Appendix B.4

CNC Crawford Mine Baseline Noise Field Program

CNC REPORT

CNC Crawford Mine Baseline Noise Field Program

2023 Baseline Noise Monitoring & Measurements - Leaves-On and Leaves-Off

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Table of Contents

1.0 INTRODUCTION 1

2.0 BACKGROUND INFORMATION AND OBJECTIVE 1

3.0 INFORMATION SOURCES AND APPLICABLE GUIDANCE 2

4.0 METHODOLOGY 3

4.1 Acoustic Local Study Area 3

4.2 Potential Receptor Layout 3

4.3 Noise Metrics 3

4.4 Monitoring Equipment 4

4.5 Program Scheduling 4

4.6 Long-Term Monitoring and Short-Term Measurement Locations 5

4.6.1 Long Term Monitoring Locations 5

4.6.1.1 Long-Term Monitoring Location ML1 6

4.6.1.2 Long-Term Monitoring Location ML2 6

4.6.1.3 Long-Term Monitoring Location ML3 7

4.6.1.4 Long-Term Monitoring Location ML4 8

4.6.1.5 Long-Term Monitoring Location ML5 9

4.6.2 Short-Term Measurements 10

5.0 RESULTS 13

5.1 Leaves-Off Season 13

5.1.1 Long-Term Monitoring Location ML1 14

5.1.2 Long-Term Monitoring Location ML2 15

5.1.3 Long-Term Monitoring Location ML3 16

5.1.4 Long-Term Monitoring Location ML4 17

5.1.5 Long-Term Monitoring Location ML5 18

5.1.6 Short-Term Noise Measurements 19

5.2 Leaves-On Season 20

5.2.1 Long-Term Monitoring Location ML1 21

5.2.2 Long-Term Monitoring Location ML2 22
5.2.3 Long-Term Monitoring Location ML3 23
5.2.4 Long-Term Monitoring Location ML4 24
5.2.5 Long-Term Monitoring Location ML5 25
5.2.6 Short-Term Noise Measurements 26
6.0 CLOSURE 27

TABLES

Table 1: Long-Term Monitoring Locations 5
Table 2: Short-Term Measurement Locations 12
Table 3: Monitored $L_{eq-1\ hour}$ Sound Levels at ML1 for the Leaves-off Season during the 2023 Acoustics Program 15
Table 4: Monitored $L_{eq-1\ hour}$ Sound Level at ML2 for the Leaves-off Season during the 2023 Acoustics Program 16
Table 5: Monitored $L_{eq-1\ hour}$ Sound Level at ML3 for the Leaves-off Season during the 2023 Acoustics Program 17
Table 6: Monitored $L_{eq-1\ hour}$ Sound Levels at ML4 for the Leaves-off Season during the 2023 Acoustics Program 18
Table 7: Monitored $L_{eq-1\ hour}$ Sound Levels at ML5 for the Leaves-off Season during the 2023 Acoustics Program 19
Table 8: Short-Term Measurement Results 19
Table 9: Monitored $L_{eq-1\ hour}$ Sound Level at ML1 for the Leaves-on Season during the 2023 Acoustics Program 21
Table 10: Monitored $L_{eq-1\ hour}$ Sound Levels at ML2 for the Leaves-on Season during the 2023 Acoustics Program 22
Table 11: Monitored $L_{eq-1\ hour}$ Sound Levels at ML3 for the Leaves-on Season during the 2023 Acoustics Program 23
Table 12: Monitored $L_{eq-1\ hour}$ Sound Level at ML4 for the Leaves-on Season during the 2023 Acoustics Program 24
Table 13: Measured $L_{eq-1\ hour}$ Sound Levels at ML5 for the Leaves-on Season during the 2023 Acoustics Program 25
Table 14: Short-Term Measurement Results 26

FIGURES

Figure 1: Major Project Components and Locations of the Long-term Monitoring and Short-term Acoustic Measurement Sites for the 2023 Program 11

Figure 2: $L_{eq\ –\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML1 during the Leaves-Off Season for the 2023 Acoustics Program 14

Figure 3: $L_{eq\ –\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML2 during the Leaves-Off Season for the 2023 Acoustics Program 15

Figure 4: $L_{eq\ –\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML3 during the Leaves-Off Season for the 2023 Acoustics Program 16

Figure 5: $L_{eq\ –\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML4 during the Leaves-Off Season for the 2023 Acoustics Program 17

Figure 6: $L_{eq\ –\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML5 during the Leaves-Off Season for the 2023 Acoustics Program 18

Figure 7: $L_{eq\ –\ 1\ hour}$ and $L_{90\ –\ 1\ hour}$ Sound Levels Monitored at ML1 during the Leaves-On Season for the 2023 Acoustics Program 21

Figure 8: $L_{eq\ -\ 1\ hour}$ and $L_{90\ –\ 1\ hour}$ Sound Levels Monitored at ML2 during the Leaves-On Season for the 2023 Acoustics Program 22

Figure 9: $L_{eq\ -\ 1\ hour}$ and $L_{90\ –\ 1\ hour}$ Sound Levels Monitored at ML3 during the Leaves-On Season for the 2023 Acoustics Program 23

Figure 10: $L_{eq\ –\ 1\ hour}$ and $L_{90\ –\ 1\ hour}$ Sound Levels Monitored at ML4 during the Leaves-On Season for the 2023 Acoustics Program 24

Figure 11: $L_{eq\ –\ 1\ hour}$ and $L_{90\ –\ 1\ hour}$ Sound Levels Monitored at ML5 during the Leaves-On Season for the 2023 Acoustics Program 25

PHOTOGRAPHS

Photograph 1: Noise Monitoring Equipment Deployed at ML1; Leaves-Off Season (left), Leaves-On Season (right) 6

Photograph 2: Noise Monitoring Equipment Deployed at ML2; Leaves-Off Season (left), Leaves-On Season (right) 7

Photograph 3: Noise Monitoring Equipment Deployed at ML3; Leaves-Off Season (left), Leaves-On Season (right) 8

Photograph 4: Noise Monitoring Equipment Deployed at ML4; Leaves-Off Season (left), Leaves-On Season (right) 9

Photograph 5: Noise Monitoring Equipment Deployed at ML5; Leaves-Off Season 10

APPENDICES

APPENDIX A
Equipment Calibration Certificates

APPENDIX B
Noise Data

APPENDIX C
Weather Data

1.0 INTRODUCTION

Canada Nickel Company (CNC) is preparing a federal Impact Assessment (IA) for the Crawford Project (the Project), located in the Crawford and Lucas townships, about 42 kilometres north of the City of Timmins (the Site). The Project will involve open pit mining of a nickel deposit. CNC has retained WSP Canada Inc. (WSP) to provide environmental support in 2023 to feed into their IA. The environmental support includes carrying out a Baseline Noise Field Program (the Program) in the vicinity of the Site.

The objective of the Program was to collect baseline noise data characterizing the acoustic environment within the Project area. The Program was divided into two separate times of the year, during seasons associated with the absence and the presence of foliage, 'Leaves-Off Season' and 'Leaves-On Season', respectively. It is possible, depending on various factors, that some variability in the noise levels in remote forested areas (majority of the Project area) exists due to wind induced noise from specific vegetation (i.e., deciduous trees), thus the corresponding wind induced noise levels potentially may be higher with the presence of foliage.

This document summarizes the Program.

2.0 BACKGROUND INFORMATION AND OBJECTIVE

The objective of the Program was to collect noise data characterizing the existing ambient noise levels at human receptor locations in the vicinity of the Project. It is WSP's understanding the assessment of the baseline noise data collected will be summarized in another report. According to the Tailored Impact Statement Guidelines dated March 2023 (TISG) and Detailed Project Description dated December 2022 (Detailed Project Description), the major components of the Project include the following:

1) Open Pit Mine;
2) Processing Facility and Ancillary Facilities (Stockpiles, Tailings Management Facility (TMF), Water, Waste and Power);
3) Aggregate Pits;
4) Railway activities from Kidd Mine to the Kidd Concentrator, including new rail spur;
5) Highway 655 Relocation; and
6) 500 kV Transmission Line Relocation.

The major Project components are presented in Figure 1.

3.0 INFORMATION SOURCES AND APPLICABLE GUIDANCE

In addition to the TISG and the Detailed Project Description, information reviewed in support of the Program included the following sources and guidance documents, which were considered applicable to the Program at the time of carrying it out:

- MECP Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300 (NPC-300) (MECP 2013);
- International Standard Organization (ISO) 1996-2(2007) standard Acoustics, Description, Measurement and Assessment of Environmental Noise – Part 2: Determination of Environmental Noise Levels (ISO 1996-2);
- MECP NPC-102 Instrumentation (NPC-102);
- MECP NPC -103 Procedures (NPC-103);
- MECP NPC-104 Sound Level Adjustments (NPC-104);
- Health Canada Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (Health Canada Noise Guidance) (Health Canada 2017);
- ISO 12913-1:2014. Acoustics – Soundscape – Part 1: Definition and conceptual framework (ISO 12913-1)
- Alberta Energy Regulator (AER) Directive 038: Noise Control (Directive 038) (AEUB 2007);
- Readily available public aerial imagery;
- CanVec geographic datasets (CANVEC); and
- Ministry of Natural Resources and Forestry (MNRF) Land Information Ontario (LIO) geographic datasets.

4.0 METHODOLOGY

The methodology of the Program was carried out as follows:

1) Acoustic Local Study Area – Definition of an acoustic local study area;
2) Potential Receptor Layout – Identification of potential sensitive receptors in the vicinity of the Project;
3) Measurement Locations – Identification of measurement locations in the vicinity of representative potential sensitive receptor locations;
4) Noise Metrics and Equipment – Confirmation of noise metrics and respective equipment; and
5) Scheduling – Confirmation of the estimated time of deployment and duration.

The Program was completed in general accordance with Health Canada Guidance, NPC-300, NPC-102, NPC-103, NPC-104 and ISO 1996-2.

In addition, the TISG recommends the consideration of soundscapes (as per ISO 12913-1) for locations associated with human presence. Based on the consideration of applicable guidelines and current general industry practices associated with collection of the acoustic baseline assessment for remote areas without the presence of permanent human activity, only noise level measurements and field observations regarding the existing noise sources present at the time of the Program were collected. WSP recommends further discussion with the regulators and stakeholders on the feasibility of applying ISO 12913-1 to the Project.

4.1 Acoustic Local Study Area

The acoustic Local Study Area (LSA) was defined as a 1.5 km buffer around the Project footprint boundary. The 1.5 km setback to define the LSA is based on where human activity is expected to occur, and professional judgement and guidance provided by AER Directive 038: Noise Control Directive (Directive 038) (AEUB 2007) for noise assessments in Alberta, as no similar guidelines have been established in Ontario. The LSA is presented in Figure 1.

As previously mentioned, the objective of the Program was to collect noise data characterizing the existing ambient noise levels in the vicinity of human receptor locations within the LSA. The assessment of the Project on wildlife, socioeconomics, and human health, as related to sensory disturbance from noise was not part of the scope of work for the Program.

4.2 Potential Receptor Layout

The potential Points of Reception (PORs) in the acoustic LSA were identified through a desktop review in general accordance with NPC-300, Health Canada Noise Guidelines, and where traditional land uses are expected to be occupied by human activity. At the time of preparing for the Program, information on traditional land uses was still being compiled and a comprehensive list was being developed.

4.3 Noise Metrics

The Program included long-term (up to 48 hours) monitoring and short-term (up to 20 minutes) measurements of existing ambient noise levels in the vicinity of the Project.

At each long-term monitoring location, a Type 1 integrating sound level meter (SLM) was deployed. The SLM was set to collect A-weighted and C-weighted equivalent sound level (L_{eq}) at 1 min and 1-hour intervals. Continuous audio recording of sound present in the area was collected at each long-term monitoring location for further analysis. In addition, octave band data and statistical data (i.e., Ln%) describing the percentage of time the noise level exceeded a certain value (e.g., L_n90) were collected.

At each of the short-term measurement locations, a similar SLM as the one used for long-term monitoring was used and similar noise metrics were collected. In addition, short-term measurements were taken within various areas of the Site to provide supplemental noise data along with observation/identification of major noise contributors.

The long-term monitoring data were analyzed and screened to remove data identified as not being representative of typical conditions and collected during periods considered to be inclement weather conditions. For the purposes of the Program, inclement weather conditions include periods with precipitation and wind speeds exceeding 15 km/h. Other weather conditions such as temperature and relative humidity may potentially affect the performance of the SLM and professional judgement was applied when screening the data. The data not considered representative that would be screened out included data associated with localized events such as elevated noise levels resulting from animals, humans, and vehicles. The nearest meteorological station with weather data that was publicly readily available and with the parameters required for the Program, was located at Timmins Victor M. Power Airport, approximately 30 km south of the Site.

4.4 Monitoring Equipment

The long-term monitoring and short-term measurements were completed using numerous Type 1 Larson Davis 831 and/or Brüel&Kjær 2250 integrating Sound Level Meters (SLMs), with an outdoor environmental kit. The microphone of the SLM was equipped with a windscreen and installed on a tripod with the microphone height set to approximately 1.5 m above the ground. The SLMs were calibrated prior to and upon completion of the measurement using a Larson-Davis and Brüel&Kjær acoustic calibrator set to generate a 94 dB tone at 1,000 Hz. An equipment summary and respective calibration certificates are provided in Appendix A.

4.5 Program Scheduling

The Program was scheduled when weather conditions were expected to be favourable (i.e., no inclement weather). A minimum of 24 hours (1 day) and a maximum of 48 hours (2 days) of noise data were collected during each season at each long-term noise monitoring location, during favourable weather conditions. A program of this duration is considered adequate for locations in remote areas such as northern Ontario where day-to-day variability is expected to be minimal due to limited human activity. The Program deployment was carried out as follows:

1) Leaves-Off Season – May 3 to May 6, 2023

2) Leaves-On Season – September 8 to September 11, 2023

4.6 Long-Term Monitoring and Short-Term Measurement Locations

4.6.1 Long Term Monitoring Locations

Long-term monitoring locations were initially identified considering the location of human receptors, through a desktop review and then confirmed when arriving at the Site. Four locations were select in each cardinal directions within the LSA, centered approximately around the Project. An additional location was selected further south, near the existing camp site and the existing railway tracks where future operations of the Project are expected. These five long-term monitoring locations were carried out for the Leaves-Off Season and Leaves-On Season deployments.

Table 1 summarizes the location identifiers and the coordinates of the selected long-term monitoring locations.

Table 1: Long-Term Monitoring Locations

Long-Term Monitoring Location	Coordinates (UTM NAD 83 Zone 17U)		Rationale
	Easting (m)	Northing (m)	
ML1	472900	5416714	Monitoring location approximately 7,500 m north of future pit. Selected to collect noise data representative of an area with contributions from nature-based sources and road traffic from the nearby HW 655.
ML2	477256	5408219	Monitoring location approximately 3,680 m east from the center of the future pit and approximately 325 m southwest from an existing private camp. Selected to collect noise data representative of a location dominated by nature-based sources and associated with human occupancy at the nearby private camp.
ML3	471530	5403397	Monitoring location approximately 538 m south of the Davis Lake Camp, and approximately 6,300 m southwest from the centre of the future pit. Selected to collect noise data representative of a location dominated by nature-based sources with contributions from road noise (Highway 655) and location associated with human occupancy at the nearby private camp.
ML4	464946	5412738	Monitoring location approximately 9,700 m southwest from the centre of the future pit and approximately 2,000 m west from private camp located (near the bank of the Mattagami River). Selected to collect noise data for an area representative of a location dominated by nature-based sources, expected to be comparable to noise with the area associated with human occupancy at the nearby private camp.
ML5	480507	5383099	Monitoring location approximately 520 m southeast of the grounds of the Big Water Camp and approximately 2,000 m west from the existing railway line that supports the Kidd Mine operations and future operations of the Project. Selected to collect noise data within the area of the camp with contributions from nature, existing rail line but in isolation from camp related onsite noise sources.

Each long-term monitoring location is further described below.

The collected 1-hour L_{eq} noise data are summarized in Appendix B. The weather data are presented in Appendix C. The analyzed data were used to determine the daytime and nighttime noise level $L_{eq, Day}$ and $L_{eq, Night}$.

4.6.1.1 Long-Term Monitoring Location ML1

The monitoring location ML1 was located approximately 7,500 m north from the center of the future pit and approximately 970 m west of Highway 655. The surrounding area was covered by vegetation typical of the northern forest with mixed vegetation comprising coniferous and deciduous trees and grass and shrub ground cover. The sources of noise at this location, during the May and September deployments, included anthropogenic sources (i.e., road traffic on nearby Highway 655) and nature-based sources including wind induced noise due to vegetation, wildlife, and insects.

Photo 1 shows the noise monitoring equipment deployed at ML1.

Photograph 1: Noise Monitoring Equipment Deployed at ML1; Leaves-Off Season (left), Leaves-On Season (right)

4.6.1.2 Long-Term Monitoring Location ML2

The monitoring location ML2 was located approximately 3,680 m east from the center of the future pit and approximately 325 m southwest from an existing private camp. The surrounding area was covered by vegetation typical of the northern forest with mixed vegetation comprising coniferous and deciduous trees with the ground covered by grasses and shrubs. The noise sources encountered at this location, during the May and September deployments, included nature-based sources such as wind induced noise due to vegetation, wildlife, and insects.

Photo 2 shows the noise monitoring equipment deployed at ML2.

Photograph 2: Noise Monitoring Equipment Deployed at ML2; Leaves-Off Season (left), Leaves-On Season (right)

4.6.1.3 Long-Term Monitoring Location ML3

The monitoring location ML3 was located approximately 1,680 m west of the Highway 655, approximately 538 m south of the Davis Lake Camp, and approximately 6,300 m southwest from the centre of the future pit.
The surrounding area was covered by vegetation typical of the northern forest with mixed vegetation comprising coniferous and deciduous trees and grass and shrub ground cover. The noise sources encountered at this location, during the May and September deployments, included nature-based sources such as wind induced noise due to vegetation, wildlife, and insects.

Photo 3 shows the noise monitoring equipment deployed at ML3.

Photograph 3: Noise Monitoring Equipment Deployed at ML3; Leaves-Off Season (left), Leaves-On Season (right)

4.6.1.4 Long-Term Monitoring Location ML4

The monitoring location ML4 was located approximately 9,700 m southwest from the centre of the future pit and adjacent to a trail leading to an existing private camp located approximately 2,000 m west (near the bank of the Mattagami River). The surrounding area was covered by vegetation typical of a wetland area without a significant presence of trees nearby relative to other locations in the vicinity of the Project. The noise sources encountered at this location, during the May and September deployments, were nature-based sources including wind induced noise due to vegetation, wildlife (significant presence of frogs during the May deployment), and insects. During the May deployment, the nighttime period was dominated by frog calls and insects.

Photo 4 shows the noise monitoring equipment deployed at ML4.

Photograph 4: Noise Monitoring Equipment Deployed at ML4; Leaves-Off Season (left), Leaves-On Season (right)

4.6.1.5 Long-Term Monitoring Location ML5

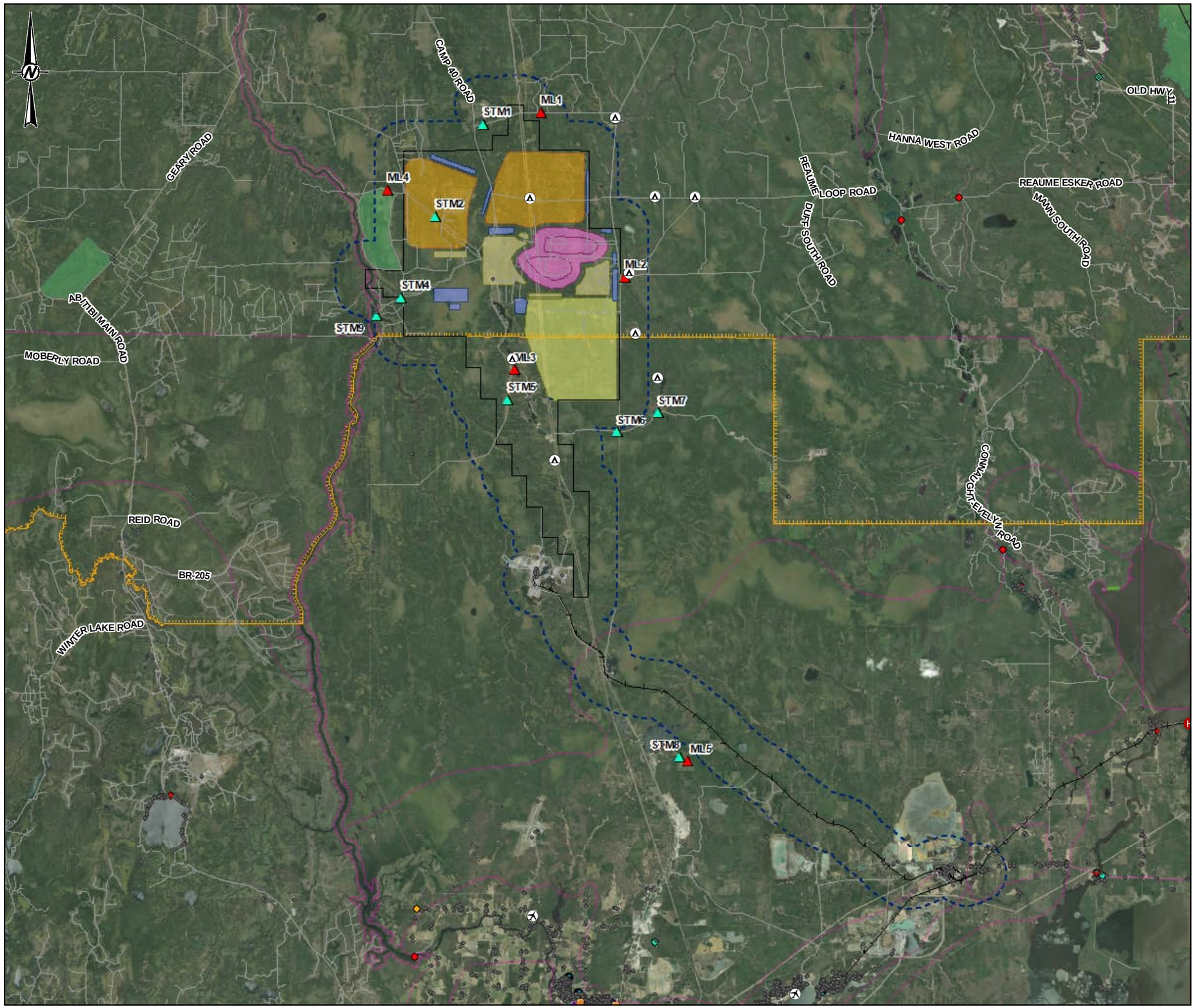
The long-term monitoring at ML5 was completed to collect baseline noise data that included contributions from the existing railway line supporting operations of the Kidd Mine and future operations of the Project. The monitoring location ML5 was located approximately 520 m southeast of the grounds of the Big Water Camp, approximately 2,065 m east of Highway 655, and approximately 2,000 m west of the existing railway line. The surrounding area was covered by less vegetation relative to other locations in the vicinity of the Project, with ground covered by soft grasses and bushes. The noise sources encountered at this location, during the May and September deployments, included anthropogenic sources (i.e., road traffic, railway, and noise from the nearby camp and recreational off-road vehicles) and nature-based sources such as wind induced noise due to vegetation, wildlife, and insects. Similar to ML4, the nighttime period during the May deployment was dominated by frog calls and insects.

Photo 5 shows the noise monitoring equipment deployed at ML5.

Photograph 5: Noise Monitoring Equipment Deployed at ML5; Leaves-Off Season

4.6.2 Short-Term Measurements

Table 2 summarizes the locations and coordinates of the short-term measurement locations. These short-term measurement locations were used to collect data to supplement the long-term monitoring data collected from the Leaves-Off Season and Leaves-On Season deployments. The locations where the short-term measurements were collected are shown in Figure 1.



KEY MAP

SCALE 1:3,000,000

LEGEND

- AIRPORT
- BUILDING
- CAMPS & HUNTING BLINDS
- HISTORIC / CULTURAL AREA IDENTIFIED
- MENTAL HEALTH AND ADDICTION ORGANIZATION
- RETIREMENT / LONG TERM CARE & SENIOR ACTIVE LIVING
- CHILDREN'S TREATMENT CENTRE / FAMILY HEALTH
- PHARMACY
- ACCESS POINT
- CLUBHOUSE
- PICNIC SITE
- PRIMARY AND SECONDARY SCHOOL
- PRIMARY SCHOOL ONLY
- SECONDARY SCHOOL ONLY
- LONG-TERM NOISE MEASUREMENT LOCATIONS
- SHORT-TERM NOISE MEASUREMENT LOCATIONS
- ROAD
- RAILWAY
- CONSERVATION RESERVE
- GENERAL USE AREA
- PROVINCIAL PARK
- PRELIMINARY PROJECT BOUNDARY
- 1.5KM BUFFER
- CARIBOU RANGE BOUNDARY
- OPEN PIT
- POND & SUMP
- STOCKPILE
- WASTE ROCK DISPOSAL FACILITY (WRD)
- TAILINGS MANAGEMENT FACILITY (TMF)

0 2,000 4,000 8,000

1:200,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS: SOURCES: 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), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
   SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
CANADA NICKEL COMPANY INC

PROJECT
CRAWFORD BASELINE NOISE MEASUREMENTS

TITLE
LOCATION OF MEASUREMENTS SITES

CONSULTANT
wsp

YYYY-MM-DD	2024-08-13
DESIGNED	TN
PREPARED	AR
REVIEWED	TN
APPROVED	SC

PROJECT NO.	CONTROL	REV.	FIGURE
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Table 2: Short-Term Measurement Locations

Short-term Measurement Location	Coordinates (UTM NAD 83 Zone 17 U)		Rationale
	Easting (m)	Northing (m)	
STM1	469917	5416134	Measurement site located approximately 8.1 km northwest from the center of the future Crawford mine pit.
STM2	467408	5411339	Measurement site located approximately 6.7 km northwest from the center of the future Crawford mine pit and along a trail leading to a camp on the shore of the Mattagami River.
STM4	465636	5407144	Measurement site located at the gate of the Lower Sturgeon Power Generation Dam.
STM5	471168	5401826	Measurement site located along the access road 1.6 km south from the ML3.
STM6	476856	5400148	Measurement site located along the road to the Gowest Mine, 9.7 km south of center of the Crawford pit.
STM7	479025	5401161	Measurement site located along the road to Gowest Mine, approximately 2.8 km east of STM6 and approximately 1.78 km south of Prosser Lake Camp.
STM8	480114	5383280	Measurement site located south-west of the Big Water Lake Camp.
STM9	464356	5406233	Measurement site located within the footprint of the Lower Sturgeon Power Generation Dam, near Mattagami River.

5.0 RESULTS

5.1 Leaves-Off Season

The Leaves-Off long-term monitoring and short-term measurements were carried out between May 3 and May 6, 2023. Weather conditions were predominantly clear, with temperatures ranging from 0°C to 18°C. Winds were predominantly from the north, with wind speeds ranging from 0 km/h to 21 km/h. Weather data is available in Appendix C. The results are presented below in Sections 5.1.1 to 5.1.6.

If present, periods of inclement weather that have the potential to affect ambient noise levels (i.e., precipitation or wind speeds exceeding 15 km/h) were identified. Noise data collected during the hour when inclement weather occurred were excluded in the results presented below in Sections 5.1.1 to 5.1.6.

Upon review of the weather data, relative humidity was above the range of the SLM's preferred operating conditions (above 90% or 99%, depending on the SLM) at times. Based on site observations and other weather parameters, the data collected did not appear to be noticeably affected such that it resulted in artificially increased ambient noise levels. During the month of May, it was common for the relative humidity to exceed 90% during the nighttime period when there was no precipitation; this was due to the air temperature approaching and reaching the dew point temperature. Therefore, it appears the weather conditions during the leaves-off program were representative of typical weather conditions in the vicinity of the Site. For the purposes of this document, noise data collected during periods of relative humidity above 90% were included in the results presented below in Sections 5.1.1 to 5.1.6.

Noise data collected when WSP personnel were in the vicinity of the monitoring equipment during deployment and retrieval were excluded. In addition, as noted above in Section 4.6.1, the sources of noise at different locations varied but included anthropogenic sources (i.e., road traffic on nearby Highway 655) and nature-based sources including wind induced noise due to vegetation, wildlife, and insects. A review of the audio collected at various times during the field program was carried out and these sources of noise contributed to localized events that increased the noise level at each location. These events were not excluded from the analysis since, based on site observation, they are considered representative of the temporal and spatial variations in the existing acoustic environment.

5.1.1 Long-Term Monitoring Location ML1

Figure 2 presents 1-hour L_{eq} and 1-hour L_{90} sound levels monitored at ML1.

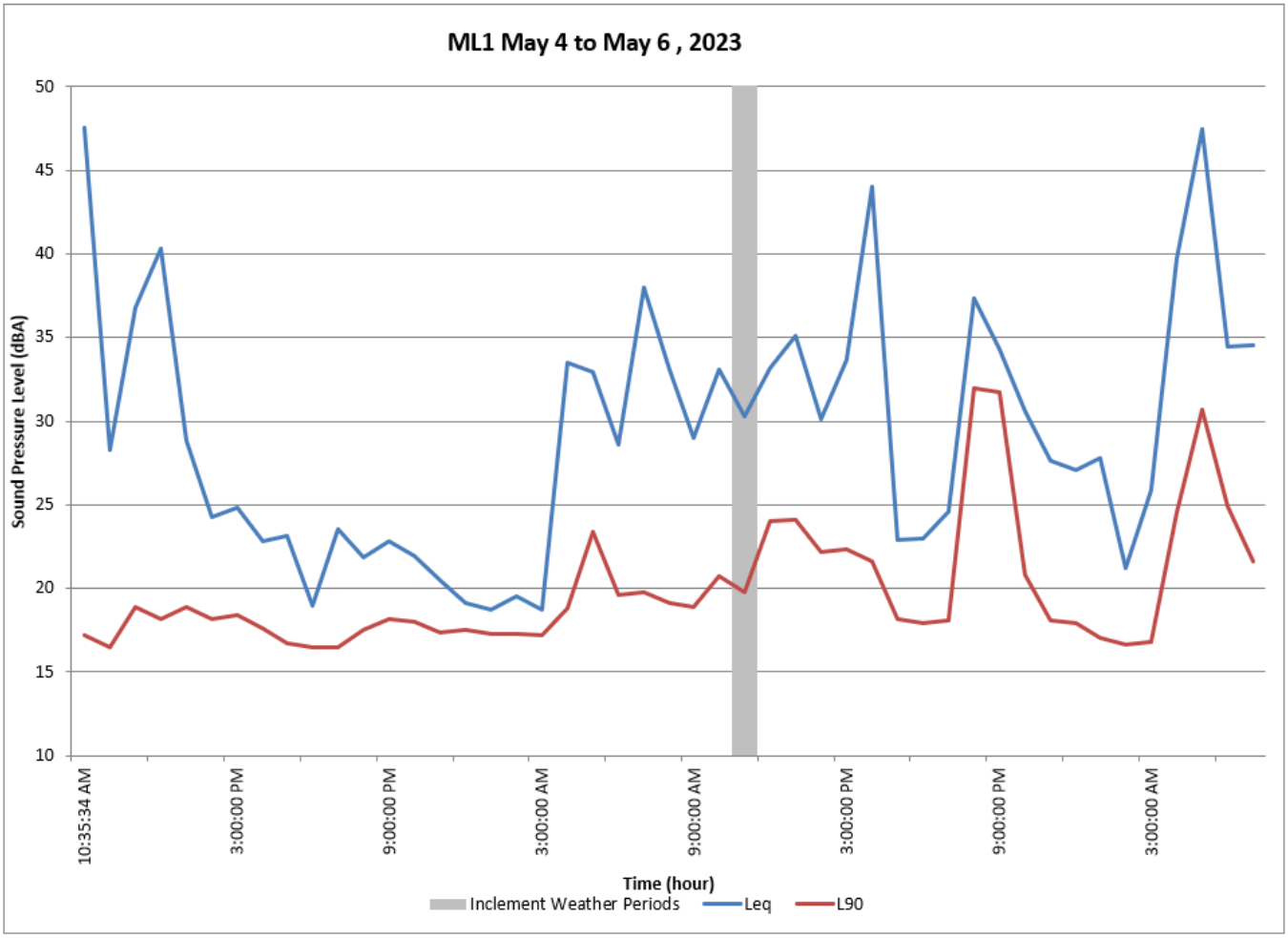

Figure 2: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML1 during the Leaves-Off Season for the 2023 Acoustics Program

Table 3 summarizes the daytime, evening, and nighttime $L_{eq-1\ hour}$ sound levels at ML1 for the duration of the noise monitoring program with sound levels collected during periods of inclement weather removed.

Table 3: Monitored $L_{eq-1\ hour}$ Sound Levels at ML1 for the Leaves-off Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq-1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq-1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq-1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML1	47	38	48	23	31	37	19	37	48	19

5.1.2 Long-Term Monitoring Location ML2

Figure 3 presents 1-hour L_{eq} and 1-hour L_{90} sound levels monitored at ML2.

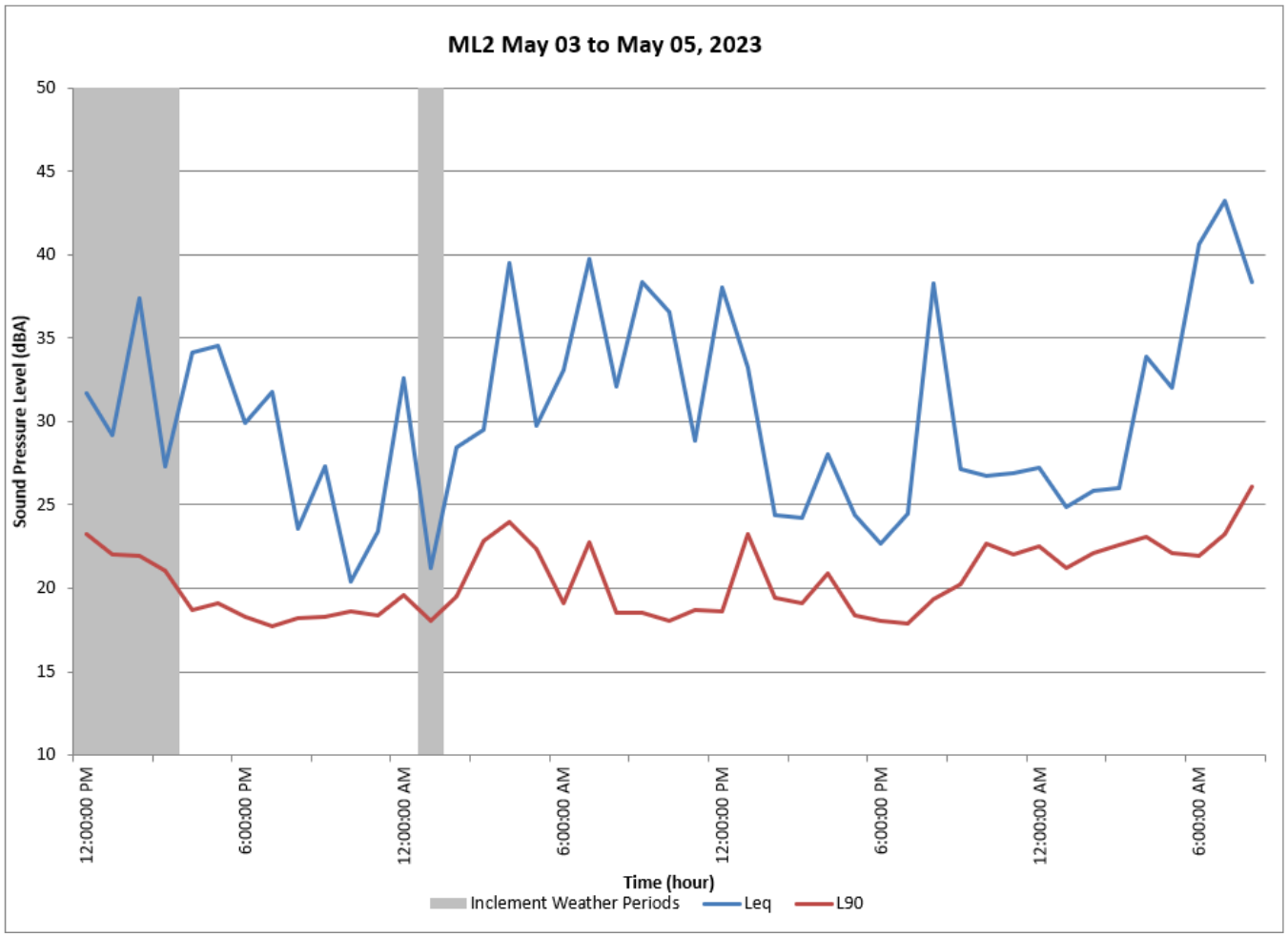

Figure 3: $L_{eq-1\ hour}$ and $L_{90-1\ hour}$ Sound Levels Monitored at ML2 during the Leaves-Off Season for the 2023 Acoustics Program

Table 4 summarizes daytime, evening, and nighttime $L_{eq-1\ hour}$ sound levels at ML2 for the duration of the noise monitoring program with sound levels collected during periods of inclement weather removed.

Table 4: Monitored $L_{eq-1\ hour}$ Sound Level at ML2 for the Leaves-off Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq-1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq-1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq-1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML2	45	37	43	24	31	38	23	34	43	20

5.1.3 Long-Term Monitoring Location ML3

Figure 4 presents 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML3.

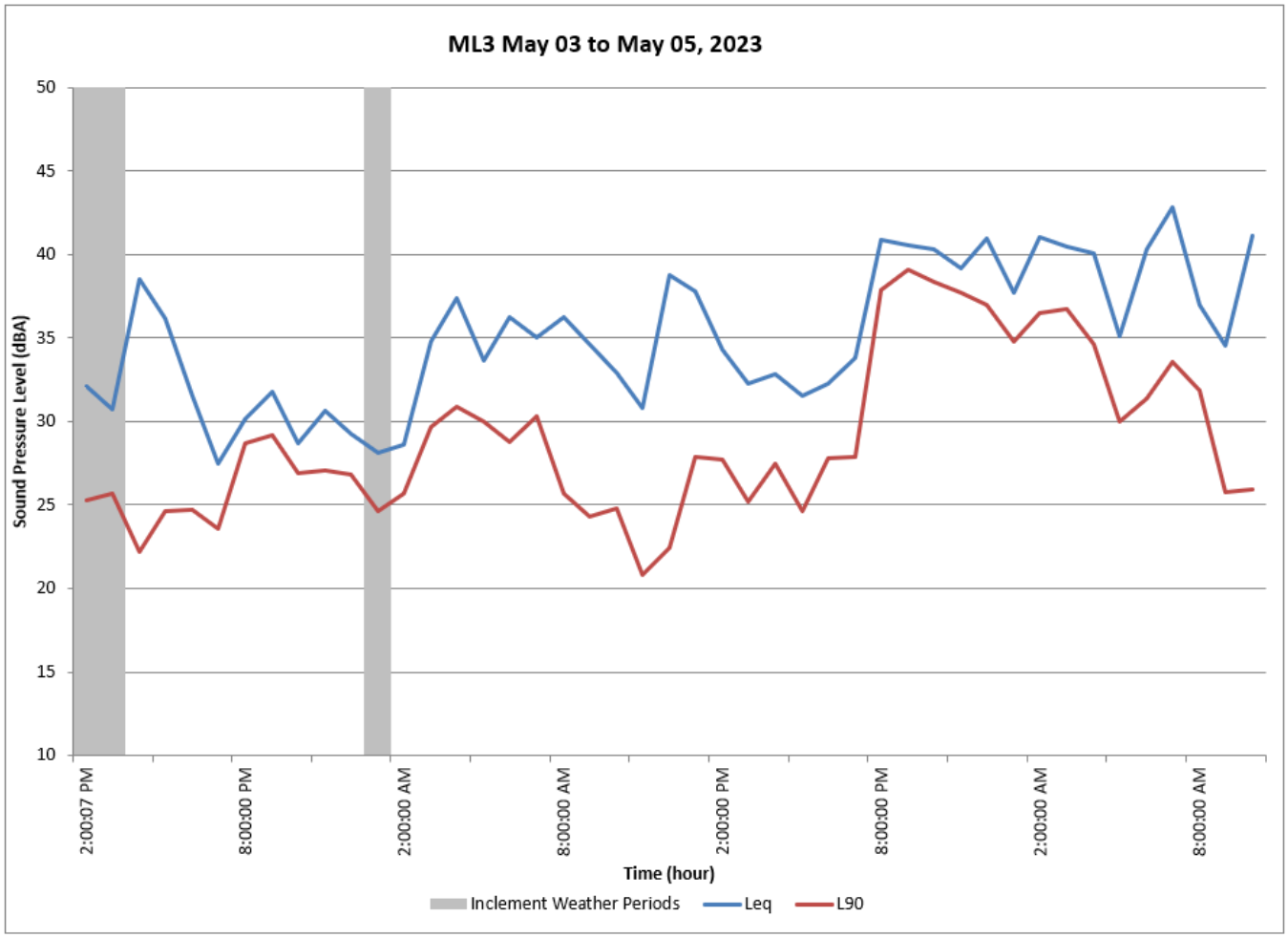

Figure 4: $L_{eq-1\ hour}$ and $L_{90-1\ hour}$ Sound Levels Monitored at ML3 during the Leaves-Off Season for the 2023 Acoustics Program

Table 5 summarizes daytime, evening, and nighttime $L_{eq-1\ hour}$ sound levels at ML3 for the duration of the noise monitoring program with sound levels collected during periods of inclement weather removed.

Table 5: Monitored $L_{eq\ -\ 1\ hour}$ Sound Level at ML3 for the Leaves-off Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML3	45	37	43	31	36	41	27	38	41	29

5.1.4 Long-Term Monitoring Location ML4

Figure 5 shows 1-hour L_{eq} and 1- hour L_{90} sound levels measured at ML4.

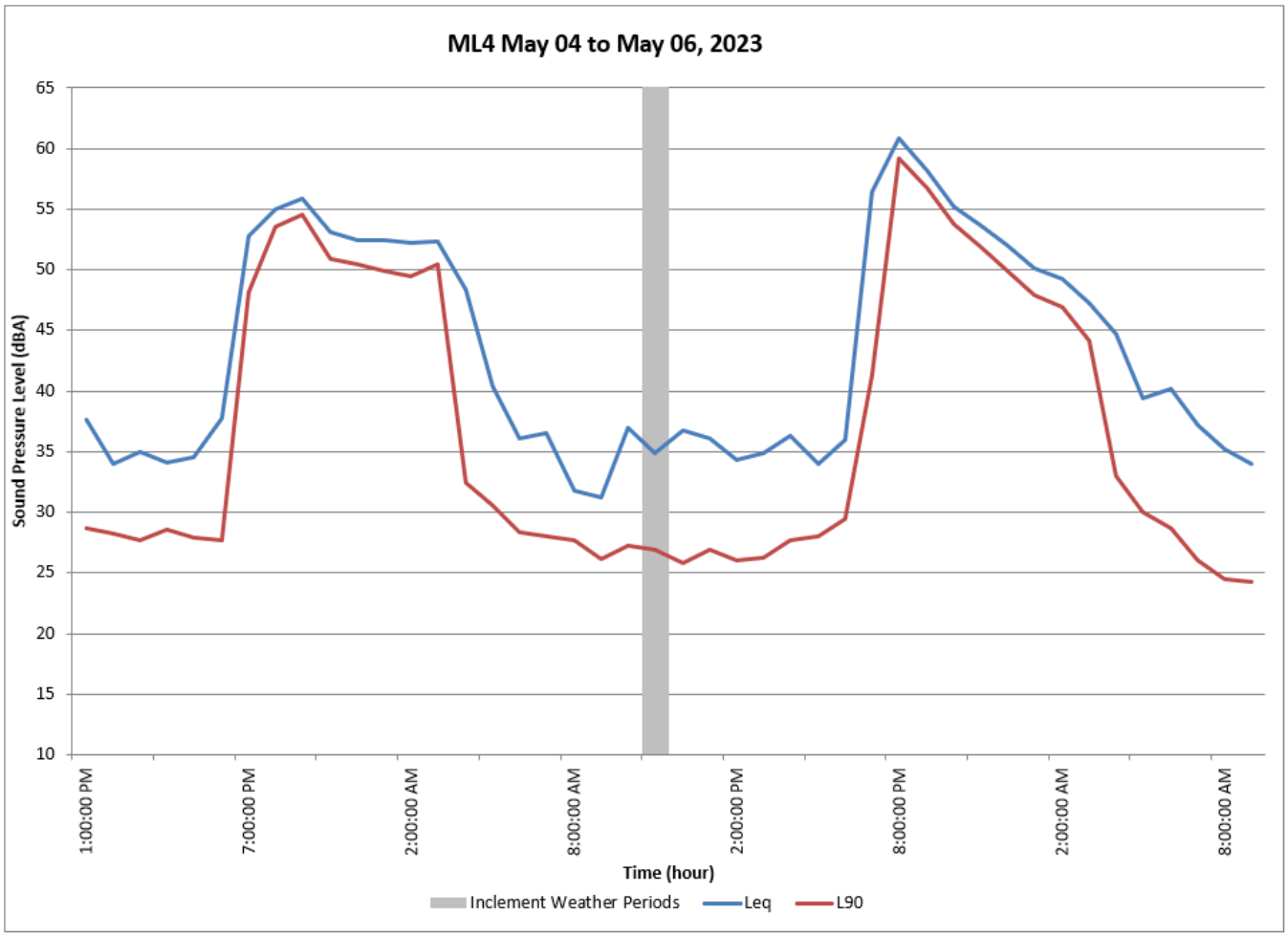

Figure 5: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML4 during the Leaves-Off Season for the 2023 Acoustics Program

Table 6 summarizes daytime, evening, and nighttime $L_{eq\ -\ 1\ hour}$ sound levels at ML4 for the duration of the noise monitoring program with sound levels collected during periods of inclement weather removed.

Table 6: Monitored $L_{eq-1\ hour}$ Sound Levels at ML4 for the Leaves-off Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq-1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq-1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq-1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML4	44	36	40	31	56	61	36	52	56	39

Please note the substantially elevated sound levels reported for the evening and nighttime periods are due to presence of animals (i.e., frogs) and insects near the microphone.

5.1.5 Long-Term Monitoring Location ML5

Figure 6 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML5.

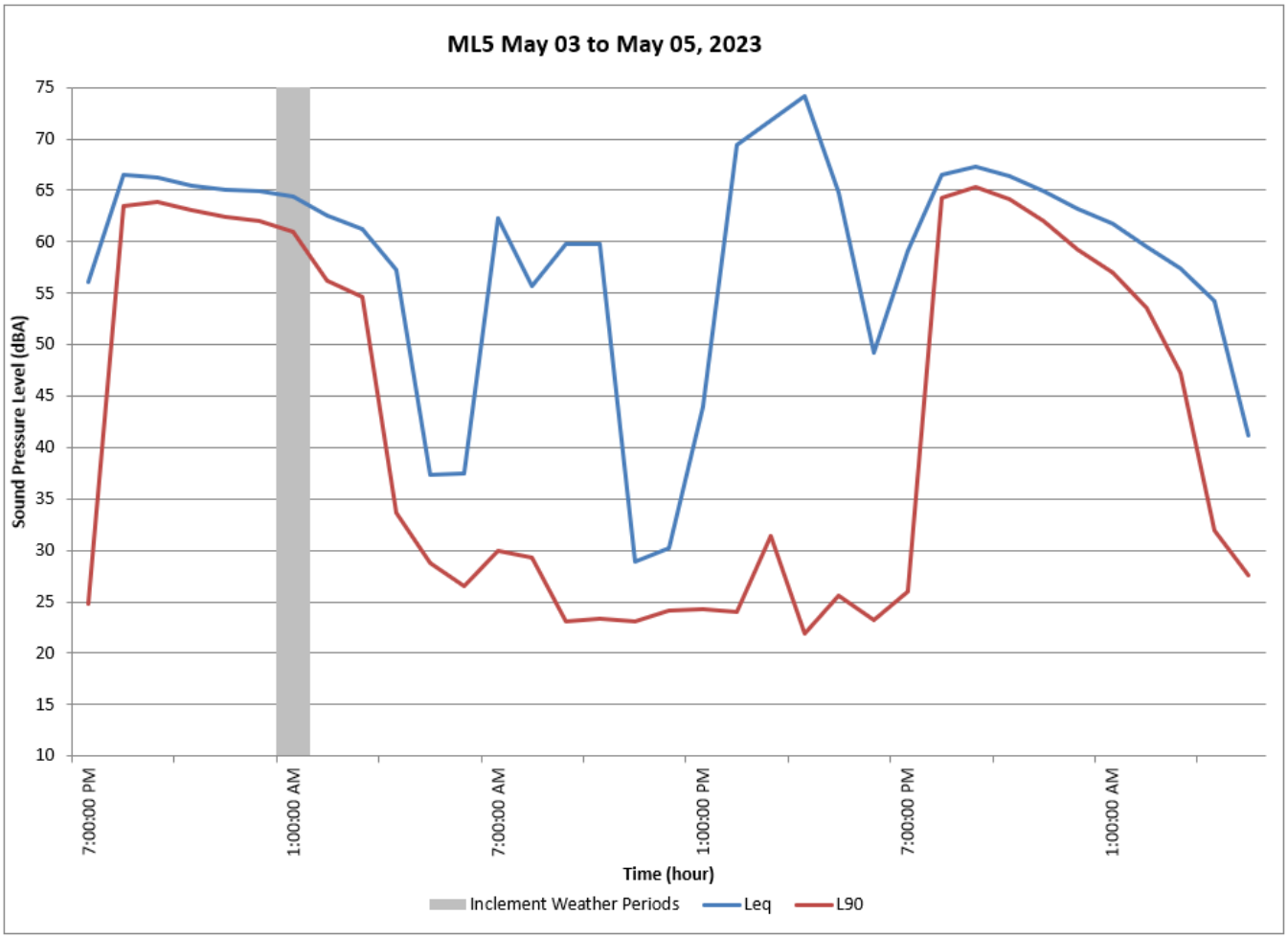

Figure 6: $L_{eq-1\ hour}$ and $L_{90\ -1\ hour}$ Sound Levels Monitored at ML5 during the Leaves-Off Season for the 2023 Acoustics Program

Table 7 summarizes daytime, evening, and nighttime $L_{eq-1\ hour}$ sound levels at ML5 for the duration of the noise monitoring program with sound levels collected during periods of inclement weather removed.

Table 7: Monitored $L_{eq-1\ hour}$ Sound Levels at ML5 for the Leaves-off Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq-1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq-1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq-1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML5	34	67	74	29	65	67	49	62	66	37

Please note the substantially elevated sound levels reported at this location for the daytime period are not a reflection of the existing acoustical environment, as it was observed through a review of the audio that for this specific period of time there were intermittent technical issues with the noise monitoring equipment primarily during the daytime. These noise levels were not excluded from the results above since concerns with the nighttime period were not observed. Note, the noise data collected at ML4 may be considered representative for ML5 due to similarities in the surrounding area (i.e., amount of vegetation). The elevated sound levels at this location during the evening and nighttime periods were also due to presence of animals (i.e., frogs) and insects near the noise monitoring equipment. As previously noted, these events were not excluded from the analysis since, based on site observation, they are considered representative of the temporal and spatial variations in the existing acoustic environment.

5.1.6 Short-Term Noise Measurements

Table 8 summarizes the results of the short-term noise measurements collected during the Leaves-Off season during the 2023 Acoustics Program.

Table 8: Short-Term Measurement Results

Location	Measured L_{eq} Sound Level [dBA]	Measured L_{90} Sound Level [dBA]
SML1	32	22
SML2	36	34
SML4	28	22
SML5	29	23
SML6	38	29
SML7	-	-
SML8	29	22

Note: '-' = data not available due to equipment / technical issues.

5.2 Leaves-On Season

The Leaves-On long-term monitoring and short-term measurements were carried out between September 8 and September 11, 2023. Weather conditions were predominantly clear, with temperatures ranging from 0°C to 20°C. Winds were predominantly from the north, with wind speeds ranging from 0 km/h to 16 km/h. Weather data is available in Appendix C. The results are presented in Sections 5.2.1 to 5.2.6.

If present, periods of inclement weather that have the potential to affect ambient noise levels (i.e., precipitation or wind speeds exceeding 15 km/h) were identified. Noise data collected during the hour when inclement weather occurred were excluded in the results presented below in Sections 5.2.1 to 5.2.6.

Upon review of the weather data, relative humidity was above the range of the SLM's preferred operating conditions (above 90% or 99%, depending on the SLM) at times. Based on site observations and other weather parameters, the data collected did not appear to be noticeably affected such that it resulted in artificially increased ambient noise levels. During the month of September, it was common for the relative humidity to exceed 90% during the nighttime period when there was no precipitation; this was due to the air temperature approaching and reaching the dew point temperature. Therefore, it appears the weather conditions during the leaves-on program were representative of typical weather conditions in the vicinity of the Site. For the purposes of this document, noise data collected during periods of relative humidity above 90% were included in the results presented below in Sections 5.2.1 to 5.2.6.

Noise data collected when WSP personnel were in the vicinity of the monitoring equipment during deployment and retrieval were excluded. In addition, as noted above in Section 4.6.1, the sources of noise at different locations varied but included anthropogenic sources (i.e., road traffic on nearby Highway 655) and nature-based sources including wind induced noise due to vegetation, wildlife, and insects. A review of the audio collected at various times during the field program was carried out and these sources of noise contributed to localized events that increased the noise level at each location. These events were not excluded from the analysis since, based on site observation, they are considered representative of the existing acoustic environment.

5.2.1 Long-Term Monitoring Location ML1

Figure 7 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML1.

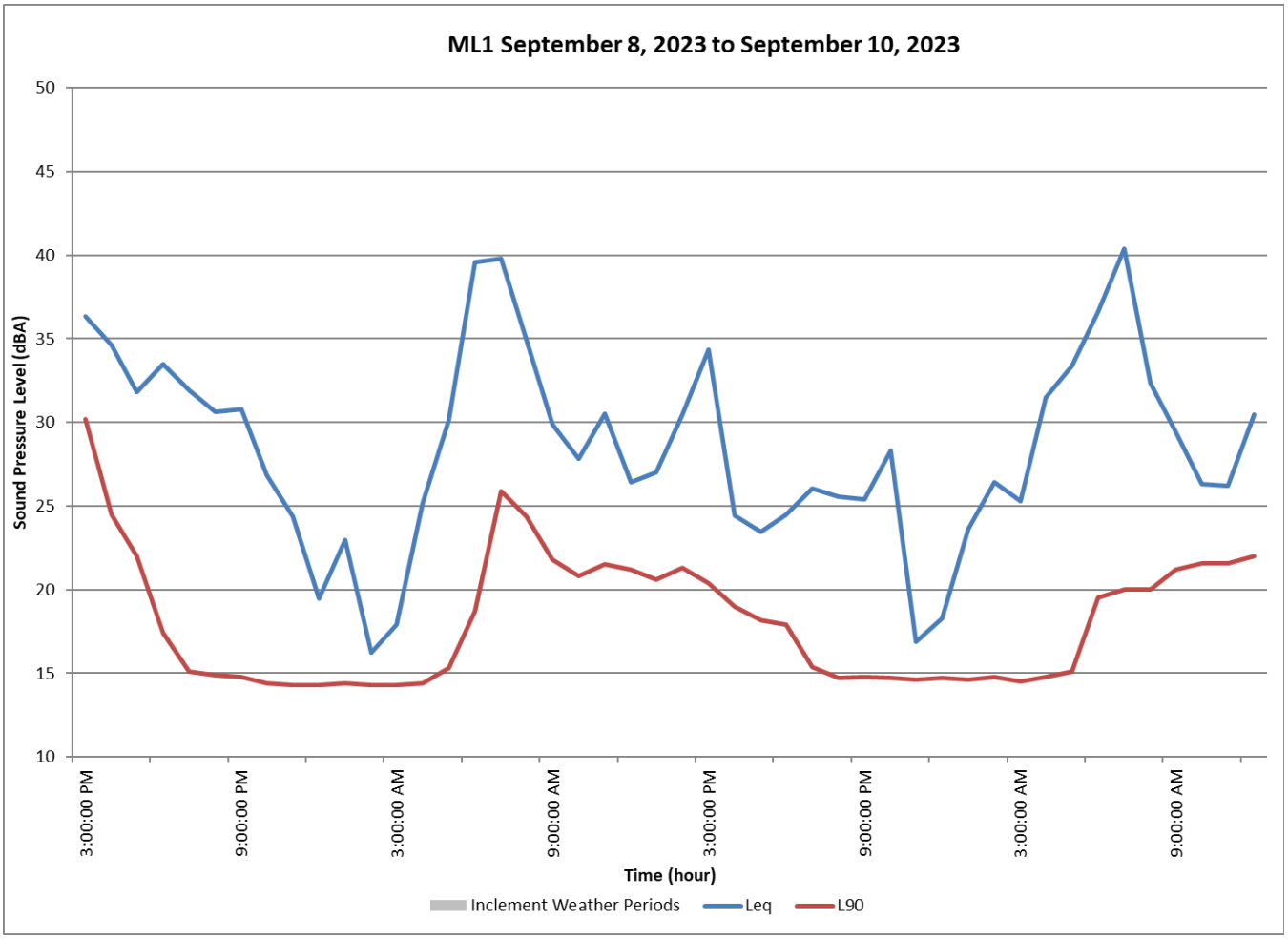

Figure 7: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -\ 1\ hour}$ Sound Levels Monitored at ML1 during the Leaves-On Season for the 2023 Acoustics Program

Table 9 summarizes daytime, evening, and nighttime $L_{eq\ -\ 1\ hour}$ sound levels collected at ML1 for the duration of the noise monitoring program.

Table 9: Monitored $L_{eq\ -\ 1\ hour}$ Sound Level at ML1 for the Leaves-on Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML1	46	34	40	23	30	34	25	27	33	16

5.2.2 Long-Term Monitoring Location ML2

Figure 8 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML2.

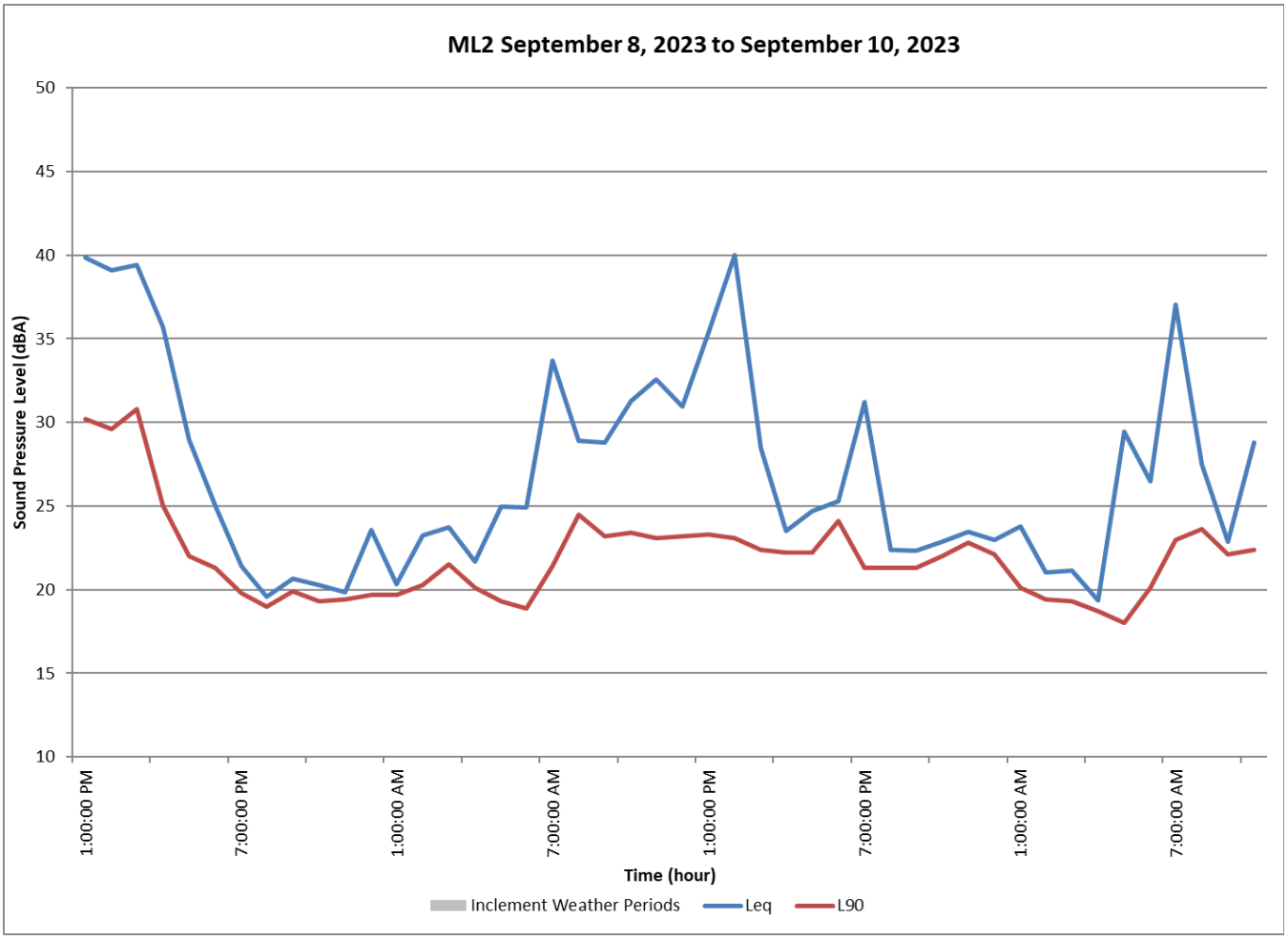

Figure 8: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -\ 1\ hour}$ Sound Levels Monitored at ML2 during the Leaves-On Season for the 2023 Acoustics Program

Table 10 summarizes daytime, evening, and nighttime $L_{eq\ -\ 1\ hour}$ sound levels collected at ML2 for the duration of the noise monitoring program.

Table 10: Monitored $L_{eq\ -\ 1\ hour}$ Sound Levels at ML2 for the Leaves-on Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML2	46	34	40	23	25	31	20	23	29	19

5.2.3 Long-Term Monitoring Location ML3

Figure 9 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML3.

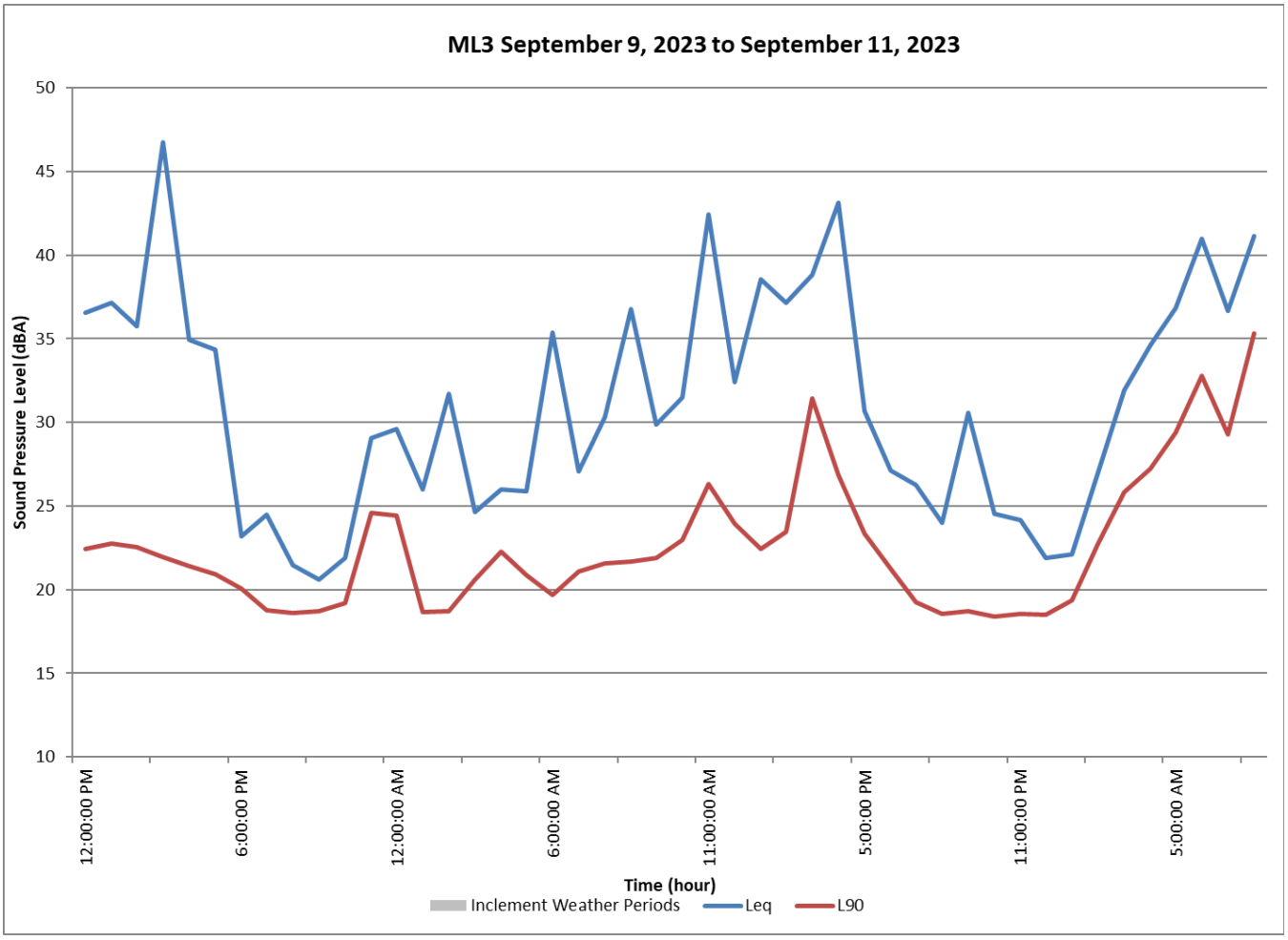

Figure 9: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -\ 1\ hour}$ Sound Levels Monitored at ML3 during the Leaves-On Season for the 2023 Acoustics Program

Table 11 summarizes daytime, evening, and nighttime L_{eq} sound levels collected at ML3 for the duration of the noise monitoring program.

Table 11: Monitored $L_{eq\ -\ 1\ hour}$ Sound Levels at ML3 for the Leaves-on Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML3	46	39	47	27	26	31	21	30	37	22

5.2.4 Long-Term Monitoring Location ML4

Figure 9 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML4.

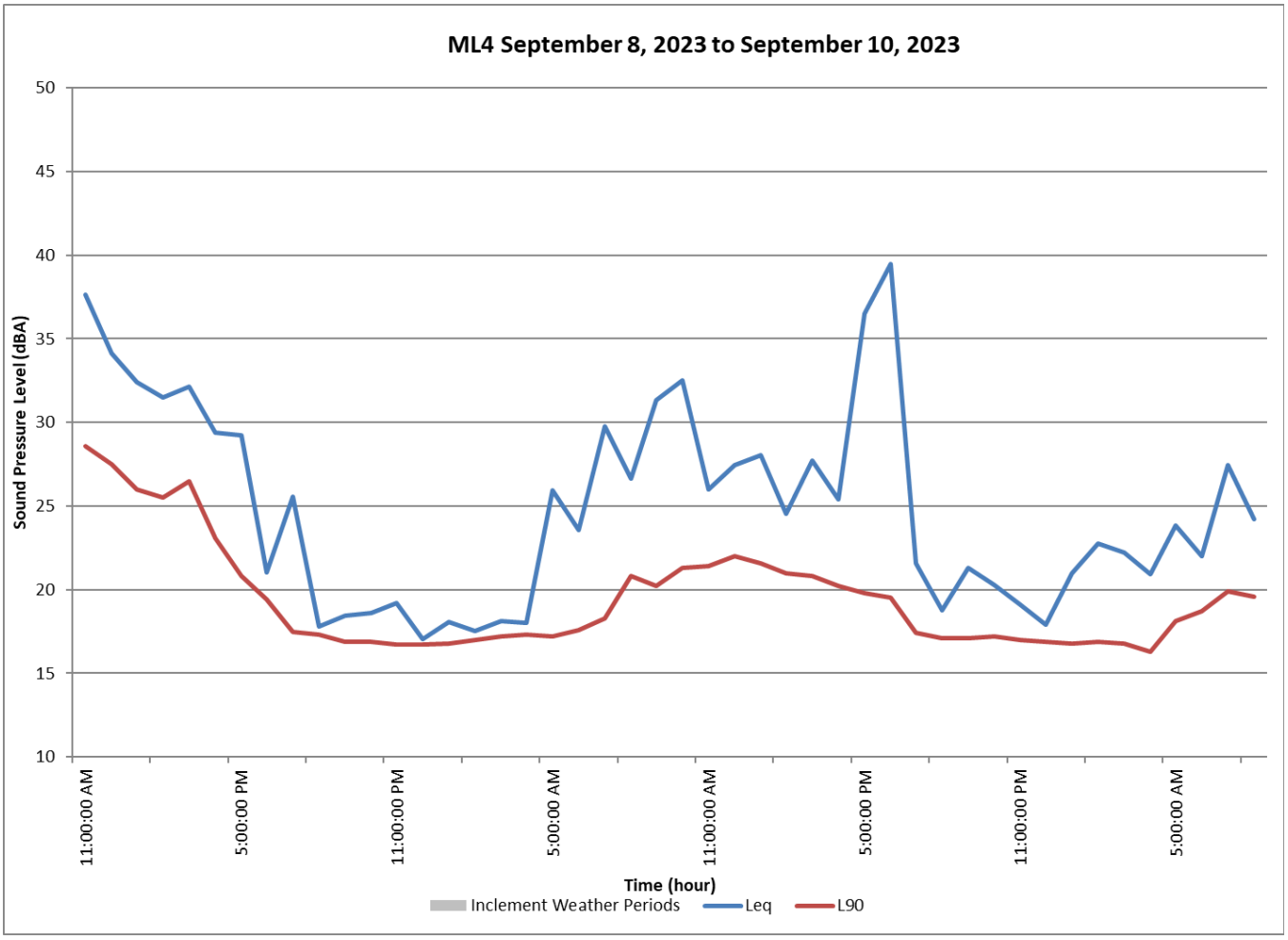

Figure 10: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -\ 1\ hour}$ Sound Levels Monitored at ML4 during the Leaves-On Season for the 2023 Acoustics Program

Table 12 summarizes daytime, evening, and nighttime L_{eq} sound levels collected at ML4 for the duration of the noise monitoring program.

Table 12: Monitored $L_{eq\ -\ 1\ hour}$ Sound Level at ML4 for the Leaves-on Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML4	46	31	38	22	31	39	18	21	26	17

5.2.5 Long-Term Monitoring Location ML5

Figure 10 shows 1-hour L_{eq} and 1-hour L_{90} sound levels measured at ML5.

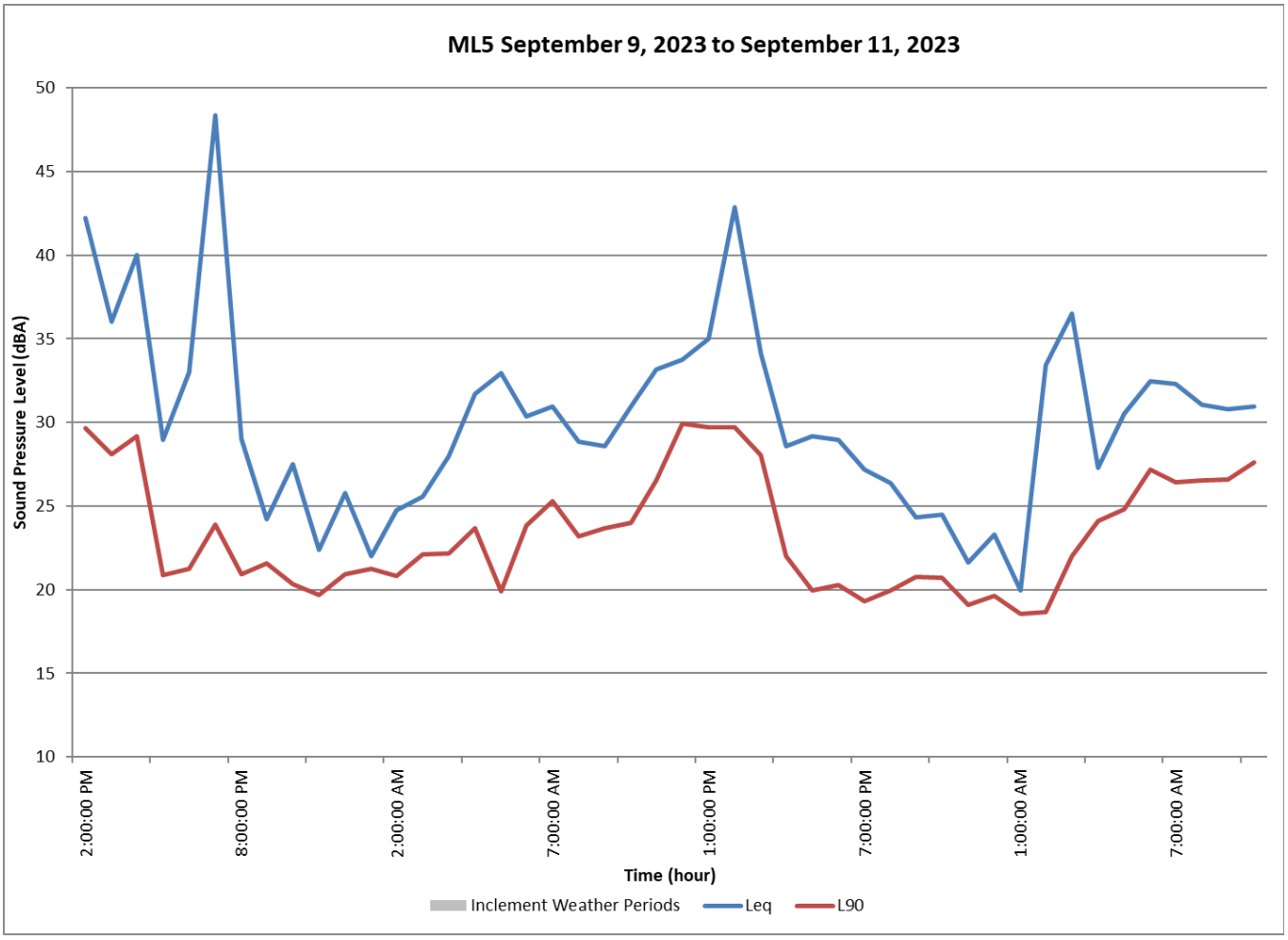

Figure 11: $L_{eq\ -\ 1\ hour}$ and $L_{90\ -\ 1\ hour}$ Sound Levels Monitored at ML5 during the Leaves-On Season for the 2023 Acoustics Program

Table 13 summarizes daytime, evening, and nighttime L_{eq} sound levels collected at ML5 for the duration of the noise monitoring program.

Table 13: Measured $L_{eq\ -\ 1\ hour}$ Sound Levels at ML5 for the Leaves-on Season during the 2023 Acoustics Program

Location	Total Hours of Data Included	Measured Daytime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (7:00 to 19:00)			Measured Evening $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (19:00 to 23:00)			Measured Nighttime $L_{eq\ -\ 1\ hour}$ Sound Level [dBA] (23:00 to 7:00)		
		Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
ML5	46	35	43	29	40	48	24	29	37	20

5.2.6 Short-Term Noise Measurements

Table 14 summarizes the results of the short-term noise measurements collected during the Leaves-on Season during the 2023 Acoustics program.

Table 14: Short-Term Measurement Results

Location	Measured L_{eq} Sound Level [dBA]	Measured L_{90} Sound Level [dBA]
SML1	28	21
SML2	32	24
SML4	30	21
SML5	40	30
SML6	41	39
SML7	46	24
SML8	37	32
SML9	31	29

6.0 CLOSURE

Canada Nickel Company is preparing a federal Impact Assessment for the Crawford Project, located in the Crawford and Lucas townships, about 42 kilometres north of the City of Timmins. The Project will involve open pit mining of a nickel deposit. CNC has retained WSP Canada Inc. to provide environmental support in 2023 to feed into their IA. The environmental support includes carrying out a Baseline Noise Field Program (the Program) in the vicinity of the Site.

The objective of the Program was to collect baseline noise data characterizing the acoustic environment within the Project area. The Program was divided into two separate times of the year, during seasons associated with the absence and the presence of foliage, ‘Leaves-Off Season’ and ‘Leaves-On Season’, respectively.

The results of the Program indicate that the existing noise levels within the Project area are primarily dominated by nature-based ambient sources including wind induced noise due to vegetation, wildlife, and insects, and to a lesser degree by anthropogenic sources (such as local industry activity and traffic along Highway 655).

Signature Page

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https://wsponlinecan.sharepoint.com/sites/ca-cnccrawford/6 deliverables/3.0 issued/23590674-024-r-rev0-10000 baseline noise field program report/23590674-024-r-rev0-10000-cnc crawford baseline noise report 14aug_24.docx

APPENDIX A

Equipment Calibration Certificates

Monitoring Equipment Summary

Table 1 and 3 summarizes the monitoring equipment utilized for the Leaves-Off and Leaves-On Seasons.

Table 1: Leaves-Off Monitoring Equipment Summary

Item	Equipment	Make/Model	Equipment Serial Number	Preamp Serial Number	Microphone Serial Number	Deployment Location
1	Sound Level Meter	Larson Davis 831A	0003603	029410	333944	ML1
2	Sound Level Meter	Bruel & Kjaer 2250	3024162	26863	3130516	ML2
3	Sound Level Meter	Larson Davis 831C	0011375	001789	326369	ML3
4	Sound Level Meter	Larson Davis 831A	0004372	019229	123680	ML4
5	Sound Level Meter	Bruel & Kjaer 2250	3006563	3009927	3334296	ML5

Table 2: Leaves-On Monitoring Equipment Summary

Item	Equipment	Make/Model	Equipment Serial Number	Preamp Serial Number	Microphone Serial Number	Deployment Location
1	Sound Level Meter	Larson Davis 831A	0001702	019106	115034	ML1
2	Sound Level Meter	Larson Davis 831A	0004372	019229	123680	ML2
3	Sound Level Meter	Bruel & Kjaer 2250	2717770	15448	3336465	ML3
4	Sound Level Meter	Larson Davis 831A	0003603	029410	333944	ML4
5	Sound Level Meter	Bruel & Kjaer 2250	3024162	26863	3130516	ML5

Table 3: Calibration Equipment Used During Leaves-Off and Leaves-On Field Programs

Item	Equipment	Make/Model	Equipment Serial Number
1	Calibrator	Larson Davis CAL200	5203
2	Calibrator	Larson Davis CAL200	15901
3	Calibrator	Bruel & Kjaer 4231	2292623

APPENDIX B

Noise Data

1.1 Leaves-Off Season

1.1.1 Long-Term Monitoring Location ML1

Table 1 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML1.

Table 1: 1-hour L_{eq} Noise Levels Measured at ML1

Time	L_{eq} [dBA]	L_{90} [dBA]
11:00:00 AM	28.3	16.5
12:00:00 PM	36.8	18.9
1:00:00 PM	40.3	18.2
2:00:00 PM	28.9	18.9
3:00:00 PM	24.2	18.2
4:00:00 PM	24.8	18.4
5:00:00 PM	22.8	17.6
6:00:00 PM	23.1	16.7
7:00:00 PM	19.0	16.5
8:00:00 PM	23.6	16.5
9:00:00 PM	21.9	17.5
10:00:00 PM	22.8	18.2
11:00:00 PM	21.9	18.0
12:00:00 AM	20.5	17.4
1:00:00 AM	19.1	17.5
2:00:00 AM	18.7	17.3
3:00:00 AM	19.5	17.3
4:00:00 AM	18.7	17.2
5:00:00 AM	33.5	18.8
6:00:00 AM	33.0	23.4
7:00:00 AM	28.6	19.6
8:00:00 AM	38.0	19.8
9:00:00 AM	33.1	19.1
10:00:00 AM	29.0	18.9
11:00:00 AM	33.1	20.7
12:00:00 PM	30.3	19.8
1:00:00 PM	33.1	24.0
2:00:00 PM	35.1	24.1
3:00:00 PM	30.2	22.2

Table 1: 1-hour L_{eq} Noise Levels Measured at ML1

Time	L_{eq} [dBA]	L_{90} [dBA]
4:00:00 PM	33.6	22.3
5:00:00 PM	44.0	21.6
6:00:00 PM	22.9	18.2
7:00:00 PM	23.0	17.9
8:00:00 PM	24.6	18.1
9:00:00 PM	37.3	32.0
10:00:00 PM	34.3	31.7
11:00:00 PM	30.6	20.8
12:00:00 AM	27.6	18.1
1:00:00 AM	27.1	17.9
2:00:00 AM	27.8	17.0
3:00:00 AM	21.2	16.6
4:00:00 AM	25.9	16.8
5:00:00 AM	39.7	24.5
6:00:00 AM	47.5	30.7
7:00:00 AM	34.4	24.9
8:00:00 AM	34.6	21.6

1.1.2 Long-Term Monitoring Location ML2

Table 2 summarizes 1-hour L_{eq} and 1- hour L_{90} data measured at ML2.

Table 2: 1-hour Leq Noise Levels Measured at ML2

Time	L_{eq} [dBA]	L_{90} [dBA]
12:00:00 PM	30.2	24.1
1:00:00 PM	31.7	23.2
2:00:00 PM	29.2	22.0
3:00:00 PM	37.4	22.0
4:00:00 PM	27.3	21.0
5:00:00 PM	34.2	18.7
6:00:00 PM	34.6	19.1
7:00:00 PM	29.9	18.3
8:00:00 PM	31.8	17.7
9:00:00 PM	23.6	18.3
10:00:00 PM	27.3	18.3
11:00:00 PM	20.4	18.6
12:00:00 AM	23.4	18.4
1:00:00 AM	32.6	19.6
2:00:00 AM	21.2	18.1
3:00:00 AM	28.5	19.5
4:00:00 AM	29.5	22.8
5:00:00 AM	39.5	24.0
6:00:00 AM	29.8	22.4
7:00:00 AM	33.1	19.1
8:00:00 AM	39.8	22.8
9:00:00 AM	32.1	18.6
10:00:00 AM	38.4	18.5
11:00:00 AM	36.6	18.1
12:00:00 PM	28.9	18.7
1:00:00 PM	38.1	18.6
2:00:00 PM	33.3	23.3
3:00:00 PM	24.4	19.4
4:00:00 PM	24.2	19.1
5:00:00 PM	28.1	20.9

Table 2: 1-hour Leq Noise Levels Measured at ML2

Time	L_{eq} [dBA]	L_{90} [dBA]
6:00:00 PM	24.4	18.4
7:00:00 PM	22.7	18.1
8:00:00 PM	24.5	17.9
9:00:00 PM	38.3	19.4
10:00:00 PM	27.1	20.3
11:00:00 PM	26.7	22.7
12:00:00 AM	26.9	22.1
1:00:00 AM	27.2	22.5
2:00:00 AM	24.9	21.2
3:00:00 AM	25.9	22.1
4:00:00 AM	26.0	22.6
5:00:00 AM	33.9	23.1
6:00:00 AM	32.1	22.2
7:00:00 AM	40.6	21.9
8:00:00 AM	43.3	23.2
9:00:00 AM	38.4	26.1

1.1.3 Long-Term Monitoring Location ML3

Table 3 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML3.

Table 3: 1-hour L_{eq} Noise Levels Measured at ML3

Time	L_{eq} [dBA]	L_{90} [dBA]
3:00:00 PM	32.09639	25.3
4:00:00 PM	30.72539	25.7
5:00:00 PM	38.52446	22.2
6:00:00 PM	36.19737	24.6
7:00:00 PM	31.57605	24.7
8:00:00 PM	27.48221	23.6
9:00:00 PM	30.12173	28.7
10:00:00 PM	31.78287	29.2
11:00:00 PM	28.68347	26.9
12:00:00 AM	30.62138	27.1
1:00:00 AM	29.2473	26.8
2:00:00 AM	28.11386	24.6
3:00:00 AM	28.61679	25.7
4:00:00 AM	34.80056	29.7
5:00:00 AM	37.42348	30.9
6:00:00 AM	33.6283	30
7:00:00 AM	36.22735	28.8
8:00:00 AM	35.0011	30.3
9:00:00 AM	36.21868	25.7
10:00:00 AM	34.61985	24.3
11:00:00 AM	32.89796	24.8
12:00:00 PM	30.82222	20.8
1:00:00 PM	38.7776	22.4

Table 3: 1-hour L_{eq} Noise Levels Measured at ML3

Time	L_{eq} [dBA]	L_{90} [dBA]
2:00:00 PM	37.76666	27.9
3:00:00 PM	34.33698	27.7
4:00:00 PM	32.25902	25.2
5:00:00 PM	32.80244	27.5
6:00:00 PM	31.52593	24.6
7:00:00 PM	32.26369	27.8
8:00:00 PM	33.77667	27.9
9:00:00 PM	40.89293	37.9
10:00:00 PM	40.53714	39.1
11:00:00 PM	40.34878	38.4
12:00:00 AM	39.1367	37.7
1:00:00 AM	40.92543	37
2:00:00 AM	37.68925	34.8
3:00:00 AM	41.05245	36.5
4:00:00 AM	40.44271	36.7
5:00:00 AM	40.03629	34.6
6:00:00 AM	35.09291	30
7:00:00 AM	40.34365	31.4
8:00:00 AM	42.84295	33.6
9:00:00 AM	37.00237	31.9
10:00:00 AM	34.57001	25.8
11:00:00 AM	41.13975	25.9

1.1.4 Long-Term Monitoring Location ML4

Table 4 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML4.

Table 4: 1-hour L_{eq} Noise Levels Measured at ML4

Time	L_{eq} [dBA]	L_{90} [dBA]
1:00:00 PM	58.8	28.7
2:00:00 PM	37.6	28.7
3:00:00 PM	33.9	28.2
4:00:00 PM	35.0	27.7
5:00:00 PM	34.1	28.6
6:00:00 PM	34.6	27.9
7:00:00 PM	37.8	27.7
9:00:00 PM	52.7	48.1
10:00:00 PM	54.9	53.5
11:00:00 PM	55.9	54.5
12:00:00 AM	53.1	50.9
1:00:00 AM	52.4	50.4
2:00:00 AM	52.4	49.9
3:00:00 AM	52.2	49.5
4:00:00 AM	52.4	50.4
5:00:00 AM	48.4	32.4
6:00:00 AM	40.4	30.6
7:00:00 AM	36.1	28.4
8:00:00 AM	36.5	28.0
9:00:00 AM	31.7	27.7
10:00:00 AM	31.2	26.1
11:00:00 AM	36.9	27.2
12:00:00 PM	34.8	26.9
1:00:00 PM	36.8	25.8
2:00:00 PM	36.1	26.9
3:00:00 PM	34.3	26.0
4:00:00 PM	34.9	26.3
5:00:00 PM	36.3	27.7
6:00:00 PM	34.0	28.0
7:00:00 PM	36.0	29.5

Table 4: 1-hour L_{eq} Noise Levels Measured at ML4

Time	L_{eq} [dBA]	L_{90} [dBA]
8:00:00 PM	56.4	41.3
9:00:00 PM	60.8	59.2
10:00:00 PM	58.1	56.8
11:00:00 PM	55.2	53.8
12:00:00 AM	53.7	51.9
1:00:00 AM	52.0	49.9
2:00:00 AM	50.1	47.9
3:00:00 AM	49.3	46.9
4:00:00 AM	47.3	44.1
5:00:00 AM	44.7	33.0
6:00:00 AM	39.4	30.0
7:00:00 AM	40.2	28.7
8:00:00 AM	37.2	26.0
9:00:00 AM	35.2	24.5
10:00:00 AM	34.0	24.3
11:00:00 AM	41.1	25.9

1.1.5 Long-Term Monitoring Location ML5

Table 5 summarizes 1-hour L_{eq} and 1-hour L_{90} measured data at ML5.

Table 5: 1-hour L_{eq} Noise Levels Measured at ML5

Time	L_{eq} [dBA]	L_{90} [dBA]
7:00:00 PM	71.7	24.6
8:00:00 PM	56.1	24.9
9:00:00 PM	66.5	63.4
10:00:00 PM	66.3	63.9
11:00:00 PM	65.5	63.1
12:00:00 AM	65.1	62.4
1:00:00 AM	64.9	62.1
2:00:00 AM	64.5	60.9
3:00:00 AM	62.6	56.3
4:00:00 AM	61.2	54.7
5:00:00 AM	57.3	33.7
6:00:00 AM	37.3	28.7
7:00:00 AM	37.4	26.6
8:00:00 AM	62.4	30.0
9:00:00 AM	55.7	29.3
10:00:00 AM	59.8	23.1
11:00:00 AM	59.8	23.4
12:00:00 PM	28.9	23.1
1:00:00 PM	30.2	24.2
2:00:00 PM	43.9	24.3
3:00:00 PM	69.4	24.0
4:00:00 PM	71.8	31.5
5:00:00 PM	74.2	21.9
6:00:00 PM	64.8	25.6
7:00:00 PM	49.2	23.2
8:00:00 PM	59.1	26.1
9:00:00 PM	66.6	64.2
10:00:00 PM	67.3	65.3
11:00:00 PM	66.4	64.2
12:00:00 AM	65.0	62.0

Time	L_{eq} [dBA]	L_{90} [dBA]
1:00:00 AM	63.2	59.2
2:00:00 AM	61.8	57.0
3:00:00 AM	59.5	53.6
4:00:00 AM	57.5	47.2
5:00:00 AM	54.2	31.9
6:00:00 AM	41.1	27.6

1.2 Leaves-On Season

1.2.1 Long-Term Monitoring Location ML1

Table 6 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML1.

Table 6: 1-hour Leq Noise Levels Measured at ML1

Time	L_{eq} [dBA]	L_{90} [dBA]
3:00:00 PM	40.7	29.6
4:00:00 PM	36.4	30.2
5:00:00 PM	34.6	24.5
6:00:00 PM	31.8	22.0
7:00:00 PM	33.5	17.4
8:00:00 PM	31.9	15.1
9:00:00 PM	30.6	14.9
10:00:00 PM	30.8	14.8
11:00:00 PM	26.9	14.4
12:00:00 AM	24.4	14.3
1:00:00 AM	19.5	14.3
2:00:00 AM	22.9	14.4
3:00:00 AM	16.3	14.3
4:00:00 AM	17.9	14.3
5:00:00 AM	25.2	14.4
6:00:00 AM	30.1	15.3
7:00:00 AM	39.6	18.7
8:00:00 AM	39.8	25.9
9:00:00 AM	34.9	24.4
10:00:00 AM	29.9	21.8
11:00:00 AM	27.8	20.8
12:00:00 PM	30.5	21.5
1:00:00 PM	26.4	21.2
2:00:00 PM	27.0	20.6
3:00:00 PM	30.5	21.3
4:00:00 PM	34.3	20.4
5:00:00 PM	24.4	19.0
6:00:00 PM	23.5	18.2
7:00:00 PM	24.5	17.9

Table 6: 1-hour Leq Noise Levels Measured at ML1

Time	L_{eq} [dBA]	L_{90} [dBA]
8:00:00 PM	26.1	15.4
9:00:00 PM	25.6	14.7
10:00:00 PM	25.4	14.8
11:00:00 PM	28.3	14.7
12:00:00 AM	16.9	14.6
1:00:00 AM	18.3	14.7
2:00:00 AM	23.6	14.6
3:00:00 AM	26.4	14.8
4:00:00 AM	25.3	14.5
5:00:00 AM	31.5	14.8
6:00:00 AM	33.4	15.1
7:00:00 AM	36.6	19.5
8:00:00 AM	40.4	20.0
9:00:00 AM	32.3	20.0
10:00:00 AM	29.5	21.2
11:00:00 AM	26.3	21.6
12:00:00 PM	26.2	21.6
1:00:00 PM	30.5	22.0
2:00:00 PM	37.9	26.2

1.2.2 Long-Term Monitoring Location ML2

Table 7 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML2.

Table 7: 1-hour L_{eq} Noise Levels Measured at ML2

Time	L_{eq} [dBA]	L_{90} [dBA]
1:00:00 PM	40.0	29.8
2:00:00 PM	39.9	30.2
3:00:00 PM	39.1	29.6
4:00:00 PM	39.4	30.8
5:00:00 PM	35.7	25.0
6:00:00 PM	29.0	22.0
7:00:00 PM	25.0	21.3
8:00:00 PM	21.4	19.8
9:00:00 PM	19.6	19.0
10:00:00 PM	20.6	19.9
11:00:00 PM	20.3	19.3
12:00:00 AM	19.8	19.4
1:00:00 AM	23.5	19.7
2:00:00 AM	20.4	19.7
3:00:00 AM	23.3	20.3
4:00:00 AM	23.7	21.5
5:00:00 AM	21.7	20.1
6:00:00 AM	25.0	19.3
7:00:00 AM	24.9	18.9
8:00:00 AM	33.7	21.4
9:00:00 AM	28.9	24.5
10:00:00 AM	28.8	23.2
11:00:00 AM	31.3	23.4
12:00:00 PM	32.6	23.1
1:00:00 PM	31.0	23.2
2:00:00 PM	35.4	23.3
3:00:00 PM	40.0	23.1
4:00:00 PM	28.4	22.4
5:00:00 PM	23.5	22.2
6:00:00 PM	24.7	22.2

Table 7: 1-hour L_{eq} Noise Levels Measured at ML2

Time	L_{eq} [dBA]	L_{90} [dBA]
7:00:00 PM	25.3	24.1
8:00:00 PM	31.2	21.3
9:00:00 PM	22.4	21.3
10:00:00 PM	22.3	21.3
11:00:00 PM	22.9	22.0
12:00:00 AM	23.5	22.8
1:00:00 AM	23.0	22.1
2:00:00 AM	23.8	20.1
3:00:00 AM	21.1	19.4
4:00:00 AM	21.2	19.3
5:00:00 AM	19.3	18.7
6:00:00 AM	29.4	18.0
7:00:00 AM	26.5	20.1
8:00:00 AM	37.1	23.0
9:00:00 AM	27.5	23.6
10:00:00 AM	22.9	22.1
11:00:00 AM	28.8	22.4
12:00:00 PM	34.2	24.4
1:00:00 PM	48.5	28.8

1.2.3 Long-Term Monitoring Location ML3

Table 8 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML3.

Table 8: 1-hour L_{eq} Noise Levels Measured at ML3

Time	L_{eq} [dBA]	L_{90} [dBA]
12:00:00 PM	38.2	22.7
1:00:00 PM	36.6	22.4
2:00:00 PM	37.2	22.7
3:00:00 PM	35.8	22.6
4:00:00 PM	46.8	21.9
5:00:00 PM	34.9	21.4
6:00:00 PM	34.4	20.9
7:00:00 PM	23.2	20.1
8:00:00 PM	24.5	18.8
9:00:00 PM	21.4	18.6
10:00:00 PM	20.6	18.7
11:00:00 PM	21.9	19.2
12:00:00 AM	29.1	24.6
1:00:00 AM	29.6	24.5
2:00:00 AM	26.0	18.7
3:00:00 AM	31.7	18.7
4:00:00 AM	24.6	20.6
5:00:00 AM	26.0	22.3
6:00:00 AM	25.9	20.9
7:00:00 AM	35.4	19.7
7:00:00 AM	27.1	21.1
8:00:00 AM	30.3	21.6
9:00:00 AM	36.8	21.7
10:00:00 AM	29.9	21.9
11:00:00 AM	31.5	23.0
12:00:00 PM	42.5	26.3
1:00:00 PM	32.4	23.9
2:00:00 PM	38.6	22.4
3:00:00 PM	37.2	23.4
4:00:00 PM	38.8	31.4

Table 8: 1-hour L_{eq} Noise Levels Measured at ML3

Time	L_{eq} [dBA]	L_{90} [dBA]
5:00:00 PM	43.2	26.9
6:00:00 PM	30.7	23.4
7:00:00 PM	27.1	21.3
8:00:00 PM	26.3	19.3
9:00:00 PM	24.0	18.5
10:00:00 PM	30.6	18.7
11:00:00 PM	24.6	18.4
12:00:00 AM	24.2	18.6
1:00:00 AM	21.9	18.5
2:00:00 AM	22.1	19.4
3:00:00 AM	27.0	22.8
4:00:00 AM	31.9	25.8
5:00:00 AM	34.6	27.2
6:00:00 AM	36.9	29.4
7:00:00 AM	41.0	32.8
7:00:00 AM	36.7	29.3
8:00:00 AM	41.2	35.3
9:00:00 AM	39.5	33.9
10:00:00 AM	37.9	33.5
11:00:00 AM	41.5	32.9
12:00:00 PM	45.4	35.3

1.2.4 Long-Term Monitoring Location ML4

Table 9 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML4.

Table 9: 1-hour L_{eq} Noise Levels Measured at ML4

Time	L_{eq} [dBA]	L_{90} [dBA]
11:00:00 AM	29.7	25.0
12:00:00 PM	37.6	28.6
1:00:00 PM	34.1	27.5
2:00:00 PM	32.4	26.0
3:00:00 PM	31.5	25.5
4:00:00 PM	32.1	26.5
5:00:00 PM	29.4	23.1
6:00:00 PM	29.2	20.8
7:00:00 PM	21.0	19.4
8:00:00 PM	25.6	17.5
9:00:00 PM	17.8	17.3
10:00:00 PM	18.4	16.9
11:00:00 PM	18.6	16.9
12:00:00 AM	19.2	16.7
1:00:00 AM	17.1	16.7
2:00:00 AM	18.1	16.8
3:00:00 AM	17.5	17.0
4:00:00 AM	18.1	17.2
5:00:00 AM	18.0	17.3
6:00:00 AM	25.9	17.2
7:00:00 AM	23.6	17.6
8:00:00 AM	29.8	18.3
9:00:00 AM	26.6	20.8
10:00:00 AM	31.3	20.2
11:00:00 AM	32.5	21.3
12:00:00 PM	26.0	21.4
1:00:00 PM	27.4	22.0
2:00:00 PM	28.0	21.6
3:00:00 PM	24.5	21.0
4:00:00 PM	27.7	20.8

Table 9: 1-hour L_{eq} Noise Levels Measured at ML4

Time	L_{eq} [dBA]	L_{90} [dBA]
5:00:00 PM	25.4	20.2
6:00:00 PM	36.5	19.8
7:00:00 PM	39.5	19.5
8:00:00 PM	21.6	17.4
9:00:00 PM	18.8	17.1
10:00:00 PM	21.3	17.1
11:00:00 PM	20.3	17.2
12:00:00 AM	19.1	17.0
1:00:00 AM	17.9	16.9
2:00:00 AM	21.0	16.8
3:00:00 AM	22.7	16.9
4:00:00 AM	22.2	16.8
5:00:00 AM	20.9	16.3
6:00:00 AM	23.8	18.1
7:00:00 AM	22.0	18.7
8:00:00 AM	27.4	19.9
9:00:00 AM	24.2	19.6

1.2.5 Long-Term Monitoring Location ML5

Table 10 summarizes 1-hour L_{eq} and 1-hour L_{90} data measured at ML5.

Table 10: 1-hour L_{eq} Noise Levels Measured at ML5

Time	L_{eq} [dBA]	L_{90} [dBA]
2:00:00 PM	44.6	34.8
3:00:00 PM	42.2	29.7
4:00:00 PM	36.0	28.1
5:00:00 PM	40.0	29.2
6:00:00 PM	29.0	20.9
7:00:00 PM	33.0	21.3
8:00:00 PM	48.4	23.9
9:00:00 PM	29.0	20.9
10:00:00 PM	24.2	21.6
11:00:00 PM	27.5	20.4
12:00:00 AM	22.4	19.7
1:00:00 AM	25.8	20.9
2:00:00 AM	22.0	21.3
3:00:00 AM	24.7	20.8
4:00:00 AM	25.6	22.1
5:00:00 AM	28.0	22.2
6:00:00 AM	31.7	23.7
7:00:00 AM	33.0	19.9
7:00:00 AM	30.4	23.8
8:00:00 AM	31.0	25.3
9:00:00 AM	28.9	23.2
10:00:00 AM	28.6	23.7
11:00:00 AM	30.9	24.0
12:00:00 PM	33.2	26.5
1:00:00 PM	33.8	29.9
2:00:00 PM	35.0	29.7
3:00:00 PM	42.9	29.7
4:00:00 PM	34.2	28.1
5:00:00 PM	28.6	22.0

Table 10: 1-hour L_{eq} Noise Levels Measured at ML5

Time	L_{eq} [dBA]	L_{90} [dBA]
6:00:00 PM	29.2	20.0
7:00:00 PM	29.0	20.3
8:00:00 PM	27.2	19.3
9:00:00 PM	26.4	20.0
10:00:00 PM	24.3	20.8
11:00:00 PM	24.5	20.7
12:00:00 AM	21.6	19.1
1:00:00 AM	23.3	19.6
2:00:00 AM	20.0	18.5
3:00:00 AM	33.4	18.7
4:00:00 AM	36.5	22.0
5:00:00 AM	27.3	24.1
6:00:00 AM	30.5	24.8
7:00:00 AM	32.5	27.2
8:00:00 AM	31.1	26.5
9:00:00 AM	30.8	26.6
10:00:00 AM	30.9	27.6
11:00:00 AM	32.1	27.9
12:00:00 PM	33.3	28.5
1:00:00 PM	34.8	30.2
2:00:00 PM	33.2	28.6

APPENDIX C

Weather Data

Station Name TIMMINS CLIMATE

Province Ontario

Latitude 48°33'26.000" N

Longitude 81°23'25.000" W

Elevation 294.40 m

Climate Identifier 6078282

WMO Identifier 71193

TC Identifier TMS

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

Table 1 summarizes weather data for May 3rd to May 6th, 2023. Table 2 summarizes weather data for September 8th to September 11th, 2023.

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-03 0:00	5.7	5.3	97	0	34	21	96.94	NA
2023-05-03 1:00	5.2	4.3	94	0	35	19	96.99	NA
2023-05-03 2:00	4.8	3.9	94	0	35	16	97	NA
2023-05-03 3:00	4.1	3.5	96	0	36	17	97.05	NA
2023-05-03 4:00	3.7	3	95	0	34	20	97.08	NA
2023-05-03 5:00	3.4	3.1	98	0	34	20	97.14	NA
2023-05-03 6:00	2.8	2.7	99	0	34	17	97.22	NA
2023-05-03 7:00	2.4	2.3	100	0	35	16	97.32	NA
2023-05-03 8:00	2.2	2.1	100	0	33	14	97.38	NA
2023-05-03 9:00	3	2.1	94	0	34	16	97.4	NA
2023-05-03 10:00	5	2	81	0	35	18	97.44	NA

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-03 11:00	6.5	2	73	0	32	15	97.45	NA
2023-05-03 12:00	8.9	2.8	65	0	33	17	97.47	NA
2023-05-03 13:00	10.5	2.9	59	0	35	18	97.42	NA
2023-05-03 14:00	11	2.7	57	0	2	19	97.4	NA
2023-05-03 15:00	10.8	1.9	54	0	3	16	97.41	NA
2023-05-03 16:00	10.7	2.7	57	0	3	18	97.42	NA
2023-05-03 17:00	10.9	3.1	58	0	3	12	97.46	NA
2023-05-03 18:00	10.9	2.8	58	0	36	10	97.51	NA
2023-05-03 19:00	9.3	3.8	69	0	34	12	97.58	NA
2023-05-03 20:00	7.8	3.8	76	0	35	10	97.61	NA
2023-05-03 21:00	5.8	3.2	83	0	34	13	97.69	NA
2023-05-03 22:00	4	2.6	91	0	33	10	97.72	NA
2023-05-03 23:00	3.5	3	96	0	32	11	97.73	NA
2023-05-04 0:00	4	3.2	94	0	32	10	97.75	NA
2023-05-04 1:00	3.6	3.5	99	0	32	9	97.76	NA
2023-05-04 2:00	4.7	4.7	100	0.3	35	6	97.77	NA
2023-05-04 3:00	4.4	4.4	100	0	1	13	97.8	NA
2023-05-04 4:00	4.2	4.1	100	0	36	10	97.83	NA
2023-05-04 5:00	4.1	4.1	100	0	36	5	97.89	NA
2023-05-04 6:00	4.1	4.1	100	0	36	6	97.94	NA

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-04 7:00	4.9	4.8	100	0	1	9	98.02	NA
2023-05-04 8:00	8.4	6.4	87	0	6	7	98.06	NA
2023-05-04 9:00	10.5	5.2	70	0	7	5	98.09	NA
2023-05-04 10:00	12.1	2.1	50	0	7	13	98.12	NA
2023-05-04 11:00	12	1.9	50	0	7	10	98.14	NA
2023-05-04 12:00	11.7	1.5	50	0	3	6	98.15	NA
2023-05-04 13:00	12	1.4	48	0	6	10	98.18	NA
2023-05-04 14:00	11.6	2.1	52	0	7	13	98.22	NA
2023-05-04 15:00	12.3	2.2	50	0	6	11	98.24	NA
2023-05-04 16:00	12	2.6	52	0	4	12	98.26	NA
2023-05-04 17:00	11.7	2.3	52	0	5	10	98.3	NA
2023-05-04 18:00	11	2.1	54	0	7	15	98.35	NA
2023-05-04 19:00	10	2.2	58	0	7	10	98.4	NA
2023-05-04 20:00	9	2.4	64	0	7	8	98.44	NA
2023-05-04 21:00	7.9	2.5	69	0	7	8	98.5	NA
2023-05-04 22:00	7.4	2.8	73	0	7	6	98.54	NA
2023-05-04 23:00	6.7	2.8	76	0	7	8	98.59	NA
2023-05-05 0:00	6.4	2.7	78	0	7	5	98.63	NA
2023-05-05 1:00	6	3.1	81	0	9	7	98.67	NA
2023-05-05 2:00	5.8	3.2	83	0	7	6	98.69	NA

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-05 3:00	5.1	3	86	0	7	5	98.71	NA
2023-05-05 4:00	4.6	3	89	0	4	6	98.74	NA
2023-05-05 5:00	5	3.9	93	0	7	7	98.79	NA
2023-05-05 6:00	6.4	3.4	81	0	10	6	98.85	NA
2023-05-05 7:00	8.6	3.7	71	0	12	12	98.91	NA
2023-05-05 8:00	8.5	4.1	74	0	9	10	98.98	NA
2023-05-05 9:00	9.9	3.9	66	0	11	11	99.02	NA
2023-05-05 10:00	11.8	3.6	57	0	10	12	99.02	NA
2023-05-05 11:00	13.3	1.8	46	0	9	15	99.03	NA
2023-05-05 12:00	13.6	3.7	51	0	11	16	99.03	NA
2023-05-05 13:00	14.3	3.3	47	0	15	15	99.02	NA
2023-05-05 14:00	14.1	3.2	48	0	10	13	99.01	NA
2023-05-05 15:00	16	3	42	0	16	13	98.99	NA
2023-05-05 16:00	14.5	2.1	43	0	13	13	99	NA
2023-05-05 17:00	15.3	2.9	43	0	12	6	98.98	NA
2023-05-05 18:00	14.3	2.8	46	0	14	10	98.99	NA
2023-05-05 19:00	13	3.6	53	0	16	8	99.01	NA
2023-05-05 20:00	9.5	3.1	64	0	13	5	98.99	NA
2023-05-05 21:00	6.5	3.6	82	0	18	1	99.02	NA
2023-05-05 22:00	4.3	2.6	89	0	5	3	99.03	NA

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-05 23:00	2.9	2.3	96	0	2	3	99.07	NA
2023-05-06 0:00	2.2	1.5	95	0	6	5	99.09	NA
2023-05-06 1:00	2.2	2	98	0		0	99.1	NA
2023-05-06 2:00	0.7	0.7	100	0		0	99.11	NA
2023-05-06 3:00	0.2	0.2	100	0	0	1	99.15	NA
2023-05-06 4:00	-0.3	-0.3	100	0		0	99.17	NA
2023-05-06 5:00	0.1	0	100	0		0	99.18	NA
2023-05-06 6:00	2	2	100	0	20	2	99.2	NA
2023-05-06 7:00	6.1	3.9	86	0	17	4	99.23	NA
2023-05-06 8:00	11.4	4.6	63	0	14	3	99.21	NA
2023-05-06 9:00	14.1	3	47	0	18	6	99.18	NA
2023-05-06 10:00	15.2	1.8	40	0	21	7	99.16	NA
2023-05-06 11:00	16.3	2	38	0	16	7	99.09	NA
2023-05-06 12:00	17.9	2.5	36	0	17	4	99.04	NA
2023-05-06 13:00	18.4	2.1	33	0	5	6	98.99	NA
2023-05-06 14:00	18	2.4	35	0	22	8	98.95	NA
2023-05-06 15:00	17.7	2	35	0	12	4	98.9	NA
2023-05-06 16:00	18	2.4	35	0	5	4	98.83	NA
2023-05-06 17:00	16.7	4.7	45	0	25	13	98.8	NA
2023-05-06 18:00	16.2	4.5	46	0	27	12	98.77	NA

Table 1: Weather Data May 3 to May 6, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Precip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-05-06 19:00	15.5	4.9	49	0	26	6	98.73	NA
2023-05-06 20:00	14.1	5.6	56	0	25	7	98.71	NA
2023-05-06 21:00	12.6	6.3	66	0	28	4	98.71	NA
2023-05-06 22:00	12.7	5.9	63	0	32	8	98.7	NA
2023-05-06 23:00	11.9	5.8	66	0	34	9	98.65	NA

°C – Celsius % - Percent deg. – Degrees km/h – kilometers per hour kPa – kilopascal

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-08 0:00	6.4	5.3	93	0	33	8	98.15	NA
2023-09-08 1:00	5.2	4.5	95	0	32	10	98.14	NA
2023-09-08 2:00	4.5	4	96	0	32	9	98.15	NA
2023-09-08 3:00	3.7	3.3	97	0	32	9	98.18	NA
2023-09-08 4:00	3	2.7	98	0	31	8	98.19	NA
2023-09-08 5:00	3.2	3	99	0	34	8	98.26	NA
2023-09-08 6:00	3.1	3	99	0	33	7	98.31	NA
2023-09-08 7:00	3.4	3.3	99	0	33	12	98.33	NA
2023-09-08 8:00	3.8	3.7	99	0	32	10	98.37	NA
2023-09-08 9:00	5.4	5	98	0	30	7	98.4	NA
2023-09-08 10:00	7.1	5	87	0	31	13	98.43	NA
2023-09-08 11:00	9.9	5.8	76	0	33	15	98.43	NA

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-08 12:00	12.3	6.5	68	0	34	14	98.39	NA
2023-09-08 13:00	13.9	6.8	62	0	32	12	98.34	NA
2023-09-08 14:00	15.1	6.3	56	0	31	14	98.33	NA
2023-09-08 15:00	16.7	6.2	50	0	31	10	98.29	NA
2023-09-08 16:00	16.9	5.3	46	0	31	13	98.31	NA
2023-09-08 17:00	16.6	5	46	0	33	11	98.34	NA
2023-09-08 18:00	15.2	5.4	52	0	33	7	98.36	NA
2023-09-08 19:00	10.4	6.3	76	0	32	8	98.38	NA
2023-09-08 20:00	9.2	5.1	75	0	33	8	98.43	NA
2023-09-08 21:00	6.1	5.1	93	0	28	7	98.46	NA
2023-09-08 22:00	4.7	4.2	97	0	16	1	98.49	NA
2023-09-08 23:00	2.7	2.1	96	0	22	1	98.51	NA
2023-09-09 0:00	1.9	1.6	97	0	23	1	98.53	NA
2023-09-09 1:00	1.6	1.4	98	0	25	2	98.59	NA
2023-09-09 2:00	0.9	0.5	98	0	0	1	98.58	NA
2023-09-09 3:00	0.4	0.1	98	0		0	98.57	NA
2023-09-09 4:00	-0.1	-0.4	98	0	17	3	98.6	NA
2023-09-09 5:00	-0.7	-1	98	0	24	1	98.64	NA
2023-09-09 6:00	-0.8	-1.1	98	0	18	3	98.68	NA
2023-09-09 7:00	2	1.8	98	0	19	6	98.73	NA

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-09 8:00	7.6	5.9	89	0	16	1	98.75	NA
2023-09-09 9:00	11.2	7.1	76	0	26	4	98.77	NA
2023-09-09 10:00	15.3	5.3	51	0	28	9	98.76	NA
2023-09-09 11:00	16.2	3.6	43	0	29	6	98.73	NA
2023-09-09 12:00	18	2.8	36	0	26	7	98.71	NA
2023-09-09 13:00	19.1	2.9	34	0	9	3	98.68	NA
2023-09-09 14:00	19.6	0.8	29	0	31	8	98.66	NA
2023-09-09 15:00	20.4	3.2	32	0	7	3	98.64	NA
2023-09-09 16:00	20.4	3.6	33	0	13	6	98.62	NA
2023-09-09 17:00	20.3	4.4	35	0	19	7	98.62	NA
2023-09-09 18:00	18.4	5.8	44	0	16	7	98.63	NA
2023-09-09 19:00	12.2	8.2	77	0	0	1	98.62	NA
2023-09-09 20:00	10.8	8.3	84	0		0	98.65	NA
2023-09-09 21:00	8.7	7.1	90	0		0	98.65	NA
2023-09-09 22:00	7.7	6.6	92	0		0	98.66	NA
2023-09-09 23:00	6.5	6	96	0	0	1	98.66	NA
2023-09-10 0:00	6.5	6	96	0	14	2	98.64	NA
2023-09-10 1:00	5.9	5.5	97	0	16	3	98.64	NA
2023-09-10 2:00	7.2	6.1	93	0	18	5	98.62	NA
2023-09-10 3:00	6.2	5.5	96	0	18	4	98.61	NA

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-10 4:00	6.2	6	98	0	19	6	98.62	NA
2023-09-10 5:00	7	6.5	97	0	18	7	98.63	NA
2023-09-10 6:00	7.6	6.8	94	0	16	2	98.63	NA
2023-09-10 7:00	8.6	7.8	95	0	20	2	98.65	NA
2023-09-10 8:00	10.8	9	89	0	17	3	98.67	NA
2023-09-10 9:00	13.3	9.6	78	0	10	3	98.68	NA
2023-09-10 10:00	14.6	10.7	78	0	23	1	98.7	NA
2023-09-10 11:00	16.1	9.2	64	0	1	3	98.71	NA
2023-09-10 12:00	17.5	9.8	61	0	1	4	98.67	NA
2023-09-10 13:00	18.7	9.4	55	0	14	4	98.65	NA
2023-09-10 14:00	19.8	8.6	48	0	11	3	98.63	NA
2023-09-10 15:00	19.8	10	53	0	19	3	98.6	NA
2023-09-10 16:00	18.9	10.8	59	0	31	9	98.6	NA
2023-09-10 17:00	17.3	12.3	72	0	30	6	98.64	NA
2023-09-10 18:00	16.7	12	74	0	33	7	98.65	NA
2023-09-10 19:00	15.9	11.6	75	0	33	9	98.67	NA
2023-09-10 20:00	15.3	11.3	77	0	1	10	98.71	NA
2023-09-10 21:00	14.6	11.4	81	0	1	8	98.73	NA
2023-09-10 22:00	14.1	11.1	82	0	1	8	98.74	NA
2023-09-10 23:00	13.4	11.1	86	0	36	6	98.75	NA

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-11 0:00	12.8	10.7	88	0	36	5	98.75	NA
2023-09-11 1:00	11.9	10.2	89	0	36	5	98.74	NA
2023-09-11 2:00	9.6	8.3	92	0	35	4	98.71	NA
2023-09-11 3:00	10.2	9.8	97	0	33	8	98.69	NA
2023-09-11 4:00	8.7	8.4	97	0	33	6	98.7	NA
2023-09-11 5:00	8.7	8.3	98	0	36	9	98.69	NA
2023-09-11 6:00	8.6	8.2	97	0	34	6	98.73	NA
2023-09-11 7:00	8.8	8.5	98	0	1	8	98.76	NA
2023-09-11 8:00	10.2	9.7	96	0	2	11	98.75	NA
2023-09-11 9:00	12.3	10.1	87	0	3	7	98.79	NA
2023-09-11 10:00	13.5	10.3	81	0	4	10	98.77	NA
2023-09-11 11:00	15.2	10.8	75	0	2	9	98.75	NA
2023-09-11 12:00	16.5	10.9	69	0	2	9	98.73	NA
2023-09-11 13:00	17.7	11.5	67	0	4	8	98.71	NA
2023-09-11 14:00	18.5	10.4	60	0	5	11	98.66	NA
2023-09-11 15:00	18.2	10.8	62	0	5	14	98.6	NA
2023-09-11 16:00	17.7	10.4	62	0	4	11	98.57	NA
2023-09-11 17:00	14.8	12.6	87	0.6	35	9	98.57	NA
2023-09-11 18:00	14.3	12.1	87	0	34	13	98.57	NA
2023-09-11 19:00	13.3	10.9	86	0	36	14	98.55	NA

Table 2: Weather Data September 8 to September 11, 2023

Time	Temperature (°C)	Dew Point Temperature (°C)	Relative Humidity (%)	Percip. Amount (mm)	Wind Direction (10s deg.)	Wind Speed (km/h)	Stn Pressure (kPa)	Weather
2023-09-11 20:00	12.6	10.5	87	0	35	13	98.57	NA
2023-09-11 21:00	11.7	9.5	86	0	1	16	98.55	NA
2023-09-11 22:00	11.6	9.2	85	0	2	15	98.57	NA
2023-09-11 23:00	10.3	9.3	94	0.8	1	9	98.58	NA

°C – Celsius % - Percent deg. – Degrees km/h – kilometers per hour kPa – kilopascal.

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