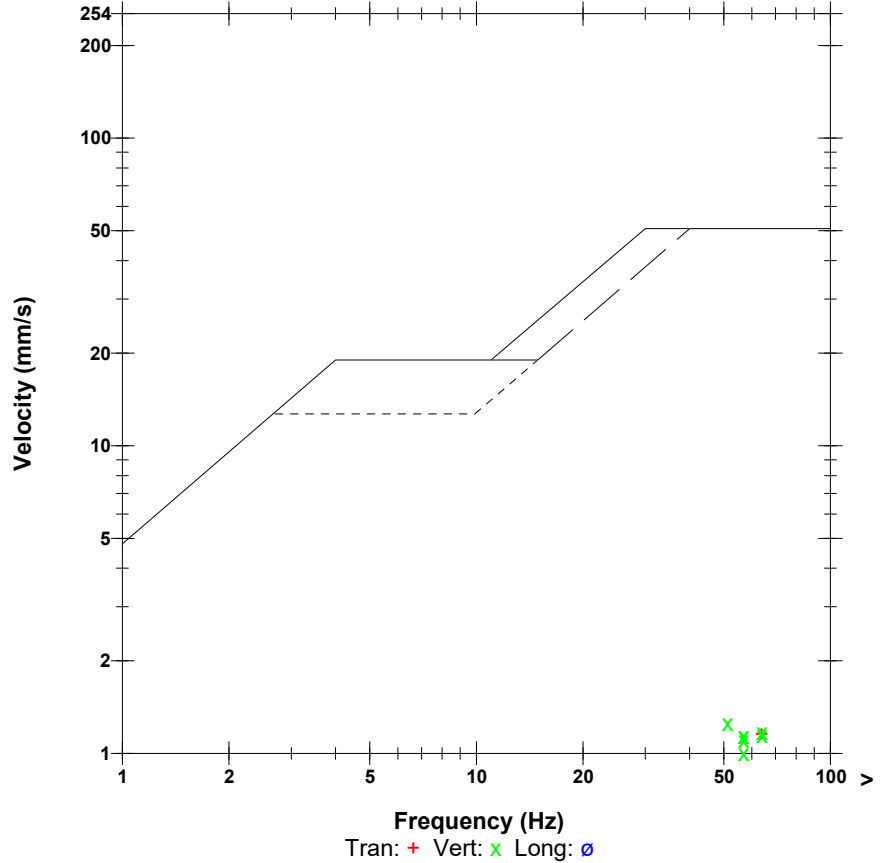
Post Event Notes
 Location: 2341 Route 820 (PW-05)
 Blast No.: 2023-36
 Project No: 234601.00

Microphone Linear Weighting
PSPL 109.8 dB(L) 6.160 pa.(L) at 1.844 sec
ZC Freq 7.8 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 1503 mv)

	Tran	Vert	Long	
PPV	1.159	1.253	0.701	mm/s
PPV	52.28	52.96	47.92	dB
ZC Freq	64	51	43	Hz
Time (Rel. to Trig)	0.271	0.262	0.372	sec
Peak Acceleration	0.084	0.098	0.053	g
Peak Displacement	0.002	0.003	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.1	4.3	4.5	

Peak Vector Sum 1.525 mm/s at 0.226 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 Vert at 13:18:24 November 17, 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 6.0 Volts
Unit Calibration April 25, 2023 by InstanTel
File Name G673KAHB.MO0
Post Event Notes
 Location: 50 Myron Road (PW-15)
 Blast No.: 2023-36
 Project No: 234601.00

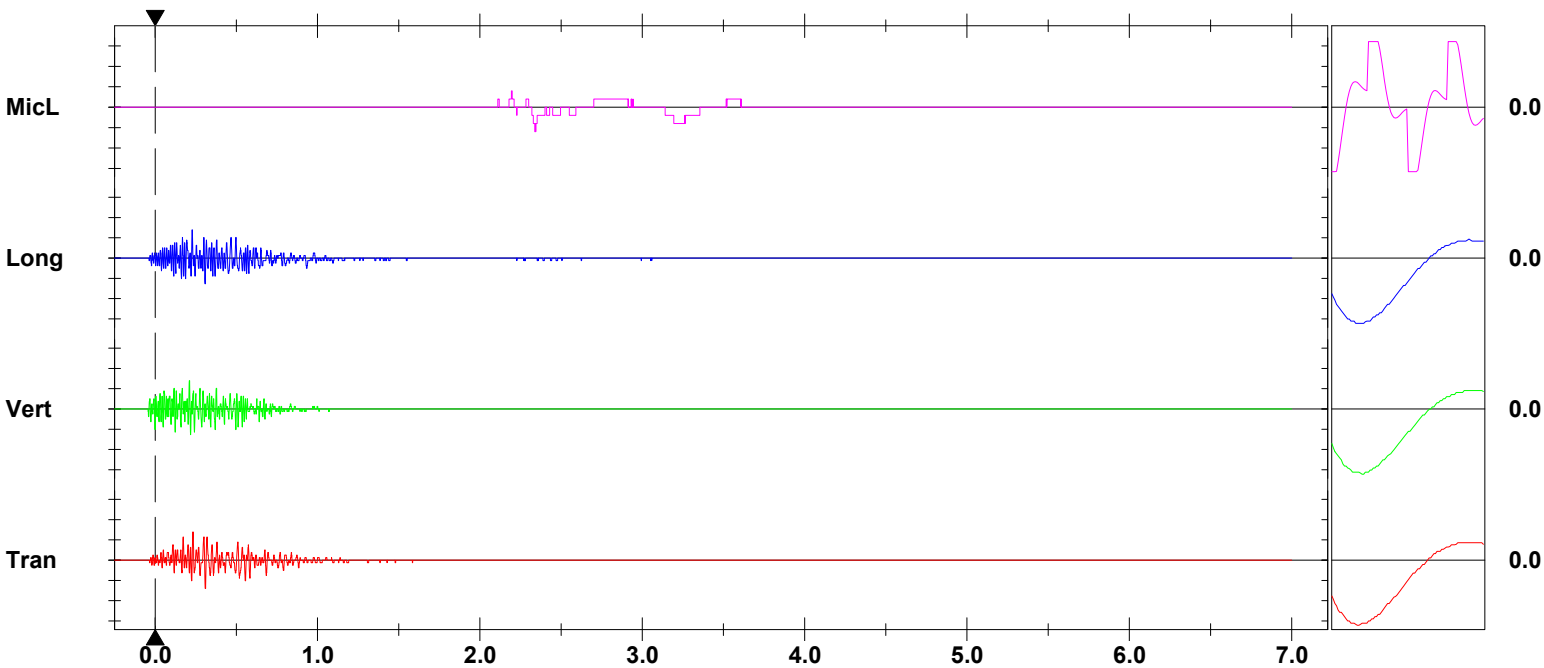
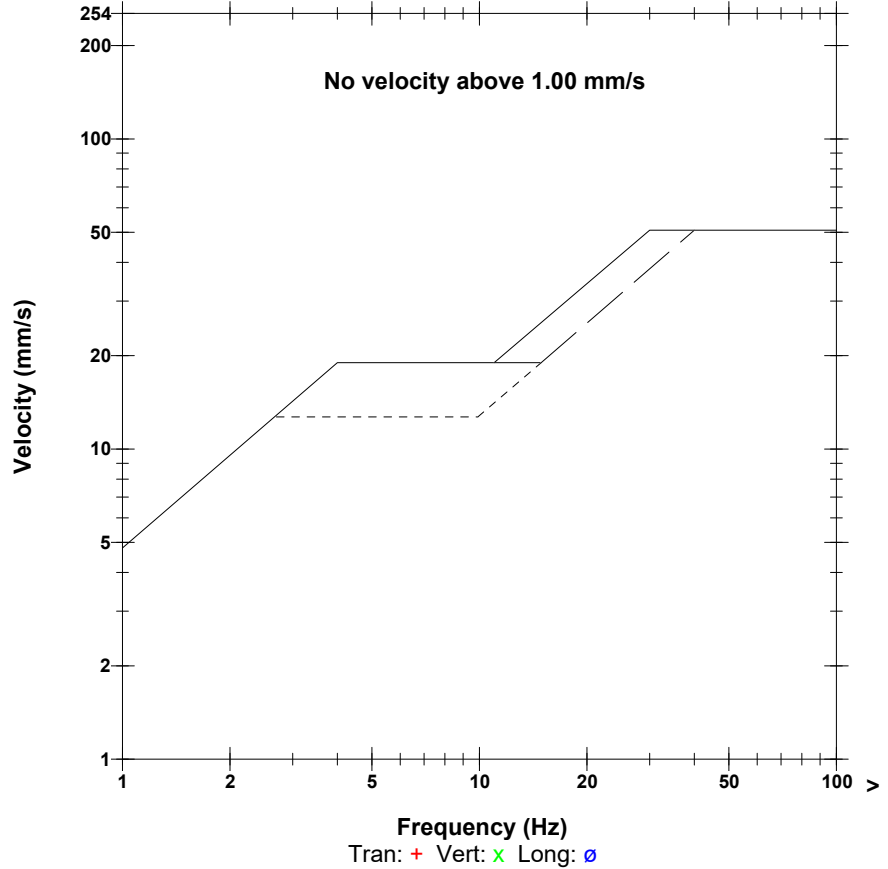
Notes
 Location:
 Client: UUUUUUUUUUUUUUUUU
 User Name: UU
 Converted: November 17, 2023 15:41:36 (V10.72.1)

Microphone Linear Weighting
PSPL 109.5 dB(L) 6.000 pa.(L) at 2.339 sec
ZC Freq 6.0 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 306 mv)

	Tran	Vert	Long	
PPV	0.699	0.699	0.699	mm/s
PPV	47.88	47.88	47.88	dB
ZC Freq	51	64	57	Hz
Time (Rel. to Trig)	0.233	0.211	0.229	sec
Peak Acceleration	0.027	0.033	0.027	g
Peak Displacement	0.002	0.002	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	7.8	8.0	Hz
Overswing Ratio	3.8	3.7	3.6	

Peak Vector Sum 0.953 mm/s at 0.309 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

November 27, 2023

Project No.: 234601.00

Mr. Daniel Guest

Hammond River Holdings

Via email: Guest.Daniel@AtlanticWallboard.com

Re: Blast Vibration Monitoring – Blast No. 2023-37 – 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 14:11 on November 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. 2023-37 – November 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)	14:11	1,410 m S	< 0.5 mm/s	<120	Units were not triggered
2. Civic No. 4126 Route 111 (PW-10)		1,035 m S	< 0.5 mm/s	<120	
3. Civic No. 4150 Route 111 (PW-13)		900 m SE	< 0.5 mm/s	<120	
4. Civic No. 2447 Route 820 (PW-07)		1,003 m NE	< 0.5 mm/s	<120	
5. PW-03 - Cottage Route 820		603 m N	1.00 mm/s @ 64 Hz	NA	-
6. Civic No. 2341 Route 820 (PW-05)		555 m N	1.37 mm/s @ 64 Hz	115	-
7. Civic No. 50 Myron Road (PW-15)		742 m NW	1.39 mm/s @ 64 Hz	NA	-
8. Civic No. 86 Myron Road (PW-16)		659 m W	0.51 mm/s @ 37 Hz	117	-
9. Civic No. 220 Myron Road (PW-01)		1,373 m S	< 0.5 mm/s	<120	Unit was not triggered
10. Civic No. 2337 Route 820 (PW-04)		598 m N	0.53 mm/s @ 64 Hz	117	-
11. Civic No. 4140 Route 111 (PW-12)		961 m SE	< 0.5 mm/s	<120	Unit was not triggered
maximum limits as per Approval to Operate			12.5 mm/s	128 dB	

Mr. Daniel Guest – Hammond River Holdings
November 27, 2023
Project No.: 234601.00 – Blast No.: 2023-37

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

Blast Record

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

IDENTIFICATION:

Blasting Contractor:	<u>Gulf Operators Ltd.</u>		
Blaster's Certification No.:	<u>1318</u>	Blaster's Name:	<u>Daniel Blanchard</u>
Blast Location:	<u>N 45°28.'54.9" W 65°38'08.8" (see attached sketch)</u>		
Type of Rock:	<u>Anhydrate/Gypsum</u>	Est. Vol. or Tonnage:	<u>12,730 tonnes</u>
Weather at time of Blast:	<u>Rain shower</u>	Air Temp.:	<u>8°C</u>
Est. Wind Speed :	<u>≈ 30 km/h</u>	Wind Direction:	<u>NW</u>
Cloud Cover:	<u>Yes</u>	Precipitation:	<u>Yes</u>

BLAST DESIGN:

Total No. Holes:	<u>86</u>	Hole Diameter:	<u>4.5"</u>
Average Depth:	<u>5.0 m – 6.2 m</u>	Spacing:	<u>12 ft x 12 ft</u>
No. Holes per Delay:	<u>2</u>	Collar Length:	<u>7 ft</u>
Delay between Holes:	<u>25 ms</u>	Delay between Rows:	<u>84 ms</u>
Initiation Method:	<u>Non-Electric</u>		
Weight of Explosives per Delay:	<u>Max.: 74 kg</u>		
Type and weight of Explosives for Blast:	<u>2,966 kg – Titan XL-1000</u>		

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



BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

BLAST MONITORING

Distance to the Nearest Structure:	<u>555 m</u>
Direction to the Nearest Structure:	<u>North</u>
Structure Type:	<u>House</u>
Scaled Distance Factor: (distance / sq. rt. of max. wt. per delay):	<u>64.5</u>

SAFETY:

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

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

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<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>1,410 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #2

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 4126 Route 111 (PW-10)</u>
Distance and Direction from Blast:	<u>1,035 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<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>900 m Southeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><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>1,003 m Northeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #5

Make, Model and Serial # of unit:	<u>Instantel Micromate, Serial #20206</u>
Calibration Date:	<u>June 9, 2023</u>
Location of seismograph:	<u>Cottage - PW-03 - Route 820</u>
Distance and Direction from Blast:	<u>603 m North</u>
Transverse Particle Velocity:	<u>0.63 mm/s @ 51 Hz</u>
Vertical Particle Velocity:	<u>0.67 mm/s @ 51 Hz</u>
Longitudinal Particle Velocity:	<u>1.00 mm/s @ 64 Hz</u>
Peak Particle Velocity:	<u>1.00 mm/s @ 64 Hz</u>
Maximum Airblast:	<u>NA dB(L)</u>

Data Collection – Seismometer #6

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 2341 Route 820 (PW-05)</u>
Distance and Direction from Blast:	<u>555 m North</u>
Transverse Particle Velocity:	<u>1.03 mm/s @ 37 Hz</u>
Vertical Particle Velocity:	<u>1.29 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>1.37 mm/s @ 64 Hz</u>
Peak Particle Velocity:	<u>1.37 mm/s @ 64 Hz</u>
Maximum Airblast:	<u>115 dB(L)</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #7

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 50 Myron Road (PW-15)</u>
Distance and Direction from Blast:	<u>742 m Northwest</u>
Transverse Particle Velocity:	<u>1.03 mm/s @ 39 Hz</u>
Vertical Particle Velocity:	<u>1.39 mm/s @ 64 Hz</u>
Longitudinal Particle Velocity:	<u>0.82 mm/s @ 43 Hz</u>
Peak Particle Velocity:	<u>1.39 mm/s @ 64 Hz</u>
Maximum Airblast:	<u>NA dB(L)</u>

Data Collection – Seismometer #8

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 86 Myron Road (PW-16)</u>
Distance and Direction from Blast:	<u>659 m West</u>
Transverse Particle Velocity:	<u>0.25 mm/s @ 57 Hz</u>
Vertical Particle Velocity:	<u>0.45 mm/s @ 37 Hz</u>
Longitudinal Particle Velocity:	<u>0.51 mm/s @ 37 Hz</u>
Peak Particle Velocity:	<u>0.51 mm/s @ 37 Hz</u>
Maximum Airblast:	<u>117 dB(L)</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #9

Make, Model and Serial # of unit:	<u>Instantel Minimate, Serial #5371</u>
Calibration Date:	<u>August 13, 2023</u>
Location of seismograph:	<u>Civic Number 220 Myron Road (PW-01)</u>
Distance and Direction from Blast:	<u>1,373 m South</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Data Collection – Seismometer #10

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 2337 Route 820 (PW-04)</u>
Distance and Direction from Blast:	<u>598 m North</u>
Transverse Particle Velocity:	<u>0.32 mm/s @ 30 Hz</u>
Vertical Particle Velocity:	<u>0.37 mm/s @ 57 Hz</u>
Longitudinal Particle Velocity:	<u>0.53 mm/s @ 64 Hz</u>
Peak Particle Velocity:	<u>0.53 mm/s @ 64 Hz</u>
Maximum Airblast:	<u>117 dB(L)</u>

BLAST RECORD

Project Name:	<u>Upham Gypsum Quarry</u>	Date of Blast:	<u>November 27, 2023</u>
Project No.:	<u>234601.00</u>	Time of Blast:	<u>14:11</u>
Inspector:	<u>I. Villegas</u>	Blast No.:	<u>2023-37</u>
Client:	<u>Hammond River Holdings</u>		

Data Collection – Seismometer #11

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 4140 Route 111 (PW-12)</u>
Distance and Direction from Blast:	<u>961 m Southeast</u>
Transverse Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Vertical Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Longitudinal Particle Velocity:	<u><0.5 mm/s – Unit was not triggered</u>
Peak Particle Velocity:	<u>N/A</u>
Maximum Airblast:	<u><120 dB(L) – Unit was not triggered</u>

Attachment B

Blast and Seismograph Location Plan

Blast and Seismograph Location Plan
Blast No: 2023-37
Upham East Gypsum Quarry, Upham, NB



Date: November 27, 2023
Project No.: 234601.00



Attachment C

Blast Event Reports

Date/Time Long at 14:11:04 November 27, 2023
Trigger Source Geo: 0.500 mm/s
Range Geo: 254.0 mm/s
Record Time 7.0 sec at 1024 sps
Operator/Setup: Operator/UPHAM.MMB

Serial Number UM20206 V 10-90GC Micromate ISEE
Battery Level 3.6 Volts
Unit Calibration June 9, 2023 by Instantel
File Name UM20206_20231127141104.IDFW

Post Event Notes

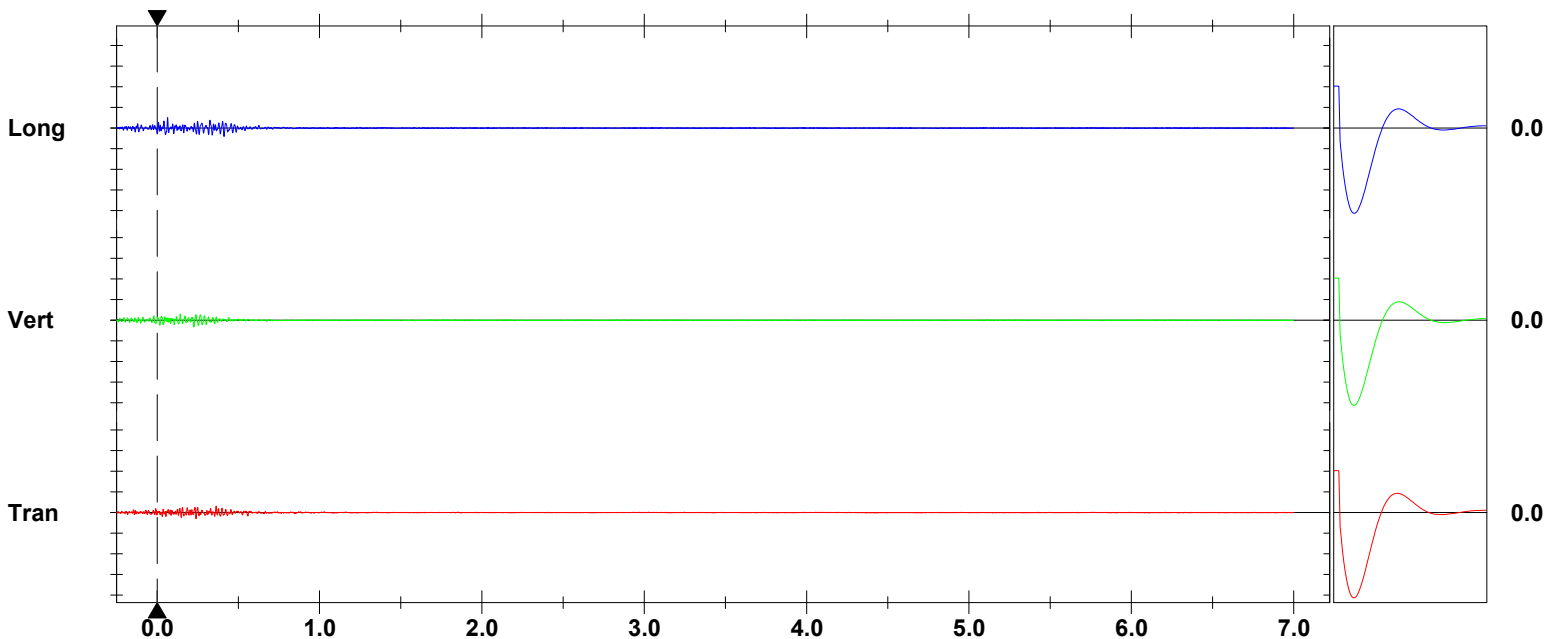
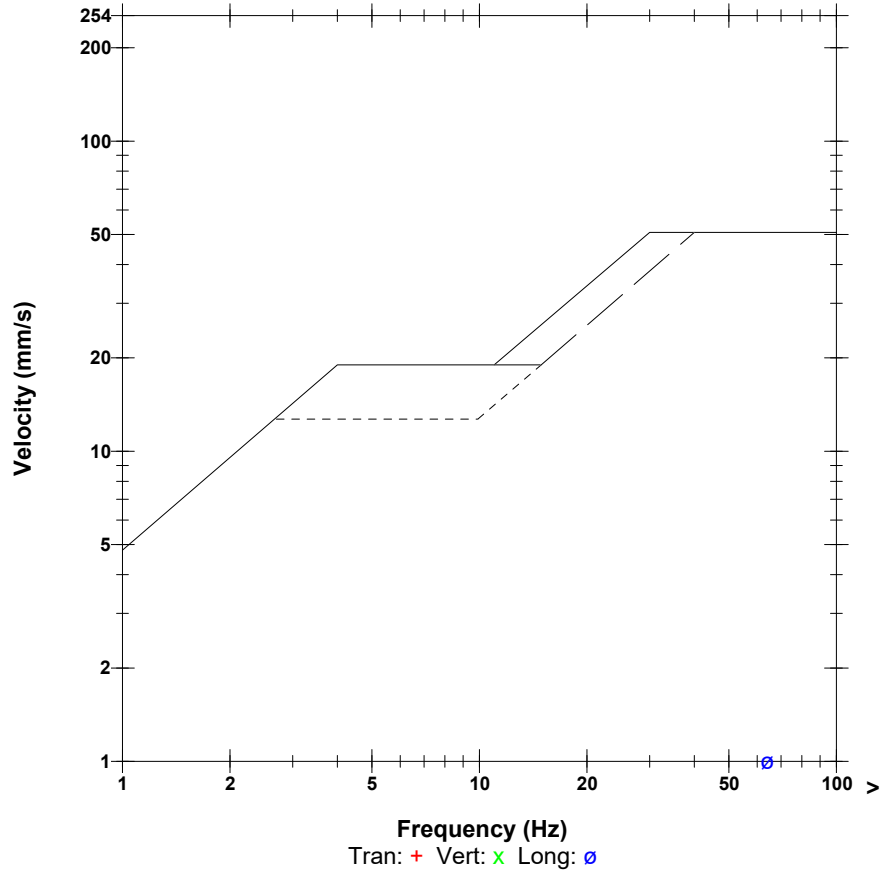
Location: Cottage - Route 802 (PW-03)
 Blast No.: 2023-37
 Project No: 234601.00

Notes

	Tran	Vert	Long	
PPV	0.623	0.670	1.001	mm/s
PPV	46.89	47.52	51.01	dB
ZC Freq	51	51	64	Hz
Time (Rel. to Trig)	0.362	0.226	0.064	sec
Peak Acceleration	0.039	0.033	0.036	g
Peak Displacement	0.002	0.002	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.5	7.5	Hz
Overswing Ratio	4.4	4.6	4.4	

Peak Vector Sum 1.019 mm/s at 0.064 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div
Trigger =

Sensor Check

Date/Time Vert at 14:11:04 November 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/UPHAM.MMB

Serial Number UM21696 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration July 10, 2023 by InstanTel
File Name UM21696_20231127141104.IDFW

Post Event Notes

Location: 2341 Route 820 (PW-05)
 Blast No.: 2023-37
 Project No: 234601.00

Notes

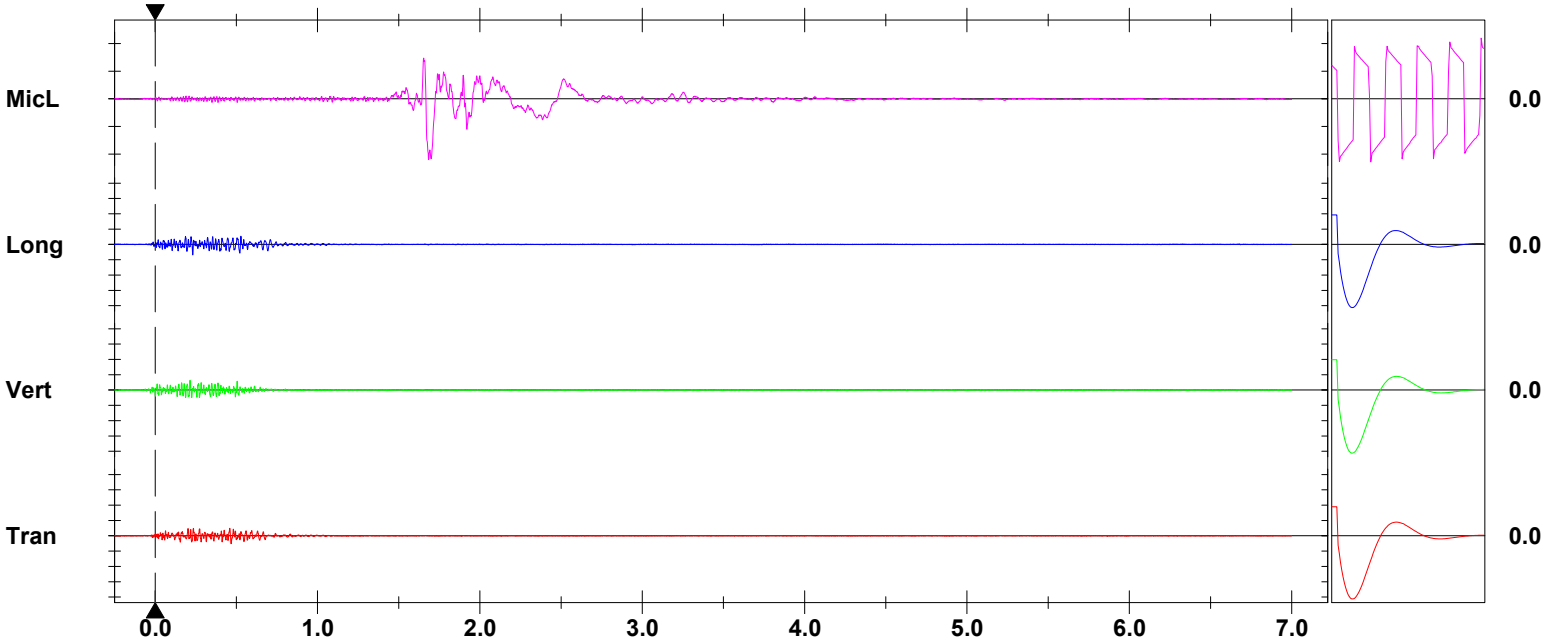
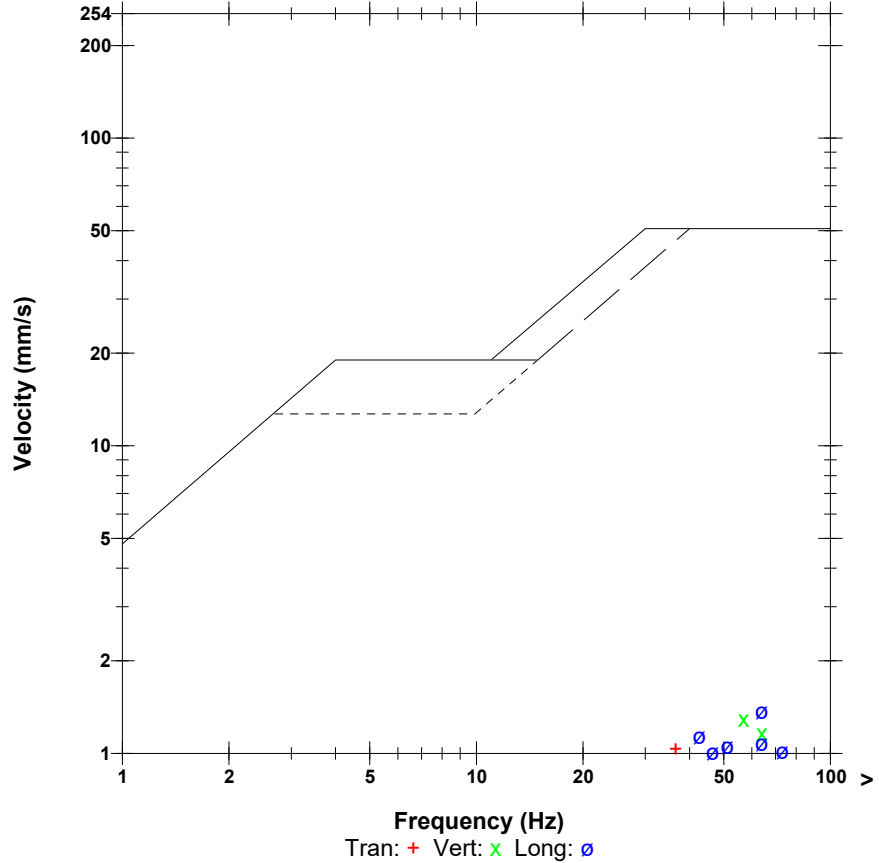
Location
 Client
 Company
 General Notes

Microphone Linear Weighting
PSPL 114.8 dB(L) 10.98 pa.(L) at 1.685 sec
ZC Freq 8.8 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 1547 mv)

	Tran	Vert	Long	
PPV	1.033	1.293	1.371	mm/s
PPV	51.28	53.23	53.74	dB
ZC Freq	37	57	64	Hz
Time (Rel. to Trig)	0.468	0.215	0.231	sec
Peak Acceleration	0.080	0.085	0.062	g
Peak Displacement	0.004	0.003	0.004	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.5	7.5	Hz
Overswing Ratio	4.7	4.6	4.6	

Peak Vector Sum 1.476 mm/s at 0.505 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 14:11:04 November 27, 2023
Trigger Source Geo: 0.500 mm/s
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_20231127141104.IDFW

Post Event Notes

Location: 50 Myron Road (PW-15)
 Blast No.: 2023-37
 Project No: 234601.00

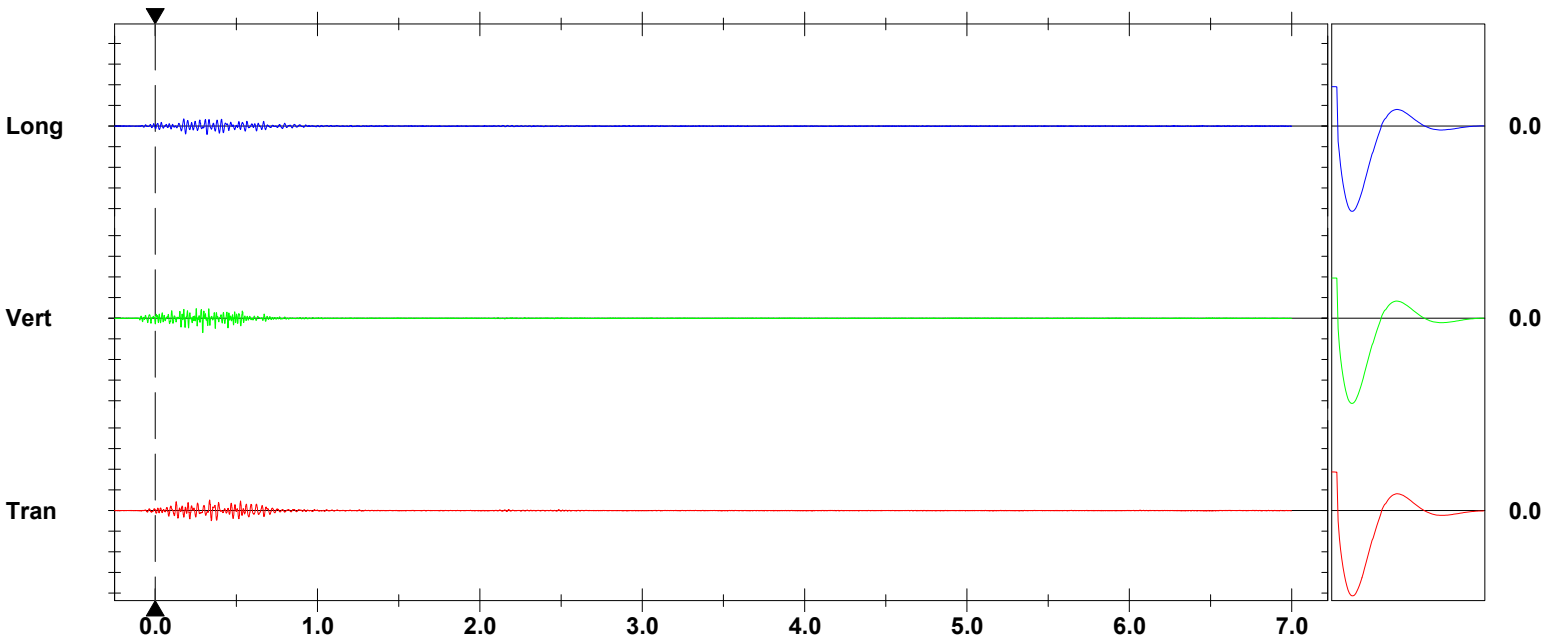
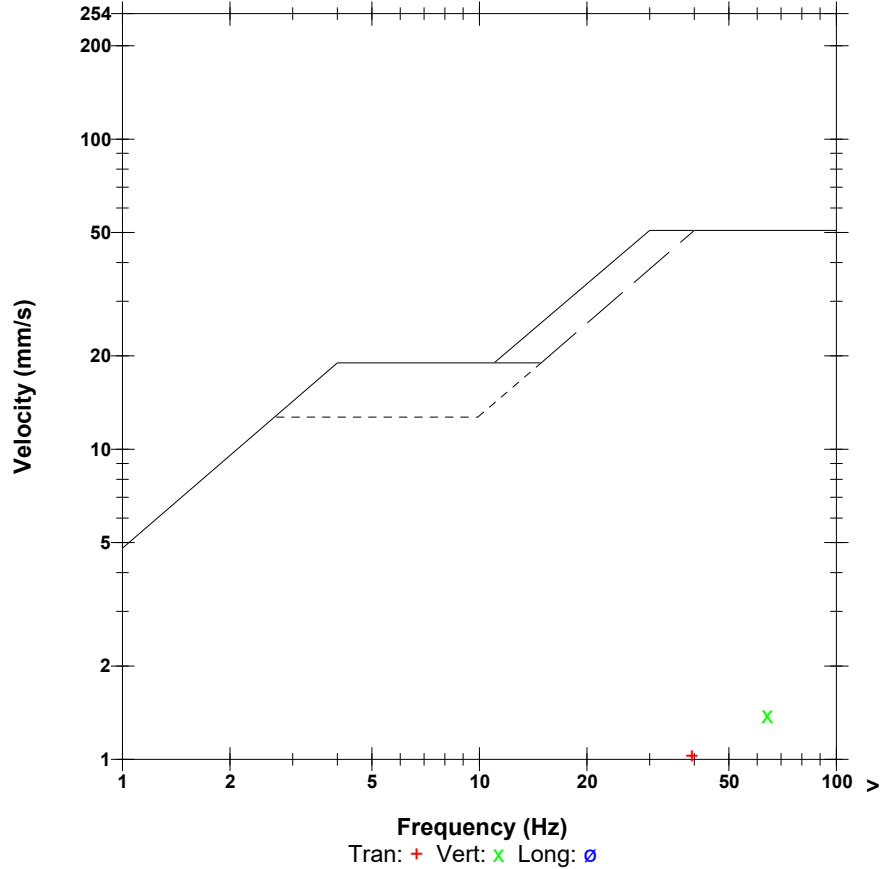
Notes

Location:
 Client:
 User Name:
 General:

	Tran	Vert	Long	
PPV	1.025	1.387	0.820	mm/s
PPV	51.21	53.84	49.27	dB
ZC Freq	39	64	43	Hz
Time (Rel. to Trig)	0.335	0.293	0.319	sec
Peak Acceleration	0.053	0.088	0.026	g
Peak Displacement	0.004	0.003	0.003	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.3	Hz
Overswing Ratio	5.1	4.9	5.1	

Peak Vector Sum 1.391 mm/s at 0.293 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div
Trigger =

Sensor Check

Date/Time Long at 14:11:05 November 27, 2023
Trigger Source Geo: 0.492 mm/s
Range Geo: 127.0 mm/s
Record Time 7.0 sec at 1024 sps

Serial Number 5489 V 2.61 MiniMate
Battery Level 6.4 Volts
Unit Calibration May 5, 2023 by InstanTel
File Name G489KAZW.QH0

Notes
 Location:
 Client:
 User Name:
 Converted: November 27, 2023 16:59:17 (V10.72.1)

Post Event Notes
 Location: 86 Myron Road (PW-16)
 Blast No.: 2023-37
 Project No: 234601.00

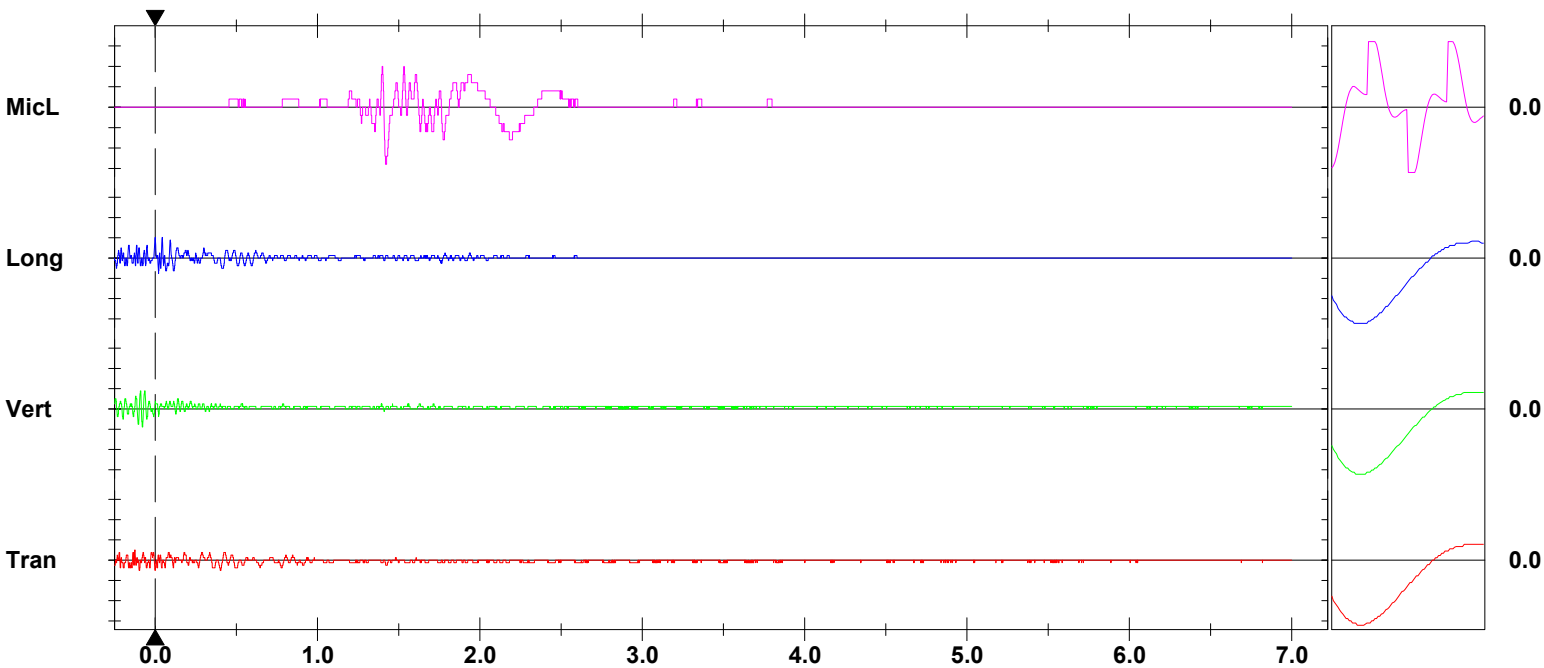
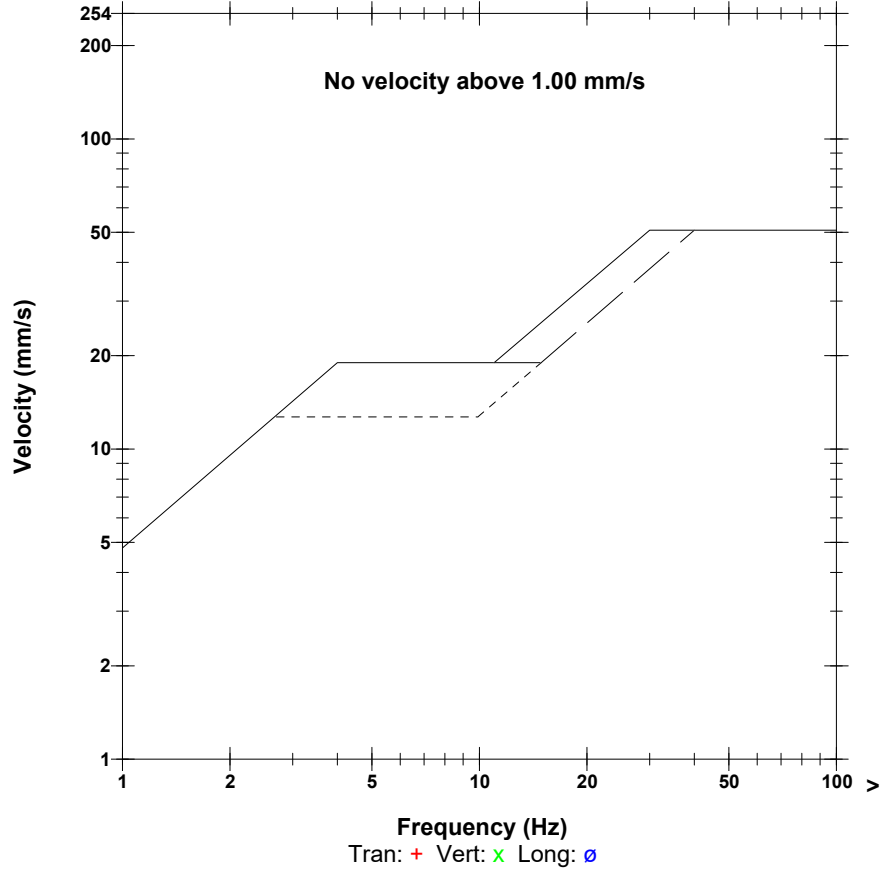
Extended Notes

Microphone Linear Weighting
PSPL 116.9 dB(L) 14.00 pa.(L) at 1.419 sec
ZC Freq 10 Hz
Channel Test Passed (Freq = 20.0 Hz Amp = 283 mv)

	Tran	Vert	Long	
PPV	0.254	0.445	0.508	mm/s
PPV	39.10	43.96	45.12	dB
ZC Freq	57	37	37	Hz
Time (Rel. to Trig)	0.001	-0.062	0.001	sec
Peak Acceleration	0.013	0.013	0.013	g
Peak Displacement	0.001	0.002	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.7	7.8	Hz
Overswing Ratio	4.0	4.0	3.9	

Peak Vector Sum 0.587 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

Date/Time Long at 14:11:04 November 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 UM20203 V 10-90GC Micromate ISEE
Battery Level 3.8 Volts
Unit Calibration May 30, 2023 by InstanTel
File Name UM20203_20231127141104.IDFW

Notes
 Location:
 Client:
 User Name:
 General:

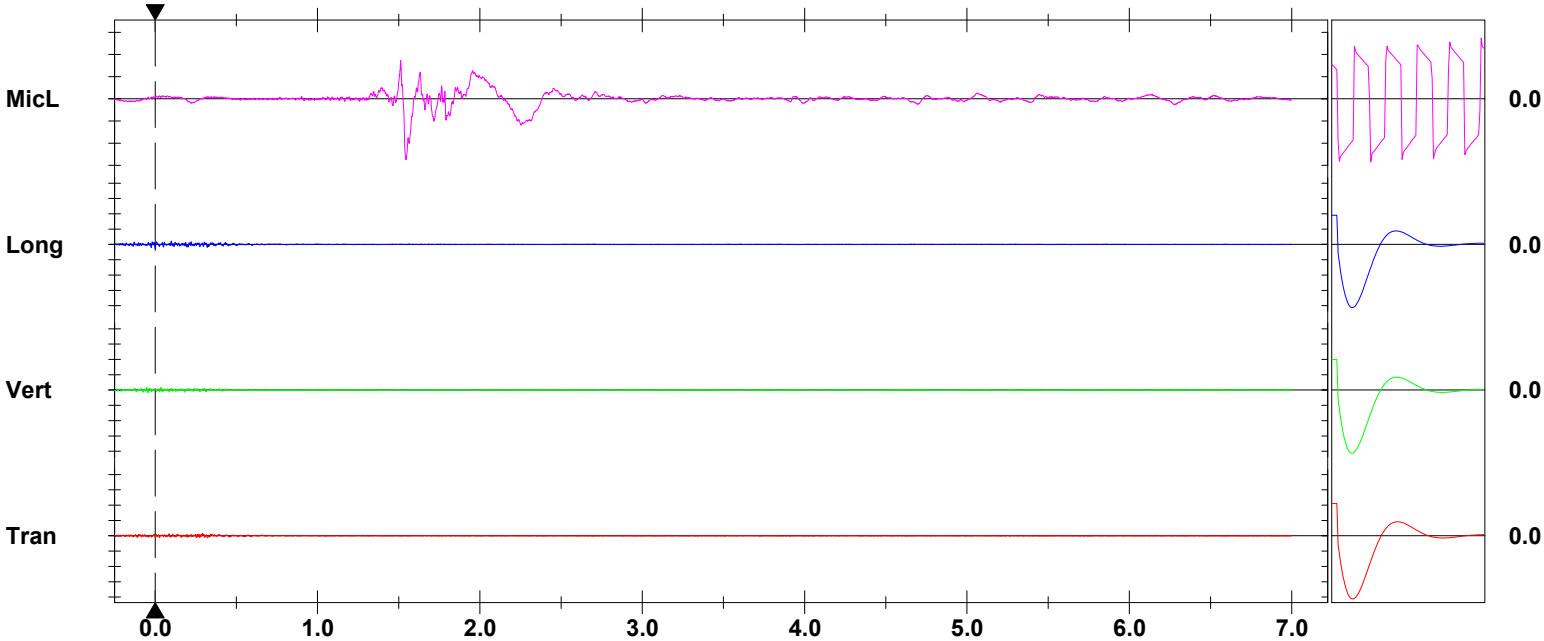
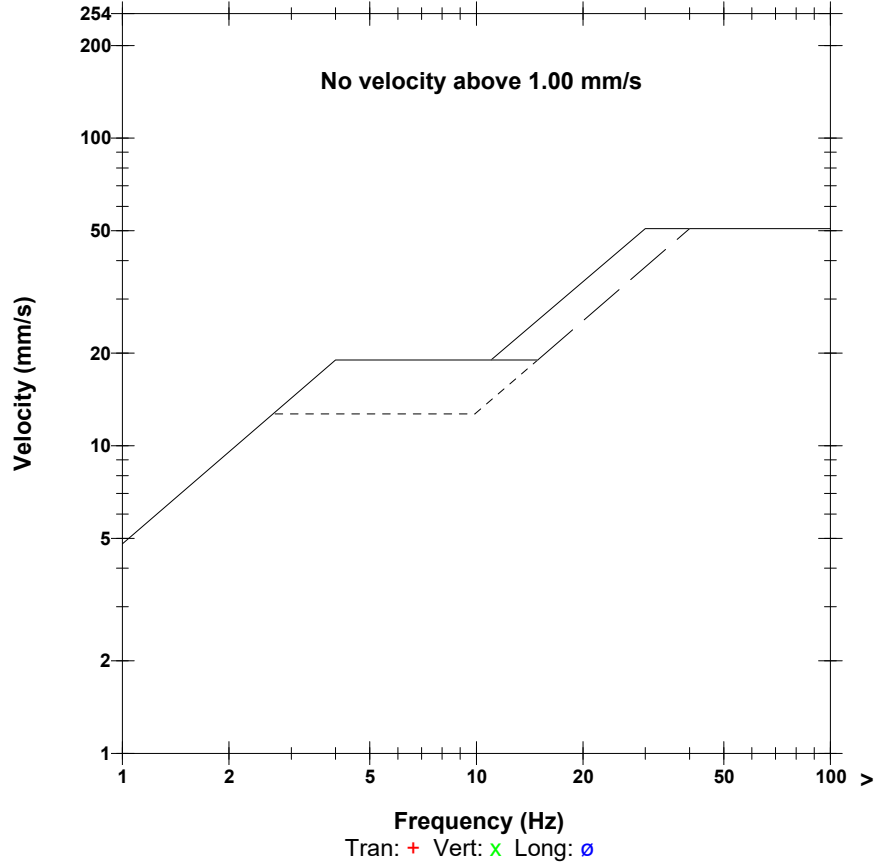
Post Event Notes
 Location: 2337 Route 820 (PW-04)
 Blast No.: 2023-37
 Project No: 234601.00

Microphone Linear Weighting
PSPL 116.7 dB(L) 13.70 pa.(L) at 1.547 sec
ZC Freq 7.4 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 1556 mv)

	Tran	Vert	Long	
PPV	0.323	0.370	0.528	mm/s
PPV	41.19	42.37	45.45	dB
ZC Freq	30	57	64	Hz
Time (Rel. to Trig)	0.290	-0.045	0.000	sec
Peak Acceleration	0.021	0.016	0.027	g
Peak Displacement	0.001	0.001	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.5	Hz
Overswing Ratio	4.5	4.9	4.7	

Peak Vector Sum 0.555 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