



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

AMS 04 – Buffalo View Point

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WBEA Monitoring Network

Vision

People are empowered to make informed decisions to ensure a safe and healthy environment.

Mission

The Wood Buffalo Environmental Association is a multi-stakeholder, consensus-based organization that leads in state of the art environmental monitoring to enable informed decision-making.

Continuous ambient air quality and meteorological data are collected under the Ambient Air Monitoring (AAM) group in WBEA. The WBEA currently operates 29 permanent continuous monitoring stations, each measuring various air quality parameters. The continuously measured air quality parameters include SO₂, H₂S, TRS, O₃, NO_x, NO, NO₂, NH₃, CO, CO₂, PM_{2.5}, THC, NMHC, and CH₄. All sites also measure ambient air temperature, wind speed, wind direction, and relative humidity. Selected sites measure barometric pressure, global radiation, precipitation, surface wetness, vertical wind speed, vertical temperature gradient, and visibility. The ambient air monitoring parameters for each station are summarized in Table 1.0 and 1.1. The WBEA also maintains and operates five portable monitoring stations. The configuration of these stations differs depending on their task. Three are configured for compliance monitoring and are equipped to measure SO₂, H₂S, NO_x, NO, NO₂, THC, wind speed, wind direction, temperature. One portable is equipped to monitor all these compliance parameters as well as PM_{2.5}. The last portable is set up to operate gas chromatography systems and currently has a Sulphur and VOC GC installed to collect speciated data for the Odour Monitoring Program within WBEA.

Since 1998 WBEA has maintained time-integrated sampling for PM_{2.5}, PM₁₀, VOC and PAH. The sampling for time-integrated monitoring has evolved with a better understanding of technology, analytical laboratory methods and sample deployment and collection methods. 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 time-integrated parameters for each station are summarized in Table 1.2.



WBEA ID	TYPE	STATION NAME	SO ₂	NO/NO ₂ /NO _x	O ₃	PM _{2.5}	TRS	H ₂ S	THC	Methane NMHC	CO	CO ₂	NH ₃
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	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	
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			
501	COMPLIANCE	LEISMER	X	X				X	X				
505	COMPLIANCE	SAWBONES BAY	X	X				X	X				
506	COMPLIANCE	JACKFISH 1	X	X			X						
508	COMPLIANCE	KIRBY NORTH	X	X				X	X				

Table 1.0 - Pollutant Parameters monitored in the WBEA network



WBEA ID	TYPE	STATION NAME	Temperature	RH	BP	Wind Speed	Wind Direction	Vertical Wind Speed	Solar Radiation	Precipitation	Leaf Wetness
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				
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				
501	COMPLIANCE	LEISMER	X	X		X	X				
505	COMPLIANCE	SAWBONES BAY	X	X		X	X				
506	COMPLIANCE	JACKFISH 1	X	X		X	X				
508	COMPLIANCE	KIRBY NORTH	X	X		X	X				

Table 1.1 – Meteorological Parameters monitored in the WBEA network



WBEA ID	TYPE	STATION NAME	VOC	PM _{2.5} Mass,	PM _{2.5}	PM ₁₀ Mass,	PAH	PRECIP
				Metals and Ions	Mass, ECOC	Metals and Ions		
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X	X	X
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X	
7	COMMUNITY	ATHABASCA VALLEY	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	
17	COMPLIANCE	WAPASU			X			X
18	ENHANCED DEPOSITION/ BACKGROUND	STONY MOUNTAIN			X			X
21	COMMUNITY	CONKLIN	X	X		X	X	
22	COMMUNITY	JANVIER	X	X		X	X	
30	COMPLIANCE	ELLS RIVER	X			X		

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



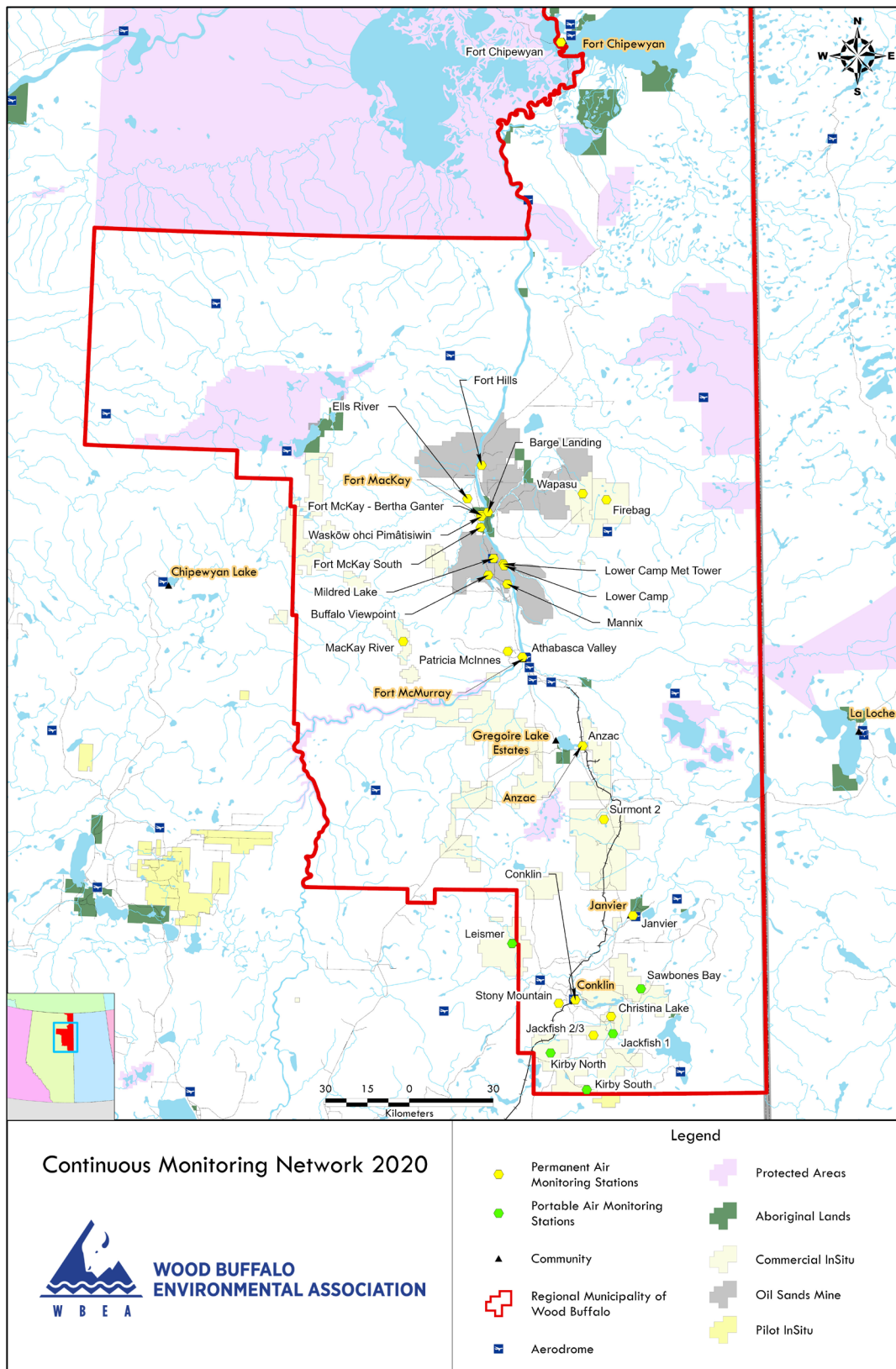


Figure 1.0 – WBEA Network Monitoring Sites



General Site Information

Station

Station ID	AMS 04
Station name	Buffalo View Point
Date station established	1979

Location

Station street address	NA
Legal land description	9-19-092-10 W4
Latitude	56°59'46.17"N
Longitude	111°35'38.22"W
UTM East	461284
UTM North	6338654
Nearest community	Fort McKay
Community population	742

Owner/Operator/Approval Holder

Operating Agency	Wood Buffalo Environmental Association
Name of Approval Holder	Syncrude Canada Ltd
Approval number	026-02-00
Contact Name	Brooke Bennett
Address	NA
Phone number	780-881-3304
Email address	bennett.brooke@syncrude.com

Site Description

Land use by sector	0 – 90 degrees	Oil Sands Plant
	91 – 180 degrees	Forest
	181 – 270 degrees	Forest
	271 – 360 degrees	Oil Sands Plant
Site elevation (above sea level)	315m	
Angle of elevation to nearby buildings	Greatest angle	0
	Building direction	NA
Airflow restrictions	North	None
	East	None
	South	None
	West	None
Sample manifold	Type	All glass
	Inlet height above roof	1 metre
	Type	Cup and vane



Meteorological Sensors	Height above ground	10m
	Distance from station	Attached to North end of Monitoring Shelter

Site Influences

Localized Sources (within 20 metres of station)

Type	Distance (m)	Description

Roadway Influences

Type	Traffic Volume	Distance (m)	Description
Dirt	Very Low	2 North	Access road to AMS 4
Dirt	Medium	147 North	Road used to access North American/Syncrude Area
HighWay	High	758 East	Paved Highway mostly used by public

Major Point Sources

Facility Name	Source Type	Production Capacity	Distance from site (km)	Compass direction from site
Syncrude	Oilsands Plant	350,000	5.12	North
Suncor	Oilsands Plant	194,000	7.8	SouthEast
Syncrude	Buffalo Farm		0.32	NorthWest
Syncrude	Tailings Pond		0.8	North East



Analytical Equipment

Parameter	Owner	Make	Model	Serial Number	Date Installed
Sulfur Dioxide	WBEA	Thermo	43i	1327300932	May 2017
Hydrogen Sulfide	WBEA	Thermo	450i	1336160094	May 2017
Oxides of Nitrogen	WBEA	Teledyne/API	T200	1035	May 2017
Ozone	WBEA	Teledyne/API	T400	2961	May 2017
PM2.5	WBEA	Teledyne/API	T640	844	Sep 2020
Methane non Methane	WBEA	Thermo	55i	1331259520	Jan 2019
Temperature/RH	WBEA	Vaisala	HMP155	N2860003	May 2017
Wind speed	WBEA	Met One	010C-1	E5131	May 2017
Wind direction	WBEA	Met One	020C-1	G3857	May 2017
Visibility	WBEA	Viasala	PWD22	H5030007	May 2017
Hi Vol Puf	ECCC	Tisch	TE-1004BL	3821	May 2017
Dichot	ECCC	Thermo	Partisol-2000iD	200ID2 01301103	May 2017
Dichot	ECCC	Thermo	Partisol-2000iD	200ID2 01271103	May 2017
SASS	ECCC	Met One Instruments	SASS	T16914	May 2017

Support Equipment

Name	Description	Make	Model	Serial Number
Datalogger	Datalogger	Campbell Scientific	CR3000	2635
Zero air generator	Zero Air Generator	Teledyne/API	701H	362
HVAC	Heating and air conditioning system. Wall mount unit	BARD	1 ton	330N122967779-01
Shelter / Building	Air monitoring portable	National	8 x 16 trailer	NA
Gas Dilution Calibrator	Mass flow controlled gas dilution	Teledyne/API	T700P	2445
Hydrogen generator	Hydrogen Generator	AMA	HG300	171067037



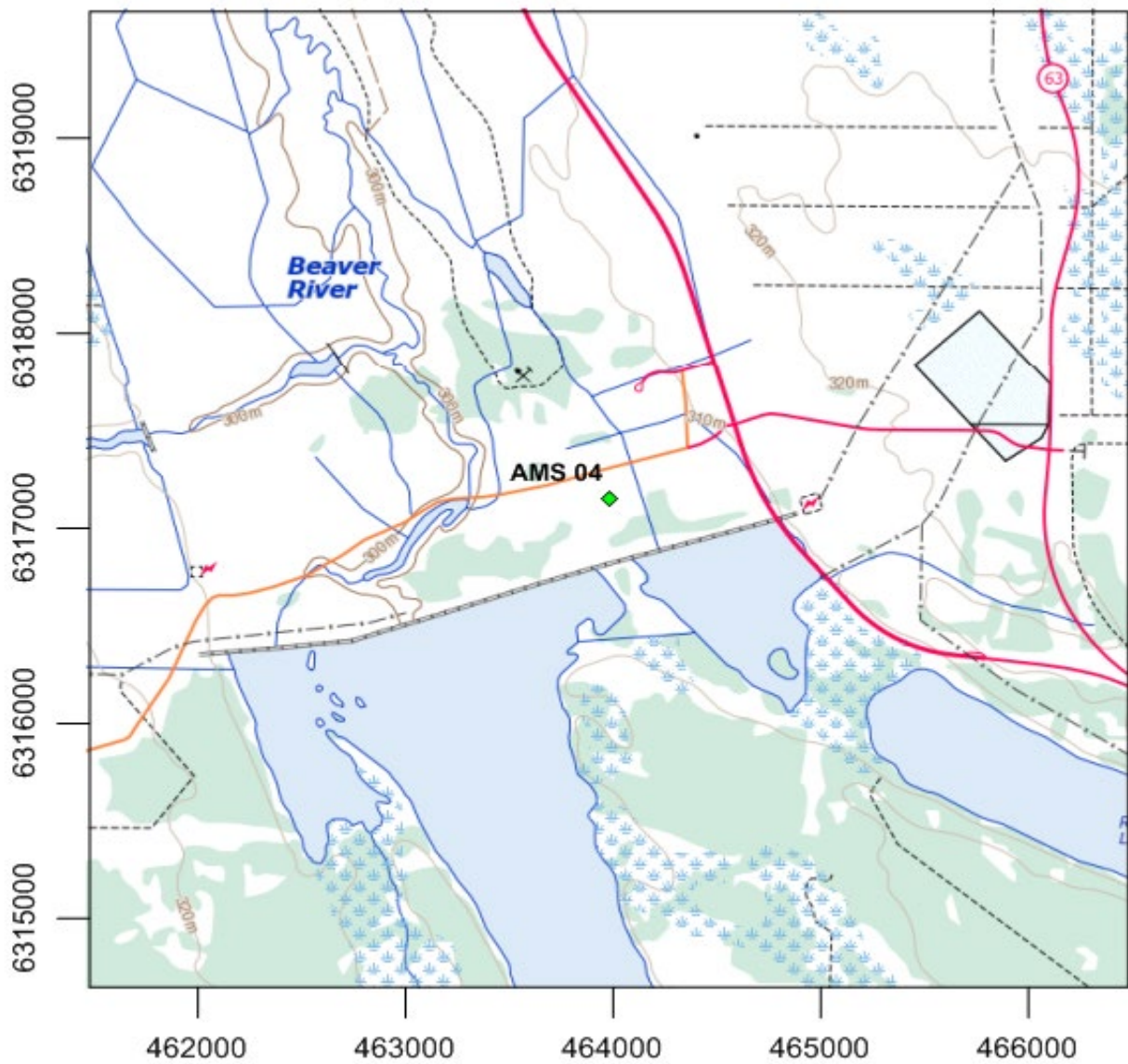


Figure 2.0 – Area Topographic map showing AMS 04





Figure 4.0 – Aerial photo showing AMS 04



Site photos

The following photos show the environment surrounding the monitoring station.



Figure 5.0 – Environ Looking North



Figure 5.1 – Environ Looking East





Figure 5.2 – Environ looking South



Figure 5.3 – Environ Looking West





Figure 5.4 – Meteorological Tower

Station Photos

The following photos show the monitoring station and instrumentation.





Figure 6.0 – Photo showing the inlet and sample manifold



Figure 6.1 – Curb shot of the monitoring station



Figure 6.2 –Photo of front and back of instrument rack





Wind Speed (WS) - km/h
Buffalo Viewpoint

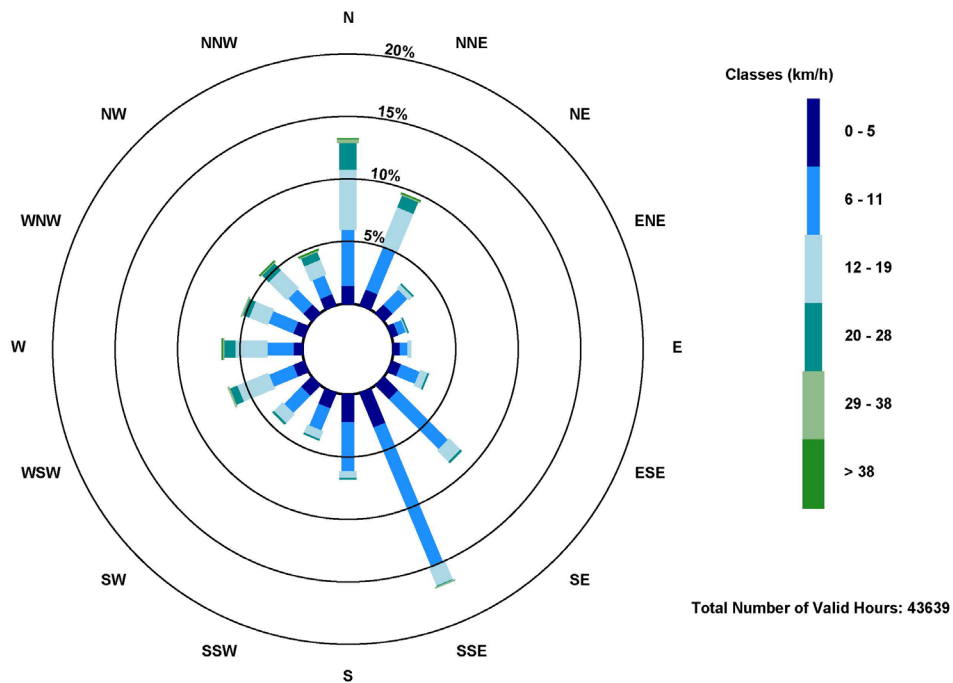


Figure 7.0 – Windrose (5 Year)