TINTINA RESOURCES, INC.
BLACK BUTTE COPPER PROJECT

METEOROLOGICAL MONITORING PROGRAM
Quarterly Data Report
Second Quarter 2012

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CERTIFICATION OF DATA INTEGRITY

Bison Engineering, Inc., certifies the data in this report is an accurate summary of the air quality conditions measured at the Black Butte Mine Met Tower air monitoring site. Every effort was made to obtain accurate and representative data and to comply with the procedures set forth in the *Quality Assurance Project Plan*, the *State of Montana Ambient Air Monitoring Program Quality Assurance Project Plan*, the Environmental Protection Agency's *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume II, Ambient Air Specific Methods (April 1994)*, and EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Part 1, Ambient Air Quality Monitoring Program Quality System Development (March 1998).*

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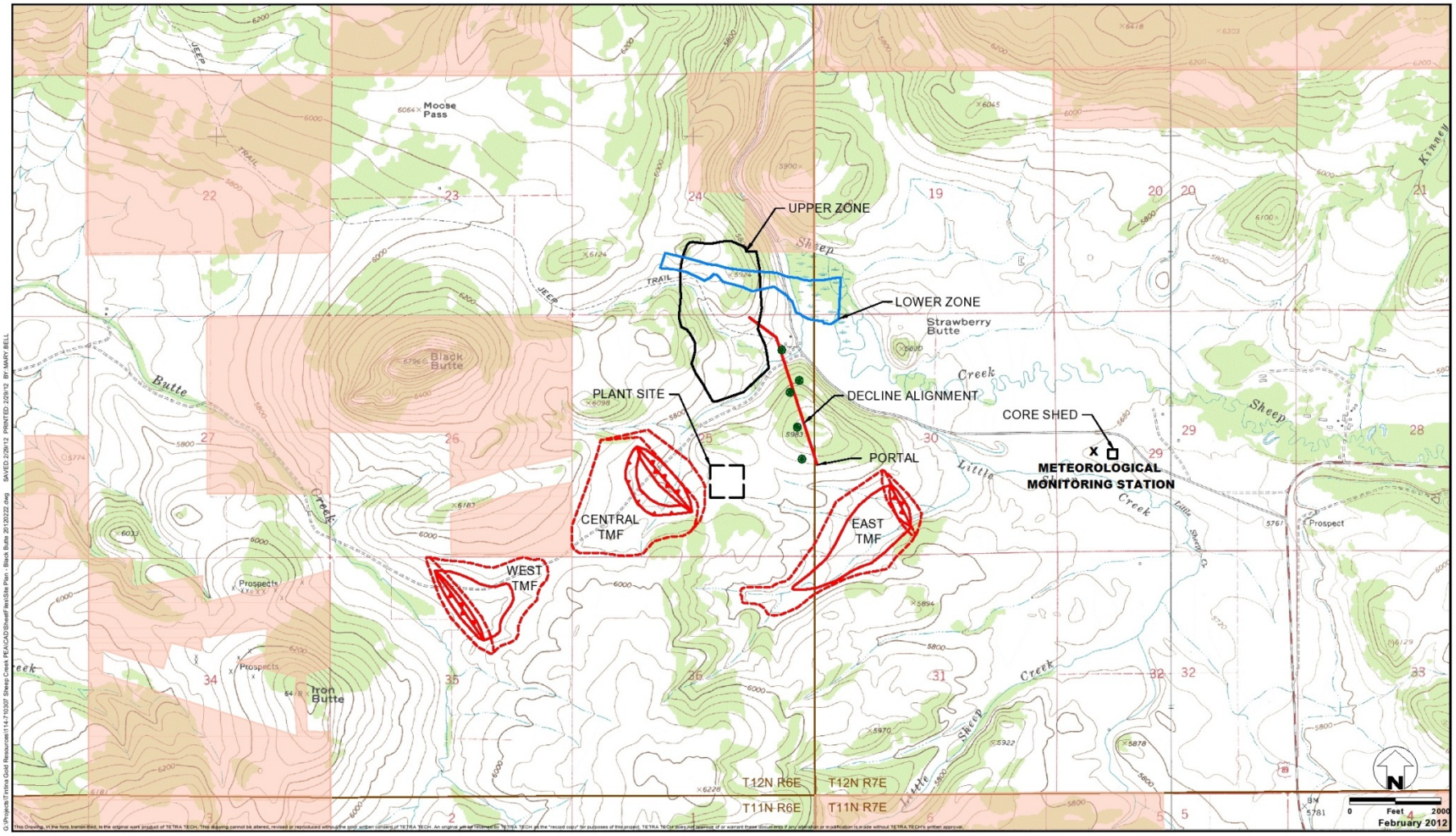
1.0 INTRODUCTION

Tintina Resources, Inc. established an ambient air monitoring site to measure wind speed, wind direction, standard deviation of wind direction, temperature at 9 meters and 2 meters, delta temperature, solar radiation, barometric pressure and precipitation. The project was established to accurately characterize the local meteorology in support of a mining permit, and a possible Environmental Impact Statement and other types of environmental studies.

The meteorological monitoring system was installed in April, 2012. The site is operated by Bison Engineering, Inc., of Helena and Billings. Figure 1 shows the location of the monitoring site.

This report presents the data collected during the second quarter (April through June) of 2012. In addition, a description of the monitoring system operations is presented, together with summaries of quality assurance activities, including calibrations and performance audits. Tabular summaries of the data completeness achieved and the periods of missing data also are presented.

Figure 1. Monitoring Site Location



2.0 MONITORING SYSTEM OPERATIONS

The installation of the monitoring meteorological system equipment took place in April 2012, soon after the equipment was received from the manufacturers. The installation and calibration of the equipment required about two weeks to complete. All meteorological parameters were in full operation and producing valid data by April 30, 2012.

3.0 CALIBRATION DATA

Results of the throughput calibrations performed on the meteorological systems during the second quarter are given in Table 1. Calibrations of the temperature system are carried out at the field monitoring sites by using a water bath. Calibrations of the wind direction system are done by subjecting the sensor to an artificial test of known directions. Calibrations of the wind speed system are done by subjecting the sensor to an artificial test using a synchronous motor. Calibrations of the solar pyranometer, barometric pressure sensor and precipitation gauge were performed at the factory prior to installation. These instruments were field-checked once operational.

During calibrations, the sensors are operated in their normal sampling mode. All operational adjustments to the system are completed prior to calibration. Calibrations are performed once each quarter.

Table 1. Meteorological Calibration

April 30, 2012						
Delta Temperature						
Sensor: Climatronics/100093						
Calibration Device: Certified Thermometer Taylor Model #21413						
	Pre-adjustment				Post-adjustment	
Calibration Value deg C	9m Station Value deg C	2m Station Value deg C	9m Station Difference deg C	2m Station Difference deg C	9m Station Value deg C	2m Station Value deg C
12.6	12.6	12.6	0.0	0.0	na	na
22.4	22.4	22.4	0.0	0.0	na	na
29.1	29.1	29.0	0.0	-0.1	na	na
Wind Direction						
Sensor: Climatronics/WMIII, S/N: 1849						
	Pre-adjustment				Post-adjustment	
	Magnetic Declination: 12° E of N Crossarm Orientation: 12° E of N Difference: 0° from north				Crossarm Orientation: 12° E of N Difference: 0° from north	
Pre-adjustment			Post-adjustment			
Calibration Value deg	DAS Station Value deg	DAS Difference deg	Calibration Value deg	DAS Station Value deg	DAS Difference deg	
90	90	0	na	na	na	
180	180	0	na	na	na	
270	270	0	na	na	na	
360	360	0	na	na	na	
Wind Speed						
Sensor: Climatronics/WMIII, S/N: 1849						
Calibration Devices: Synchronous Motor RPM						
Pre-adjustment			Post-adjustment			
Calibration Value mps	DAS Station Value mps	DAS Difference mps	Calibration Value mps	DAS Station Value mps	DAS Difference mps	
0.2	0.2	0	na	na	na	
6.7	6.6	-0.1	na	na	na	
13.1	13.1	0	na	na	na	
20.6	20.6	0	na	na	na	

Table 1. Meteorological Calibration (Continued)

Barometric Pressure					
Sensor: Climatronics/102663-2					
Calibration Device: Shortland Bowen					
Pre-adjustment			Post-adjustment		
Calibration Value In HG	DAS Station Value In HG	DAS Difference In HG	Calibration Value In HG	DAS Station Value In HG	DAS Difference In HG
24.06	24.01	-0.05	na	na	na

Relative Humidity					
Sensor: Climatronics/102798-G0-H0					
Calibration Device: Dwyer Sling Psychrometer					
Pre-adjustment			Post-adjustment		
Calibration Value %	DAS Station Value %	DAS Difference %	Calibration Value %	DAS Station Value %	DAS Difference %
76.3	76.9	0.6	na	na	na

Precipitation					
Sensor: Climatronics/100097-1-G0					
Calibration Device: 250 ml Graduated Cylinder					
Pre-adjustment			Post-adjustment		
Calibration Value In	DAS Station Value In	DAS Difference In	Calibration Value In	DAS Station Value In	DAS Difference In
0.30	0.29	-0.01	na	na	na

na Indicates that there were no adjustments to meteorological sensors.

4.0 PERFORMANCE AUDIT DATA

Because the system was started in the second quarter, there was no audit conducted during the quarter. The first audit will occur during the third quarter, and will be documented in the next quarterly report.

5.0 DATA COMPLETENESS

The meteorological percentages of data recovery achieved during the second quarter of 2012 are given in Tables 2 and 3. In these tables, the number of possible data values during each month of the quarter is given, together with the number of valid readings and the number of hours spent on quality assurance activities (such as calibrations, performance audits, and maintenance on the sensors). The quality assurance hours are added to the number of hours of valid data to compute the net percentage data recovery.

During the second quarter, the net percentage data recovery was 83.4 percent for all meteorological parameters at Black Butte.

Table 2. Monthly Data Completeness

April 2012					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Tintina Met Tower					
Wind Speed	5	4	80.0	1	100.0
Wind Direction	5	4	80.0	1	100.0
Standard Deviation	5	4	80.0	1	100.0
Temperature 9 Meters	5	4	80.0	1	100.0
Temperature 2 Meters	5	4	80.0	1	100.0
Temperature Delta T	5	4	80.0	1	100.0
Solar Radiation	5	4	80.0	1	100.0
Barometric Pressure	5	4	80.0	1	100.0
Relative Humidity	5	4	80.0	1	100.0
Precipitation	5	4	80.0	1	100.0
Total	50	40	80.0	10	100.0

Table 2. Monthly Data Completeness (Continued)

May 2012					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Tintina Met Tower					
Wind Speed	744	744	100.0	0	100.0
Wind Direction	744	744	100.0	0	100.0
Standard Deviation	744	744	100.0	0	100.0
Temperature 9 Meters	744	744	100.0	0	100.0
Temperature 2 Meters	744	744	100.0	0	100.0
Temperature Delta T	744	744	100.0	0	100.0
Solar Radiation	744	744	100.0	0	100.0
Barometric Pressure	744	744	100.0	0	100.0
Relative Humidity	744	744	100.0	0	100.0
Precipitation	744	744	100.0	0	100.0
Total	7,440	7,440	100.0	0	100.0

Table 2. Monthly Data Completeness (Continued)

June 2012					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Tintina Met Tower					
Wind Speed	720	476	66.1	0	66.1
Wind Direction	720	476	66.1	0	66.1
Standard Deviation	720	476	66.1	0	66.1
Temperature 9 Meters	720	476	66.1	0	66.1
Temperature 2 Meters	720	476	66.1	0	66.1
Temperature Delta T	720	476	66.1	0	66.1
Solar Radiation	720	476	66.1	0	66.1
Barometric Pressure	720	476	66.1	0	66.1
Relative Humidity	720	476	66.1	0	66.1
Precipitation	720	476	66.1	0	66.1
Total	7,200	4,758	66.1	0	66.1

Table 3. Quarterly Data Completeness

Second Quarter 2012					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Tintina Met Tower					
Wind Speed	1,469	1,224	83.3	1	83.4
Wind Direction	1,469	1,224	83.3	1	83.4
Standard Deviation	1,469	1,224	83.3	1	83.4
Temperature 9 Meters	1,469	1,224	83.3	1	83.4
Temperature 2 Meters	1,469	1,224	83.3	1	83.4
Temperature Delta T	1,469	1,224	83.3	1	83.4
Solar Radiation	1,469	1,224	83.3	1	83.4
Barometric Pressure	1,469	1,224	83.3	1	83.4
Relative Humidity	1,469	1,224	83.3	1	83.4
Precipitation	1,469	1,224	83.3	1	83.4
Total	14,690	12,237	83.3	10	83.4

Table 4. Periods of Missing Meteorological Data

Starting Date/Hour	Ending Date/Hour	Parameter	Total Hours	Percent of Quarter	Circumstance
June 15/15	June 25/18	all	244	16.4	Missing data: Power failure at site.

6.0 MONITORING DATA

The hourly data values collected at the monitoring sites are given in the data tables in Appendix A. Each of these tables presents one month's data for all parameters in the monitoring system. In addition, the average, maximum, and minimum values for each parameter for each day are listed (for wind direction, the prevailing wind direction for the day is given). For those hours with missing data, a code is given that explains the reason the data were missing. These codes are given in Table 5.

Monthly and quarterly wind rose distributions from the monitoring site are presented in Tables 6 through 9. These tables give the percentage frequency of occurrence of winds from 16 cardinal directions and from 22 wind speed ranges. These same data are presented graphically in Figures 2 through 5. In the wind rose figures, the length of each "petal" of the rose is proportional to the percentage of time the wind blew from that direction. On the bottom of each figure is a histogram showing the average wind speed from each of the cardinal wind directions.

Table 5. Missing Data Codes

Mnemonic Code	Description	Equivalent EPA Null Value Reason Code
Sc	Scheduled but not collected	9972
Ti	Sample time out of limits	9973
Fi	Filter damage	9976
Op	Voided by operator	9978
ND	Machine malfunction	9980
Wx	Bad weather	9981
Co	Collection error	9983
Lb	Lab error	9984
QA	Poor quality assurance results	9985
Pwr	Power failure	9988
Wi	Wildlife damage	9989
AZ	Automatic zero/span check	9991
ZS	Manual zero/span check	9991
Au	Performance audit	9992
Ma	Routine maintenance/repairs	9993
Ca	Multipoint calibration	9995
PZ	Precision/zero/span	9998

Table 6. Monthly Wind Rose Summary, Black Butte Mine Met Tower

April 2012																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.1 - 2.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
	2.1 - 3.0	0.0	0.0	0.0	25.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0
	3.1 - 4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4.1 - 5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
	Average Speed	---	---	---	1.9	2.4	---	---	---	---	---	---	---	---	---	---	---	2.1

Table 7. Monthly Wind Rose Summary, Black Butte Mine Met Tower

May 2012																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.4	0.4	0.8	0.5	0.8	0.9	0.8	0.5	0.7	0.3	0.0	0.4	0.3	0.0	0.1	1.1	8.1
	1.1 - 2.0	0.8	0.7	1.1	3.0	3.1	3.1	2.3	1.5	1.1	0.1	0.5	0.8	0.7	0.5	1.5	0.5	21.2
	2.1 - 3.0	0.1	0.3	0.4	2.3	3.9	1.6	0.4	0.7	0.8	0.4	0.4	1.1	2.0	2.0	3.0	0.5	19.9
	3.1 - 4.0	0.1	0.1	0.1	1.3	1.5	0.0	0.3	0.8	0.7	0.4	0.4	2.4	4.4	2.4	0.9	0.1	16.1
	4.1 - 5.0	0.1	0.0	0.0	1.2	0.4	0.4	0.3	0.8	0.3	0.0	0.4	2.2	3.1	1.6	0.9	0.1	11.8
	5.1 - 6.0	0.1	0.0	0.0	0.3	0.7	0.0	0.5	0.4	0.0	0.4	0.0	1.3	3.8	1.6	0.9	0.1	10.2
	6.1 - 7.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.3	0.4	0.5	2.2	1.7	0.5	0.0	6.5
	7.1 - 8.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	2.3	0.5	0.0	0.0	3.5
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.1	0.0	0.0	1.3
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.9
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	2.3	1.5	2.4	8.6	10.8	6.0	4.6	4.7	3.5	2.0	2.3	9.8	20.4	10.6	7.9	2.6	100.0
	Average Speed	3.2	1.8	1.5	2.6	2.7	1.9	2.2	2.7	2.2	4.0	3.8	4.4	5.1	4.4	3.3	1.9	3.5

Table 8. Monthly Wind Rose Summary, Black Butte Mine Met Tower

June 2012																	
	Direction>>>	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	1.5	1.5	0.4	1.1	0.8	1.1	0.6	0.4	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.4	8.6
	1.1 - 2.0	1.5	0.8	2.7	3.2	3.4	2.5	4.0	1.3	0.8	0.0	0.2	0.2	0.8	0.8	1.3	0.8	24.4
	2.1 - 3.0	0.0	0.0	0.8	2.5	2.7	1.1	0.6	0.4	0.4	0.4	0.8	0.6	1.7	1.1	2.1	0.4	15.8
	3.1 - 4.0	0.0	0.0	0.2	0.4	1.5	0.0	0.2	0.4	0.0	0.4	0.8	1.5	3.6	1.5	0.6	0.4	11.6
	4.1 - 5.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.4	0.4	0.6	0.8	2.9	4.0	2.3	0.6	0.2	13.0
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.1	0.8	0.6	2.5	2.5	1.1	0.0	0.0	9.2
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.6	1.9	2.3	0.2	0.4	0.0	6.3
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.0	0.4	2.3	1.1	1.3	0.2	0.0	5.9
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.2	0.0	0.0	1.5
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	1.9
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.8
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.4
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Calm																	0.0
	Total	2.9	2.3	4.2	7.1	8.8	5.5	7.1	3.8	3.4	3.6	4.4	12.8	17.9	8.6	5.3	2.3	100.0
	Average Speed	1.1	1.1	1.8	1.9	2.2	2.8	3.3	3.0	4.3	5.5	4.5	5.6	5.1	4.5	3.2	2.2	3.7

Table 9. Quarterly Wind Rose Summary, Black Butte Mine Met Tower

Second Quarter 2012																	
Direction>>>		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.8	0.8	0.7	0.7	0.8	1.0	0.7	0.5	0.5	0.2	0.0	0.2	0.2	0.1	0.1	0.8	8.3
	1.1 - 2.0	1.1	0.7	1.7	3.1	3.2	2.9	2.9	1.4	1.0	0.1	0.4	0.6	0.7	0.7	1.4	0.7	22.5
	2.1 - 3.0	0.1	0.2	0.6	2.5	3.6	1.4	0.5	0.6	0.7	0.4	0.6	0.9	1.9	1.6	2.6	0.5	18.5
	3.1 - 4.0	0.1	0.1	0.2	1.0	1.5	0.0	0.2	0.7	0.4	0.4	0.6	2.0	4.1	2.0	0.8	0.2	14.3
	4.1 - 5.0	0.1	0.0	0.0	0.7	0.4	0.2	0.2	0.7	0.3	0.2	0.6	2.5	3.4	1.9	0.8	0.2	12.3
	5.1 - 6.0	0.1	0.0	0.0	0.2	0.4	0.0	0.3	0.5	0.4	0.6	0.2	1.8	3.3	1.4	0.6	0.1	9.8
	6.1 - 7.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.4	0.5	1.1	2.2	1.1	0.5	0.0	6.4
	7.1 - 8.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.2	1.1	1.8	0.8	0.1	0.0	4.4
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.2	0.0	0.0	1.4
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.9	0.0	0.0	0.0	1.3
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.3
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calm																		0.0
Total		2.5	1.8	3.1	8.2	10.1	5.8	5.6	4.3	3.4	2.6	3.1	10.9	19.4	9.8	6.9	2.5	100.0
Average Speed		2.3	1.4	1.6	2.3	2.5	2.2	2.8	2.8	3.0	4.8	4.2	4.9	5.1	4.5	3.2	2.0	3.6

Figure 2. Monthly Wind Rose, Black Butte Mine Met Tower

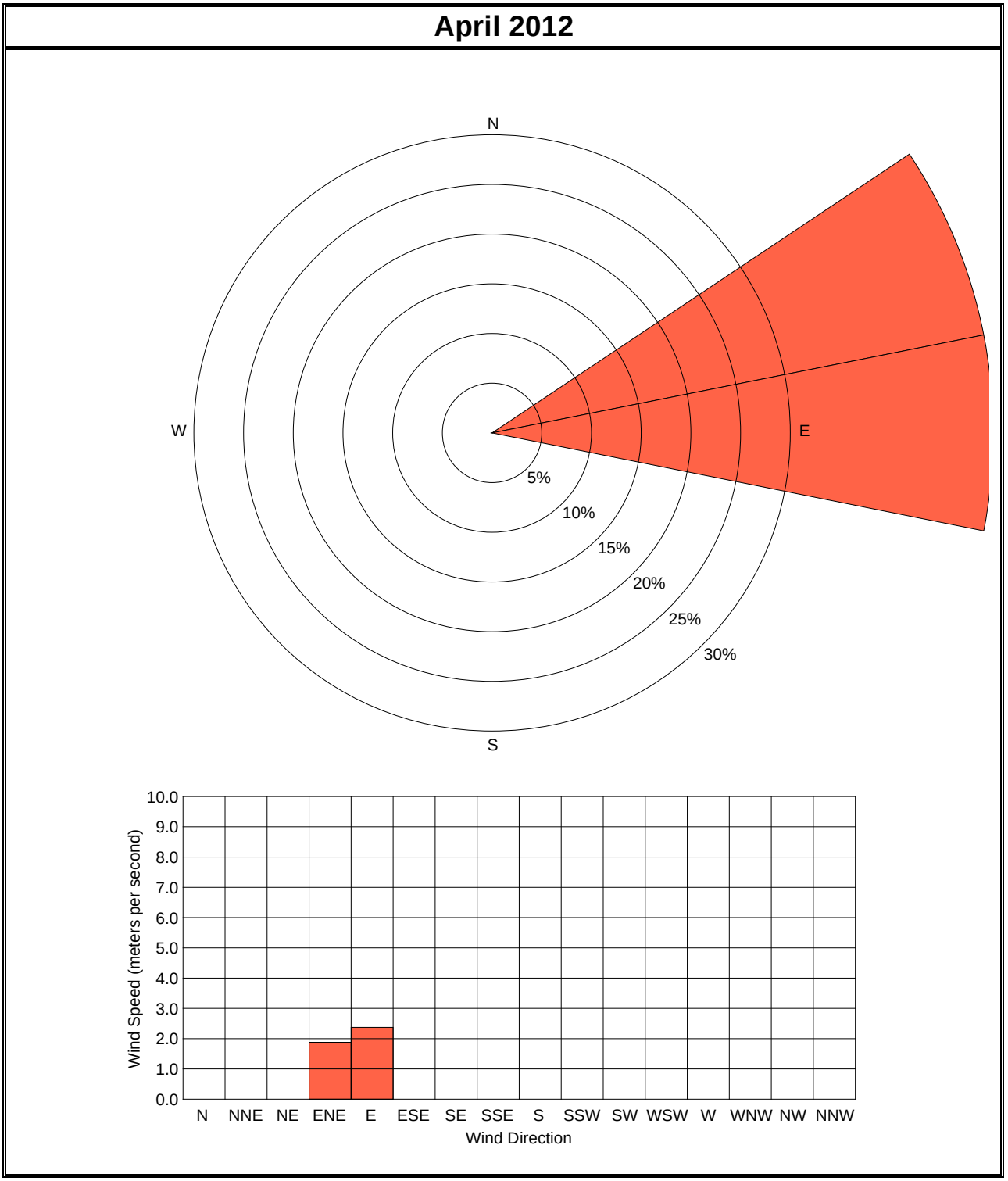


Figure 3. Monthly Wind Rose, Black Butte Mine Met Tower

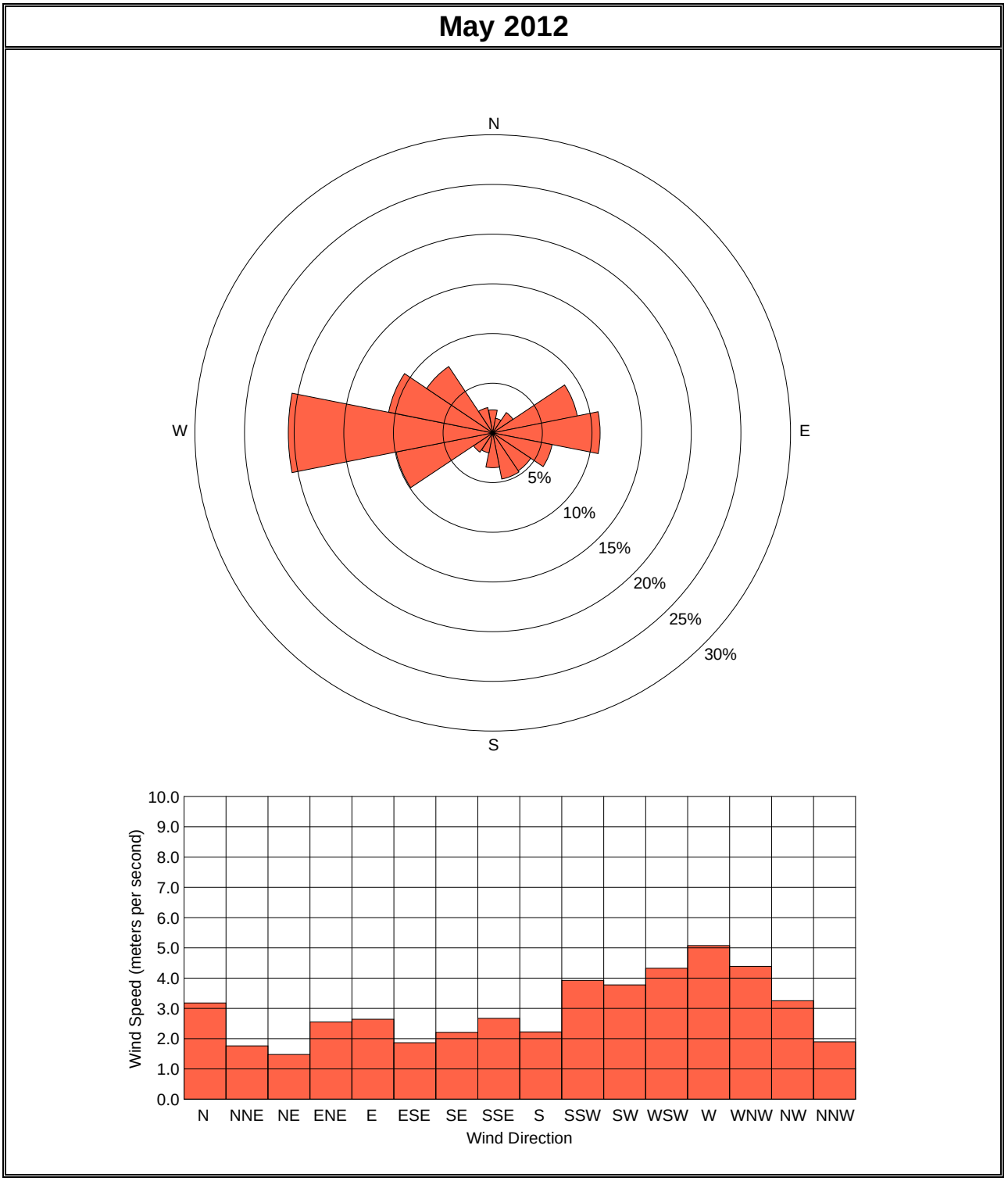


Figure 4. Monthly Wind Rose, Black Butte Mine Met Tower

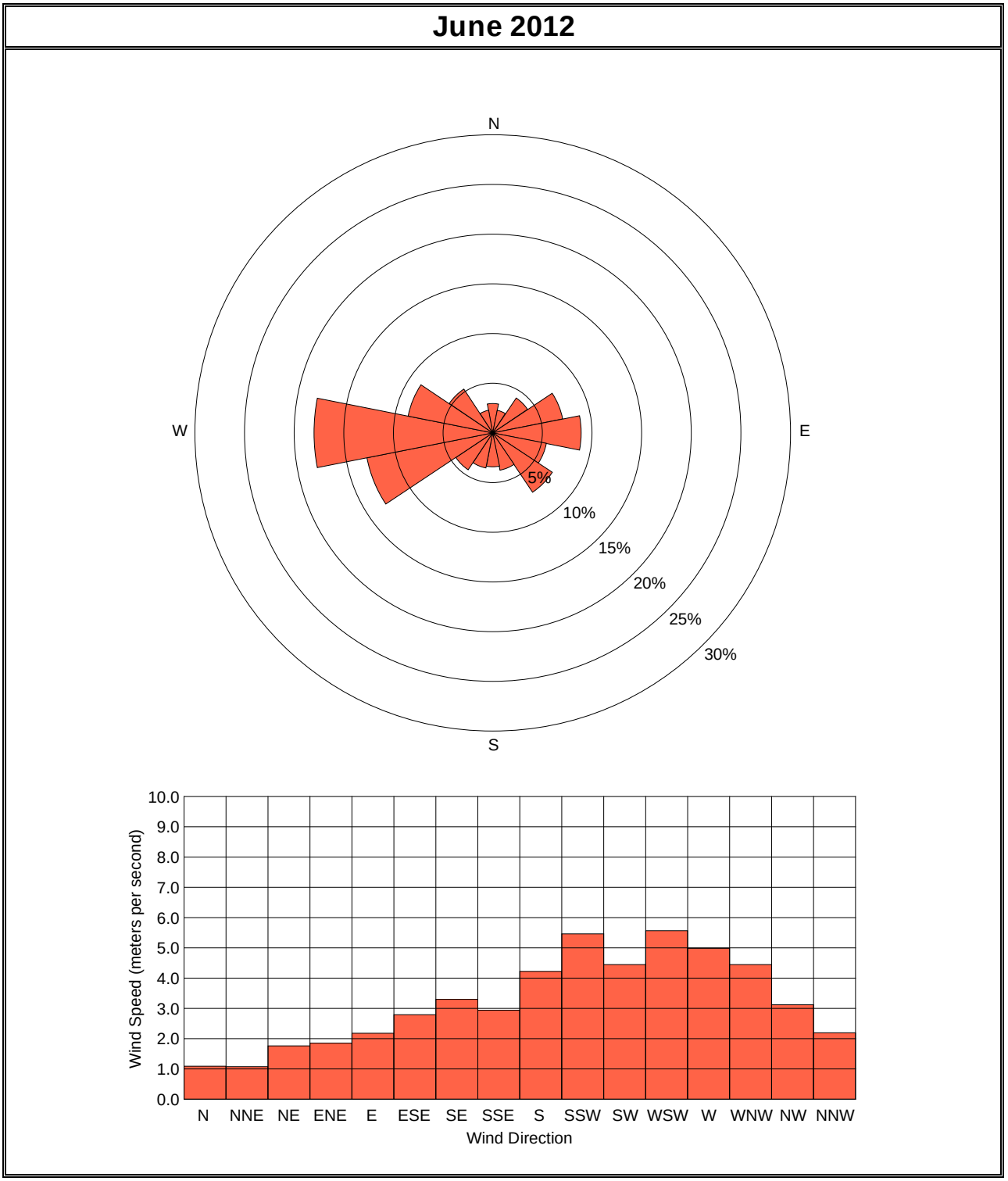


Figure 5. Quarterly Wind Rose, Black Butte Mine Met Tower