



Wood Buffalo Environmental Association  
**Ambient Air Monitoring Station  
Site Documentation**

## Surmont 2

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LAST UPDATED: 03-14-2023



# Table of Contents

WBEA Monitoring Network .....	4
Vision .....	4
Mission.....	4
The Region .....	4
The Network.....	4
Time Integrated Sampling.....	4
General Site Information .....	10
Station.....	10
Location .....	10
Owner/Operator/Approval Holder.....	10
Site Description .....	10
Site Influences.....	11
Localized Sources (within 20 metres of station) .....	11
Roadway Influences.....	11
Major Point Sources .....	11
Station Equipment.....	12
Analytical Equipment.....	12
Meteorological Equipment .....	12
Support Equipment .....	12
Site photos .....	17
Station Photos.....	22

## Tables and Figures

Table 1.0 - Pollutant parameters monitored in the WBEA network .....	6
Table 1.1 – Meteorological Parameters monitored in the WBEA network.....	7
Table 1.2 – Time-Integrated Parameters monitored in the WBEA network .....	8
Figure 1.0 – WBEA Network Monitoring Sites .....	9
Figure 2.0 – Area topographic map showing AMS 29 .....	13
Figure 3.0 – Aerial photo showing AMS 29.....	14
Figure 4.0 – Plan view sketch for AMS 29 site .....	15
Figure 5.0 – Elevation view image for AMS 29 site .....	16
Figure 6.0 – Environment looking North .....	17
Figure 6.1 – Environment looking East.....	18
Figure 6.2 – Environment looking South .....	19
Figure 6.3 – Environment looking West .....	20
Figure 6.4 – Meteorological Tower .....	21
Figure 7.0 – Photo showing the inlet and sample manifold .....	22
Figure 7.1 – Curb shot of the monitoring station.....	23
Figure 7.2 –Photo of the front and the back of instrument rack .....	24
Figure 7.3 –Photo of the T640 Analyzer .....	25
Figure 8.0 – Windrose (2018 – 2022) .....	26

## WBEA Monitoring Network

### Vision

Empower all stakeholders and rights holders with environmental data to make informed decisions.

### Mission

A multi-stakeholder, consensus-based organization providing world-class environmental monitoring and reporting.

### The Region

From north-central Alberta to the borders of Saskatchewan and the Northwest Territories, the Regional Municipality of Wood Buffalo ([www.woodbuffalo.ab.ca](http://www.woodbuffalo.ab.ca)) covers 68,454 square kilometres, making it the second largest municipality in Canada. It was established in 1995 through an amalgamation of the City of Fort McMurray and Improvement District No. 143. The Athabasca Oil Sands Region (AOSR) is within the municipality, and includes both traditional bitumen mining operations and in situ oil production. The region also encompasses the communities of Fort McMurray, Fort Chipewyan, Fort McKay, Anzac, Janvier, and Conklin.

### The Network

Continuous ambient air quality and meteorological data are collected under the Ambient Air Monitoring (AAM) group in WBEA. The WBEA currently operates 28 permanent continuous monitoring locations, each measuring various air quality parameters. The continuously measured air quality parameters include Sulphur Dioxide (SO<sub>2</sub>), Hydrogen Sulfide (H<sub>2</sub>S), Total Reduced Sulphur (TRS), Ozone (O<sub>3</sub>), Total Oxides of Nitrogen (NO<sub>x</sub>), Nitric Oxide (NO), Nitrogen Dioxide (NO<sub>2</sub>), Ammonia (NH<sub>3</sub>), Carbon Monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), Particulate Matter less than 2.5µm (PM<sub>2.5</sub>), Total Suspended Particulates (TSP), Total Hydrocarbon (THC), Methane and Non-Methane Hydrocarbons (NMHC). All sites also measure ambient air temperature (AT), wind speed (WS), wind direction (WD), and relative humidity (RH). Selected sites measure barometric pressure (BP), global radiation (GR), precipitation (PC), leaf wetness (LW), vertical wind speed (VWS), vertical temperature gradient VTG) and Present Weather Detector (PWD). The ambient air monitoring parameters for each station are summarized in Table 1.0 and 1.1.

The WBEA also maintains and operates six portable monitoring stations. Five of these stations are used for compliance monitoring at sites that require less than 12 months per year. One portable is set up for gas chromatography systems and currently has a Sulphur and VOC GC installed to collect speciated data for the Odour Monitoring Program within WBEA.

### Time Integrated Sampling

Since 1998 WBEA has maintained time-integrated sampling for PM<sub>2.5</sub>, PM<sub>10</sub>, VOC and PAH at permanent monitoring sites. The sampling for time-integrated monitoring has evolved with a better understanding of technology, analytical laboratory methods and sample deployment and collection methods.

In 2012, the WBEA moved to Hivol PUF sampling for PAH compounds from the previous low volume method. This was done to achieve a lower detection limit for the target analytes. In 2015, the WBEA moved to duplicate sampling for the PM<sub>10</sub> and PM<sub>2.5</sub> time integrated parameters for 2 reasons; (1) to have duplicate mass measurements for QA purposes, (2) to have separate filters for subsequent metals and ion analysis. Elemental and Organic Carbon (ECOC) sampling began on August 7, 2012 at the Bertha Ganter site. ECOC was added and the Wapasu and Stony Mountain sites on May 1, 2018. All time-integrated samples in the WBEA ambient air monitoring network are collected on the National Air Pollution Surveillance (NAPS) schedule every 6 days for a 24-hour period.

The WBEA also collects precipitation samples for chemistry analysis through the National Atmospheric Deposition Program (NADP) at three sites; Bertha Ganter, Wapasu and Stony Mountain. These samples are collected every Tuesday at 12:00.

In 2022, the WBEA added a dustfall sampling network to better understand the larger size settleable particulate in the region. These sites are currently located at the community sites and are collected on a monthly frequency.

The time-integrated parameters for each station are summarized in Table 1.2.

Table 1.0 provides a listing of stations with their names and corresponding WBEA identification number and the air quality parameters measured by continuous methods at each site. Parameters measured include; sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), particulate matter less than 2.5µm (PM<sub>2.5</sub>), total reduced sulphur (TRS), hydrogen sulphide (H<sub>2</sub>S), total hydrocarbons (THC), non-methane hydrocarbons (NMHC), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), ammonia (NH<sub>3</sub>). Sites are categorized by their station type based on the monitoring objectives for the site.

WBEA ID	TYPE	STATION NAME	SO <sub>2</sub>	NO <sub>2</sub>	O <sub>3</sub>	PM <sub>2.5</sub>	TRS	H <sub>2</sub> S	THC	NMHC	CO	CO <sub>2</sub>	NH <sub>3</sub>
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X	X	X	X	X	X	X	X
2	COMPLIANCE	MILDRED LAKE	X					X	X	X			
3	METEOROLOGICAL	LOWER CAMP MET TOWER											
4	COMPLIANCE	BUFFALO VIEWPOINT	X	X	X	X		X	X	X			
5	COMPLIANCE/METEOROLOGICAL	MANNIX	X					X	X	X			
6	COMMUNITY	PATRICIA MCINNES	X	X	X	X	X		X	X			X
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X	X		X	X	X		
8	COMMUNITY/COMPLIANCE	FORT CHIPEWYAN	X	X	X	X	X				X	X	
9	ATTRIBUTION	BARGE LANDING	X	X		X	X		X	X			
11	COMPLIANCE	LOWER CAMP	X					X	X	X			
13	COMPLIANCE/ATTRIBUTION	FORT MCKAY SOUTH	X	X	X	X	X		X	X			
14	COMPLIANCE/COMMUNITY	ANZAC	X	X	X	X	X		X	X			
17	COMPLIANCE	WAPASU	X	X	X	X		X	X				
18	BACKGROUND	STONY MOUNTAIN	X	X	X	X	X		X	X	X	X	
19	COMPLIANCE	FIREBAG	X	X				X	X				
20	COMPLIANCE	MACKAY RIVER	X	X				X	X				
21	COMMUNITY	CONKLIN	X	X	X	X	X		X	X			
22	COMMUNITY	JANVIER	X	X	X	X	X		X	X			
23	COMPLIANCE	FORT HILLS	X	X		X	X		X	X			
25	EMERGENCY RESPONSE	WASKOW OHCI PIMATISIWIN	X					X					
26	COMPLIANCE	CHRISTINA LAKE	X	X				X					
27	COMPLIANCE	JACKFISH 2/3	X	X				X					
29	COMPLIANCE	SURMONT 2	X	X		X		X	X				
30	COMPLIANCE	ELLS RIVER	X	X		X	X		X	X			
501	COMPLIANCE	LEISMER	X	X				X					
505	COMPLIANCE	SAWBONES BAY	X	X				X					
506	COMPLIANCE	JACKFISH 1	X	X				X					
507	COMPLIANCE	KIRBY SOUTH	X	X				X	X				
508	COMPLIANCE	KIRBY NORTH	X	X				X	X				

Table 1.0 - Pollutant parameters monitored in the WBEA network

Table 1.1 provides a listing of stations and meteorological parameters measured by continuous methods. Parameters measured include ambient temperature (AT), relative humidity (RH), barometric pressure (BP), wind speed (WS), wind direction (WD), vertical wind speed (VWS), global radiation (GR), total precipitation (PC), and leaf wetness (LW). Sites are categorized by their station type based on the monitoring objectives for the site.

WBEA ID	TYPE	STATION NAME	AT	RH	BP	WS	WD	VWS	GR	PC	LW
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X		X	X		X	X	X
2	COMPLIANCE	MILDRED LAKE	X	X		X	X				
3	METEOROLOGICAL	LOWER CAMP MET TOWER	X	X		X	X	X			
4	COMPLIANCE	BUFFALO VIEWPOINT	X	X		X	X				
5	COMPLIANCE/ METEOROLOGICAL	MANNIX	X	X		X	X	X			
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X				
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X	X				
8	COMMUNITY/ COMPLIANCE	FORT CHIPEWYAN	X	X		X	X		X		X
9	ATTRIBUTION	BARGE LANDING	X	X	X	X	X				
11	COMPLIANCE	LOWER CAMP	X	X	X	X	X				
13	COMPLIANCE/ ATTRIBUTION	FORT MCKAY SOUTH	X	X		X	X				
14	COMPLIANCE/ COMMUNITY	ANZAC	X	X		X	X				X
17	COMPLIANCE	WAPASU	X	X		X	X			X	
18	BACKGROUND	STONY MOUNTAIN	X	X		X	X		X	X	X
19	COMPLIANCE	FIREBAG	X	X		X	X				
20	COMPLIANCE	MACKAY RIVER	X	X		X	X			X	
21	COMMUNITY	CONKLIN	X	X		X	X				
22	COMMUNITY	JANVIER	X	X		X	X				
23	COMPLIANCE	FORT HILLS	X	X		X	X				
25	EMERGENCY RESPONSE	WASKOW OHCI PIMATISIWIN	X	X		X	X				
26	COMPLIANCE	CHRISTINA LAKE	X	X		X	X				
27	COMPLIANCE	JACKFISH 2/3	X	X		X	X				
29	COMPLIANCE	SURMONT 2	X	X		X	X				
30	COMPLIANCE	ELLS RIVER	X	X		X	X		X		
501	COMPLIANCE	LEISMER	X	X		X	X				
505	COMPLIANCE	SAWBONES BAY	X	X		X	X				
506	COMPLIANCE	JACKFISH 1	X	X		X	X				
507	COMPLIANCE	KIRBY SOUTH	X	X		X	X				
508	COMPLIANCE	KIRBY NORTH	X	X		X	X				

Table 1.1 – Meteorological Parameters monitored in the WBEA network

Table 1.2 provides a listing of stations and air quality parameters measured by time integrated methods. Parameters measured include volatile organic compounds (VOC), particulate matter less than 2.5 µm aerodynamic diameter (PM<sub>2.5</sub>) and associated metals and ions, particulate matter less than 10 µm aerodynamic diameter (PM<sub>10</sub>) and associated metals and ions, polycyclic aromatic hydrocarbons (PAH), precipitation chemistry (PRECIP), and dustfall (DUSTFALL) samples.

WBEA ID	TYPE	STATION NAME	VOC	PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PAH	PRECIP	DUSTFALL
					ECOC				
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X	X	X	X
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X		X
7	COMMUNITY	ATHABASCA VALLEY	X	X		X	X		X
8	COMPLIANCE/COMMUNITY	FORT CHIPEWYAN	X	X		X	X		
9	ATTRIBUTION	BARGE LANDING	X						
13	COMPLIANCE/ATTRIBUTION	FORT MCKAY SOUTH	X			X			
14	COMPLIANCE/COMMUNITY	ANZAC	X	X		X	X		X
17	COMPLIANCE	WAPASU			X			X	
18	ENHANCED DEPOSITION/ BACKGROUND	STONY MOUNTAIN			X			X	
21	COMMUNITY	CONKLIN	X	X		X	X		X
22	COMMUNITY	JANVIER	X	X		X	X		X
23	COMPLIANCE	FORT HILLS	X			X			
30	COMPLIANCE	ELLS RIVER	X			X			

Table 1.2 – Time-Integrated Parameters monitored in the WBEA network



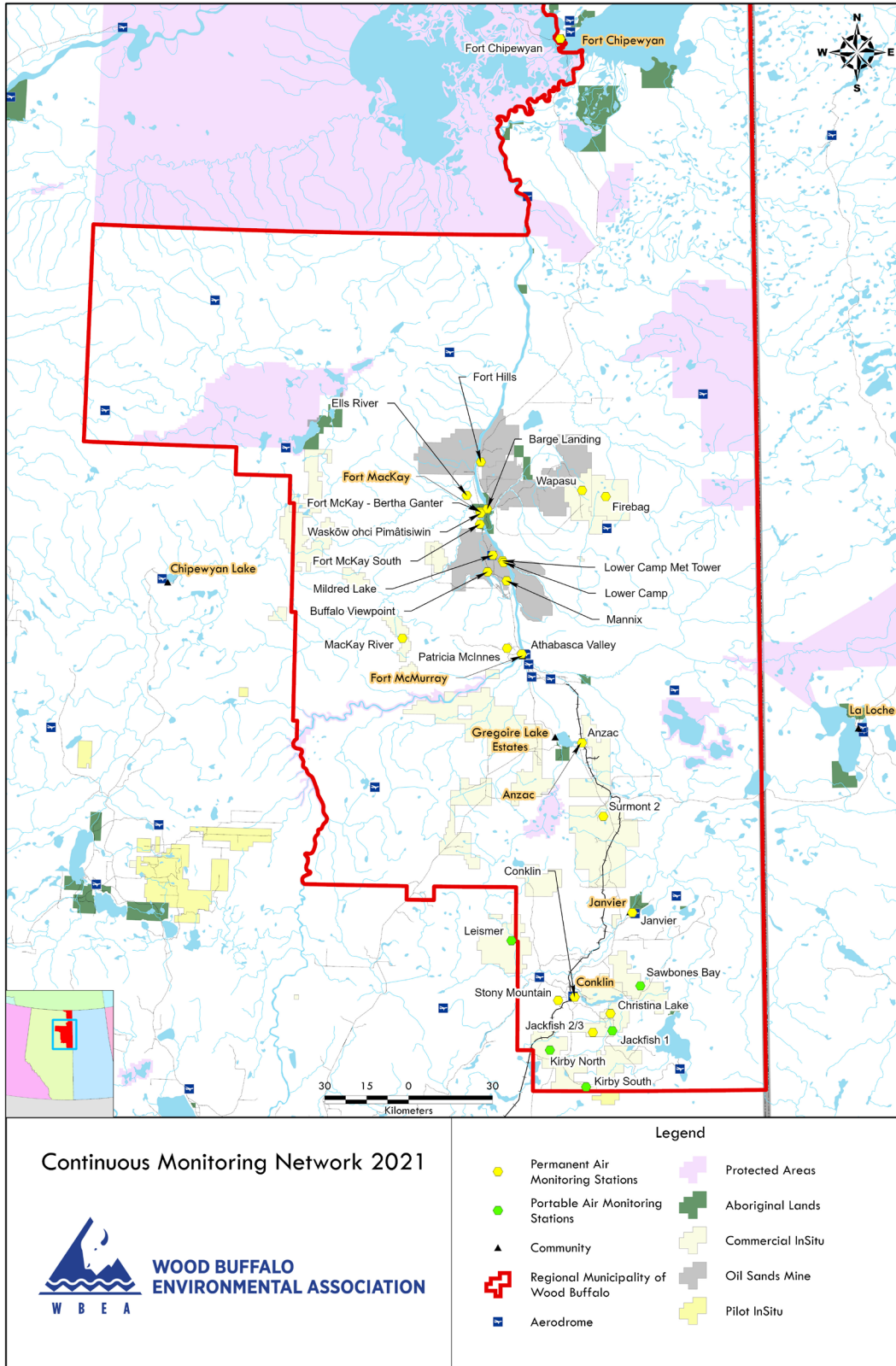


Figure 1.0 – WBEA Network Monitoring Sites

## General Site Information

### Station

Station ID	AMS 29
Station name	Surmont 2
Date station established	2019

### Location

Station street address	NA
Legal land description	10-20-83-6-W4
Airshed Zone	Wood Buffalo Environmental Association
Latitude	56.2124224862
Longitude	-110.914925019
UTM East	505285
UTM North	6229755
Nearest community	Anzac
Community population	555
Census Year	2021

### Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Address of Operating Agency	Unit 3, 805 Memorial Drive, Fort McMurray, Alberta T9K 0K4
Name of Approval Holder	ConocoPhillips Canada Resources Corp.
Approval number	48263-01-00
Contact Name	Fernando Restrepo
Address	401 9 Ave SW, Calgary, Alberta, T2P 3C5
Phone number	780-215-0498
Email address	<a href="mailto:Fernando.Restrepo@conocophillips.com">Fernando.Restrepo@conocophillips.com</a>

### Site Description

Land use by sector	0 – 90 degrees	Trees
	91 – 180 degrees	Trees/shed/potable water access point
	181 – 270 degrees	Trees
	271 – 360 degrees	Trees/ laydown yard
Site elevation (m) (above sea level)	550	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None
	East	None

	South	None
	West	None
Distance to nearest trees (m)	North	60 m
	East	50 m
	West	100 m
	South	55 m
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
Meteorological Sensors	Type	Cup and vane
	Height above ground (m)	10 m
	Distance from station (m)	0

### Site Influences

#### Localized Sources (within 20 metres of station)

Type	Distance (m)	Description
Vehicles	20 m NW	Moving vehicles around station

#### Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt/gravel road	low	20	Used by site personnel for accessing various sections around plant.

#### Major Point Sources

Facility Name	Source Type	Production Capacity	Distance from site (km)	Compass direction from site
ConocoPhillips	SAGD	140 MBOED	0.36 km	NW

## Station Equipment

Equipment Owner:

## Analytical Equipment

Parameter	Make	Model	Serial Number	Date Installed
SO <sub>2</sub>	Thermo Environmental	43i	1170050150	2016
H <sub>2</sub> S	Thermo Environmental	450i	1170050142	2016
NO <sub>2</sub>	Thermo Environmental	42i	1170050148	2016
THC	Thermo Environmental	51i	1170050149	2021
PM <sub>2.5</sub>	Teledyne/API	T640	253	2019

## Meteorological Equipment

Parameter	Make	Model	Serial Number	WMO Site Class	Date Installed
AT/RH	Vaisala	HMP155	G4340046	3	2016
WS	Met One	010C-1	P10039	2	2019
WD	Met One	020C-1	P22885	2	2016

## Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	9037
Gas Dilution Calibrator	Dynamic dilution calibrator	Teledyne/API	T700	5258
Zero air generator	Zero Air Generator	Teledyne/API	701	4297
Shelter / Building	Air monitoring portable	ITB	8 x 16 trailer	ITB-17-17154
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	NA
Tower	10m Tower	Aluma	T-135	AT21403Z32

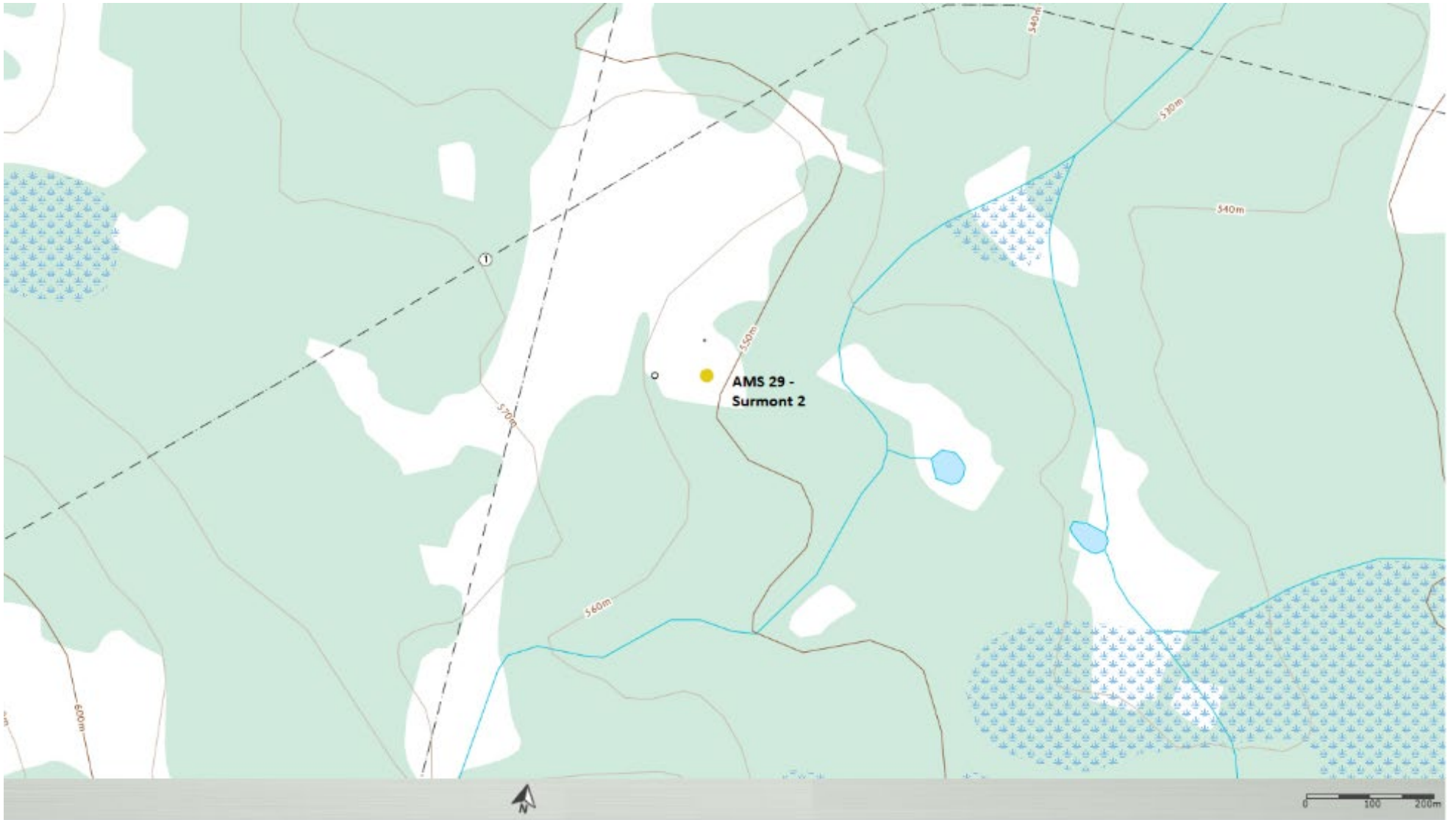


Figure 2.0 – Area topographic map showing AMS 29

PLAN VIEW:



CLIENT:



NOTES:  
 1. ALL DIMENSIONS AND DISTANCES ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.  
 2. ALL ELEVATIONS ARE IN METRES AND REFERENCED TO CAN-NAD 83 DATUM.  
 3. UTM COORDINATES: 18Q UTM ZONE 12, CL. 11° WEST  
 4. HORIZONTAL REFERENCE DATUM: NAD83

THE INFORMATION CONTAINED ON THIS DRAWING, AND ANY DOCUMENTATION PERTAINING TO THIS DRAWING IS CURRENT AS OF 24-NOV-2022. ANY FACILITIES UNDER OR ABOVE GROUND INSTALLED AFTER THE ABOVE MENTIONED DATE MAY NOT HAVE BEEN CONSIDERED IN THE PREPARATION OF THIS DOCUMENT, OR ITS SUPPORT DOCUMENTS.

LEGEND:

SITE MAP:



REVISIONS

NO.	DESCRIPTION	DATE
0	PLAN ISSUED	7-Nov-22



DRAWING TITLE:  
 WBEA AMS#29  
 AIR MONITORING STATION  
 SITE PLAN

SCALE:  
 0 50 100 150 METERS

DRAWN BY: ZF SURVEYED BY: ES REV: 0  
 DWG NO: LND00671-029-WBE\_0 EMP NO: SHEET: 1 OF 3  
 DATE: 07-NOV-2022

Figure 3.0 – Aerial photo showing AMS 29

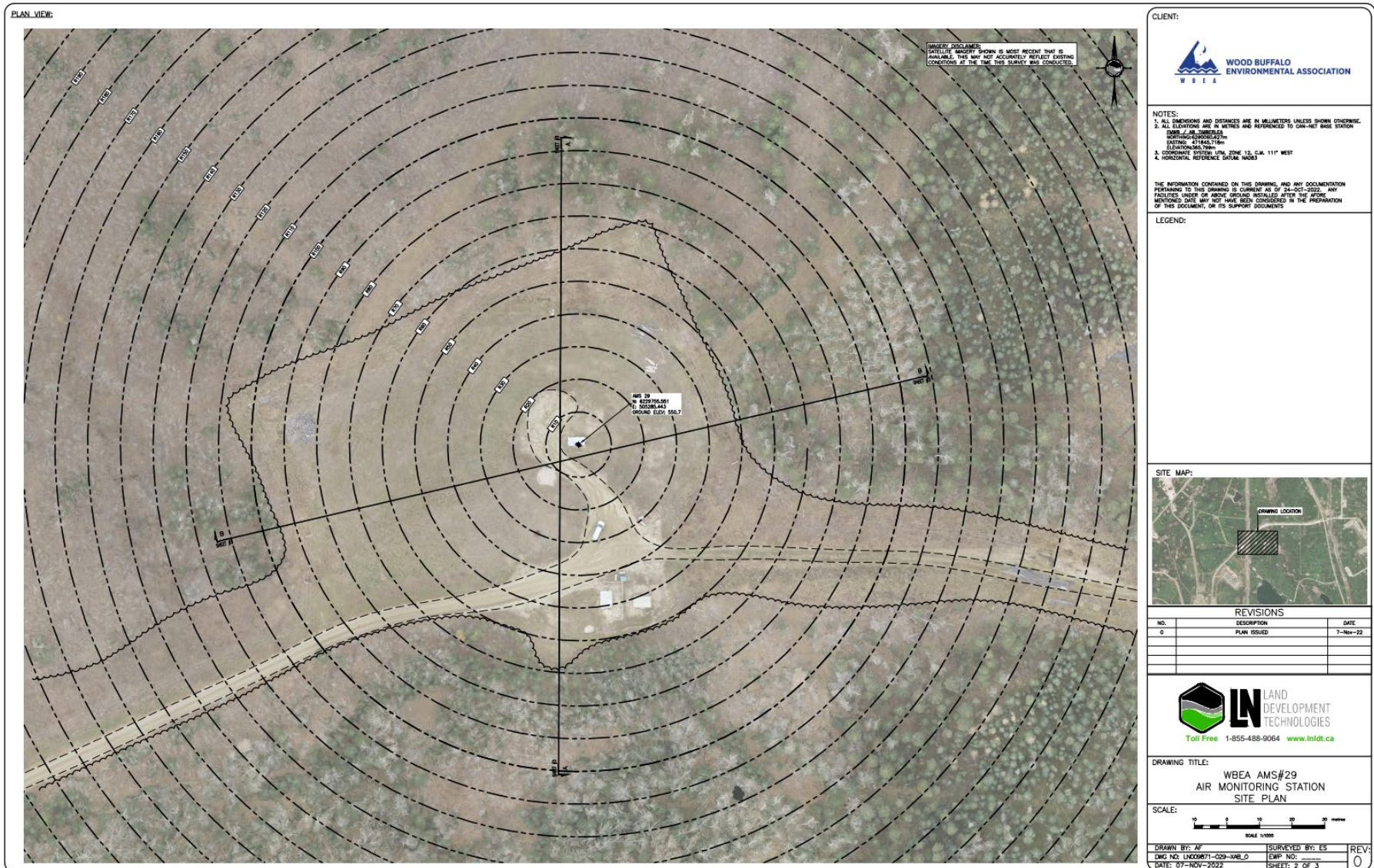
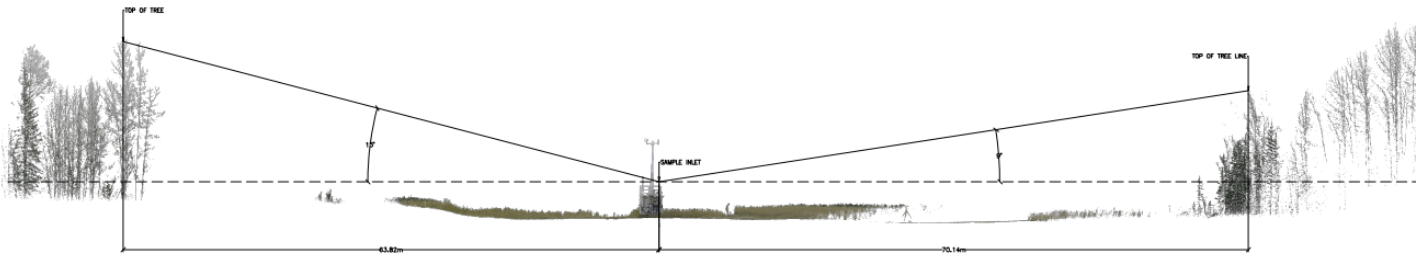
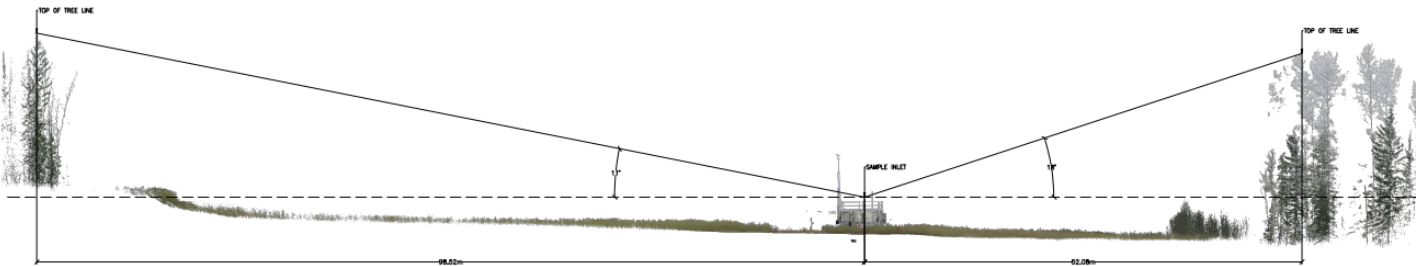


Figure 4.0 – Plan view sketch for AMS 29 site

SECTION VIEW:



SECTION A-A  
1:800



SECTION B-B  
1:800

CLIENT:



- NOTES:
1. ALL DIMENSIONS AND DISTANCES ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
  2. ALL ELEVATIONS ARE IN METRES AND REFERENCED TO CAN-NET BAIL STATION.
  3. DATE: 07-26-2022
  4. WORKING ADDRESS: 4570 HWY 1, RR 1, Box 100, Wood Buffalo, AB T1B 0A6, CANADA
  5. ELECTRONIC FILE: WBAMS29.DWG
  6. COORDINATE SYSTEM: UTM, ZONE 12, CLM, 11° WEST
  7. HORIZONTAL REFERENCE DATUM: NAD83

THE INFORMATION CONTAINED ON THIS DRAWING, AND ANY DOCUMENTATION PERTAINING TO THIS DRAWING IS CURRENT AS OF 24-01-2022. ANY FACILITIES UNDER OR ABOVE GROUND INSTALLED AFTER THE ABOVE MENTIONED DATE MAY NOT HAVE BEEN CONSIDERED IN THE PREPARATION OF THIS DOCUMENT, OR ITS SUPPORT DOCUMENTS.

LEGEND:

SITE MAP:



REVISIONS

NO.	DESCRIPTION	DATE
0	PLAN ISSUED	7-Nov-22



DRAWING TITLE:

WBEA AMS#29  
AIR MONITORING STATION  
SITE PLAN

SCALE:



DRAWN BY: AF	SURVEYED BY: ES	REV: 0
DWG NO: LND00071-220-AMB_D	EMP NO: _____	
DATE: 07-26-2022	SHEET: 3 OF 3	

Figure 5.0 – Elevation view image for AMS 29 site



## Site photos

The following photos show the environment surrounding the monitoring station.



Figure 6.0 – Environment looking North



Figure 6.1 – Environment looking East



Figure 6.2 – Environment looking South



Figure 6.3 – Environment looking West



Figure 6.4 – Meteorological Tower

## Station Photos

The following photos show the monitoring station and instrumentation.

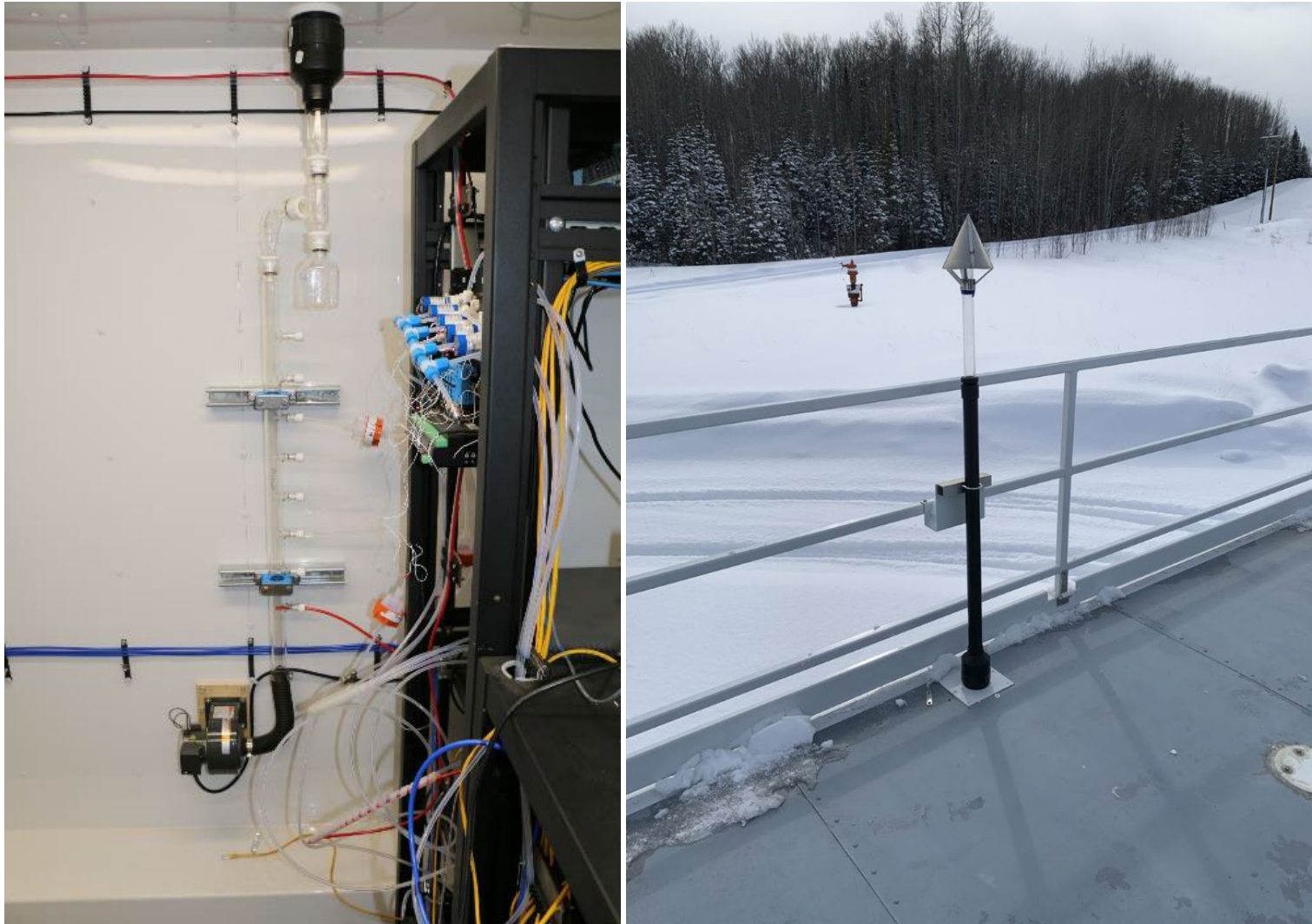


Figure 7.0 – Photo showing the inlet and sample manifold



Figure 7.1 – Curb shot of the monitoring station



Figure 7.2 –Photo of the front and the back of instrument rack





Figure 7.3 –Photo of the T640 Analyzer



Wood Buffalo Environmental Association  
Wind Rose 2018 - 2022

Wind Speed (WS) - km/h  
Surmont 2

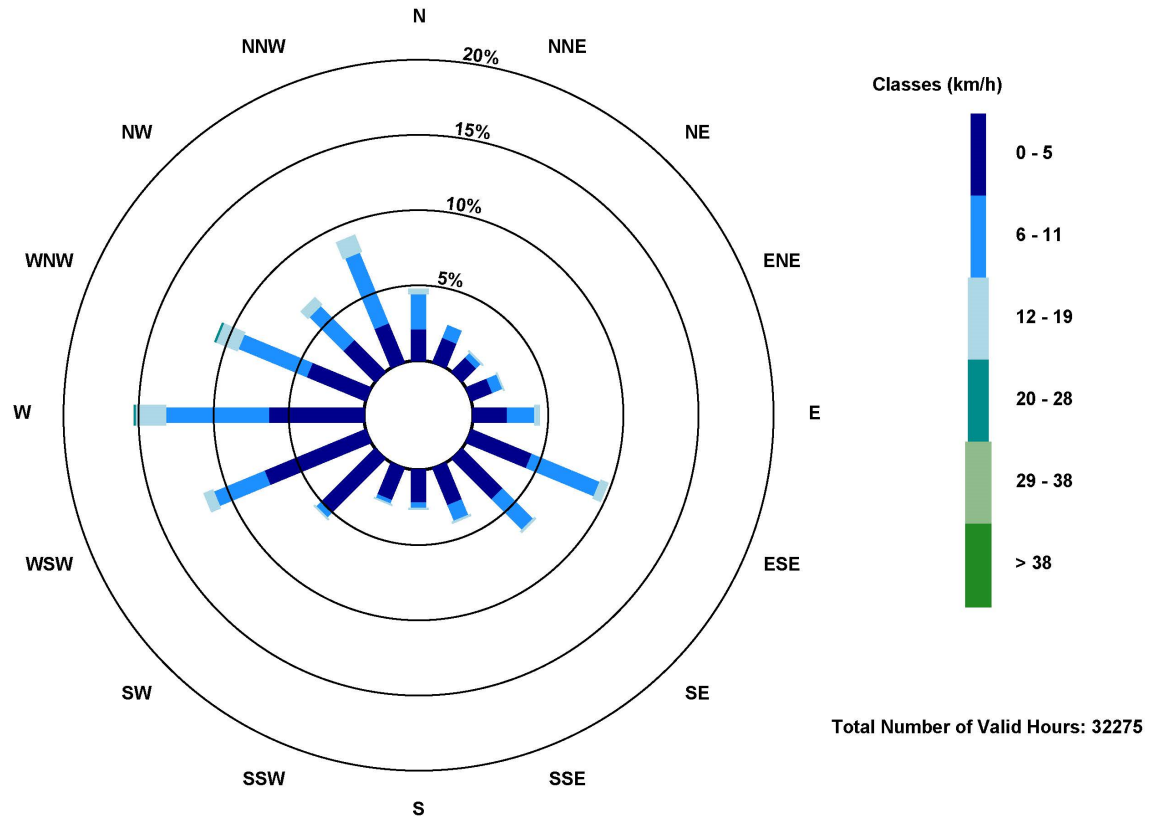


Figure 8.0 – Windrose (2018 – 2022)