

**SANDFIRE RESOURCES, INC.
BLACK BUTTE COPPER
PROJECT AMBIENT AIR
MONITORING PROGRAM
Quarterly Data Report
Third Quarter 2020**

Prepared for:

Sandfire Resources, Inc.
PO Box 431
White Sulphur Springs, MT 59645

Prepared by:

Bison Engineering, Inc.
2751 Enterprise Ave., Ste. 2
Billings, MT 59102
(406) 896-1716
<http://www.bison-eng.com>

November 11, 2020

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 Copper Project air monitoring site. Every effort was made to obtain accurate and representative data and to comply with the procedures set forth in the project-specific *Quality Assurance Project Plan*, the *State of Montana Ambient Air Monitoring Program Quality Assurance Project Plan (April 2013)*, and the Environmental Protection Agency's *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume I, A Field Guide to Environmental Quality Assurance (April 1994)*, *Volume II, Ambient Air Quality Program (May 2013)*, and *Volume IV, Meteorological Measurements (March 2008)*.

Preparer: Don Milmine.

Signature: 

Title: Project Engineer

Date: November 10, 2020

Reviewer: Steve Heck

Signature: 

Title: Meteorologist

Date: November 11, 2020

TABLE OF CONTENTS

CERTIFICATION OF DATA INTEGRITY	ii
1.0 INTRODUCTION	1
2.0 MONITORING SYSTEM OPERATIONS	3
3.0 PERFORMANCE AUDIT DATA	4
4.0 CALIBRATION DATA	5
5.0 DATA COMPLETENESS	6
6.0 MONITORING DATA	10

LIST OF TABLES

Table 1. Monthly Data Completeness	6
Table 2. Quarterly Data Completeness	9
Table 3. Missing Data Codes	11
Table 4. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower	12
Table 5. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower	14
Table 6. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower	15
Table 7. Quarterly Wind Rose Summary, Black Butte Copper Project Met Tower	16

LIST OF FIGURES

Figure 1. Monitoring Site Location	2
Figure 2. Monthly Wind Rose, Black Butte Copper Project Met Tower	16
Figure 3. Monthly Wind Rose, Black Butte Copper Project Met Tower	17
Figure 4. Monthly Wind Rose, Black Butte Copper Project Met Tower	18
Figure 5. Quarterly Wind Rose, Black Butte Copper Project Met Tower	19

APPENDICES

Appendix A: Meteorological Data
Appendix B: Performance Audit Reports
Appendix C: Newlan Creek RAWS Station Precipitation Summaries

1.0 INTRODUCTION

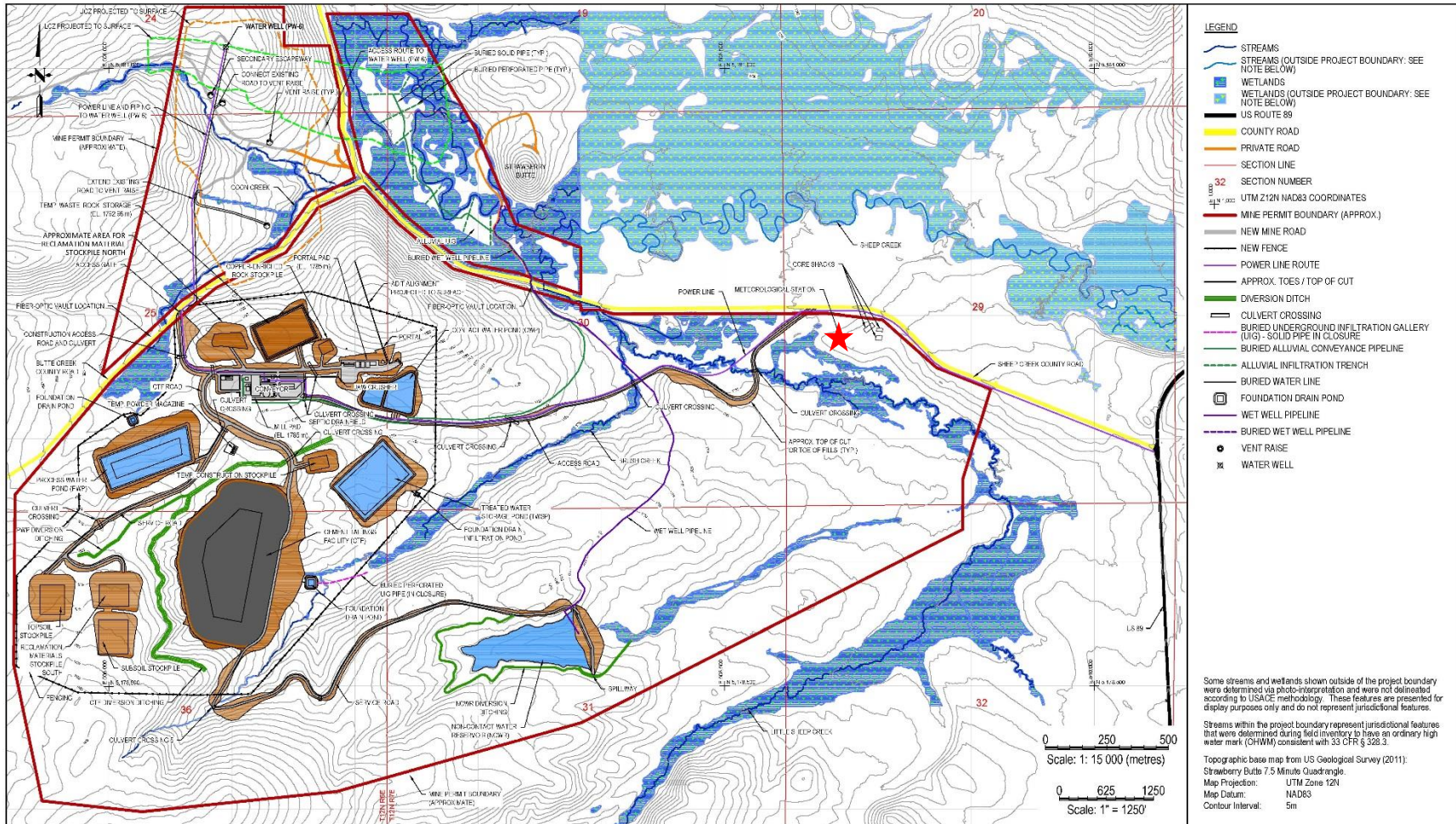
Sandfire Resources, Inc. established an ambient air monitoring site to measure wind speed, wind direction, standard deviation of wind direction, temperature at 9 meters and 2 meters, delta temperature, solar radiation, barometric pressure, and precipitation. The station was established to accurately characterize the local meteorology and collect baseline data in support of an operating permit application and various 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 current location of the monitoring site, depicted by a red star. It is located to the west-southwest of the core shed buildings. On February 6, 2018, the tower was shut down and moved to a new location approximately 300 feet southwest of the original location, where monitoring resumed on March 7, 2018. Relocation activities were documented in the monitoring report for the first quarter of 2018.

This report presents the data collected during the third quarter (July through September) of 2020. 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. Appendix A presents hourly meteorological data collected.

On June 23, 2015, an evaporation pan and manual precipitation gauge were installed adjacent to the existing meteorological system. The evaporation data will be used for hydrological / water balance studies. The manual rain gauge was installed to provide a backup data source for the existing automatic rain gauge, which has experienced occasional mechanical problems. Also, the automatic rain gauge is sometimes unreliable for measuring frozen precipitation. Neither the evaporation pan nor the rain gauge was operated during the third quarter of 2020.

Figure 1. Monitoring Site Location



Prepared by Tetra Tech Inc. (Revised October 2018 to include alluvial UG as included in the December 2018 Integrated Discharge Permit Application Narrative Report by Hydrometrics that was revised in February 2018, Completeness Determination by MT DEQ on May 25, 2018.)



FIGURE 1.3
Facilities Site Plan
Black Butte Copper Project
Mine Operating Permit Application
Meagher County, Montana

2.0 MONITORING SYSTEM OPERATIONS

Monitoring activities continued in the normal manner during the third quarter of 2020. Data were downloaded and reviewed by Bison at least once a week and examined for suspect behavior. All instruments except the automatic rain gauge were operational throughout the quarter. Other than the rain gauge problem (described below), data losses were limited to approximately one day of data in late July when the AC power breaker for the meteorological tower tripped, resulting in draining, and ultimately failure, of the backup 12-volt battery.

Review of hourly data records indicated that the rain gauge signal cable began to fail intermittently on May 29; subsequent investigation determined that the cable had been chewed by rodents. This resulted in the loss of precipitation data from May 29 through August 4. In lieu of those data, daily precipitation data from the Newlan Creek RAWS site for the months of July and August are provided as Appendix C to this report. Hourly data can also be provided if desired.¹ The signal cable was repaired by onsite personnel on August 4, 2020. It was replaced with a new cable during the third quarter audit on September 15, 2020. The rain gauge heater and AC power cord also were replaced at that time. The rain gauge has worked properly since those repairs were made.

Steve Heck of Bison conducted performance audits of the meteorological system on September 15, 2020. No calibration adjustments were made to any of the instrumentation.

¹ The Newlan Creek RAWS site is located approximately 2.9 miles southeast of the Black Butte meteorological tower, at a similar elevation (within 100 feet). The precipitation data from that site should be representative of the Black Butte site during most conditions.

3.0 PERFORMANCE AUDIT DATA

Steve Heck of Bison conducted performance audits of the meteorological system on September 15, 2020. All audit results were satisfactory and no calibration adjustments were necessary.

The Bison report of the audits is presented in Appendix B.

4.0 CALIBRATION DATA

Steve Heck of Bison conducted performance audits of the meteorological system on September 15, 2020, as discussed in Section 3.0. All of the as-found audit results were satisfactory, and no calibration adjustments were needed.

5.0 DATA COMPLETENESS

The meteorological percentages of data recovery achieved during the third quarter of 2020 are given in Tables 1 and 2. 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 third quarter the net percentage data recovery for precipitation was 62.5 percent due to the signal cable problem described in Section 2.0. Data recovery for other parameters was 99.3 percent. Sixteen hours of data were lost on July 20-21 due to an AC power failure. Overall net data recovery for the quarter was 95.6 percent.

Table 1. Monthly Data Completeness

July 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	744	728	97.8	0	97.8
Wind Direction	744	728	97.8	0	97.8
Standard Deviation	744	728	97.8	0	97.8
9-Meter Temperature	744	728	97.8	0	97.8
2-Meter Temperature	744	728	97.8	0	97.8
9-2 M Delta Temperature	744	728	97.8	0	97.8
Solar Radiation	744	728	97.8	0	97.8
Barometric Pressure	744	728	97.8	0	97.8
Relative Humidity	744	728	97.8	0	97.8
Precipitation	744	0	0.0	0	0.0
Total	7,440	6,552	88.1	0	88.1

Table 1. Monthly Data Completeness (Continued)

August 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project 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
9-Meter Temperature	744	744	100.0	0	100.0
2-Meter Temperature	744	744	100.0	0	100.0
9-2 M Delta Temperature	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	661	88.8	0	88.8
Total	7,440	7,357	98.9	0	98.9

Table 1. Monthly Data Completeness (Continued)

September 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	720	716	99.4	4	100.0
Wind Direction	720	716	99.4	4	100.0
Standard Deviation	720	716	99.4	4	100.0
9-Meter Temperature	720	716	99.4	4	100.0
2-Meter Temperature	720	716	99.4	4	100.0
9-2 M Delta Temperature	720	716	99.4	4	100.0
Solar Radiation	720	716	99.4	4	100.0
Barometric Pressure	720	720	100.0	0	100.0
Relative Humidity	720	720	100.0	0	100.0
Precipitation	720	718	99.7	2	100.0
Total	7,200	7,170	99.6	30	100.0

Table 2. Quarterly Data Completeness

Third Quarter 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	2,208	2,188	99.1	4	99.3
Wind Direction	2,208	2,188	99.1	4	99.3
Standard Deviation	2,208	2,188	99.1	4	99.3
9-Meter Temperature	2,208	2,188	99.1	4	99.3
2-Meter Temperature	2,208	2,188	99.1	4	99.3
9-2 M Delta Temperature	2,208	2,188	99.1	4	99.3
Solar Radiation	2,208	2,188	99.1	4	99.3
Barometric Pressure	2,208	2,192	99.3	0	99.3
Relative Humidity	2,208	2,192	99.3	0	99.3
Precipitation	2,208	1,379	62.5	2	62.5
Total	22,080	21,079	95.5	30	95.6

6.0 MONITORING DATA

The hourly data values collected at the monitoring site are given in the data tables in Appendix A. Each of these tables presents one month's data for one parameter 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 3.

Monthly and quarterly wind rose distributions from the monitoring site are presented in Tables 4 through 7. 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 3. 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
Mi	Miscellaneous void	9979
ND	Machine malfunction	9980
Wx	Bad weather	9981
Co	Collection error	9983
Lb	Lab error	9984
QA	Poor quality assurance results	9985
ZS	Manual zero/span check	9986
Wa	Monitoring waived	9987
Pw	Power failure	9988
Wi	Wildlife damage	9989
AZ	Automatic zero/span check	9991
Au	Performance audit	9992
Ma	Routine maintenance/repairs	9993
Ca	Multipoint calibration	9995
PZ	Precision/zero/span	9998

Table 4. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower

July 2020																		
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	0.3	1.5	0.5	0.7	1.8	1.2	2.2	2.1	0.7	1.0	0.1	0.4	0.3	0.0	1.0	1.2	15.0
	1.1 - 2.0	1.0	1.2	1.8	3.2	4.1	6.5	5.5	1.8	0.8	0.4	0.3	0.8	0.7	0.5	0.8	1.4	30.8
	2.1 - 3.0	0.1	0.1	0.5	1.1	2.9	1.5	1.4	1.5	0.5	0.0	0.4	0.5	1.0	3.0	1.4	0.7	16.8
	3.1 - 4.0	0.0	0.0	0.1	1.2	1.0	0.1	0.7	1.1	0.4	0.4	0.4	1.5	1.9	3.8	1.1	0.3	14.1
	4.1 - 5.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.1	0.1	0.4	1.9	3.4	2.6	0.5	0.1	9.9
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.1	0.1	0.1	0.7	0.8	2.6	1.2	0.1	0.0	6.5
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	1.4	0.8	0.3	0.1	3.2
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.1	0.4	0.4	0.3	0.0	1.8
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.4	0.1	0.3	0.1	0.0	0.0	1.5
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
	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	0.1	0.3	0.0	0.0	0.0	0.4
	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		1.4	2.9	3.0	6.5	10.3	9.5	10.0	7.0	2.9	2.3	3.3	6.7	12.2	12.6	5.5	3.8	100.0
Average Speed		1.5	1.2	1.7	2.0	2.1	1.7	1.8	2.3	2.4	2.7	5.1	4.0	4.7	4.0	3.0	1.9	2.8

Table 5. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower

August 2020																		
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	0.7	0.7	2.0	2.7	2.0	0.9	1.1	0.4	0.1	0.3	0.1	0.7	0.1	1.5	14.1
	1.1 - 2.0	0.9	1.1	2.4	3.2	5.6	5.8	5.8	1.7	0.3	0.4	0.3	0.1	0.9	0.3	1.3	0.7	30.9
	2.1 - 3.0	0.1	0.3	0.3	1.6	3.5	2.6	1.1	0.9	0.4	0.3	0.1	0.7	1.5	1.7	1.6	0.5	17.2
	3.1 - 4.0	0.0	0.0	0.1	0.5	0.5	0.0	0.5	1.3	0.1	0.3	0.3	0.7	3.8	2.8	0.9	0.4	12.4
	4.1 - 5.0	0.0	0.0	0.0	0.3	0.3	0.3	0.4	0.8	0.4	0.1	0.4	1.2	3.1	2.6	1.1	0.3	11.2
	5.1 - 6.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.3	1.6	0.7	2.2	0.9	0.1	6.6
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.0	0.0	0.1	1.3	0.7	0.7	0.0	3.8
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.3	0.9	0.1	0.4	0.0	2.4
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.7	0.1	0.0	0.1	1.1
	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	0.1	0.1	0.1	0.0	0.4
	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		1.6	1.7	3.5	6.5	12.1	11.3	10.8	6.7	2.6	1.5	1.5	5.0	13.2	11.3	7.3	3.6	100.0
Average Speed		1.7	1.5	1.5	2.1	1.8	1.6	2.1	3.0	2.5	2.0	3.5	4.4	4.5	4.1	3.9	2.2	2.9

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

September 2020																		
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	2.1	0.6	1.0	1.5	2.1	3.4	2.5	0.8	0.1	0.3	0.4	0.4	0.3	0.4	0.1	0.7	16.8
	1.1 - 2.0	0.6	0.8	2.9	3.1	4.2	7.1	5.9	1.7	0.3	0.1	0.1	0.3	0.7	0.6	0.4	1.1	29.9
	2.1 - 3.0	0.1	0.4	0.3	1.5	2.1	0.8	1.0	0.4	0.7	0.3	0.3	0.7	2.0	1.1	1.1	0.3	13.1
	3.1 - 4.0	0.3	0.0	0.0	0.3	0.7	0.1	0.0	0.8	0.6	0.1	1.0	1.1	1.5	1.0	0.7	0.3	8.5
	4.1 - 5.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.3	0.4	1.4	2.9	0.7	0.4	0.7	8.4
	5.1 - 6.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.6	0.6	1.5	3.4	1.5	0.3	0.0	8.4
	6.1 - 7.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.6	0.4	1.7	2.2	0.6	0.1	6.1
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	1.1	1.0	0.3	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	0.0	1.5	0.3	0.1	0.0	2.0
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.1	0.6	0.1	0.0	2.2
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1	0.3	0.1	0.1	0.0	0.0	0.7
	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	0.1	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		3.9	1.8	4.2	6.4	9.1	11.5	9.4	4.6	2.4	2.2	4.1	7.0	16.6	9.5	4.2	3.2	100.0
Average Speed		2.1	1.4	1.4	1.7	1.7	1.4	1.3	2.5	3.0	4.5	4.8	4.9	5.5	5.3	4.2	2.5	3.2

Table 7. Quarterly Wind Rose Summary, Black Butte Copper Project Met Tower

Third Quarter 2020																		
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	0.9	0.8	0.7	1.0	2.0	2.4	2.2	1.3	0.6	0.5	0.2	0.4	0.2	0.4	0.4	1.1	15.3
	1.1 - 2.0	0.8	1.1	2.4	3.2	4.7	6.4	5.7	1.7	0.5	0.3	0.2	0.4	0.8	0.5	0.9	1.1	30.5
	2.1 - 3.0	0.1	0.3	0.4	1.4	2.8	1.6	1.1	1.0	0.5	0.2	0.3	0.6	1.5	2.0	1.4	0.5	15.7
	3.1 - 4.0	0.1	0.0	0.1	0.7	0.7	0.1	0.4	1.1	0.4	0.3	0.5	1.1	2.4	2.6	0.9	0.3	11.7
	4.1 - 5.0	0.2	0.0	0.0	0.2	0.1	0.1	0.1	0.5	0.4	0.2	0.4	1.5	3.2	2.0	0.7	0.4	9.8
	5.1 - 6.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.1	0.2	0.5	1.3	2.2	1.6	0.5	0.0	7.1
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.2	0.3	1.5	1.2	0.5	0.1	4.3
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.2	0.3	0.8	0.5	0.3	0.0	2.6
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.8	0.2	0.0	0.0	1.5
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.2	0.1	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	0.1	0.0	0.0	0.0	0.2
	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	0.0	0.0	0.0	0.0	0.2
	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		2.3	2.1	3.6	6.4	10.5	10.7	10.1	6.1	2.6	2.0	2.9	6.2	14.0	11.2	5.7	3.6	100.0
Average Speed		1.9	1.3	1.5	1.9	1.9	1.6	1.8	2.6	2.7	3.2	4.7	4.4	5.0	4.4	3.7	2.2	3.0

Figure 2. Monthly Wind Rose, Black Butte Copper Project Met Tower

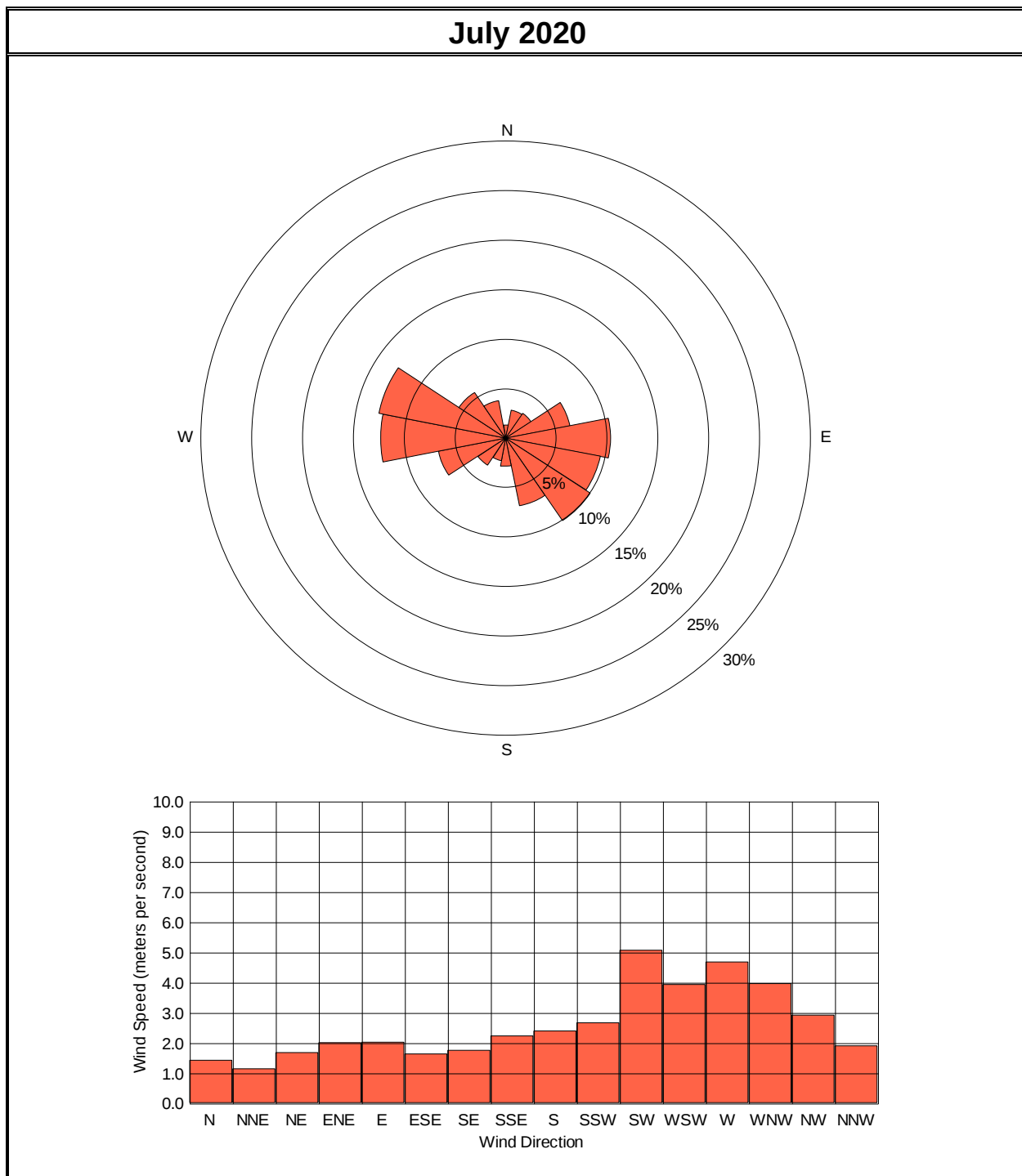


Figure 3. Monthly Wind Rose, Black Butte Copper Project Met Tower

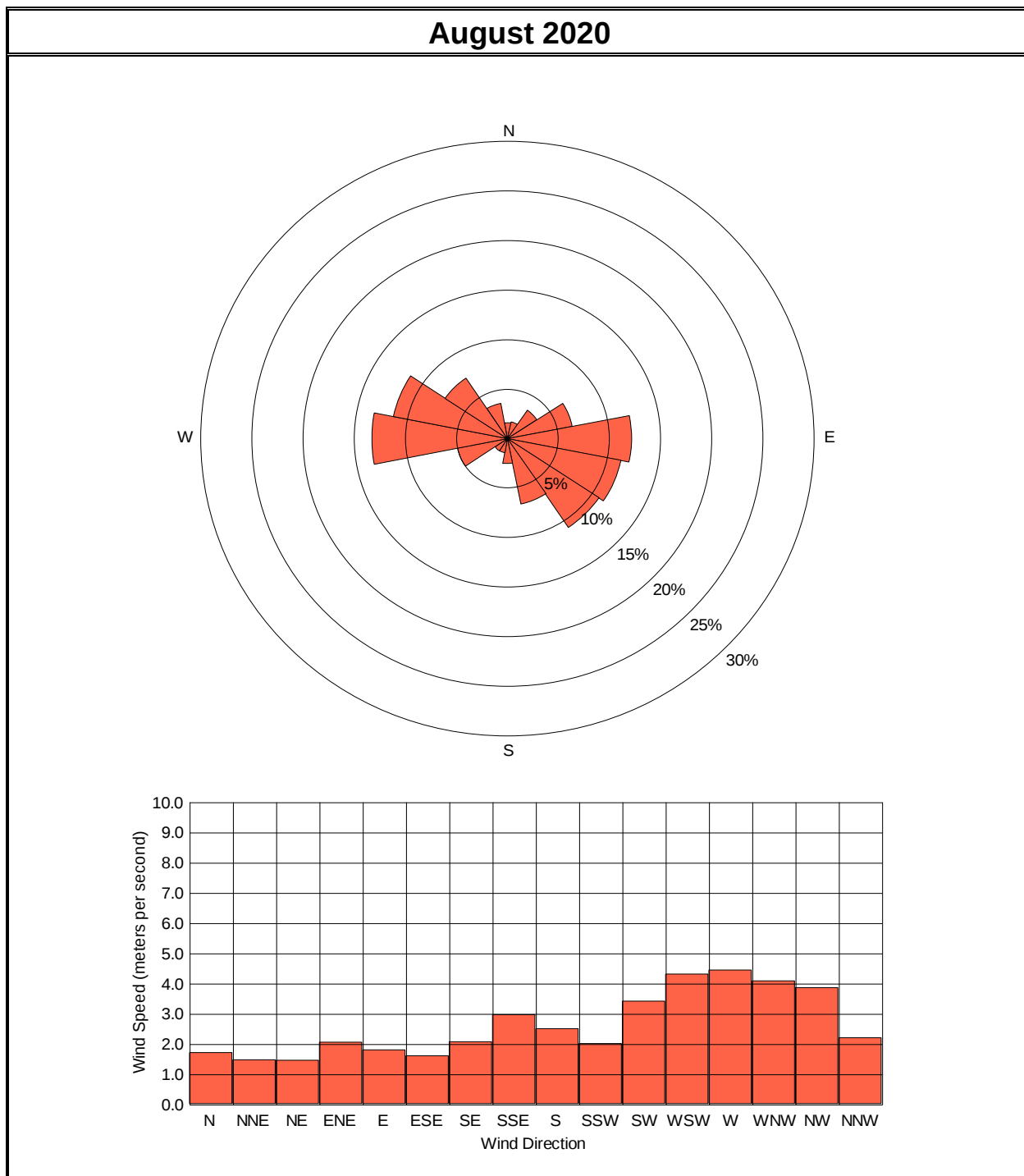


Figure 4. Monthly Wind Rose, Black Butte Copper Project Met Tower

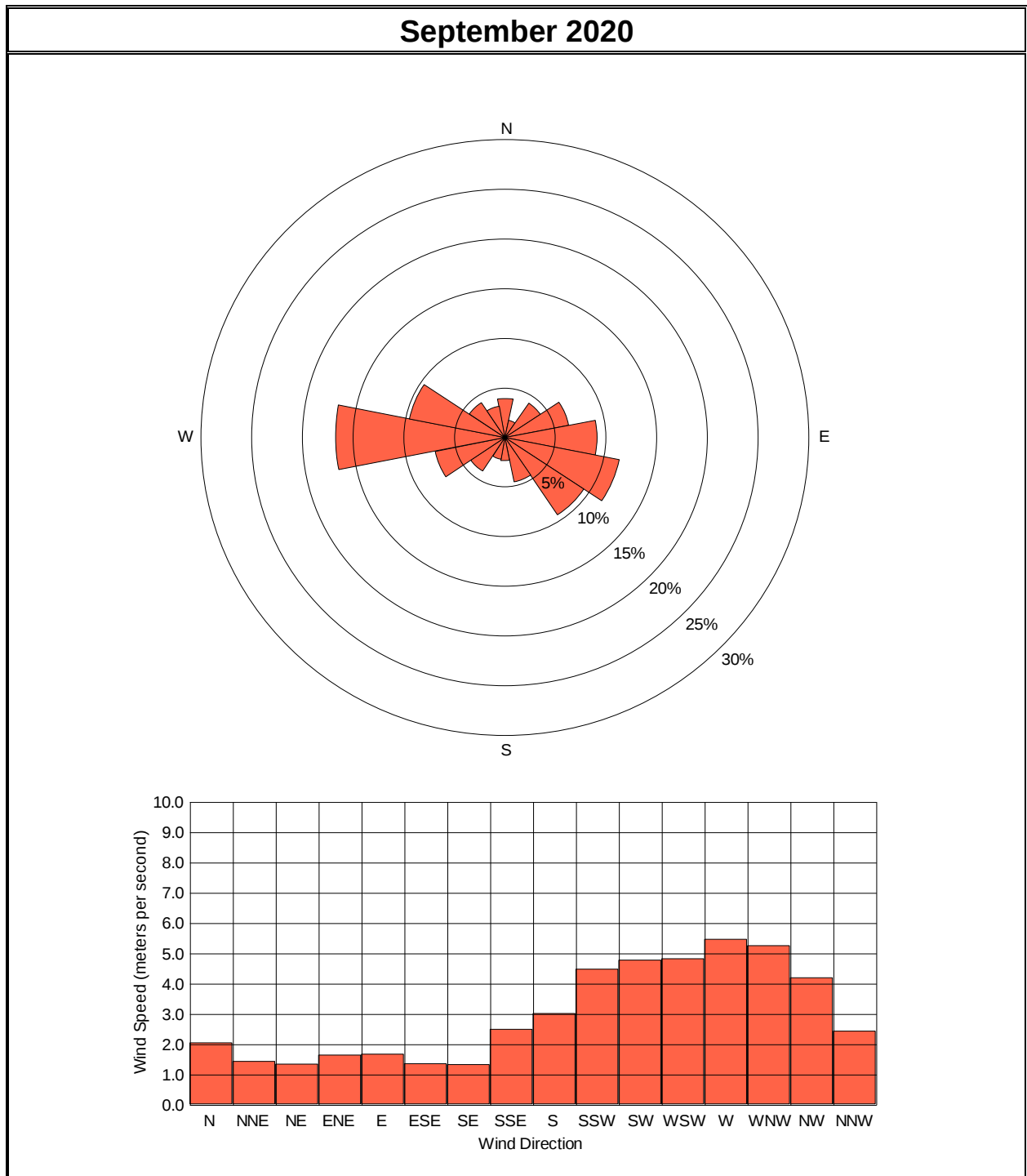
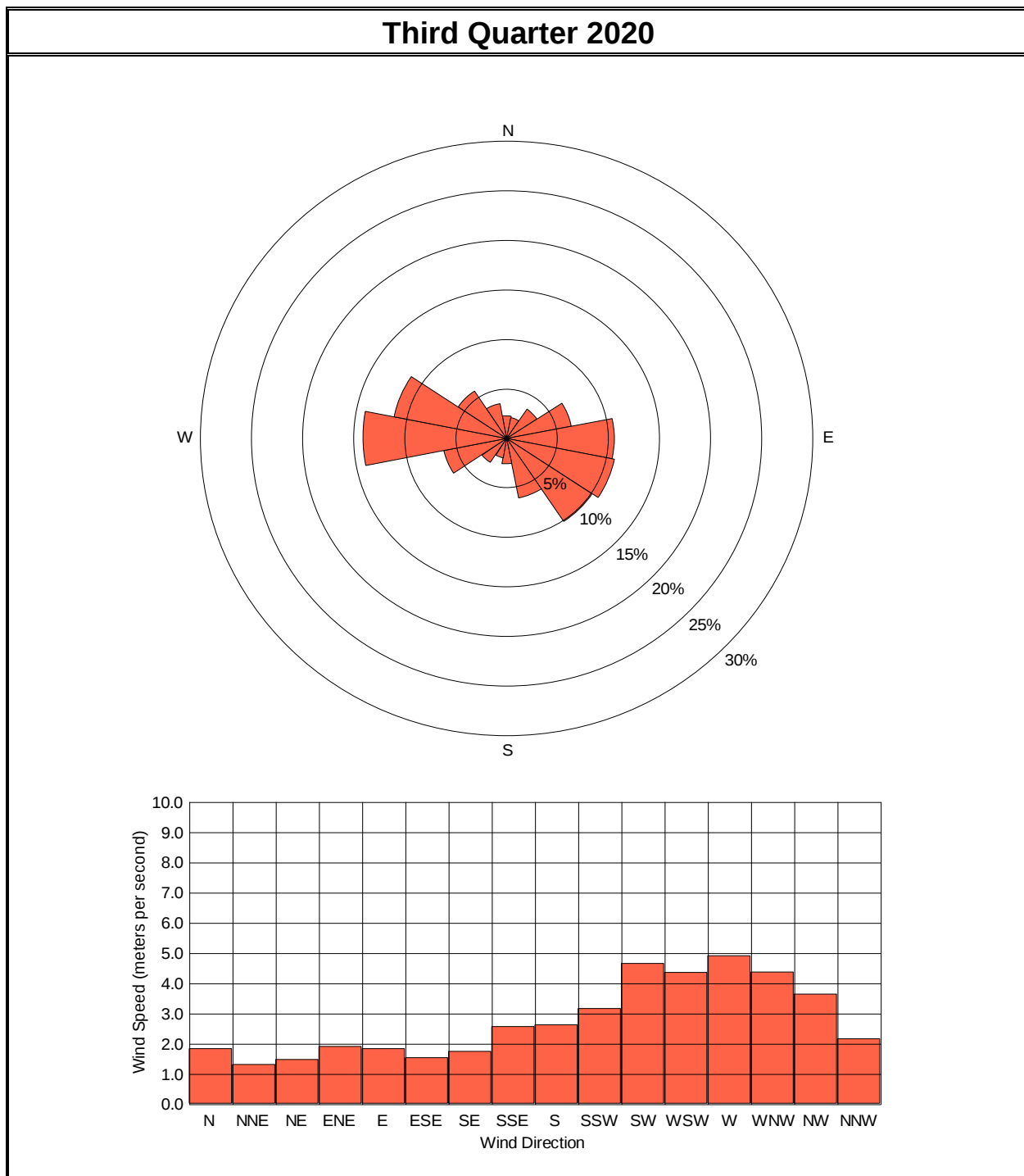


Figure 5. Quarterly Wind Rose, Black Butte Copper Project Met Tower



**APPENDIX A: HOURLY AIR QUALITY AND
METEOROLOGICAL DATA, THIRD QUARTER 2020**

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
July 2020

A-1

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.9	0.7	0.8	0.9	0.6	1.3	0.9	5.2	7.5	7.7	8.7	8.5	8.5	6.6	2.0	2.6	2.1	3.1	1.9	2.1	2.9	1.4	2.2	2.2	3.4	8.7	0.6
2	1.8	2.3	2.5	1.9	3.0	2.6	1.5	1.4	5.8	6.5	8.8	9.8	9.0	7.8	6.0	4.6	4.9	4.1	3.4	1.0	2.3	3.7	2.4	1.6	4.1	9.8	1.0
3	1.3	1.0	0.8	1.2	1.0	0.6	0.7	1.0	3.9	4.0	4.4	4.0	4.3	2.5	1.9	3.4	7.2	3.2	2.6	2.8	2.1	2.2	4.6	2.6	2.6	7.2	0.6
4	3.3	1.7	1.8	1.8	1.7	1.6	1.4	0.8	1.3	1.5	1.7	3.2	4.4	5.3	5.0	7.5	6.5	3.1	1.7	1.5	1.8	1.4	3.6	3.1	2.8	7.5	0.8
5	2.6	1.4	1.8	2.4	1.6	1.3	1.1	0.9	1.6	3.8	3.6	3.4	4.0	3.2	3.4	3.3	3.4	3.9	3.8	1.8	1.4	1.7	1.2	1.5	2.4	4.0	0.9
6	3.5	4.0	1.4	2.0	1.3	1.3	1.2	1.2	3.8	2.5	2.2	2.6	1.9	3.1	3.2	3.4	3.2	2.1	0.7	1.6	2.2	2.4	3.3	2.0	2.3	4.0	0.7
7	1.0	1.1	2.2	1.5	1.8	1.6	9.0	8.7	8.3	6.1	4.6	6.7	7.5	5.1	3.8	6.2	7.3	8.4	7.2	4.0	3.3	4.4	4.2	3.9	4.9	9.0	1.0
8	2.4	2.1	2.2	4.6	2.2	1.9	5.3	7.9	10.1	10.6	8.3	10.5	7.9	7.8	6.9	7.0	7.0	6.2	5.6	4.4	2.0	1.9	3.1	2.0	5.4	10.6	1.9
9	1.7	1.2	1.5	1.3	1.8	1.0	0.5	0.7	1.9	3.4	3.1	3.3	2.4	4.8	4.4	3.7	3.9	2.7	1.9	1.3	1.4	2.5	1.0	0.7	2.2	4.8	0.5
10	1.2	0.9	0.7	0.8	0.7	2.6	4.5	7.7	2.5	2.7	5.0	5.0	8.6	7.0	5.8	5.7	6.6	6.2	5.3	3.5	1.9	1.5	1.9	2.2	3.8	8.6	0.7
11	1.2	1.6	1.5	1.7	1.3	1.6	0.8	0.7	1.2	5.3	5.0	3.5	3.9	4.0	4.5	4.6	3.5	2.6	2.0	1.4	2.9	2.6	1.3	1.5	2.5	5.3	0.7
12	0.9	1.0	1.3	1.5	2.4	1.4	1.5	0.9	3.0	5.0	5.5	6.4	5.9	5.8	6.1	6.4	5.9	5.1	5.2	4.5	3.5	3.1	3.3	4.5	3.8	6.4	0.9
13	2.2	1.9	1.4	1.6	1.0	1.9	1.7	4.0	5.6	6.3	7.2	6.0	4.2	5.6	5.1	6.5	5.9	5.9	4.8	3.8	1.9	1.7	1.5	1.3	3.7	7.2	1.0
14	1.1	1.0	0.9	1.1	0.8	1.2	0.8	0.7	3.2	3.9	4.6	4.5	5.1	5.3	4.7	5.1	4.9	5.3	4.6	3.2	1.9	3.5	1.8	1.9	3.0	5.3	0.7
15	1.1	1.4	1.2	1.1	0.9	0.9	0.8	1.0	4.6	5.9	5.1	5.7	5.0	5.5	5.3	5.1	4.6	4.0	2.7	1.5	1.1	2.7	1.9	2.0	3.0	5.9	0.8
16	1.3	1.5	1.2	1.5	1.0	1.2	0.8	0.6	1.0	2.5	4.2	4.2	4.9	4.0	4.9	4.9	4.3	3.9	2.9	1.6	1.3	3.5	2.6	1.7	2.6	4.9	0.6
17	1.4	1.2	1.1	1.1	0.9	1.0	0.7	0.8	1.2	3.6	3.6	3.2	2.6	3.5	6.1	3.0	4.0	2.1	2.5	1.9	1.7	2.4	1.7	1.9	2.2	6.1	0.7
18	1.8	1.9	1.1	1.1	0.7	0.9	1.0	0.6	2.8	3.6	5.2	3.7	4.2	4.5	5.0	4.5	4.1	4.1	3.5	2.2	2.5	2.5	2.7	1.7	2.7	5.2	0.6
19	0.8	0.7	0.6	0.7	1.0	1.2	0.5	0.7	1.0	3.9	3.6	3.7	3.4	4.1	3.8	4.1	3.0	2.7	1.3	0.8	1.4	2.2	1.8	1.7	2.0	4.1	0.5
20	1.4	0.9	1.0	1.1	1.4	1.1	1.1	0.8	1.3	1.9	3.1	4.3	4.9	4.7	5.0	3.2	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	2.3	5.0	0.8
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	3.3	2.6	1.9	3.4	3.9	4.5	4.2	5.0	5.3	4.1	2.5	1.0	2.1	3.1	2.6	1.9	3.2	5.3	1.0
22	1.8	1.4	1.0	1.3	1.3	0.9	0.7	0.8	1.1	2.6	4.1	2.8	2.4	2.0	3.3	3.0	3.4	2.9	4.7	6.5	2.1	2.6	1.3	1.2	2.3	6.5	0.7
23	1.5	1.3	1.0	1.0	1.6	1.1	1.1	1.0	1.9	2.7	2.9	2.1	1.9	1.8	2.7	5.7	4.4	1.7	1.9	2.0	2.2	2.1	2.8	2.4	2.1	5.7	1.0
24	2.0	1.8	2.4	0.9	1.0	1.3	1.4	0.9	0.9	2.1	4.4	4.1	4.3	5.7	6.4	5.8	5.4	3.7	4.3	5.2	2.7	1.9	2.3	1.7	3.0	6.4	0.9
25	1.1	1.3	1.3	1.3	1.5	1.5	1.2	1.1	1.6	4.3	3.2	3.0	2.1	4.5	6.8	5.8	5.1	3.2	2.1	1.3	2.1	1.7	1.7	1.7	2.5	6.8	1.1
26	1.0	0.8	0.5	0.8	0.9	0.6	0.5	0.6	1.8	1.5	1.6	2.8	2.9	2.7	2.5	3.1	3.0	3.2	3.6	2.4	0.9	1.5	1.9	1.0	1.8	3.6	0.5
27	0.9	1.2	1.2	1.2	0.4	1.0	0.9	0.7	1.1	1.7	2.7	2.8	2.0	2.6	2.6	2.4	1.9	1.8	1.2	3.5	3.1	2.4	1.9	1.4	1.8	3.5	0.4
28	1.2	1.2	1.3	1.9	1.8	1.6	1.2	1.4	1.7	1.8	2.7	2.3	2.8	1.7	2.7	2.4	2.5	2.8	1.4	1.3	2.0	2.4	1.5	2.0	1.9	2.8	1.2
29	1.5	1.2	1.2	0.8	0.9	0.8	0.6	0.5	0.7	2.9	4.1	3.9	4.6	4.7	4.3	3.8	4.5	6.4	2.8	2.2	1.3	2.4	2.4	1.8	2.5	6.4	0.5
30	1.5	1.5	1.4	1.1	0.6	1.0	0.9	0.7	1.0	2.1	2.7	3.3	3.6	4.5	5.8	5.5	3.5	2.5	4.0	2.1	3.7	3.6	3.4	2.1	2.6	5.8	0.6
31	1.3	0.8	1.5	0.9	1.2	0.8	0.7	0.7	1.0	3.4	5.1	3.8	2.8	3.0	3.1	3.1	3.9	4.4	5.6	5.2	3.1	1.7	1.7	2.3	2.5	5.6	0.7
Avg	1.6	1.4	1.3	1.4	1.3	1.3	1.5	1.8	2.8	3.8	4.3	4.4	4.4	4.4	4.4	4.5	4.5	3.8	3.3	2.6	2.2	2.4	2.3	2.0	2.8	6.1	0.8
Max	3.5	4.0	2.5	4.6	3.0	2.6	9.0	8.7	10.1	10.6	8.8	10.5	9.0	7.8	6.9	7.5	7.3	8.4	7.2	6.5	3.7	4.4	4.6	4.5	5.4	10.6	1.9
Min	0.8	0.7	0.5	0.7	0.4	0.6	0.5	0.5	0.7	1.5	1.6	2.1	1.9	1.7	1.9	2.4	1.9	1.7	0.7	0.8	0.9	1.4	1.0	0.7	1.8	2.8	0.4

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
August 2020

A-2

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	2.2	1.6	1.8	2.2	1.4	1.4	1.7	2.7	5.2	6.9	7.7	7.1	6.7	7.5	7.1	7.0	7.0	7.0	7.3	6.0	3.7	1.5	1.5	1.3	4.4	7.7	1.3
2	2.1	2.1	1.0	1.3	1.8	1.3	1.2	1.1	1.4	3.9	3.7	3.9	3.5	3.3	2.6	2.5	2.6	2.7	4.2	4.7	2.2	1.9	1.6	2.7	2.5	4.7	1.0
3	1.9	1.1	1.2	1.8	1.4	1.1	0.6	0.8	2.1	2.4	5.9	3.0	2.9	1.9	3.7	4.6	5.4	5.6	4.2	3.5	1.3	3.2	1.7	1.8	2.6	5.9	0.6
4	0.6	1.0	1.0	1.2	0.7	0.9	0.6	0.7	2.1	1.9	2.5	3.2	3.1	2.3	2.2	2.7	2.6	2.1	1.2	2.5	3.6	2.9	2.2	2.8	1.9	3.6	0.6
5	1.7	0.9	0.8	1.1	0.7	1.0	0.8	2.3	4.5	4.1	4.1	3.6	3.1	3.1	2.5	2.1	2.0	4.2	6.9	8.9	5.2	5.8	5.0	2.3	3.2	8.9	0.7
6	1.4	1.1	1.3	0.8	1.5	1.5	1.1	0.9	2.1	2.9	3.4	4.0	4.8	4.1	5.0	7.1	5.9	4.3	4.5	3.2	1.9	2.0	1.9	1.4	2.8	7.1	0.8
7	1.4	1.7	1.1	0.9	1.5	1.3	1.4	4.9	5.5	6.7	8.6	8.2	8.3	8.5	9.7	9.8	7.7	7.1	5.4	2.2	2.4	1.5	2.2	2.4	4.6	9.8	0.9
8	1.5	1.8	1.9	1.6	1.4	1.4	1.3	0.8	1.0	3.3	4.7	4.4	5.2	5.2	5.4	6.6	6.1	3.9	3.7	2.8	1.9	2.0	1.8	1.5	3.0	6.6	0.8
9	1.2	1.2	1.3	1.5	1.8	1.8	1.1	0.7	2.9	5.2	4.7	3.9	3.9	4.4	3.6	5.7	5.5	6.6	5.9	3.1	1.2	1.6	2.1	1.6	3.0	6.6	0.7
10	1.3	0.9	1.0	0.8	1.0	1.3	0.7	0.8	2.5	3.9	3.4	3.5	3.8	3.6	4.2	4.5	5.3	4.9	3.9	2.2	2.1	2.5	1.9	1.7	2.6	5.3	0.7
11	1.2	1.1	0.9	1.4	1.0	1.1	0.8	0.8	0.9	3.6	5.6	5.4	5.6	5.8	5.6	5.9	4.8	5.0	3.5	1.6	3.4	3.4	2.6	1.5	3.0	5.9	0.8
12	1.5	1.7	1.2	1.7	1.6	1.3	1.2	1.1	1.3	1.7	3.8	5.7	4.7	4.5	5.5	5.8	5.7	4.8	5.0	2.9	1.3	0.9	1.2	1.4	2.8	5.8	0.9
13	1.8	1.3	1.2	2.3	2.1	1.3	1.7	1.7	3.3	4.1	3.8	5.2	7.0	7.4	5.0	6.4	6.2	4.8	2.9	1.4	2.1	1.6	2.5	1.7	3.3	7.4	1.2
14	1.5	1.1	1.0	0.9	1.1	0.9	1.2	0.8	2.6	4.9	4.4	4.5	5.2	6.1	6.9	5.7	6.3	4.8	4.8	2.7	1.9	2.0	2.2	1.6	3.1	6.9	0.8
15	1.3	1.2	1.4	1.2	1.0	0.7	0.7	0.8	2.1	3.2	3.8	3.7	4.2	4.1	4.6	4.6	4.3	3.8	3.6	2.6	3.4	3.3	1.8	1.2	2.6	4.6	0.7
16	1.3	1.2	1.4	0.8	0.7	1.5	0.7	0.7	0.8	1.4	3.4	3.8	3.5	3.2	4.6	4.3	3.4	2.6	1.0	1.8	2.5	2.5	2.9	2.5	2.2	4.6	0.7
17	2.2	1.1	0.9	1.6	1.3	1.6	1.4	0.8	0.9	1.3	3.3	3.7	4.1	5.2	6.4	7.2	7.0	5.4	4.1	1.6	2.6	2.4	1.8	0.8	2.9	7.2	0.8
18	1.0	1.4	1.2	1.5	1.7	0.6	0.9	0.7	0.8	0.7	1.5	3.6	4.0	2.0	2.8	4.3	2.8	4.0	3.2	1.4	2.4	1.9	1.7	1.5	2.0	4.3	0.6
19	1.3	1.2	1.2	0.7	0.9	1.3	1.0	0.7	1.2	4.7	3.5	4.6	3.8	3.2	2.1	2.3	3.2	1.8	1.5	2.6	2.7	2.4	4.8	2.5	2.3	4.8	0.7
20	2.4	1.6	1.9	1.9	1.6	1.7	1.1	0.7	0.7	0.8	1.1	1.4	2.9	3.6	3.1	3.5	5.5	5.6	2.8	1.5	1.7	1.1	0.9	0.8	2.1	5.6	0.7
21	1.0	0.9	1.1	0.9	1.1	1.0	1.2	0.6	0.9	2.6	2.7	3.3	4.8	3.9	3.0	4.0	2.5	2.7	1.7	2.4	4.0	1.6	1.0	1.2	2.1	4.8	0.6
22	1.7	2.1	1.5	1.3	2.2	1.6	1.4	0.9	0.7	1.1	2.5	4.8	7.2	7.0	5.9	5.9	4.0	3.9	4.1	2.6	2.1	1.7	1.5	1.1	2.9	7.2	0.7
23	1.1	1.1	1.1	1.1	0.7	0.9	0.9	0.7	2.5	3.7	4.0	3.1	3.8	4.8	4.2	4.8	5.2	4.0	2.4	2.2	2.2	2.8	2.3	0.9	2.5	5.2	0.7
24	1.2	0.8	0.9	1.2	0.6	0.9	0.6	0.7	0.9	0.9	1.9	2.5	3.2	3.3	2.9	4.2	4.2	4.0	3.3	2.4	2.2	2.7	1.5	1.0	2.0	4.2	0.6
25	1.5	1.6	1.3	1.9	0.9	0.9	1.2	0.8	1.1	1.1	2.6	5.2	4.2	5.7	5.0	4.4	9.2	6.9	4.3	2.1	2.1	1.4	2.5	2.2	2.9	9.2	0.8
26	1.7	1.5	1.0	1.2	1.2	1.5	0.7	0.9	0.7	2.3	4.9	5.1	5.4	6.6	6.4	6.6	4.1	2.6	1.2	2.3	2.8	2.2	2.6	2.3	2.8	6.6	0.7
27	2.0	1.6	1.8	1.7	1.4	1.1	1.0	0.7	0.9	2.9	4.9	2.5	3.3	1.5	2.3	3.6	3.4	3.6	4.5	3.0	2.5	1.9	2.2	2.3	2.4	4.9	0.7
28	1.3	1.3	1.5	1.3	1.0	0.9	1.1	1.8	4.7	6.2	4.8	4.1	4.1	4.6	4.0	4.5	3.4	3.0	3.1	3.0	1.5	1.8	1.0	1.1	2.7	6.2	0.9
29	2.0	1.7	1.2	1.4	1.8	1.7	1.2	1.0	1.1	3.3	7.3	8.2	8.8	7.6	7.3	6.8	7.3	7.0	6.1	5.6	5.3	4.2	4.1	4.7	4.4	8.8	1.0
30	4.9	2.2	3.4	4.1	4.4	2.7	2.9	3.1	4.9	7.7	8.2	5.6	6.0	7.1	7.5	6.7	6.0	3.7	2.0	1.5	2.6	2.4	2.0	1.5	4.3	8.2	1.5
31	1.3	1.3	1.1	0.8	1.1	1.2	1.1	0.7	2.2	4.6	3.3	2.5	3.4	4.4	2.6	4.1	5.2	4.9	5.3	4.6	3.5	2.1	2.6	1.6	2.7	5.3	0.7
Avg	1.6	1.4	1.3	1.4	1.4	1.3	1.1	1.2	2.1	3.4	4.2	4.3	4.7	4.7	4.6	5.1	5.0	4.4	3.8	2.9	2.6	2.3	2.2	1.8	2.9	6.3	0.8
Max	4.9	2.2	3.4	4.1	4.4	2.7	2.9	4.9	5.5	7.7	8.6	8.2	8.8	8.5	9.7	9.8	9.2	7.1	7.3	8.9	5.3	5.8	5.0	4.7	4.6	9.8	1.5
Min	0.6	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.7	1.1	1.4	2.9	1.5	2.1	2.1	2.0	1.8	1.0	1.4	1.2	0.9	0.9	0.8	1.9	3.6	0.6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
September 2020

A-3

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	2.6	1.9	2.1	1.8	1.9	1.5	1.8	1.2	3.7	6.2	7.5	9.5	9.5	8.3	8.8	8.4	8.5	8.1	7.5	5.6	4.8	4.1	1.8	2.0	5.0	9.5	1.2
2	2.2	2.0	1.8	2.5	2.0	1.6	1.3	1.1	4.4	8.9	9.9	11.2	13.0	11.7	12.0	9.2	9.0	7.0	2.4	2.4	1.1	1.6	1.3	1.1	5.0	13.0	1.1
3	1.4	1.3	1.0	1.2	0.8	0.8	0.8	0.9	1.0	5.6	5.9	5.9	6.5	6.6	6.2	6.1	7.1	7.2	5.4	3.2	1.2	2.3	2.0	1.5	3.4	7.2	0.8
4	1.3	1.2	0.8	0.8	0.9	0.7	1.1	0.6	0.7	1.5	2.6	3.9	4.6	4.0	3.9	3.5	2.7	2.0	1.3	3.3	3.2	3.2	2.2	1.1	2.1	4.6	0.6
5	1.3	1.4	1.2	1.0	1.5	1.3	0.9	0.7	0.9	1.0	3.4	6.6	6.7	6.0	6.8	7.9	7.5	6.5	6.5	4.7	4.3	1.6	2.5	2.3	3.5	7.9	0.7
6	1.7	1.4	0.9	1.1	1.0	1.0	1.0	1.2	0.9	2.1	3.7	5.0	5.7	5.2	5.2	4.3	5.2	4.1	2.0	1.6	4.9	3.1	5.6	4.3	3.0	5.7	0.9
7	2.5	1.6	1.8	2.6	1.8	3.6	4.5	3.8	4.0	2.8	4.3	5.3	4.7	3.7	4.9	4.7	6.3	5.0	3.7	4.1	4.2	2.6	1.4	1.4	3.6	6.3	1.4
8	1.4	4.3	1.8	1.6	1.4	1.4	1.5	0.8	1.6	2.8	2.7	3.0	2.6	2.5	3.3	3.3	2.7	2.7	2.0	2.1	3.1	1.6	1.6	0.8	2.2	4.3	0.8
9	1.2	1.8	1.0	0.8	0.9	1.0	1.4	0.8	1.0	2.5	2.2	3.4	4.3	3.8	3.5	2.7	3.1	4.3	2.9	1.8	2.1	2.7	1.7	1.6	2.2	4.3	0.8
10	1.4	1.1	1.4	0.8	1.2	1.0	0.8	0.7	0.7	2.0	2.4	2.4	2.6	3.1	3.0	2.2	3.1	4.8	3.5	1.5	1.4	2.0	1.7	2.1	2.0	4.8	0.7
11	1.8	1.0	1.2	1.2	1.0	0.8	1.0	0.9	0.7	2.7	5.2	5.9	6.3	5.5	5.3	5.2	5.3	4.5	2.5	2.3	2.6	3.0	2.0	1.3	2.9	6.3	0.7
12	1.2	1.2	0.8	0.9	1.0	1.2	1.1	0.7	0.7	1.0	2.8	4.0	4.8	5.2	5.4	5.8	5.6	4.6	2.1	2.1	2.8	2.0	1.3	1.3	2.5	5.8	0.7
13	0.9	1.4	1.2	0.7	0.8	1.0	0.8	1.3	0.9	0.9	1.9	3.2	3.2	4.3	4.3	3.1	2.6	1.9	2.2	2.5	1.4	1.8	1.8	2.0	1.9	4.3	0.7
14	1.5	1.4	1.6	1.8	1.5	1.1	1.8	1.1	1.1	3.0	4.5	5.3	5.5	4.4	2.1	1.2	1.2	3.2	2.2	1.8	2.2	1.9	1.5	1.7	2.3	5.5	1.1
15	1.0	1.1	0.9	1.1	0.7	1.2	0.8	0.9	0.7	0.9	Au	Au	Au	Au	6.2	7.5	6.3	5.9	3.1	2.6	2.7	1.4	1.8	0.9	2.4	7.5	0.7
16	1.2	1.2	0.9	0.7	0.7	0.5	0.4	0.5	0.8	1.3	1.8	1.4	1.4	3.1	3.9	2.9	2.7	1.2	1.3	2.9	2.3	2.3	1.9	1.3	1.6	3.9	0.4
17	0.8	1.0	1.2	0.8	1.4	1.3	0.6	1.4	0.6	0.7	1.0	1.7	2.9	3.1	2.4	3.2	6.6	5.1	3.5	2.8	1.9	2.1	1.2	0.9	2.0	6.6	0.6
18	1.3	0.7	0.8	1.1	1.5	0.8	0.7	0.6	0.6	0.8	2.6	3.6	3.7	4.6	5.5	6.4	7.7	4.3	3.9	1.2	1.5	1.2	1.8	0.9	2.4	7.7	0.6
19	1.5	1.2	1.0	1.5	1.1	0.6	1.2	0.7	1.2	1.9	3.9	4.2	4.5	4.6	2.8	5.2	5.3	6.5	5.5	3.1	4.1	5.9	4.8	6.0	3.3	6.5	0.6
20	4.3	3.8	4.2	5.1	4.7	6.1	6.7	6.2	8.2	8.6	10.0	9.4	8.1	9.1	7.9	7.2	7.4	5.9	4.0	2.7	2.8	1.8	2.0	1.8	5.8	10.0	1.8
21	1.0	0.8	0.9	0.8	1.0	0.7	0.8	0.4	0.6	2.7	4.9	6.3	6.4	5.1	3.5	3.7	3.9	2.6	2.2	3.5	3.2	2.4	1.9	1.2	2.5	6.4	0.4
22	1.9	1.7	1.4	1.2	1.1	1.6	1.3	1.1	0.7	1.2	4.5	5.2	5.9	6.7	7.3	7.2	6.5	4.5	1.8	1.8	1.1	1.8	1.8	1.4	2.9	7.3	0.7
23	1.2	1.5	1.2	1.1	1.2	1.4	1.1	0.6	1.1	1.4	3.6	5.9	5.6	6.2	5.5	5.6	4.9	1.7	1.8	1.6	1.2	0.7	1.2	1.1	2.4	6.2	0.6
24	2.2	3.5	5.5	5.7	2.8	3.1	4.1	4.3	7.8	9.2	9.5	9.4	9.8	6.5	5.9	5.6	5.6	6.2	5.1	3.8	5.9	3.8	5.4	5.2	5.7	9.8	2.2
25	4.9	3.6	2.9	2.1	2.1	2.3	2.6	1.4	1.1	2.5	3.4	2.2	6.2	10.6	11.3	5.9	4.8	5.0	4.1	5.3	7.1	7.3	5.9	7.8	4.7	11.3	1.1
26	5.7	9.2	11.4	8.5	5.9	7.9	7.0	6.8	8.2	7.9	9.2	10.4	9.8	9.7	9.5	8.0	8.7	7.7	6.5	7.8	5.7	4.8	2.1	1.8	7.5	11.4	1.8
27	2.4	2.8	1.5	1.2	1.3	1.4	0.8	0.9	1.3	5.0	6.4	6.3	6.5	6.2	6.5	6.8	6.1	4.6	2.2	1.2	1.0	2.3	1.5	1.3	3.2	6.8	0.8
28	0.9	0.9	1.1	0.6	1.0	1.3	0.8	1.1	0.7	2.9	4.2	4.9	4.7	5.3	5.0	4.2	3.9	2.5	1.3	4.0	2.3	1.8	1.8	1.8	2.5	5.3	0.6
29	1.3	1.3	1.2	1.1	0.8	0.9	1.0	0.8	1.0	4.7	6.4	7.1	7.1	8.3	7.2	7.0	6.6	6.2	4.7	1.9	2.8	2.0	2.3	1.8	3.6	8.3	0.8
30	1.6	1.3	1.7	1.5	0.9	1.0	0.6	0.8	0.7	2.0	2.9	2.7	3.8	5.4	6.0	5.4	6.4	3.6	1.3	2.1	1.3	1.2	1.3	0.9	2.3	6.4	0.6
Avg	1.9	2.0	1.9	1.8	1.5	1.7	1.7	1.5	1.9	3.2	4.6	5.4	5.7	5.8	5.7	5.3	5.4	4.6	3.3	2.9	2.9	2.5	2.2	2.0	3.2	7.0	0.9
Max	5.7	9.2	11.4	8.5	5.9	7.9	7.0	6.8	8.2	9.2	10.0	11.2	13.0	11.7	12.0	9.2	9.0	8.1	7.5	7.8	7.1	7.3	5.9	7.8	7.5	13.0	2.2
Min	0.8	0.7	0.8	0.6	0.7	0.5	0.4	0.4	0.6	0.7	1.0	1.4	1.4	2.5	2.1	1.2	1.2	1.2	1.3	1.2	1.0	0.7	1.2	0.8	1.6	3.9	0.4

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
July 2020

A-4

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	142	138	82	141	180	123	73	221	214	226	205	220	256	306	337	101	141	144	162	149	156	338	24	80	155
2	53	100	95	112	59	109	115	100	211	210	221	223	218	233	240	253	262	299	303	240	98	65	49	126	162
3	179	158	113	8	73	319	126	342	162	150	187	191	260	310	348	195	156	62	127	129	118	110	78	94	128
4	87	124	100	126	101	103	120	163	108	42	304	251	251	222	235	310	308	60	326	233	93	32	102	144	114
5	177	94	61	69	49	60	130	254	9	283	284	285	250	304	269	289	241	195	282	262	129	77	128	132	248
6	297	88	59	105	69	344	156	244	143	123	151	157	251	265	302	269	251	286	143	152	152	85	80	120	149
7	158	225	160	156	156	200	137	137	151	173	281	281	298	299	334	301	298	295	283	292	304	346	306	288	258
8	230	274	244	268	299	323	255	268	261	269	266	258	270	269	272	271	294	286	288	301	165	19	70	48	277
9	109	105	74	26	97	165	168	167	125	164	148	172	160	235	207	234	279	288	249	301	125	44	84	24	149
10	100	129	76	18	318	300	285	312	37	285	287	283	263	277	279	289	293	301	311	304	154	349	45	101	313
11	114	42	44	113	103	135	204	340	21	240	240	250	268	274	271	270	295	249	179	143	101	117	142	297	209
12	222	184	66	100	77	63	63	109	290	285	280	277	279	266	261	284	295	276	293	244	262	292	294	297	281
13	293	34	257	209	170	139	109	224	265	277	257	267	279	261	256	254	275	301	301	318	310	104	138	74	261
14	344	33	89	97	84	134	158	33	289	255	256	252	260	265	275	270	282	268	288	281	190	59	49	105	282
15	124	103	130	109	108	86	73	338	269	259	278	274	285	285	289	277	263	257	303	265	95	93	108	94	263
16	85	122	87	137	92	112	162	33	28	282	251	255	257	247	249	263	274	291	296	275	115	75	82	82	176
17	84	113	63	131	93	126	152	211	55	279	285	288	320	290	328	345	305	308	323	11	66	101	80	90	30
18	99	89	131	74	330	35	17	199	299	286	294	275	265	277	286	286	274	265	299	299	123	94	73	150	303
19	272	12	47	201	98	114	152	316	331	283	279	291	258	267	277	274	267	291	309	188	108	95	113	85	279
20	102	144	32	16	150	116	59	336	237	295	289	274	262	325	301	312	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	319
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	132	158	147	278	249	272	283	278	260	279	282	266	89	80	79	82	243
22	110	111	117	116	121	109	194	113	2	288	273	311	334	345	307	220	196	226	243	275	286	104	137	72	178
23	138	140	175	135	84	311	112	305	176	138	146	142	121	66	265	171	62	348	279	18	117	106	86	95	119
24	116	109	108	126	153	87	126	138	160	185	249	243	229	257	251	236	227	229	238	222	273	130	85	122	180
25	37	62	104	146	136	144	136	144	172	288	287	267	309	276	281	263	258	288	331	279	65	89	53	79	258
26	348	87	149	45	97	33	139	310	135	331	50	284	297	303	265	242	289	294	332	1	59	19	107	121	5
27	159	133	82	102	95	125	114	309	182	140	170	151	149	157	310	343	350	329	24	76	75	77	58	144	105
28	257	111	136	108	129	82	359	93	142	147	142	304	283	344	281	315	37	133	152	141	113	93	21	81	103
29	62	65	127	128	12	360	86	239	206	292	290	291	293	287	310	303	306	265	246	248	127	106	73	123	301
30	64	121	123	110	136	94	138	194	315	334	306	319	273	82	91	82	84	130	151	92	86	64	48	71	91
31	57	330	86	8	77	40	118	158	330	154	147	157	127	178	128	183	163	147	116	82	96	282	210	158	126
Prev	109	104	99	106	99	92	126	231	201	247	250	258	263	277	281	271	275	277	280	265	113	72	80	98	187

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
August 2020

A-5

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	140	128	109	119	144	131	155	159	161	157	141	148	147	147	142	139	146	151	148	139	126	270	245	8	145
2	62	134	146	121	114	113	56	12	163	159	156	159	163	134	136	185	283	59	102	104	74	344	354	86	113
3	108	138	85	78	41	131	122	287	61	320	254	314	355	174	273	288	288	293	299	265	222	96	94	106	3
4	337	339	104	80	102	102	190	248	306	305	338	320	252	310	302	318	314	327	294	26	73	74	54	83	348
5	95	181	192	106	172	122	101	150	158	166	162	148	162	153	170	116	63	133	139	170	82	66	68	123	135
6	150	194	114	144	103	133	86	297	158	124	152	225	245	191	187	247	177	167	284	41	13	123	121	142	156
7	129	72	73	116	145	152	360	277	285	295	273	262	277	282	277	282	280	281	296	278	137	81	108	109	269
8	116	102	88	77	54	49	152	347	328	299	264	266	259	286	251	262	258	277	296	309	337	97	334	323	312
9	280	177	75	35	113	67	32	25	307	296	298	297	279	287	296	304	303	310	307	311	127	76	92	115	335
10	94	49	110	115	109	55	50	279	300	272	297	303	278	270	262	275	254	272	261	244	101	46	49	113	310
11	95	85	91	100	96	112	60	165	343	284	257	256	253	267	242	249	214	269	263	270	89	73	93	134	177
12	62	111	74	136	157	109	107	325	321	44	271	254	255	266	304	308	317	311	302	319	346	7	356	140	335
13	90	62	232	95	110	68	30	5	284	285	299	298	277	271	299	324	322	314	299	194	148	32	97	97	339
14	83	76	132	118	118	74	121	244	288	250	281	285	265	279	268	275	265	272	263	267	128	62	89	43	252
15	99	78	108	130	125	96	126	308	344	300	281	276	281	260	287	271	267	279	287	286	94	76	65	48	324
16	82	145	151	102	98	123	112	112	287	29	266	271	270	285	288	292	336	340	183	105	88	91	73	72	89
17	100	97	93	119	98	117	119	69	347	328	284	262	283	291	298	299	296	314	313	316	90	86	66	103	23
18	24	98	143	350	78	165	113	175	333	331	323	319	329	317	302	328	295	292	293	140	83	85	80	82	11
19	59	92	131	114	85	139	127	154	161	323	310	304	69	143	128	268	265	273	153	104	109	90	79	63	112
20	117	134	86	125	124	126	104	129	144	207	260	322	281	276	281	285	292	332	19	16	90	88	328	160	110
21	102	356	96	131	95	93	123	302	75	277	247	272	248	254	265	283	208	149	161	111	95	114	61	194	150
22	155	137	112	125	115	93	39	124	220	9	293	281	274	285	298	287	280	312	314	320	106	88	102	325	338
23	111	143	140	86	95	80	80	334	134	142	163	207	262	258	265	261	288	288	263	116	74	64	94	85	129
24	82	43	93	145	85	113	146	172	343	27	45	293	251	248	264	234	260	266	262	118	102	83	50	34	91
25	80	50	56	99	159	148	98	188	272	141	162	232	209	236	258	285	310	317	91	95	116	94	109	123	135
26	85	52	167	140	98	138	98	145	303	322	263	261	247	269	263	262	273	250	128	112	90	99	100	95	151
27	116	84	146	126	82	67	117	349	207	280	299	257	151	136	185	275	275	330	72	58	58	74	85	82	97
28	33	103	124	132	133	131	142	120	146	143	144	147	147	184	197	217	228	221	179	150	152	118	45	53	144
29	103	111	75	66	130	116	154	109	324	305	258	264	272	264	273	273	278	282	273	290	298	285	269	294	275
30	302	271	292	283	317	295	296	282	322	323	330	2	321	325	320	317	301	306	283	140	88	98	105	141	312
31	102	62	142	126	93	134	41	187	318	278	249	197	296	348	292	250	252	252	250	249	265	255	274	269	252
Prev	92	99	114	110	108	110	101	214	296	297	266	267	260	258	264	275	277	287	270	141	95	78	71	92	125

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
September 2020

A-6

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	269	265	256	317	46	91	94	50	313	283	267	262	251	272	283	283	279	279	278	279	276	270	103	103	283
2	99	80	92	95	77	109	344	352	269	259	259	258	261	275	295	322	322	340	56	306	150	91	75	47	3
3	134	131	348	148	112	146	54	129	64	265	284	278	288	274	263	267	294	292	279	274	118	89	67	44	275
4	43	58	38	103	96	106	139	356	359	354	274	253	247	245	265	261	281	286	130	104	79	85	96	92	59
5	104	107	112	81	120	133	162	119	318	351	296	235	249	262	280	307	320	303	289	285	286	126	62	82	298
6	43	62	49	58	141	37	351	134	357	333	271	265	278	267	286	276	291	275	269	152	160	158	159	174	285
7	247	162	262	274	264	305	351	5	354	14	347	352	348	347	2	7	359	337	311	324	346	352	32	134	338
8	341	5	162	104	71	47	104	352	145	142	158	153	172	213	238	264	251	259	261	117	83	37	78	125	130
9	138	139	236	138	63	274	143	268	352	307	302	296	272	239	221	278	291	258	266	111	54	83	106	61	255
10	46	11	118	339	105	96	84	122	286	164	167	182	143	227	213	128	171	151	156	142	115	112	85	59	128
11	53	66	68	126	122	127	109	157	2	317	277	274	290	297	305	299	305	311	319	128	59	80	107	64	30
12	120	116	116	95	73	129	89	236	209	24	296	292	262	264	258	265	268	261	227	110	65	92	82	105	149
13	92	117	133	138	114	115	123	142	17	290	100	173	188	217	208	247	259	213	143	95	137	123	117	129	144
14	122	143	149	129	115	67	117	113	126	99	203	218	243	251	316	314	336	76	77	78	31	73	88	103	107
15	101	115	105	118	92	109	144	135	199	28	Au	Au	Au	Au	289	291	287	284	315	99	90	46	110	215	109
16	79	81	133	76	87	73	73	345	349	143	142	104	282	311	298	294	272	239	141	88	71	103	91	110	84
17	96	103	141	111	125	137	128	138	7	1	336	297	276	287	300	230	149	152	164	114	114	111	130	118	127
18	127	111	48	43	102	251	140	108	16	1	122	147	155	214	202	197	207	168	161	153	131	108	117	101	134
19	82	90	139	77	42	165	91	90	93	149	264	264	256	253	291	271	269	251	257	278	270	262	261	249	242
20	253	251	262	269	277	274	271	277	271	267	265	268	265	261	248	257	274	262	266	275	256	76	108	104	263
21	131	122	76	141	139	159	152	96	243	299	238	232	239	239	232	208	215	177	130	98	90	72	77	69	156
22	112	126	107	102	74	95	116	141	239	236	178	190	205	212	232	296	316	329	312	342	90	99	181	155	156
23	53	100	111	106	115	143	152	117	339	329	256	262	254	229	236	219	216	181	119	140	137	191	128	41	158
24	191	214	202	212	180	187	169	183	203	230	288	298	294	294	291	291	273	260	249	225	273	265	254	255	242
25	278	332	328	23	99	124	73	51	330	263	245	221	219	224	235	253	253	251	259	265	261	246	232	235	258
26	243	250	254	270	275	253	265	266	277	286	282	280	277	276	275	289	275	277	272	260	265	267	273	26	272
27	291	309	86	33	63	37	5	67	26	304	320	288	289	289	294	309	306	297	258	243	291	94	84	46	334
28	46	97	125	113	115	104	123	86	356	306	284	274	265	268	254	271	281	269	162	78	77	44	66	89	76
29	19	13	64	92	7	118	76	125	66	269	284	269	271	276	283	282	287	288	287	10	69	44	77	44	359
30	116	145	141	142	125	114	340	149	45	303	303	305	286	285	284	289	268	275	334	94	98	97	120	84	91
Prev	93	102	115	101	99	118	104	109	341	304	267	256	256	260	268	275	277	266	250	125	93	91	101	94	206

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
July 2020

A-7

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	66	71	65	31	79	39	56	24	15	16	17	12	35	16	64	46	43	20	44	35	25	101	85	42	44	101	12
2	69	64	58	53	33	30	47	50	31	23	16	14	15	23	20	25	24	18	9	67	47	14	45	64	36	69	9
3	95	38	85	87	93	88	78	55	20	18	19	25	17	59	46	20	36	77	56	57	23	60	8	20	49	95	8
4	17	17	34	17	35	32	31	49	99	71	72	36	33	29	32	21	20	53	75	83	71	89	42	95	48	99	17
5	65	65	51	40	32	44	41	93	101	27	24	30	40	37	43	32	42	22	39	70	64	61	38	56	48	101	22
6	93	20	78	39	95	69	38	63	11	34	26	13	86	22	38	35	39	55	61	12	20	39	10	56	44	95	10
7	61	53	24	70	38	67	22	16	11	26	25	18	12	15	31	16	16	16	12	11	25	19	9	12	26	70	9
8	51	55	27	11	29	61	15	18	14	13	16	12	19	18	20	18	14	12	13	6	65	78	31	43	27	78	6
9	52	41	42	47	50	55	64	86	44	27	26	48	55	27	34	35	22	21	30	52	45	37	60	74	45	86	21
10	49	86	78	64	78	73	47	10	49	60	24	16	14	16	20	15	12	14	10	10	91	46	69	33	41	91	10
11	33	49	51	20	40	28	91	71	90	23	21	32	30	38	25	20	29	49	26	35	26	26	61	51	40	91	20
12	90	52	70	46	26	60	64	76	27	21	19	17	17	15	13	15	15	18	13	23	38	13	14	5	32	90	5
13	51	29	88	60	76	26	43	67	15	17	16	22	28	25	25	16	21	14	10	10	61	58	64	88	39	88	10
14	82	84	49	36	71	34	87	88	51	23	22	26	26	31	23	21	25	16	17	17	66	30	35	32	41	88	16
15	34	38	24	34	48	64	72	59	23	16	23	23	25	27	18	19	25	25	18	38	72	18	18	22	33	72	16
16	34	33	61	16	40	52	29	102	84	57	23	23	22	28	25	26	20	19	8	13	46	13	22	50	35	102	8
17	65	49	74	53	83	25	52	82	66	26	32	39	22	40	7	22	22	14	20	96	86	57	47	53	47	96	7
18	43	34	27	36	80	60	51	83	22	28	13	34	25	26	18	27	22	25	11	61	36	40	21	29	36	83	11
19	50	74	85	81	63	55	72	94	90	26	30	24	43	33	42	31	57	27	31	96	52	21	17	54	52	96	17
20	51	63	62	85	67	55	60	58	63	52	36	27	25	21	20	33	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	49	85	20
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	5	31	64	32	34	20	24	19	30	29	19	50	38	13	17	33	29	64	5
22	18	56	59	44	45	59	86	61	60	39	27	33	55	64	25	51	27	23	15	28	69	27	38	50	44	86	15
23	38	46	49	45	64	92	86	83	52	41	13	22	26	57	57	78	63	88	27	89	30	77	21	30	53	92	13
24	28	53	35	40	42	68	58	68	47	42	25	27	31	21	18	17	16	16	19	16	47	46	38	26	35	68	16
25	42	37	67	29	29	24	25	30	88	16	24	48	71	36	17	22	20	26	20	92	53	50	39	55	40	92	16
26	74	78	98	82	44	71	88	81	30	101	83	36	48	52	56	46	34	18	33	52	79	48	15	77	59	101	15
27	89	26	51	24	75	34	46	79	38	67	31	35	58	56	50	37	45	69	32	11	10	22	41	25	44	89	10
28	57	62	75	49	41	76	60	61	94	37	24	30	23	54	30	68	55	55	29	35	18	19	52	25	47	94	18
29	35	33	19	26	55	68	71	71	76	26	20	32	19	25	24	30	26	15	64	48	29	31	26	30	37	76	15
30	54	46	20	52	71	52	38	64	77	41	38	26	51	56	13	14	16	36	8	50	10	38	32	32	39	77	8
31	42	77	65	82	36	59	39	55	97	18	15	22	43	72	38	44	16	13	26	11	47	50	61	51	45	97	11
Avg	54	51	56	47	55	54	55	63	51	34	28	27	34	34	30	30	28	30	27	42	46	41	36	44	41	87	13
Max	95	86	98	87	95	92	91	102	101	101	83	48	86	72	64	78	63	88	75	96	91	101	85	95	59	102	22
Min	17	17	19	11	26	24	15	10	5	13	13	12	12	15	7	14	12	12	8	6	10	13	8	5	26	64	5

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
August 2020

A-8

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	53	59	43	24	30	24	19	12	7	11	10	11	10	9	10	9	9	7	8	11	68	37	47	79	25	79	7
2	67	58	77	77	30	30	67	41	58	15	23	23	42	25	62	75	74	49	26	24	83	69	74	34	50	83	15
3	58	49	48	17	44	43	49	61	66	61	55	52	70	74	28	19	17	14	14	18	89	36	40	29	44	89	14
4	72	68	73	91	84	76	71	84	21	49	37	28	47	53	75	38	39	23	36	84	10	14	21	18	51	91	10
5	58	64	96	73	77	78	69	27	10	17	18	28	39	40	53	38	31	12	7	27	63	47	17	55	44	96	7
6	51	72	37	87	71	59	92	78	81	18	24	32	29	35	24	21	60	12	52	77	74	32	28	43	50	92	12
7	83	54	73	45	52	90	60	18	19	17	18	12	21	15	14	13	16	13	16	30	88	72	43	24	38	90	12
8	46	70	60	47	47	74	31	72	51	43	19	21	22	22	21	22	21	13	25	11	41	84	85	39	41	85	11
9	63	64	83	46	38	28	41	61	50	17	23	29	45	28	35	17	23	12	11	29	65	38	42	23	38	83	11
10	34	62	46	46	55	69	67	84	60	24	36	33	34	37	28	24	23	21	18	40	29	29	56	34	41	84	18
11	45	69	55	68	66	34	76	73	100	43	17	24	16	30	34	22	22	20	14	68	29	15	36	22	42	100	14
12	47	48	48	41	64	76	61	52	88	81	68	26	33	25	16	13	8	14	8	13	64	77	85	51	46	88	8
13	39	78	64	49	14	65	70	38	28	25	18	19	17	19	16	14	9	12	39	79	64	58	22	26	37	79	9
14	24	50	29	49	51	61	31	88	71	17	28	27	23	23	19	22	21	17	15	51	33	32	49	44	36	88	15
15	43	43	29	36	25	61	52	101	28	29	24	39	32	38	29	26	27	22	17	52	23	22	25	62	37	101	17
16	61	35	26	70	74	20	45	75	67	91	30	30	35	45	24	15	11	13	93	22	12	20	23	14	40	93	11
17	26	44	74	25	39	30	34	70	41	46	37	28	22	17	16	16	15	15	12	84	20	31	58	63	36	84	12
18	86	65	46	70	33	54	42	87	64	58	62	45	14	53	25	17	48	20	14	60	35	37	25	41	46	87	14
19	56	47	32	47	49	50	65	64	57	23	40	45	22	21	56	54	21	20	34	21	39	47	6	46	40	65	6
20	24	26	25	21	26	19	46	42	49	75	56	54	40	15	29	17	23	25	38	62	38	76	74	80	41	80	15
21	57	72	71	31	81	47	37	74	90	45	49	34	29	41	72	36	57	42	22	15	12	53	80	99	52	99	12
22	19	18	74	29	32	30	43	49	90	49	49	20	22	18	16	14	20	15	6	58	85	61	58	78	40	90	6
23	50	37	60	62	70	59	92	62	22	15	20	81	38	37	29	41	17	13	11	35	30	21	33	85	43	92	11
24	44	82	74	45	79	48	48	82	56	86	71	46	44	25	33	23	19	15	11	75	34	18	52	45	48	86	11
25	36	53	38	36	57	89	46	69	89	26	40	36	24	19	23	17	13	38	19	39	35	75	23	16	40	89	13
26	34	60	46	31	41	34	99	75	74	57	22	22	21	25	20	16	18	19	40	21	15	38	28	48	38	99	15
27	16	31	30	41	52	51	59	52	86	67	13	51	16	63	55	27	23	68	11	19	17	27	31	33	39	86	11
28	64	36	19	20	77	61	40	52	19	10	16	17	22	35	42	36	44	37	15	31	36	25	57	47	36	77	10
29	29	23	37	44	13	17	35	81	34	50	13	16	15	18	22	23	14	13	11	14	9	16	36	7	25	81	7
30	11	42	25	15	12	15	13	39	16	14	13	22	28	16	16	17	20	18	41	30	19	22	36	21	22	42	11
31	43	72	51	53	88	69	81	80	85	20	41	70	50	19	45	23	15	15	11	11	11	17	16	47	43	88	11
Avg	46	53	51	46	51	50	54	63	54	39	32	33	30	30	32	25	25	21	22	39	41	40	42	44	40	86	11
Max	86	82	96	91	88	90	99	101	100	91	71	81	70	74	75	75	74	68	93	84	89	84	85	99	52	101	18
Min	11	18	19	15	12	15	13	12	7	10	10	11	10	9	10	9	8	7	6	11	9	14	6	7	22	42	6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
September 2020

A-9

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	16	23	22	82	29	55	42	48	51	18	16	14	20	18	15	16	12	12	10	11	13	15	63	23	27	82	10
2	34	49	43	49	47	52	80	64	27	16	15	14	12	18	12	11	9	18	65	40	90	60	61	55	39	90	9
3	82	52	79	27	50	26	97	85	85	23	19	18	19	19	25	20	14	16	12	41	58	27	20	33	39	97	12
4	58	52	54	52	27	43	49	72	79	39	34	26	25	33	32	28	46	20	92	22	12	13	15	35	40	92	12
5	37	57	49	52	24	24	51	70	81	84	89	18	19	29	15	16	11	13	10	10	12	53	48	36	38	89	10
6	38	59	73	67	69	54	78	56	74	53	30	20	20	39	35	32	14	14	36	56	14	19	8	14	41	78	8
7	67	53	41	20	66	13	31	18	14	80	13	14	18	22	19	18	19	34	38	20	25	43	63	97	35	97	13
8	74	16	50	52	48	34	45	74	34	32	27	42	56	65	49	28	31	21	46	21	16	33	34	59	41	74	16
9	36	86	90	71	100	82	27	83	48	37	59	39	40	40	33	39	33	12	14	57	36	18	22	26	47	100	12
10	29	52	53	55	57	68	64	54	99	95	46	48	54	65	96	73	35	10	11	27	37	26	25	19	50	99	10
11	37	55	54	58	35	55	29	74	60	48	18	21	19	18	15	20	15	10	61	32	38	30	38	47	37	74	10
12	55	45	42	52	76	58	90	82	72	58	66	24	24	26	37	25	21	11	53	31	22	42	53	37	46	90	11
13	70	78	32	63	37	78	75	39	69	65	80	24	28	22	16	26	15	68	17	23	32	17	25	15	42	80	15
14	26	28	20	28	40	55	36	50	64	67	26	18	12	11	45	48	69	13	29	55	44	42	41	42	38	69	11
15	50	45	43	34	58	34	58	27	93	35	Au	Au	Au	Au	15	11	11	9	43	18	19	62	31	81	39	93	9
16	35	43	42	59	40	57	61	78	33	59	45	70	83	26	13	14	17	59	20	18	16	18	24	25	40	83	13
17	30	27	48	42	17	24	31	24	53	52	51	66	36	31	32	69	6	10	16	41	40	36	62	57	38	69	6
18	51	51	60	81	53	92	46	70	67	84	64	23	36	27	15	12	12	21	12	46	38	68	60	86	49	92	12
19	91	88	70	45	66	78	72	59	56	102	19	14	17	13	45	19	14	10	13	18	14	10	12	11	40	102	10
20	11	18	11	11	13	10	11	12	13	12	11	12	13	17	13	15	17	15	12	16	20	31	36	48	17	48	10
21	55	27	59	72	29	47	80	88	90	81	25	18	23	30	31	28	25	16	18	19	19	16	28	28	40	90	16
22	21	21	29	41	64	56	50	63	89	70	19	23	23	25	23	13	12	14	96	57	79	58	95	52	46	96	12
23	68	35	27	26	48	31	34	70	68	101	41	20	18	17	26	17	15	41	19	24	28	85	56	72	41	101	15
24	49	11	11	8	32	29	19	10	13	15	18	10	9	14	17	18	19	13	10	27	22	28	21	16	18	49	8
25	24	22	49	76	74	36	41	79	59	25	20	45	19	11	13	15	13	12	14	17	13	8	9	10	29	79	8
26	8	11	10	16	14	9	12	16	14	16	16	12	12	11	14	11	12	11	11	12	10	8	25	69	15	69	8
27	25	19	77	59	38	32	68	48	50	19	18	21	19	18	19	15	15	13	35	78	90	21	30	39	36	90	13
28	63	73	43	64	61	76	58	83	75	42	22	21	20	19	16	18	18	23	58	43	32	42	44	56	45	83	16
29	65	68	71	58	69	73	89	76	97	28	16	18	17	13	16	14	13	12	13	31	17	51	19	51	41	97	12
30	51	65	61	35	60	54	87	35	90	52	54	55	40	18	21	16	11	20	67	25	30	29	24	42	43	90	11
Avg	45	44	47	49	48	48	54	57	61	50	34	26	26	25	26	24	19	19	32	31	31	34	36	43	38	85	11
Max	91	88	90	82	100	92	97	88	99	102	89	70	83	65	96	73	69	68	96	78	90	85	95	97	50	102	16
Min	8	11	10	8	13	9	11	10	13	12	11	10	9	11	12	11	6	9	10	10	10	8	8	10	15	48	6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
July 2020

A-10

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	6.8	5.9	4.6	3.8	2.5	2.2	5.6	9.9	10.6	11.3	13.0	13.1	12.3	9.2	9.2	10.5	11.5	11.8	12.3	11.9	9.6	7.8	7.3	6.7	8.7	13.1	2.2
2	5.7	5.9	5.7	3.4	2.7	1.9	4.2	8.4	11.8	13.2	14.5	15.4	16.1	17.3	18.1	18.7	19.2	19.2	18.9	17.4	12.4	10.7	8.9	6.2	11.5	19.2	1.9
3	5.5	4.7	3.6	3.0	2.7	2.8	6.4	13.2	18.2	19.0	20.5	21.2	21.7	21.9	22.2	22.0	16.8	18.5	18.6	17.2	16.0	12.3	12.2	10.6	13.8	22.2	2.7
4	9.4	6.5	6.5	5.0	4.9	5.1	8.2	13.4	18.0	20.1	21.2	22.2	22.9	23.4	23.0	19.3	17.6	15.6	15.4	14.2	12.1	11.0	10.9	11.6	14.1	23.4	4.9
5	10.3	8.7	7.5	6.0	5.2	4.3	6.5	10.6	14.5	16.1	17.0	17.8	18.9	18.9	19.7	20.1	19.9	18.6	18.0	16.2	12.9	11.2	9.5	9.4	13.2	20.1	4.3
6	11.4	10.7	8.8	7.5	6.8	6.7	8.4	11.2	13.6	14.9	17.0	17.2	18.7	19.9	20.6	20.9	21.3	21.3	21.2	19.1	16.4	15.5	15.6	15.2	15.0	21.3	6.7
7	14.7	14.5	13.9	14.5	15.2	15.5	17.8	18.4	18.5	19.4	18.9	18.5	15.7	13.9	15.5	17.3	17.9	17.9	17.3	15.9	14.3	12.7	12.0	11.1	15.9	19.4	11.1
8	9.3	8.8	9.6	8.3	7.3	7.6	9.3	10.0	11.0	11.5	12.3	13.2	14.1	14.9	15.5	16.3	16.6	16.7	16.3	15.0	11.2	8.2	6.5	4.9	11.4	16.7	4.9
9	3.5	1.6	1.1	0.8	-0.1	0.4	2.4	8.0	13.7	16.0	17.2	18.6	19.6	20.7	21.3	21.7	21.9	21.6	21.3	19.3	14.8	12.4	10.7	9.4	12.4	21.9	-0.1
10	7.7	7.0	5.8	5.2	4.9	7.0	10.4	9.3	8.8	10.8	12.5	13.7	15.3	15.6	16.4	17.4	18.1	18.3	17.6	16.1	13.3	10.0	7.8	6.5	11.5	18.3	4.9
11	4.3	3.2	3.2	2.0	1.2	0.9	3.8	9.3	15.1	17.9	18.8	19.7	20.9	21.7	22.5	23.1	23.5	23.7	23.4	21.0	15.7	11.7	10.8	13.4	13.8	23.7	0.9
12	17.8	15.7	11.4	9.2	8.3	7.4	10.3	15.1	17.8	18.7	19.8	20.4	20.2	19.8	20.6	20.9	20.2	19.7	18.5	17.7	16.0	15.0	13.2	13.4	16.1	20.9	7.4
13	10.9	10.1	9.6	8.4	7.2	5.8	7.4	10.8	11.3	11.8	13.0	14.0	14.6	15.5	16.3	16.7	17.0	17.1	16.0	13.9	11.1	8.5	6.7	5.9	11.6	17.1	5.8
14	4.5	3.2	2.0	0.9	0.0	-0.6	1.8	6.9	11.2	12.0	13.0	13.9	15.1	16.0	16.8	17.5	18.1	18.1	17.7	16.0	11.5	8.0	6.3	2.9	9.7	18.1	-0.6
15	1.7	0.7	-0.1	-0.2	-0.3	-0.4	1.4	7.8	13.4	14.8	16.0	17.1	18.0	19.0	19.9	20.2	20.3	20.7	19.8	17.9	13.9	11.3	7.9	7.1	11.2	20.7	-0.4
16	5.5	4.6	3.6	2.7	2.5	2.5	5.5	10.8	15.8	18.6	19.9	20.7	21.5	22.4	23.4	24.2	24.5	24.2	23.8	21.6	16.6	14.1	11.8	9.7	14.6	24.5	2.5
17	8.5	7.5	6.9	6.0	5.4	5.2	8.0	13.1	18.5	20.3	21.3	22.1	22.1	20.5	21.2	20.8	19.8	19.3	18.4	17.2	15.0	12.5	11.8	11.4	14.7	22.1	5.2
18	9.6	8.1	6.1	5.6	4.5	4.1	5.7	9.9	13.6	14.8	15.7	16.7	17.6	18.7	19.4	20.0	20.4	20.7	20.4	18.5	13.4	10.4	8.8	6.4	12.9	20.7	4.1
19	5.6	4.7	3.8	3.6	3.3	2.9	5.5	10.5	15.3	17.2	17.6	18.4	19.6	20.4	21.0	21.4	21.7	21.4	20.8	18.7	14.7	11.3	8.7	8.0	13.2	21.7	2.9
20	6.5	5.7	5.5	5.1	5.6	6.4	7.8	9.9	13.9	16.2	17.1	18.1	18.9	19.6	19.8	20.3	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	12.3	20.3	5.1
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	18.7	19.0	20.8	21.8	22.7	23.6	24.3	24.9	25.4	25.4	24.9	22.0	16.9	13.8	12.0	10.0	20.4	25.4	10.0
22	7.7	6.5	6.0	5.4	4.9	5.3	7.9	13.1	18.7	22.7	23.8	24.8	26.0	27.2	27.6	28.1	28.1	28.1	26.2	23.5	21.3	18.3	16.5	15.5	18.1	28.1	4.9
23	14.6	14.8	13.5	13.5	14.6	14.3	13.8	13.2	14.5	15.0	15.8	17.0	18.2	20.2	21.1	14.4	13.4	14.1	15.0	14.2	12.6	11.5	11.4	10.5	14.6	21.1	10.5
24	9.1	7.9	7.6	7.4	7.8	8.5	9.9	11.5	13.3	15.5	17.1	17.8	19.2	20.0	21.0	21.8	21.8	21.9	22.1	20.7	17.8	15.0	13.0	11.5	15.0	22.1	7.4
25	10.2	10.6	10.1	9.4	8.4	7.6	8.3	11.0	14.7	16.2	16.8	17.7	18.6	19.9	20.8	21.4	21.7	21.6	20.9	18.0	12.2	10.7	8.2	7.1	14.3	21.7	7.1
26	5.6	4.6	4.2	3.1	2.9	2.8	4.4	10.7	16.3	18.0	19.2	20.4	21.3	22.0	22.8	23.4	23.8	23.7	22.7	20.5	16.7	13.0	9.3	7.5	14.1	23.8	2.8
27	6.8	5.5	5.0	4.2	4.1	4.1	5.9	11.7	18.7	22.0	23.3	24.3	25.3	26.1	26.8	27.1	27.5	27.5	27.1	23.5	20.1	19.7	20.1	19.1	17.7	27.5	4.1
28	16.6	14.5	12.9	11.7	11.7	13.6	13.3	13.9	16.5	20.5	22.3	23.1	24.2	24.4	24.7	23.7	22.3	21.5	20.4	19.0	17.3	15.5	14.2	13.2	18.0	24.7	11.7
29	11.2	10.0	9.0	8.4	8.0	8.1	9.0	12.5	17.4	21.4	22.7	23.8	24.7	25.4	26.0	26.4	26.5	24.3	22.4	21.0	17.2	14.1	12.9	10.9	17.2	26.5	8.0
30	9.7	8.5	7.2	6.3	6.3	5.8	7.5	12.3	17.7	21.7	23.3	24.5	25.1	25.1	25.2	26.0	26.3	26.2	24.2	22.7	19.6	17.7	16.4	14.2	17.5	26.3	5.8
31	11.6	10.8	9.9	9.1	8.1	7.9	9.0	14.1	20.2	24.1	24.8	25.5	26.8	27.2	27.6	27.4	27.3	26.6	25.2	22.0	20.5	20.0	20.1	19.2	19.4	27.6	7.9
Avg	8.7	7.7	6.8	6.0	5.6	5.5	7.5	11.4	15.2	17.1	18.3	19.1	19.9	20.3	21.0	21.1	21.0	20.8	20.2	18.4	15.1	12.8	11.4	10.3	14.3	21.9	5.1
Max	17.8	15.7	13.9	14.5	15.2	15.5	17.8	18.4	20.2	24.1	24.8	25.5	26.8	27.2	27.6	28.1	28.1	28.1	27.1	23.5	21.3	20.0	20.1	19.2	20.4	28.1	11.7
Min	1.7	0.7	-0.1	-0.2	-0.3	-0.6	1.4	6.9	8.8	10.8	12.3	13.1	12.3	9.2	9.2	10.5	11.5	11.8	12.3	11.9	9.6	7.8	6.3	2.9	8.7	13.1	-0.6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
August 2020

A-11

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	18.5	17.9	17.5	16.4	15.3	14.9	16.3	19.5	21.5	23.0	24.3	25.1	25.7	25.9	25.6	26.6	26.2	26.3	25.1	23.9	22.9	21.5	20.7	20.1	21.7	26.6	14.9
2	20.1	19.3	17.7	16.8	16.5	15.0	13.5	16.8	21.1	23.8	24.8	25.6	26.6	27.3	28.0	28.8	29.4	28.9	27.6	25.3	22.8	22.4	22.3	21.7	22.6	29.4	13.5
3	19.6	17.8	15.1	13.2	11.9	10.7	11.3	15.7	18.3	21.8	22.3	19.6	23.5	25.1	26.0	26.2	26.3	25.7	24.6	22.7	19.2	14.7	11.6	9.8	18.9	26.3	9.8
4	8.7	7.4	7.1	6.3	5.7	5.3	6.6	12.1	17.3	19.2	20.3	21.3	22.0	23.0	23.8	24.1	24.6	24.6	24.2	21.2	18.0	16.0	15.7	15.6	16.3	24.6	5.3
5	13.0	11.5	11.0	11.3	11.7	10.2	11.6	16.8	19.2	21.0	22.4	23.4	24.8	25.6	25.9	26.5	26.2	25.5	23.9	19.6	16.0	14.9	13.5	11.5	18.2	26.5	10.2
6	10.4	10.7	9.8	9.3	9.1	8.5	9.5	13.2	18.5	21.4	23.2	23.5	24.0	25.0	25.9	25.9	21.9	22.2	19.1	17.2	15.6	13.6	11.4	9.5	16.6	25.9	8.5
7	8.4	9.5	9.0	7.9	6.5	5.7	7.2	12.6	13.3	13.8	14.8	15.1	15.6	16.5	17.4	18.0	18.4	18.5	17.7	15.9	12.4	8.6	6.0	4.1	12.2	18.5	4.1
8	3.0	1.8	1.5	0.2	-0.2	-0.2	0.8	6.5	12.9	16.6	17.5	18.3	19.5	20.5	20.9	21.8	21.7	21.2	20.6	18.6	15.1	12.8	11.5	12.0	12.3	21.8	-0.2
9	13.8	13.0	9.4	7.8	6.4	4.9	6.0	10.2	13.9	15.0	15.8	16.4	17.3	17.9	18.6	19.4	19.9	19.6	18.8	16.8	13.9	9.9	7.9	5.6	13.3	19.9	4.9
10	4.2	3.4	2.3	2.0	1.2	0.9	2.1	7.2	13.7	15.4	17.0	18.8	20.2	21.6	22.5	23.1	23.3	23.4	22.8	20.2	14.4	11.7	10.2	7.6	12.9	23.4	0.9
11	5.7	5.1	4.2	3.9	3.5	2.8	4.0	9.6	16.5	19.7	20.6	21.8	22.8	23.8	24.4	24.9	25.4	25.7	25.1	21.8	16.0	14.4	12.1	9.3	15.1	25.7	2.8
12	9.1	8.2	6.4	5.0	4.4	3.9	5.5	10.7	17.3	20.5	22.4	23.2	23.6	23.9	23.4	22.4	20.2	18.8	17.6	16.5	15.5	14.3	13.6	11.7	14.9	23.9	3.9
13	10.3	10.4	10.5	7.8	6.3	5.3	6.2	10.0	12.8	13.6	14.8	16.4	17.6	17.6	17.4	17.3	16.6	15.8	15.1	13.6	11.3	9.7	5.8	2.8	11.9	17.6	2.8
14	1.4	0.4	-1.0	-1.8	-2.5	-2.6	-2.0	3.3	10.8	12.9	14.3	15.5	16.8	18.0	19.0	19.7	20.1	20.2	19.8	17.8	12.9	8.7	6.5	5.1	9.7	20.2	-2.6
15	3.9	3.1	2.0	1.2	0.8	0.3	1.6	7.2	14.8	17.6	19.0	20.3	21.8	22.8	23.5	24.4	24.8	24.8	24.3	21.8	15.7	12.5	10.2	7.9	13.6	24.8	0.3
16	6.7	5.0	4.3	3.4	3.2	2.8	4.4	9.9	17.1	22.1	23.9	24.7	25.7	26.7	27.8	27.8	27.7	27.1	25.5	20.8	18.8	16.4	15.7	14.2	16.7	27.8	2.8
17	11.0	10.1	10.9	11.5	11.3	9.4	10.4	15.2	18.9	24.9	26.8	27.1	27.9	28.5	29.1	29.5	29.5	28.5	27.1	24.7	18.5	15.2	13.5	11.9	19.6	29.5	9.4
18	10.9	10.8	9.0	8.8	9.3	8.9	9.9	13.4	17.1	21.4	25.6	25.9	25.7	26.4	26.2	25.8	26.6	26.5	25.1	21.7	17.9	15.4	13.5	11.1	18.0	26.6	8.8
19	10.1	9.0	8.4	7.9	7.2	7.0	8.3	12.4	18.3	20.2	18.6	18.0	16.8	19.5	23.1	24.9	25.0	24.7	23.0	19.0	17.2	17.4	15.6	14.1	16.1	25.0	7.0
20	12.5	11.4	11.1	9.5	9.5	8.7	8.7	9.8	13.1	18.1	22.2	24.0	24.7	24.7	25.3	25.4	24.4	19.7	18.6	16.3	13.0	10.9	9.9	9.1	15.9	25.4	8.7
21	7.7	6.3	5.1	4.4	3.4	3.2	3.6	7.8	14.2	19.0	20.7	21.9	23.0	23.9	24.6	25.5	25.8	25.8	24.5	19.8	16.8	13.6	12.4	14.1	15.3	25.8	3.2
22	16.0	13.4	11.3	9.3	8.4	7.3	7.1	8.8	13.4	19.7	22.1	23.9	24.8	25.3	25.6	25.8	25.8	25.1	23.5	20.2	17.1	13.9	12.0	11.2	17.1	25.8	7.1
23	9.6	8.0	6.9	5.8	5.8	5.0	5.4	9.6	17.6	20.2	21.7	23.1	24.0	25.2	25.9	26.5	26.9	26.4	25.3	19.6	16.4	15.0	12.5	10.2	16.4	26.9	5.0
24	9.0	7.8	7.3	6.9	6.4	6.3	5.6	9.1	14.9	21.3	24.8	26.3	27.2	27.3	27.1	27.0	26.4	25.8	24.8	21.3	16.3	15.1	12.1	11.9	17.0	27.3	5.6
25	10.6	9.5	9.3	7.9	7.2	6.8	6.7	9.7	13.2	18.8	21.8	23.1	23.2	24.1	24.7	24.2	19.2	13.8	12.8	13.6	11.8	11.3	10.6	9.1	14.3	24.7	6.7
26	8.5	7.5	6.6	5.5	5.7	5.7	6.4	8.8	12.3	16.8	18.7	19.6	20.8	21.9	22.7	23.3	23.0	22.8	20.6	16.8	14.5	13.1	15.1	12.6	14.6	23.3	5.5
27	11.7	10.6	9.6	8.4	7.5	6.9	6.6	8.3	13.0	17.5	15.1	15.1	14.4	16.6	18.4	19.5	20.0	18.7	14.7	13.4	12.6	11.9	9.3	8.0	12.8	20.0	6.6
28	7.1	4.7	3.6	2.6	2.7	2.3	2.8	8.7	13.6	15.3	16.6	18.0	19.7	21.0	22.1	22.9	23.2	23.0	21.2	18.1	15.3	11.7	9.0	8.5	13.1	23.2	2.3
29	6.1	5.1	4.7	3.5	2.8	2.0	2.7	6.4	12.6	19.6	21.1	22.1	23.2	23.9	24.2	24.6	24.7	24.1	23.1	21.5	20.2	19.5	18.3	17.4	15.6	24.7	2.0
30	14.7	12.3	11.3	9.2	8.2	7.4	7.1	7.9	10.4	11.8	11.1	10.4	10.3	11.6	12.5	13.0	13.3	13.7	12.9	8.0	4.7	2.3	0.4	-0.8	9.3	14.7	-0.8
31	-1.4	-1.7	-1.3	-0.6	-0.1	1.0	1.3	3.2	6.6	8.7	9.3	10.3	11.0	10.4	11.1	11.3	11.3	11.1	10.4	9.4	7.9	6.4	6.2	5.9	6.2	11.3	-1.7
Avg	9.7	8.7	7.8	6.8	6.3	5.7	6.4	10.3	15.1	18.4	19.8	20.6	21.4	22.3	23.0	23.4	23.2	22.5	21.3	18.6	15.5	13.4	11.8	10.4	15.1	23.8	5.1
Max	20.1	19.3	17.7	16.8	16.5	15.0	16.3	19.5	21.5	24.9	26.8	27.1	27.9	28.5	29.1	29.5	29.5	28.9	27.6	25.3	22.9	22.4	22.3	21.7	22.6	29.5	14.9
Min	-1.4	-1.7	-1.3	-1.8	-2.5	-2.6	-2.0	3.2	6.6	8.7	9.3	10.3	10.3	10.4	11.1	11.3	11.3	11.1	10.4	8.0	4.7	2.3	0.4	-0.8	6.2	11.3	-2.6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
September 2020

A-12

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	6.4	6.7	6.7	6.3	6.0	3.5	1.7	6.4	10.9	13.2	14.9	16.7	17.4	19.1	20.0	20.9	20.8	20.4	19.4	18.4	17.5	16.4	13.5	8.9	13.0	20.9	1.7
2	7.7	8.7	7.9	6.3	4.7	4.1	4.9	9.1	16.2	19.1	19.9	21.3	22.4	23.6	22.9	21.2	19.3	16.8	15.2	12.4	10.2	7.3	5.5	4.1	13.0	23.6	4.1
3	2.7	1.7	1.1	0.7	0.1	-0.1	0.1	3.7	10.8	16.5	18.2	19.3	21.0	22.0	23.0	23.8	24.3	23.7	22.5	19.7	16.5	10.6	8.8	7.1	12.4	24.3	-0.1
4	5.8	4.4	4.0	2.9	2.8	1.8	1.8	5.5	11.8	18.0	20.4	22.0	23.4	24.9	26.2	26.8	27.1	27.0	24.0	17.1	14.4	12.6	9.8	9.1	14.3	27.1	1.8
5	7.7	7.1	7.0	5.8	5.4	4.6	5.5	7.9	13.0	21.4	26.4	28.0	28.8	28.8	29.0	28.4	27.3	26.6	25.6	24.0	23.0	18.2	12.7	9.9	17.6	29.0	4.6
6	8.7	6.9	5.5	4.6	3.6	2.2	2.6	5.9	12.3	17.3	19.3	21.0	22.3	23.1	23.6	24.0	23.6	22.5	19.3	15.6	15.6	13.5	12.2	11.4	14.0	24.0	2.2
7	10.3	9.2	8.0	6.9	6.7	6.5	6.4	5.5	4.0	3.3	2.8	2.8	2.6	2.6	2.5	1.6	1.3	0.7	0.7	0.0	0.0	-0.2	-0.7	-1.9	3.4	10.3	-1.9
8	-1.9	-0.8	-2.7	-4.1	-5.7	-7.2	-8.9	-5.7	-1.9	0.3	1.5	3.2	4.4	5.8	6.8	7.3	7.7	7.7	5.7	1.1	-0.6	-1.9	-3.4	-3.8	0.1	7.7	-8.9
9	-3.7	-3.7	-2.7	-2.5	-3.4	-2.7	-2.9	-0.1	5.2	10.1	11.9	13.5	14.7	15.3	15.9	16.7	17.0	16.5	14.5	10.4	8.0	6.3	3.1	3.1	6.7	17.0	-3.7
10	1.9	0.9	0.0	-0.7	-0.6	-1.4	-1.3	1.5	8.3	14.2	16.4	18.0	19.4	20.4	20.7	21.4	21.2	20.2	17.3	15.3	12.3	7.7	6.5	5.4	10.2	21.4	-1.4
11	3.6	2.0	0.9	0.1	-0.7	-1.4	-0.8	2.0	8.9	15.8	18.4	19.7	20.9	21.6	22.3	22.5	22.5	21.7	18.7	13.0	10.9	8.8	6.1	4.7	10.9	22.5	-1.4
12	3.5	3.1	2.1	1.8	0.9	1.2	0.4	3.7	9.9	15.5	18.8	20.5	22.0	22.9	23.7	24.3	24.5	23.9	20.7	14.1	11.7	7.9	6.2	5.4	12.0	24.5	0.4
13	4.6	4.1	2.9	2.4	1.2	0.0	0.0	1.2	4.8	10.5	17.2	20.3	21.5	22.3	22.9	23.2	22.8	21.3	17.1	13.5	9.2	7.0	5.7	4.3	10.8	23.2	0.0
14	3.4	2.8	2.9	2.1	2.2	3.2	2.3	3.3	9.4	19.0	23.4	23.8	23.9	23.7	23.1	23.3	23.2	20.2	16.4	13.7	11.7	10.9	8.0	7.3	12.6	23.9	2.1
15	5.8	4.8	4.0	3.6	2.9	2.2	1.4	2.7	6.8	13.0	Au	Au	Au	Au	23.5	23.4	22.9	22.2	19.8	14.4	11.1	8.9	8.7	6.8	10.4	23.5	1.4
16	6.0	4.2	2.6	1.4	0.6	0.1	-0.4	0.5	5.2	11.4	14.0	16.3	18.3	19.8	20.8	21.5	21.3	20.3	15.7	11.7	9.3	6.3	4.3	2.7	9.7	21.5	-0.4
17	2.2	1.4	0.3	0.6	0.3	-0.2	-0.1	1.7	5.9	12.7	19.3	22.5	23.3	23.6	23.9	23.9	21.9	19.7	17.6	16.7	14.8	14.2	14.9	13.1	12.3	23.9	-0.2
18	11.4	8.7	6.0	5.1	5.2	4.9	4.5	5.5	8.7	15.3	21.7	23.9	25.3	26.0	26.1	26.0	25.6	22.8	19.8	18.9	17.5	15.0	13.8	12.4	15.4	26.1	4.5
19	12.4	12.3	11.4	10.3	9.5	9.2	8.3	7.8	10.4	13.9	14.5	12.4	10.8	9.4	9.8	10.0	9.8	9.5	8.9	8.5	8.4	8.1	8.1	7.9	10.1	14.5	7.8
20	7.6	8.0	8.1	8.4	8.5	8.8	9.0	9.1	9.9	10.6	11.8	12.8	13.3	13.9	13.4	14.4	13.5	13.4	11.8	10.4	8.9	5.6	3.1	1.0	9.8	14.4	1.0
21	-0.2	-0.8	-1.8	-2.4	-3.0	-3.3	-3.9	-2.3	4.0	12.0	14.8	15.6	16.8	17.4	17.8	18.9	19.4	19.0	14.2	9.2	6.7	6.1	4.1	2.7	7.5	19.4	-3.9
22	1.5	1.2	0.4	0.3	-0.1	0.1	0.3	2.7	9.3	17.0	20.7	21.7	22.6	23.2	22.5	19.7	17.8	17.1	15.1	13.2	12.7	10.5	10.1	8.5	11.2	23.2	-0.1
23	5.9	4.1	2.2	1.4	1.1	1.5	2.4	3.4	8.8	14.2	16.6	17.5	18.3	19.0	19.9	20.1	20.3	19.1	15.4	13.4	11.5	9.5	8.8	9.2	11.0	20.3	1.1
24	14.1	15.6	16.7	17.8	15.4	17.3	15.9	17.2	19.3	20.1	17.2	14.4	11.9	11.2	10.8	10.8	11.3	11.1	10.2	9.6	9.7	9.5	8.8	8.3	13.5	20.1	8.3
25	7.7	6.3	5.8	4.2	3.3	0.5	-0.9	0.6	6.0	8.7	9.4	9.8	11.8	12.6	11.3	9.5	10.8	11.4	10.9	10.7	10.3	9.8	9.3	9.7	7.9	12.6	-0.9
26	9.1	9.0	7.4	6.2	6.0	5.4	5.2	5.5	6.3	7.2	8.3	8.3	8.8	8.7	9.2	9.0	8.6	8.3	7.2	6.0	5.3	4.2	2.9	2.4	6.9	9.2	2.4
27	3.6	3.3	2.2	1.2	0.1	-0.5	-1.2	-1.5	3.3	5.8	6.4	8.0	8.6	9.4	10.1	10.0	9.8	9.0	7.0	5.1	4.3	0.8	-1.5	-3.3	4.2	10.1	-3.3
28	-4.0	-5.1	-6.4	-6.9	-7.0	-6.9	-7.0	-5.1	0.0	6.3	8.5	10.4	11.5	13.0	13.3	14.4	14.8	14.0	11.9	7.3	4.7	3.4	1.8	0.6	3.6	14.8	-7.0
29	0.3	-0.5	-1.0	-2.1	-2.2	-2.1	-2.7	-1.2	5.4	13.8	16.1	17.6	18.7	19.6	20.5	20.8	20.7	19.6	17.8	13.3	10.0	6.9	5.4	3.4	9.1	20.8	-2.7
30	3.8	4.3	3.3	1.3	0.1	-1.5	-2.4	-1.3	3.9	9.5	11.4	12.4	13.6	14.2	14.7	14.5	13.6	12.2	9.5	6.4	3.1	1.4	0.0	-1.3	6.1	14.7	-2.4
Avg	4.9	4.3	3.5	2.8	2.1	1.7	1.3	3.2	7.9	12.9	15.2	16.3	17.2	17.8	18.3	18.4	18.2	17.3	15.0	12.1	10.3	8.2	6.6	5.3	10.0	19.6	0.2
Max	14.1	15.6	16.7	17.8	15.4	17.3	15.9	17.2	19.3	21.4	26.4	28.0	28.8	28.8	29.0	28.4	27.3	27.0	25.6	24.0	23.0	18.2	14.9	13.1	17.6	29.0	8.3
Min	-4.0	-5.1	-6.4	-6.9	-7.0	-7.2	-8.9	-5.7	-1.9	0.3	1.5	2.8	2.6	2.6	2.5	1.6	1.3	0.7	0.7	0.0	-0.6	-1.9	-3.4	-3.8	0.1	7.7	-8.9

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
July 2020

A-13

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	6.6	5.2	3.7	2.9	1.7	1.9	6.0	10.2	10.9	11.6	13.6	13.5	12.8	9.2	9.4	10.7	11.5	12.1	12.6	11.9	8.7	7.3	6.9	6.5	8.6	13.6	1.7
2	5.5	5.7	5.1	2.8	2.4	1.8	4.5	8.9	12.1	13.7	15.0	16.0	16.7	17.9	18.8	19.3	19.7	19.7	19.2	17.2	11.7	10.4	8.2	4.9	11.5	19.7	1.8
3	3.9	3.1	2.2	1.5	1.5	2.1	6.7	13.9	18.5	19.4	20.9	21.7	22.3	22.4	22.8	21.6	16.6	18.4	18.3	16.4	14.9	11.3	11.7	10.0	13.4	22.8	1.5
4	8.8	5.5	5.1	3.5	3.4	4.2	8.4	13.7	18.6	20.8	21.7	22.8	23.6	23.8	22.8	19.0	17.2	15.8	15.0	13.6	11.4	10.4	10.5	11.0	13.8	23.8	3.4
5	9.6	7.9	6.6	4.9	4.5	3.7	6.8	11.2	15.1	16.8	17.8	18.7	19.6	19.2	20.2	20.6	19.7	18.1	18.1	15.7	11.5	10.2	7.8	8.0	13.0	20.6	3.7
6	10.8	10.4	8.2	6.8	6.4	6.3	8.4	11.6	14.0	15.3	17.4	17.3	19.2	20.5	21.4	21.5	21.8	21.7	21.4	18.3	15.6	14.6	15.1	14.2	14.9	21.8	6.3
7	13.8	13.6	13.1	13.9	14.6	15.1	17.3	18.1	18.7	19.5	19.4	18.9	15.6	13.8	16.2	18.0	18.2	18.3	17.3	15.5	13.4	11.4	10.7	9.8	15.6	19.5	9.8
8	7.9	8.0	8.8	7.3	6.4	7.0	9.3	10.2	11.4	12.2	12.9	14.2	14.9	15.8	16.3	17.0	17.2	17.1	16.5	14.5	9.9	6.7	5.9	3.9	11.3	17.2	3.9
9	2.3	0.6	0.0	-0.4	-1.3	-0.6	2.6	8.5	14.3	16.6	17.9	19.3	20.1	21.5	21.8	22.2	22.5	21.8	21.2	18.9	13.5	11.5	9.6	8.1	12.2	22.5	-1.3
10	6.2	5.6	4.7	3.8	3.6	6.4	10.2	9.1	9.0	11.5	13.4	14.2	16.1	16.2	16.8	18.1	18.5	18.8	17.8	15.7	11.6	8.9	6.4	5.8	11.2	18.8	3.6
11	3.2	2.2	2.0	0.3	0.0	-0.1	4.1	10.0	15.7	18.4	19.4	20.3	21.7	22.5	23.3	23.7	24.1	24.0	23.1	20.1	14.6	9.8	9.2	10.2	13.4	24.1	-0.1
12	14.3	12.5	9.0	7.4	6.5	6.4	10.4	15.5	18.5	19.4	20.6	21.0	20.7	20.0	20.9	20.9	19.8	19.2	18.0	17.1	15.2	14.0	11.6	11.9	15.5	21.0	6.4
13	9.8	8.9	8.5	7.3	5.7	4.4	7.2	11.1	11.6	12.4	13.8	14.9	15.5	16.3	17.1	17.4	17.6	17.5	15.5	12.9	9.8	7.1	5.4	4.8	11.4	17.6	4.4
14	3.1	1.7	0.5	-0.8	-1.1	-1.7	2.0	7.7	12.0	12.7	13.8	14.8	16.0	17.1	17.8	18.3	18.8	18.4	17.7	15.1	10.0	7.1	5.2	1.3	9.5	18.8	-1.7
15	0.3	-0.6	-1.4	-1.7	-1.6	-1.5	1.5	8.6	13.9	15.5	16.9	18.1	19.0	20.0	20.9	21.0	20.8	21.1	19.9	17.2	12.7	9.9	6.4	5.3	10.9	21.1	-1.7
16	3.8	3.2	2.3	1.3	1.3	1.6	5.6	11.5	16.5	19.3	20.6	21.5	22.4	23.1	24.2	25.0	25.1	24.6	23.9	20.7	15.3	13.4	10.2	8.3	14.4	25.1	1.3
17	6.7	6.2	5.5	4.5	3.9	4.2	8.0	13.7	19.2	21.1	22.2	22.8	22.3	20.5	21.4	20.7	19.4	19.1	17.9	16.2	14.2	12.2	11.7	11.1	14.4	22.8	3.9
18	9.2	7.4	5.5	5.1	3.9	3.3	5.9	10.3	14.2	15.6	16.5	17.5	18.4	19.7	20.3	21.0	21.0	21.2	20.6	17.7	12.2	9.4	7.8	5.0	12.9	21.2	3.3
19	4.1	3.4	2.9	2.3	1.7	1.9	5.8	11.2	16.0	17.9	18.5	19.3	20.5	21.4	22.0	22.4	22.4	21.7	20.6	18.0	12.8	9.7	7.0	6.4	12.9	22.4	1.7
20	5.2	4.5	3.8	3.5	3.6	5.0	6.5	10.0	14.4	17.0	18.1	19.1	20.0	20.7	20.9	21.3	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	12.1	21.3	3.5
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	19.3	19.7	21.4	22.6	23.5	24.6	25.3	25.8	25.9	25.7	24.8	21.3	16.1	12.3	10.3	7.6	20.4	25.9	7.6
22	5.5	5.0	4.4	3.6	3.5	3.9	8.0	13.7	19.6	23.4	24.6	25.7	26.9	27.9	28.8	28.7	28.0	28.0	25.1	23.0	20.2	17.4	15.7	14.4	17.7	28.8	3.5
23	13.7	14.2	12.8	12.5	13.5	13.4	13.2	13.0	14.5	15.2	16.3	17.4	18.7	20.9	21.3	14.3	13.3	14.3	15.1	13.8	12.1	11.0	11.0	10.3	14.4	21.3	10.3
24	8.4	7.0	6.9	6.9	7.4	8.3	9.9	11.8	13.5	16.0	17.9	18.3	19.8	20.5	21.6	22.2	21.7	21.8	21.8	19.5	16.5	14.1	12.5	10.1	14.8	22.2	6.9
25	9.6	10.0	9.7	8.8	8.0	7.2	8.3	11.3	15.2	16.6	17.5	18.5	19.4	20.7	21.7	22.2	22.3	22.1	21.1	16.7	11.4	9.5	6.7	5.6	14.2	22.3	5.6
26	4.5	3.2	2.7	1.8	1.6	1.7	4.6	11.4	16.8	18.7	20.1	21.3	22.3	23.1	23.7	24.3	24.6	24.4	22.7	19.7	14.9	11.3	7.4	5.7	13.9	24.6	1.6
27	4.7	3.5	3.0	2.5	2.8	2.5	5.8	12.3	19.1	22.6	24.1	25.2	26.0	27.0	27.9	28.2	28.4	28.0	27.0	22.7	19.3	17.8	18.0	16.4	17.3	28.4	2.5
28	14.3	12.6	11.4	10.5	11.0	12.9	12.7	13.7	16.9	21.2	22.7	23.9	25.1	24.9	25.0	23.3	22.1	20.9	20.1	18.6	16.7	14.8	13.1	12.0	17.5	25.1	10.5
29	9.8	8.5	8.1	7.3	6.9	7.3	8.9	12.9	17.9	22.3	23.6	24.8	25.7	26.5	27.1	27.5	27.4	24.2	22.2	19.8	15.9	13.1	12.2	9.4	17.1	27.5	6.9
30	8.6	6.9	5.7	5.0	4.9	4.3	7.4	12.8	18.5	22.6	24.3	25.6	25.4	26.0	26.0	26.9	26.9	26.5	23.5	22.0	19.1	17.3	15.8	12.9	17.3	26.9	4.3
31	10.2	9.3	7.8	7.5	6.2	6.5	8.8	14.5	21.0	24.8	25.7	26.5	27.7	28.2	28.6	27.7	27.7	26.1	25.0	21.8	20.0	18.3	18.6	18.1	19.0	28.6	6.2
Avg	7.5	6.5	5.6	4.8	4.4	4.6	7.5	11.7	15.7	17.7	19.0	19.9	20.6	21.0	21.7	21.6	21.3	21.0	20.1	17.7	14.0	11.7	10.3	9.0	14.0	22.5	3.9
Max	14.3	14.2	13.1	13.9	14.6	15.1	17.3	18.1	21.0	24.8	25.7	26.5	27.7	28.2	28.8	28.7	28.4	28.0	27.0	23.0	20.2	18.3	18.6	18.1	20.4	28.8	10.5
Min	0.3	-0.6	-1.4	-1.7	-1.6	-1.7	1.5	7.7	9.0	11.5	12.9	13.5	12.8	9.2	9.4	10.7	11.5	12.1	12.6	11.9	8.7	6.7	5.2	1.3	8.6	13.6	-1.7

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
August 2020

A-14

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	18.0	16.9	16.3	15.3	13.8	13.0	15.6	19.8	22.0	23.6	25.2	26.2	26.7	26.8	26.1	27.5	26.4	26.2	24.7	23.3	22.2	20.3	19.8	19.3	21.5	27.5	13.0
2	19.5	18.3	16.0	14.9	14.7	13.2	13.0	17.6	21.7	24.5	25.7	26.7	27.7	28.1	28.7	29.6	30.3	29.4	27.6	24.7	22.1	21.1	21.6	21.0	22.4	30.3	13.0
3	18.2	15.8	13.0	11.7	10.0	9.1	11.0	16.3	18.3	22.6	21.9	19.5	24.3	25.9	26.6	27.0	27.0	26.1	24.4	20.8	17.7	13.4	10.3	8.2	18.3	27.0	8.2
4	7.3	6.1	5.2	4.5	4.0	3.8	6.8	12.7	18.3	20.1	21.3	22.5	23.0	24.1	24.9	25.3	25.6	25.4	24.5	20.2	17.4	15.4	13.9	13.9	16.1	25.6	3.8
5	10.5	9.4	8.7	9.0	9.2	7.9	10.1	17.1	19.8	21.8	23.3	24.4	25.8	26.6	26.6	27.2	26.6	25.2	23.5	18.9	15.3	14.7	13.3	10.8	17.7	27.2	7.9
6	8.9	9.1	8.2	7.8	7.8	7.3	9.3	13.8	19.2	22.1	23.8	24.0	24.8	25.8	26.7	26.2	21.7	21.8	18.8	16.3	14.7	12.8	10.1	8.1	16.2	26.7	7.3
7	6.8	8.4	8.4	7.0	5.1	4.6	7.1	13.0	14.1	14.5	15.7	16.2	16.8	17.7	18.4	18.9	19.2	19.0	17.8	15.1	11.0	7.3	4.2	2.5	12.0	19.2	2.5
8	1.2	0.3	0.1	-1.1	-1.5	-1.3	0.4	7.3	13.8	17.6	18.5	19.3	20.6	21.8	21.9	22.7	22.1	21.0	20.5	16.7	13.6	10.8	9.3	10.2	11.9	22.7	-1.5
9	12.7	11.5	8.1	6.9	5.4	4.0	6.3	11.1	14.7	16.1	16.9	17.3	18.5	18.8	19.6	20.6	20.9	20.1	18.9	15.7	12.0	8.2	6.2	3.9	13.1	20.9	3.9
10	2.7	2.1	1.0	0.4	-0.2	-0.5	2.4	7.9	14.6	16.3	18.2	20.0	21.3	22.8	23.7	24.2	24.0	23.9	22.6	19.0	13.3	10.8	7.9	5.8	12.7	24.2	-0.5
11	4.3	3.4	2.3	2.3	1.4	1.0	3.7	10.1	17.3	20.6	21.6	22.9	23.9	25.0	25.3	25.7	26.1	26.2	24.7	20.2	15.2	13.7	10.6	7.3	14.8	26.2	1.0
12	7.4	5.6	4.3	2.7	2.3	2.0	4.9	11.5	18.1	21.3	23.2	24.1	24.2	24.6	24.0	22.7	20.2	18.6	17.3	15.6	14.8	13.5	12.9	10.3	14.4	24.6	2.0
13	8.9	8.8	9.7	6.7	5.8	4.9	6.3	10.8	13.6	14.5	15.8	17.5	18.8	18.4	18.1	17.9	16.8	15.8	14.6	12.8	10.3	8.5	4.0	1.5	11.7	18.8	1.5
14	-0.1	-0.9	-2.5	-3.2	-4.1	-4.3	-2.5	3.9	11.6	13.7	15.4	16.8	18.0	19.3	20.2	20.8	20.9	20.8	19.7	16.5	10.6	7.8	5.2	3.6	9.5	20.9	-4.3
15	2.1	0.9	0.1	-0.5	-0.9	-1.4	0.9	7.8	15.7	18.6	20.1	21.3	23.1	24.0	24.9	25.5	25.7	25.4	24.1	20.1	14.1	11.7	8.3	6.4	13.3	25.7	-1.4
16	4.8	2.9	2.2	1.8	1.2	0.7	3.6	10.6	17.9	23.0	24.9	25.8	26.9	28.1	29.0	28.3	28.1	27.0	24.5	19.8	17.8	14.7	14.8	12.4	16.3	29.0	0.7
17	8.0	8.7	10.1	10.7	10.1	7.8	9.6	15.8	19.6	25.8	27.5	27.9	28.7	29.5	30.1	30.4	30.2	28.7	26.4	23.1	16.9	13.8	12.0	10.1	19.2	30.4	7.8
18	8.5	7.6	6.9	7.5	7.7	7.5	9.2	13.8	17.5	22.0	26.6	26.6	26.5	27.3	26.6	26.4	27.4	26.8	24.0	20.2	16.8	13.7	11.8	9.0	17.4	27.4	6.9
19	8.2	6.9	7.0	6.5	5.6	5.3	7.4	12.7	18.8	20.5	18.7	17.7	16.9	20.4	23.9	25.9	25.4	24.5	22.2	18.3	16.3	16.0	14.9	13.4	15.6	25.9	5.3
20	11.1	10.2	9.8	8.0	8.2	7.4	7.6	9.6	13.3	18.6	22.8	24.9	25.4	25.4	26.0	25.7	24.2	19.3	18.5	15.6	11.7	9.4	8.5	7.8	15.4	26.0	7.4
21	6.1	4.7	3.7	2.9	1.9	1.6	2.6	8.5	14.9	19.9	21.7	23.0	24.1	25.0	25.7	26.8	26.5	26.1	23.6	18.7	15.7	11.3	10.2	11.3	14.9	26.8	1.6
22	12.5	11.0	8.8	7.3	6.1	5.2	5.5	8.6	14.0	20.4	22.9	24.9	25.8	26.3	26.7	26.6	26.4	25.2	22.2	17.8	15.5	12.6	10.4	9.7	16.3	26.7	5.2
23	7.6	6.2	5.0	4.2	4.3	3.2	3.9	10.0	18.1	21.1	22.6	24.2	25.1	26.3	27.0	27.5	27.7	26.7	24.0	18.3	15.5	13.3	11.2	8.2	15.9	27.7	3.2
24	6.9	6.2	5.5	4.8	4.1	4.2	4.3	9.4	15.7	22.1	25.8	27.2	28.1	27.8	27.3	26.7	26.1	25.4	23.7	19.4	15.4	14.0	9.9	10.2	16.3	28.1	4.1
25	9.0	7.8	7.8	6.0	5.9	5.2	5.5	9.8	13.6	19.4	22.5	23.6	23.5	24.8	25.6	24.5	18.9	13.4	12.6	13.2	11.6	11.0	10.2	8.4	13.9	25.6	5.2
26	7.9	6.8	6.0	4.8	4.9	5.0	6.1	9.1	13.1	17.6	19.5	20.5	21.8	23.0	23.6	23.9	23.4	22.6	19.8	15.7	13.6	11.7	13.6	12.1	14.4	23.9	4.8
27	10.6	9.5	8.1	7.0	6.4	5.7	6.0	8.5	13.5	18.1	15.4	15.1	14.8	17.2	19.1	20.3	20.7	18.9	14.7	13.2	12.4	11.3	8.5	7.1	12.6	20.7	5.7
28	6.4	3.3	2.2	1.4	1.2	0.9	1.9	8.7	14.1	16.2	17.6	19.2	20.8	22.1	23.0	23.8	23.9	23.3	19.8	16.7	13.7	9.7	7.0	6.4	12.6	23.9	0.9
29	4.4	3.3	2.4	1.7	0.8	0.5	1.5	6.8	13.6	20.4	21.9	23.1	24.2	25.0	25.2	25.5	25.3	24.2	22.6	20.7	19.4	18.9	17.4	16.6	15.2	25.5	0.5
30	14.4	11.9	10.9	8.9	8.0	7.1	7.0	8.3	11.2	12.7	12.1	11.0	11.2	12.9	13.7	14.2	14.3	14.3	12.7	6.6	3.7	1.3	-1.6	-2.2	9.4	14.4	-2.2
31	-2.9	-3.0	-2.4	-1.1	-0.5	0.3	1.1	3.4	6.9	9.4	10.2	10.9	11.6	10.8	11.9	11.9	11.6	11.2	10.2	8.9	7.1	5.5	5.6	5.2	6.0	11.9	-3.0
Avg	8.1	7.1	6.2	5.4	4.8	4.2	5.7	10.8	15.8	19.2	20.6	21.4	22.4	23.3	23.9	24.2	23.7	22.7	20.8	17.5	14.4	12.2	10.4	9.0	14.7	24.6	3.6
Max	19.5	18.3	16.3	15.3	14.7	13.2	15.6	19.8	22.0	25.8	27.5	27.9	28.7	29.5	30.1	30.4	30.3	29.4	27.6	24.7	22.2	21.1	21.6	21.0	22.4	30.4	13.0
Min	-2.9	-3.0	-2.5	-3.2	-4.1	-4.3	-2.5	3.4	6.9	9.4	10.2	10.9	11.2	10.8	11.9	11.9	11.6	11.2	10.2	6.6	3.7	1.3	-1.6	-2.2	6.0	11.9	-4.3

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
September 2020

A-15

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	5.6	6.2	6.1	5.5	4.0	1.3	0.9	6.8	11.7	14.1	15.7	17.8	18.5	20.4	21.1	21.9	21.4	20.8	19.2	17.9	16.7	15.5	11.4	7.5	12.8	21.9	0.9
2	6.1	6.4	5.6	4.9	3.9	3.2	4.7	9.5	16.0	19.3	20.4	22.1	23.4	24.7	23.6	22.1	20.0	16.9	15.2	11.5	9.1	6.2	4.0	2.7	12.6	24.7	2.7
3	1.1	0.4	0.1	-0.5	-0.8	-1.6	-0.7	4.1	11.6	17.3	19.3	20.4	22.2	23.2	24.1	24.6	25.0	24.0	22.0	18.0	14.8	9.5	7.6	5.5	12.1	25.0	-1.6
4	4.0	2.4	2.6	1.1	0.8	-0.1	0.4	6.1	12.5	18.9	21.3	23.0	24.5	26.1	27.3	27.7	27.9	27.5	22.9	16.3	13.3	10.5	7.0	7.1	13.8	27.9	-0.1
5	5.7	4.9	4.8	3.7	3.4	3.3	3.9	7.7	13.5	22.1	27.1	28.9	29.7	29.6	29.4	28.5	27.3	26.2	24.9	22.5	21.8	15.9	11.4	9.1	16.9	29.7	3.3
6	7.5	5.1	3.5	1.8	1.3	0.6	1.3	5.9	13.0	18.3	20.3	22.1	23.5	24.3	24.8	24.9	24.4	22.7	18.7	13.7	14.8	13.0	11.9	11.0	13.7	24.9	0.6
7	9.9	8.8	7.8	6.9	6.6	6.4	6.4	5.5	4.0	3.4	2.9	2.9	2.8	2.9	2.8	1.9	1.5	0.7	0.7	0.0	-0.1	-0.7	-1.3	-2.8	3.3	9.9	-2.8
8	-2.3	-1.4	-3.8	-5.1	-6.7	-8.5	-9.8	-5.1	-1.4	1.0	2.4	4.1	5.3	6.8	7.9	8.4	8.5	8.2	5.0	0.4	-1.5	-2.9	-5.0	-4.8	-0.0	8.5	-9.8
9	-4.7	-4.8	-2.8	-3.3	-3.9	-3.4	-4.1	0.4	6.1	11.1	12.9	14.6	15.9	16.3	16.8	17.6	18.0	16.8	13.6	9.0	6.9	5.0	1.0	0.9	6.5	18.0	-4.8
10	0.2	-0.3	-1.5	-1.9	-2.0	-3.0	-2.7	1.7	9.0	15.0	17.2	18.9	20.4	21.4	21.6	22.2	21.9	20.3	16.3	14.5	10.3	5.5	5.1	4.1	9.8	22.2	-3.0
11	1.3	-0.1	-1.0	-1.8	-2.5	-2.7	-3.1	2.3	9.8	16.8	19.5	20.8	22.1	22.9	23.6	23.7	23.3	21.9	17.0	11.2	9.7	7.0	3.8	2.8	10.3	23.7	-3.1
12	1.6	1.1	0.1	-0.5	-0.9	-0.8	-1.4	4.1	10.5	16.4	19.9	21.7	23.1	24.0	24.8	25.1	25.0	23.9	18.9	12.8	10.6	5.9	3.9	3.4	11.4	25.1	-1.4
13	2.0	2.0	0.8	-0.1	-0.9	-1.7	-1.9	0.4	5.1	10.9	17.9	21.0	22.3	23.0	23.4	23.6	22.7	20.1	15.8	12.3	6.7	4.1	2.7	2.0	9.8	23.6	-1.9
14	1.2	0.2	0.1	-0.1	0.1	0.7	-0.1	2.6	9.8	19.7	23.9	23.9	24.1	23.7	23.2	23.3	22.4	18.8	15.8	12.3	10.2	8.9	6.8	5.0	11.5	24.1	-0.1
15	3.5	2.6	1.8	1.6	0.8	-0.2	-0.6	1.6	7.0	13.7	Au	Au	Au	Au	24.2	23.7	23.0	21.8	18.1	12.8	10.1	7.2	6.9	5.7	9.3	24.2	-0.6
16	4.6	2.6	1.2	0.5	-0.7	-1.2	-1.8	0.2	5.8	11.9	14.6	17.0	19.1	20.9	21.8	22.3	21.5	19.9	14.3	10.4	6.8	3.5	1.9	0.5	9.1	22.3	-1.8
17	0.4	-0.9	-1.3	-1.6	-2.1	-2.1	-1.7	0.3	6.6	13.6	20.1	23.3	24.3	24.6	24.8	24.4	22.0	19.2	16.3	15.2	13.4	13.1	13.9	10.8	11.5	24.8	-2.1
18	8.2	6.3	4.3	2.9	3.3	3.5	3.0	4.7	9.3	16.1	22.5	24.8	26.2	26.7	26.5	26.1	25.6	21.5	18.5	18.1	16.3	13.4	12.2	11.1	14.6	26.7	2.9
19	10.8	10.4	9.8	8.4	7.7	8.0	7.2	7.3	10.4	14.1	14.6	12.4	10.6	9.3	10.0	10.2	10.0	9.5	8.8	8.3	8.2	8.0	8.0	7.9	9.6	14.6	7.2
20	7.3	7.8	7.9	8.3	8.4	8.7	8.9	9.2	10.0	11.0	12.7	13.7	13.9	14.7	13.9	14.9	13.8	13.5	11.1	9.0	7.0	3.9	1.5	-0.3	9.6	14.9	-0.3
21	-1.7	-2.7	-3.5	-3.8	-4.5	-4.9	-5.4	-2.1	4.9	12.9	15.7	16.5	17.9	18.4	18.6	19.7	19.9	18.6	12.6	7.9	5.5	4.4	1.1	0.0	6.9	19.9	-5.4
22	-0.9	-1.4	-1.4	-1.9	-1.7	-2.2	-1.8	2.4	10.0	17.6	21.5	22.5	23.5	23.9	22.9	19.9	18.0	17.1	13.9	12.3	12.0	9.7	9.3	7.1	10.5	23.9	-2.2
23	4.7	2.5	0.5	-0.3	-0.1	0.5	1.6	3.4	9.3	14.7	17.4	18.4	19.2	19.8	20.7	20.5	20.5	18.5	14.4	11.9	9.8	8.0	6.8	6.8	10.4	20.7	-0.3
24	11.0	13.3	14.3	14.9	13.2	15.8	14.3	16.7	19.4	20.6	17.6	14.7	12.1	11.5	11.0	11.0	11.5	11.1	9.9	9.1	9.5	9.1	8.7	8.1	12.9	20.6	8.1
25	7.4	5.1	4.8	3.0	1.3	-1.1	-1.6	0.5	6.6	9.1	9.7	10.0	12.1	12.8	11.4	9.7	11.0	11.4	10.7	10.4	10.2	9.6	9.0	9.6	7.6	12.8	-1.6
26	9.0	8.8	7.3	6.2	5.9	5.2	5.1	5.6	6.6	8.0	9.2	9.1	9.7	9.4	10.0	9.5	8.8	8.3	7.0	6.0	5.2	3.7	2.2	1.7	7.0	10.0	1.7
27	3.5	3.0	1.8	0.6	-0.6	-1.5	-2.7	-1.2	4.2	6.5	7.0	9.2	9.6	10.5	11.2	10.6	10.1	8.8	6.2	4.0	3.3	-0.7	-2.9	-4.2	4.0	11.2	-4.2
28	-5.7	-7.4	-8.1	-8.6	-8.9	-8.3	-8.7	-5.2	0.7	7.2	9.6	11.4	12.5	14.0	14.1	15.0	14.9	13.6	10.5	6.4	4.2	2.4	0.3	-0.7	3.1	15.0	-8.9
29	-1.2	-2.2	-3.1	-3.9	-4.0	-4.4	-4.7	-1.4	6.1	14.5	17.1	18.6	19.8	20.6	21.4	21.5	21.1	19.4	16.9	12.2	8.1	5.2	3.1	1.7	8.4	21.5	-4.7
30	1.9	2.8	1.5	-0.3	-1.7	-3.5	-4.2	-1.8	4.7	10.4	12.3	13.5	14.9	15.5	15.7	15.4	14.1	12.1	8.5	4.9	1.6	-0.3	-2.0	-2.8	5.5	15.7	-4.2
Avg	3.4	2.7	2.0	1.2	0.6	0.2	0.0	3.1	8.4	13.5	15.9	17.1	18.0	18.7	19.1	19.0	18.5	17.1	14.1	11.0	9.2	6.8	5.0	3.9	9.5	20.3	-1.3
Max	11.0	13.3	14.3	14.9	13.2	15.8	14.3	16.7	19.4	22.1	27.1	28.9	29.7	29.6	29.4	28.5	27.9	27.5	24.9	22.5	21.8	15.9	13.9	11.1	16.9	29.7	8.1
Min	-5.7	-7.4	-8.1	-8.6	-8.9	-8.5	-9.8	-5.2	-1.4	1.0	2.4	2.9	2.8	2.9	2.8	1.9	1.5	0.7	0.7	0.0	-1.5	-2.9	-5.0	-4.8	-0.0	8.5	-9.8

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
July 2020

A-16

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.18	0.66	0.92	0.83	0.77	0.33	-0.43	-0.25	-0.28	-0.28	-0.65	-0.36	-0.53	0.00	-0.20	-0.19	0.01	-0.36	-0.25	0.00	0.89	0.57	0.45	0.22	0.09	0.92	-0.65
2	0.22	0.17	0.57	0.59	0.35	0.17	-0.32	-0.46	-0.33	-0.45	-0.50	-0.61	-0.66	-0.68	-0.66	-0.61	-0.53	-0.55	-0.27	0.23	0.71	0.33	0.65	1.34	-0.05	1.34	-0.68
3	1.60	1.57	1.38	1.44	1.24	0.69	-0.25	-0.71	-0.27	-0.43	-0.44	-0.47	-0.54	-0.43	-0.52	0.35	0.19	0.10	0.28	0.80	1.16	0.94	0.42	0.61	0.36	1.60	-0.71
4	0.59	1.00	1.33	1.47	1.47	0.91	-0.14	-0.33	-0.62	-0.64	-0.54	-0.54	-0.62	-0.37	0.17	0.25	0.34	-0.20	0.40	0.54	0.71	0.62	0.40	0.62	0.28	1.47	-0.64
5	0.68	0.82	0.88	1.08	0.67	0.60	-0.23	-0.60	-0.57	-0.66	-0.76	-0.81	-0.72	-0.33	-0.55	-0.53	0.15	0.44	-0.04	0.50	1.37	0.94	1.67	1.39	0.22	1.67	-0.81
6	0.62	0.34	0.54	0.62	0.32	0.46	-0.03	-0.35	-0.36	-0.34	-0.48	-0.12	-0.54	-0.62	-0.78	-0.58	-0.47	-0.35	-0.15	0.82	0.82	0.89	0.49	0.97	0.07	0.97	-0.78
7	0.91	0.88	0.83	0.64	0.62	0.43	0.43	0.33	-0.21	-0.12	-0.43	-0.42	0.10	0.09	-0.68	-0.74	-0.38	-0.33	-0.03	0.41	0.87	1.33	1.33	1.22	0.30	1.33	-0.74
8	1.30	0.87	0.79	1.04	0.92	0.64	0.02	-0.19	-0.47	-0.68	-0.60	-0.93	-0.84	-0.87	-0.82	-0.79	-0.67	-0.45	-0.14	0.51	1.30	1.57	0.65	0.98	0.13	1.57	-0.93
9	1.21	1.02	1.15	1.27	1.25	1.08	-0.23	-0.48	-0.58	-0.58	-0.65	-0.70	-0.56	-0.74	-0.58	-0.51	-0.61	-0.26	0.06	0.43	1.36	0.97	1.16	1.30	0.24	1.36	-0.74
10	1.49	1.36	1.17	1.44	1.31	0.65	0.28	0.20	-0.19	-0.63	-0.92	-0.52	-0.79	-0.55	-0.39	-0.66	-0.44	-0.42	-0.16	0.39	1.74	1.14	1.33	0.73	0.32	1.74	-0.92
11	1.11	1.03	1.19	1.69	1.32	1.11	-0.30	-0.77	-0.65	-0.45	-0.66	-0.65	-0.77	-0.77	-0.78	-0.60	-0.65	-0.27	0.29	0.96	1.07	1.90	1.58	3.16	0.38	3.16	-0.78
12	3.59	3.15	2.43	1.71	1.80	1.03	-0.15	-0.44	-0.67	-0.69	-0.75	-0.65	-0.50	-0.22	-0.30	0.00	0.42	0.44	0.49	0.55	0.81	0.99	1.51	1.49	0.67	3.59	-0.75
13	1.08	1.26	1.08	1.16	1.49	1.36	0.25	-0.35	-0.28	-0.55	-0.78	-0.94	-0.81	-0.76	-0.80	-0.70	-0.56	-0.42	0.46	1.03	1.29	1.40	1.38	1.10	0.31	1.49	-0.94
14	1.48	1.52	1.52	1.76	1.15	1.10	-0.15	-0.73	-0.76	-0.72	-0.82	-0.89	-0.91	-1.04	-0.95	-0.79	-0.66	-0.28	-0.03	0.90	1.42	0.87	1.11	1.66	0.24	1.76	-1.04
15	1.42	1.44	1.26	1.49	1.29	1.11	-0.02	-0.80	-0.55	-0.67	-0.87	-0.93	-1.03	-0.99	-1.03	-0.76	-0.42	-0.38	-0.01	0.71	1.17	1.42	1.56	1.84	0.26	1.84	-1.03
16	1.73	1.47	1.31	1.35	1.18	0.88	-0.07	-0.66	-0.70	-0.63	-0.69	-0.76	-0.86	-0.78	-0.81	-0.73	-0.64	-0.37	-0.11	0.89	1.35	0.72	1.57	1.37	0.25	1.73	-0.86
17	1.82	1.30	1.42	1.55	1.51	1.00	-0.03	-0.58	-0.68	-0.78	-0.89	-0.74	-0.19	0.02	-0.26	0.07	0.37	0.24	0.52	0.98	0.81	0.26	0.16	0.24	0.34	1.82	-0.89
18	0.42	0.76	0.59	0.56	0.61	0.78	-0.21	-0.38	-0.70	-0.78	-0.86	-0.82	-0.80	-0.95	-0.90	-0.92	-0.59	-0.45	-0.18	0.79	1.24	1.00	0.98	1.39	0.02	1.39	-0.95
19	1.55	1.30	0.93	1.32	1.54	0.99	-0.31	-0.69	-0.74	-0.77	-0.87	-0.94	-0.87	-1.00	-0.94	-0.92	-0.70	-0.30	0.17	0.62	1.91	1.59	1.67	1.55	0.25	1.91	-1.00
20	1.32	1.22	1.71	1.54	1.92	1.38	1.33	-0.07	-0.43	-0.83	-0.93	-1.04	-1.11	-1.10	-1.13	-0.95	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	0.18	1.92	-1.13
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	-0.65	-0.68	-0.67	-0.82	-0.81	-1.01	-0.98	-0.80	-0.52	-0.32	0.10	0.72	0.82	1.42	1.70	2.35	-0.01	2.35	-1.01
22	2.21	1.56	1.67	1.82	1.41	1.35	-0.13	-0.55	-0.86	-0.70	-0.77	-0.91	-0.87	-0.76	-1.11	-0.53	0.10	0.18	1.18	0.46	1.11	0.96	0.85	1.13	0.37	2.21	-1.11
23	0.98	0.63	0.67	0.96	1.02	0.89	0.54	0.22	-0.05	-0.15	-0.41	-0.42	-0.49	-0.70	-0.16	0.10	0.12	-0.22	-0.07	0.42	0.48	0.45	0.35	0.23	0.22	1.02	-0.70
24	0.74	0.88	0.67	0.41	0.39	0.14	-0.02	-0.33	-0.19	-0.53	-0.77	-0.54	-0.65	-0.45	-0.58	-0.45	0.07	0.08	0.28	1.16	1.29	0.92	0.49	1.42	0.18	1.42	-0.77
25	0.67	0.59	0.47	0.61	0.43	0.38	-0.03	-0.30	-0.58	-0.48	-0.69	-0.78	-0.75	-0.89	-0.97	-0.78	-0.59	-0.56	-0.20	1.28	0.89	1.16	1.42	1.47	0.07	1.47	-0.97
26	1.10	1.36	1.46	1.27	1.33	1.10	-0.16	-0.71	-0.50	-0.75	-0.83	-0.94	-0.98	-1.08	-0.89	-0.83	-0.85	-0.69	0.03	0.82	1.73	1.77	1.95	1.78	0.27	1.95	-1.08
27	2.07	1.98	1.95	1.62	1.35	1.68	0.06	-0.61	-0.42	-0.65	-0.80	-0.85	-0.68	-0.82	-1.08	-1.08	-0.87	-0.54	0.09	0.81	0.87	1.84	2.10	2.68	0.45	2.68	-1.08
28	2.31	1.90	1.54	1.18	0.70	0.71	0.59	0.18	-0.39	-0.64	-0.44	-0.72	-0.95	-0.58	-0.30	0.36	0.18	0.61	0.29	0.44	0.58	0.67	1.14	1.23	0.44	2.31	-0.95
29	1.35	1.43	0.82	1.13	1.08	0.83	0.09	-0.49	-0.58	-0.88	-0.92	-0.95	-1.06	-1.12	-1.15	-1.13	-0.90	0.10	0.21	1.18	1.36	1.00	0.69	1.51	0.15	1.51	-1.15
30	1.04	1.65	1.47	1.33	1.44	1.49	0.17	-0.44	-0.78	-0.99	-1.00	-1.11	-0.34	-0.92	-0.83	-0.83	-0.65	-0.38	0.76	0.75	0.58	0.36	0.60	1.34	0.20	1.65	-1.11
31	1.39	1.53	2.09	1.64	1.93	1.37	0.21	-0.42	-0.75	-0.70	-0.89	-0.95	-0.89	-0.97	-0.99	-0.33	-0.42	0.40	0.17	0.18	0.56	1.73	1.41	1.10	0.35	2.09	-0.99
Avg	1.27	1.22	1.19	1.22	1.13	0.89	0.03	-0.39	-0.51	-0.61	-0.72	-0.74	-0.71	-0.69	-0.71	-0.54	-0.34	-0.18	0.14	0.68	1.08	1.06	1.09	1.31	0.25	1.78	-0.90
Max	3.59	3.15	2.43	1.82	1.93	1.68	1.33	0.33	-0.05	-0.12	-0.41	-0.12	0.10	0.09	0.17	0.36	0.42	0.61	1.18	1.28	1.91	1.90	2.10	3.16	0.67	3.59	-0.64
Min	0.18	0.17	0.47	0.41	0.32	0.14	-0.43	-0.80	-0.86	-0.99	-1.00	-1.11	-1.11	-1.12	-1.15	-1.13	-0.90	-0.69	-0.27	0.00	0.48	0.26	0.16	0.22	-0.05	0.92	-1.15

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
August 2020

A-17

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.49	0.96	1.13	1.09	1.51	1.91	0.74	-0.25	-0.44	-0.60	-0.88	-1.02	-1.00	-0.81	-0.52	-0.90	-0.19	0.02	0.42	0.52	0.66	1.24	0.98	0.81	0.24	1.91	-1.02
2	0.62	1.07	1.66	1.88	1.79	1.74	0.53	-0.78	-0.64	-0.72	-0.90	-1.02	-1.06	-0.80	-0.66	-0.74	-0.92	-0.52	0.01	0.53	0.67	1.27	0.72	0.72	0.19	1.88	-1.06
3	1.44	1.96	2.10	1.50	1.84	1.58	0.33	-0.60	-0.01	-0.79	0.35	0.04	-0.82	-0.84	-0.66	-0.78	-0.76	-0.38	0.20	1.82	1.49	1.30	1.25	1.56	0.55	2.10	-0.84
4	1.44	1.29	1.93	1.82	1.61	1.48	-0.22	-0.61	-0.97	-0.91	-1.03	-1.19	-0.99	-1.12	-1.15	-1.17	-1.03	-0.81	-0.29	0.96	0.62	0.64	1.75	1.68	0.16	1.93	-1.19
5	2.49	2.15	2.33	2.30	2.58	2.32	1.43	-0.29	-0.54	-0.78	-0.93	-1.01	-1.04	-1.01	-0.75	-0.68	-0.36	0.27	0.47	0.68	0.68	0.27	0.20	0.72	0.48	2.58	-1.04
6	1.56	1.57	1.60	1.49	1.36	1.24	0.24	-0.59	-0.67	-0.73	-0.62	-0.45	-0.77	-0.85	-0.79	-0.29	0.23	0.39	0.28	0.89	0.92	0.73	1.31	1.41	0.39	1.60	-0.85
7	1.68	1.11	0.59	0.95	1.43	1.07	0.07	-0.30	-0.74	-0.61	-0.90	-1.08	-1.18	-1.16	-1.00	-0.91	-0.76	-0.48	-0.08	0.80	1.35	1.32	1.81	1.65	0.19	1.81	-1.18
8	1.73	1.43	1.37	1.37	1.33	1.17	0.38	-0.82	-0.96	-1.02	-0.95	-1.02	-1.07	-1.27	-0.98	-0.95	-0.40	0.11	0.10	1.94	1.53	1.98	2.17	1.89	0.38	2.17	-1.27
9	1.08	1.57	1.29	0.91	1.03	0.83	-0.29	-0.86	-0.83	-1.02	-1.02	-0.91	-1.16	-0.92	-1.02	-1.17	-0.93	-0.50	-0.06	1.08	1.86	1.70	1.77	1.69	0.17	1.86	-1.17
10	1.59	1.26	1.38	1.68	1.45	1.43	-0.25	-0.67	-0.84	-0.91	-1.10	-1.21	-1.18	-1.21	-1.15	-1.15	-0.70	-0.49	0.23	1.23	1.10	0.91	2.22	1.78	0.23	2.22	-1.21
11	1.39	1.73	1.85	1.62	2.10	1.81	0.24	-0.53	-0.79	-0.91	-0.94	-1.06	-1.12	-1.22	-0.89	-0.79	-0.72	-0.44	0.34	1.55	0.82	0.67	1.50	2.02	0.34	2.10	-1.22
12	1.68	2.62	2.06	2.29	2.04	1.96	0.60	-0.76	-0.78	-0.81	-0.84	-0.87	-0.66	-0.72	-0.52	-0.30	-0.01	0.22	0.35	0.93	0.71	0.89	0.71	1.34	0.51	2.62	-0.87
13	1.39	1.62	0.87	1.04	0.48	0.42	-0.16	-0.75	-0.86	-0.92	-1.01	-1.18	-1.14	-0.75	-0.66	-0.58	-0.20	0.06	0.47	0.78	0.93	1.16	1.81	1.35	0.17	1.81	-1.18
14	1.54	1.38	1.51	1.44	1.55	1.63	0.49	-0.63	-0.77	-0.87	-1.10	-1.21	-1.20	-1.31	-1.20	-1.12	-0.80	-0.54	0.14	1.34	2.28	0.88	1.27	1.50	0.26	2.28	-1.31
15	1.80	2.11	1.86	1.75	1.76	1.75	0.63	-0.62	-0.92	-0.97	-1.04	-1.05	-1.24	-1.21	-1.35	-1.11	-0.87	-0.57	0.17	1.73	1.63	0.73	1.94	1.53	0.35	2.11	-1.35
16	1.93	2.11	2.15	1.62	1.95	2.05	0.71	-0.61	-0.82	-0.86	-0.97	-1.09	-1.21	-1.31	-1.23	-0.56	-0.46	0.08	0.97	1.02	0.99	1.74	0.96	1.76	0.46	2.15	-1.31
17	2.98	1.41	0.84	0.86	1.27	1.60	0.75	-0.55	-0.67	-0.97	-0.62	-0.84	-0.83	-0.97	-1.05	-0.94	-0.72	-0.22	0.74	1.64	1.63	1.46	1.44	1.81	0.42	2.98	-1.05
18	2.33	3.28	2.13	1.31	1.59	1.38	0.69	-0.38	-0.48	-0.62	-0.95	-0.71	-0.84	-0.88	-0.32	-0.59	-0.87	-0.24	1.08	1.46	1.05	1.69	1.60	2.09	0.62	3.28	-0.95
19	1.91	2.06	1.40	1.41	1.60	1.64	0.86	-0.38	-0.48	-0.34	-0.08	0.29	-0.11	-0.91	-0.81	-0.95	-0.35	0.15	0.84	0.78	0.86	1.33	0.71	0.71	0.51	2.06	-0.95
20	1.37	1.23	1.22	1.44	1.29	1.35	1.12	0.15	-0.26	-0.54	-0.65	-0.86	-0.72	-0.73	-0.74	-0.34	0.19	0.47	0.08	0.65	1.29	1.50	1.40	1.23	0.46	1.50	-0.86
21	1.58	1.53	1.41	1.46	1.54	1.54	0.97	-0.69	-0.77	-0.85	-0.93	-1.07	-1.14	-1.10	-1.04	-1.22	-0.68	-0.27	0.96	1.11	1.07	2.30	2.24	2.84	0.45	2.84	-1.22
22	3.51	2.40	2.52	1.99	2.29	2.03	1.61	0.16	-0.56	-0.78	-0.85	-1.05	-0.95	-1.04	-1.03	-0.78	-0.60	-0.11	1.35	2.44	1.57	1.30	1.59	1.51	0.77	3.51	-1.05
23	1.99	1.79	1.97	1.56	1.49	1.80	1.53	-0.38	-0.52	-0.86	-0.90	-1.07	-1.08	-1.16	-1.12	-0.94	-0.74	-0.33	1.28	1.30	0.81	1.68	1.31	2.07	0.48	2.07	-1.16
24	2.10	1.69	1.87	2.11	2.33	2.13	1.26	-0.30	-0.78	-0.77	-0.99	-0.94	-0.83	-0.41	-0.21	0.34	0.30	0.40	1.08	1.89	0.86	1.03	2.15	1.66	0.75	2.33	-0.99
25	1.59	1.67	1.51	1.89	1.25	1.61	1.21	-0.16	-0.39	-0.52	-0.70	-0.52	-0.30	-0.72	-0.86	-0.31	0.36	0.39	0.13	0.41	0.22	0.32	0.41	0.65	0.38	1.89	-0.86
26	0.62	0.75	0.55	0.72	0.88	0.75	0.28	-0.30	-0.80	-0.79	-0.80	-0.86	-0.95	-1.05	-0.96	-0.67	-0.30	0.23	0.77	1.05	0.87	1.45	1.46	0.54	0.14	1.46	-1.05
27	1.14	1.16	1.56	1.42	1.12	1.27	0.63	-0.20	-0.52	-0.59	-0.30	0.05	-0.35	-0.67	-0.72	-0.80	-0.65	-0.20	-0.07	0.22	0.22	0.62	0.75	0.82	0.25	1.56	-0.80
28	0.69	1.45	1.43	1.13	1.58	1.41	0.91	-0.05	-0.55	-0.90	-1.03	-1.16	-1.18	-1.04	-0.89	-0.84	-0.70	-0.25	1.39	1.37	1.60	1.95	1.98	2.11	0.43	2.11	-1.18
29	1.68	1.80	2.33	1.80	2.00	1.44	1.21	-0.43	-0.93	-0.78	-0.81	-0.94	-1.04	-1.08	-1.04	-0.87	-0.57	-0.08	0.42	0.82	0.74	0.64	0.97	0.74	0.33	2.33	-1.08
30	0.36	0.49	0.42	0.27	0.20	0.38	0.18	-0.31	-0.82	-0.86	-0.93	-0.61	-0.91	-1.29	-1.27	-1.19	-0.93	-0.67	0.19	1.43	1.02	1.03	2.00	1.40	-0.02	2.00	-1.29
31	1.49	1.38	1.08	0.53	0.39	0.65	0.22	-0.21	-0.31	-0.62	-0.85	-0.54	-0.62	-0.39	-0.76	-0.54	-0.23	-0.13	0.14	0.42	0.78	0.97	0.60	0.77	0.18	1.49	-0.85
Avg	1.59	1.61	1.55	1.44	1.50	1.46	0.61	-0.44	-0.66	-0.78	-0.82	-0.84	-0.93	-0.97	-0.88	-0.77	-0.50	-0.14	0.45	1.12	1.06	1.18	1.39	1.43	0.36	2.15	-1.08
Max	3.51	3.28	2.52	2.30	2.58	2.32	1.61	0.16	-0.01	-0.34	0.35	0.29	-0.11	-0.39	-0.21	0.34	0.36	0.47	1.39	2.44	2.28	2.30	2.24	2.84	0.77	3.51	-0.80
Min	0.36	0.49	0.42	0.27	0.20	0.38	-0.29	-0.86	-0.97	-1.02	-1.10	-1.21	-1.24	-1.31	-1.35	-1.22	-1.03	-0.81	-0.29	0.22	0.22	0.27	0.20	0.54	-0.02	1.46	-1.35

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
September 2020

A-18

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.85	0.50	0.64	0.81	1.95	2.16	0.82	-0.46	-0.82	-0.90	-0.85	-1.08	-1.04	-1.30	-1.12	-0.99	-0.59	-0.34	0.15	0.47	0.71	0.93	2.11	1.34	0.16	2.16	-1.30
2	1.67	2.34	2.32	1.42	0.79	0.88	0.24	-0.39	0.15	-0.23	-0.46	-0.87	-0.92	-1.04	-0.72	-0.86	-0.65	-0.07	0.09	0.93	1.07	1.13	1.49	1.34	0.40	2.34	-1.04
3	1.64	1.28	1.03	1.17	0.90	1.48	0.81	-0.45	-0.75	-0.83	-1.02	-1.10	-1.25	-1.22	-1.05	-0.82	-0.70	-0.25	0.54	1.71	1.79	1.09	1.19	1.64	0.28	1.79	-1.25
4	1.82	1.93	1.49	1.84	1.99	1.98	1.38	-0.66	-0.75	-0.92	-0.91	-1.01	-1.09	-1.12	-1.09	-0.95	-0.81	-0.56	1.08	0.86	1.07	2.14	2.80	2.03	0.52	2.80	-1.12
5	2.02	2.20	2.29	2.07	2.06	1.32	1.57	0.20	-0.50	-0.70	-0.76	-0.83	-0.86	-0.87	-0.42	-0.16	-0.01	0.38	0.67	1.44	1.20	2.34	1.30	0.80	0.70	2.34	-0.87
6	1.21	1.86	2.07	2.79	2.29	1.62	1.29	-0.04	-0.72	-1.00	-1.01	-1.07	-1.20	-1.21	-1.14	-0.93	-0.77	-0.17	0.66	1.84	0.80	0.51	0.29	0.34	0.35	2.79	-1.21
7	0.38	0.42	0.16	0.03	0.08	0.05	0.03	0.04	-0.02	-0.09	-0.12	-0.14	-0.20	-0.28	-0.27	-0.23	-0.16	-0.08	0.00	0.06	0.14	0.49	0.56	0.86	0.07	0.86	-0.28
8	0.43	0.59	1.03	0.99	1.03	1.36	0.86	-0.56	-0.47	-0.74	-0.86	-0.89	-0.83	-1.02	-1.04	-1.03	-0.79	-0.47	0.79	0.72	0.89	0.98	1.66	1.02	0.15	1.66	-1.04
9	1.03	1.08	0.09	0.82	0.51	0.69	1.12	-0.62	-0.91	-1.00	-1.04	-1.08	-1.19	-1.00	-0.92	-0.97	-0.94	-0.36	0.88	1.45	1.11	1.37	2.12	2.22	0.19	2.22	-1.19
10	1.68	1.26	1.57	1.25	1.36	1.66	1.42	-0.22	-0.71	-0.78	-0.74	-0.89	-0.95	-1.03	-0.93	-0.83	-0.69	-0.18	0.97	0.87	2.03	2.22	1.37	1.32	0.46	2.22	-1.03
11	2.34	2.15	1.89	1.96	1.81	1.35	2.31	-0.27	-0.93	-0.97	-1.03	-1.14	-1.22	-1.28	-1.29	-1.14	-0.79	-0.21	1.67	1.79	1.19	1.77	2.29	1.92	0.59	2.34	-1.29
12	1.97	1.93	1.97	2.26	1.83	2.03	1.81	-0.40	-0.57	-0.95	-1.03	-1.19	-1.17	-1.15	-1.03	-0.85	-0.57	0.05	1.79	1.29	1.08	2.00	2.30	2.04	0.64	2.30	-1.19
13	2.58	2.09	2.06	2.47	2.16	1.73	1.91	0.77	-0.30	-0.38	-0.65	-0.69	-0.73	-0.61	-0.51	-0.38	0.12	1.14	1.32	1.30	2.49	2.90	3.01	2.29	1.09	3.01	-0.73
14	2.13	2.58	2.79	2.30	2.15	2.50	2.43	0.69	-0.41	-0.66	-0.46	-0.12	-0.18	-0.07	-0.04	0.00	0.77	1.37	0.63	1.35	1.46	2.00	1.20	2.29	1.11	2.79	-0.66
15	2.23	2.20	2.22	2.01	2.11	2.38	2.04	1.10	-0.23	-0.66	Au	Au	Au	Au	-0.64	-0.28	-0.05	0.38	1.65	1.56	0.95	1.69	1.83	1.04	1.18	2.38	-0.66
16	1.40	1.60	1.36	0.92	1.40	1.35	1.39	0.32	-0.60	-0.52	-0.62	-0.74	-0.81	-1.08	-1.00	-0.77	-0.21	0.38	1.38	1.33	2.47	2.85	2.36	2.20	0.68	2.85	-1.08
17	1.86	2.35	1.71	2.27	2.43	1.85	1.65	1.39	-0.64	-0.83	-0.82	-0.81	-0.95	-0.96	-0.87	-0.57	-0.11	0.46	1.33	1.52	1.37	1.13	1.04	2.24	0.75	2.43	-0.96
18	3.20	2.43	1.67	2.23	1.88	1.46	1.49	0.80	-0.58	-0.79	-0.84	-0.86	-0.89	-0.71	-0.37	-0.17	-0.05	1.35	1.29	0.79	1.19	1.58	1.58	1.29	0.79	3.20	-0.89
19	1.62	1.96	1.62	1.90	1.74	1.21	1.02	0.49	0.01	-0.20	-0.07	-0.03	0.16	0.03	-0.23	-0.18	-0.10	0.00	0.08	0.15	0.16	0.17	0.08	0.07	0.49	1.96	-0.23
20	0.33	0.19	0.18	0.14	0.14	0.10	0.05	-0.02	-0.14	-0.40	-0.88	-0.90	-0.64	-0.84	-0.50	-0.56	-0.28	-0.09	0.74	1.45	1.83	1.68	1.51	1.30	0.18	1.83	-0.90
21	1.51	1.81	1.70	1.43	1.53	1.66	1.55	-0.21	-0.86	-0.86	-0.93	-0.95	-1.05	-1.01	-0.78	-0.78	-0.51	0.43	1.63	1.26	1.25	1.75	3.08	2.70	0.64	3.08	-1.05
22	2.52	2.60	1.88	2.24	1.61	2.34	2.16	0.29	-0.64	-0.58	-0.75	-0.83	-0.89	-0.73	-0.44	-0.24	-0.11	0.01	1.24	0.89	0.67	0.83	0.77	1.40	0.68	2.60	-0.89
23	1.13	1.64	1.70	1.72	1.23	0.99	0.81	0.00	-0.58	-0.53	-0.82	-0.87	-0.93	-0.84	-0.83	-0.41	-0.17	0.67	1.07	1.53	1.76	1.47	2.02	2.48	0.59	2.48	-0.93
24	3.12	2.29	2.36	2.92	2.27	1.56	1.68	0.42	-0.18	-0.44	-0.40	-0.25	-0.13	-0.33	-0.16	-0.18	-0.14	-0.06	0.27	0.53	0.22	0.30	0.16	0.16	0.67	3.12	-0.44
25	0.30	1.15	1.01	1.22	2.02	1.74	0.70	0.08	-0.64	-0.39	-0.27	-0.26	-0.32	-0.24	-0.11	-0.18	-0.14	-0.02	0.20	0.27	0.15	0.19	0.27	0.16	0.29	2.02	-0.64
26	0.19	0.15	0.09	0.07	0.11	0.14	0.10	-0.09	-0.35	-0.75	-0.87	-0.82	-0.87	-0.67	-0.83	-0.53	-0.11	0.00	0.16	0.04	0.11	0.58	0.68	0.63	-0.12	0.68	-0.87
27	0.16	0.27	0.44	0.59	0.73	1.05	1.51	-0.30	-0.87	-0.77	-0.59	-1.13	-0.98	-1.11	-1.12	-0.57	-0.36	0.21	0.77	1.11	1.05	1.55	1.47	0.93	0.17	1.55	-1.13
28	1.66	2.37	1.70	1.72	1.91	1.48	1.72	0.18	-0.79	-0.87	-1.08	-1.00	-0.99	-0.99	-0.82	-0.64	-0.14	0.41	1.40	0.86	0.50	0.98	1.47	1.29	0.51	2.37	-1.08
29	1.50	1.69	2.11	1.76	1.78	2.27	1.93	0.21	-0.71	-0.62	-0.94	-0.97	-1.10	-1.01	-0.96	-0.75	-0.37	0.21	0.90	1.10	1.93	1.75	2.29	1.76	0.66	2.29	-1.10
30	1.88	1.50	1.82	1.67	1.91	2.04	1.80	0.50	-0.79	-0.87	-0.94	-1.08	-1.23	-1.24	-1.07	-0.95	-0.50	0.09	1.03	1.51	1.53	1.78	1.91	1.41	0.57	2.04	-1.24
Avg	1.55	1.61	1.50	1.57	1.52	1.48	1.32	0.09	-0.54	-0.67	-0.75	-0.81	-0.84	-0.86	-0.74	-0.60	-0.33	0.16	0.88	1.07	1.14	1.40	1.54	1.42	0.51	2.28	-0.94
Max	3.20	2.60	2.79	2.92	2.43	2.50	2.43	1.39	0.15	-0.09	-0.07	-0.03	0.16	0.03	-0.04	0.00	0.77	1.37	1.79	1.84	2.49	2.90	3.08	2.70	1.18	3.20	-0.23
Min	0.16	0.15	0.09	0.03	0.08	0.05	0.03	-0.66	-0.93	-1.00	-1.08	-1.19	-1.25	-1.30	-1.29	-1.14	-0.94	-0.56	0.00	0.04	0.11	0.17	0.08	0.07	-0.12	0.68	-1.30

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
July 2020

A-19

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0	0	0	0	6	64	238	395	404	397	888	557	554	64	210	327	129	421	251	127	7	0	0	0	210	888	0
2	0	0	0	0	4	75	225	399	580	737	862	941	978	958	896	768	615	444	258	92	4	0	0	0	368	978	0
3	0	0	0	0	4	76	224	398	571	719	816	860	885	647	629	198	199	208	151	60	3	0	0	0	277	885	0
4	0	0	0	0	4	74	221	392	570	730	793	923	953	793	375	160	50	354	50	24	2	0	0	0	270	953	0
5	0	0	0	0	4	68	215	387	565	726	851	931	1007	427	673	571	220	140	203	85	4	0	0	0	295	1007	0
6	0	0	0	0	4	63	103	324	378	468	743	311	918	905	812	692	577	412	250	85	4	0	0	0	294	918	0
7	0	0	0	0	3	32	68	129	513	453	511	533	145	123	631	701	499	440	253	86	4	0	0	0	214	701	0
8	0	0	0	0	3	60	215	304	560	762	659	990	874	899	839	771	604	441	259	92	3	0	0	0	347	990	0
9	0	0	0	0	3	69	216	385	563	720	844	924	962	962	801	740	622	346	251	83	3	0	0	0	354	962	0
10	0	0	0	0	3	52	41	27	275	565	818	382	877	551	451	653	506	436	254	88	3	0	0	0	249	877	0
11	0	0	0	0	3	63	215	384	565	731	853	933	977	952	887	766	612	432	250	83	2	0	0	0	363	977	0
12	0	0	0	0	2	56	202	375	566	731	851	745	616	445	585	331	69	48	23	9	5	0	0	0	236	851	0
13	0	0	0	0	3	40	162	375	334	540	791	936	744	822	904	742	575	434	139	55	4	0	0	0	317	936	0
14	0	0	0	0	2	56	193	370	562	725	856	940	974	952	882	750	583	415	257	85	2	0	0	0	359	974	0
15	0	0	0	0	3	35	169	375	535	721	813	918	954	935	868	675	486	460	195	58	3	0	0	0	342	954	0
16	0	0	0	0	2	51	193	362	543	703	831	915	953	931	864	746	599	395	249	74	1	0	0	0	351	953	0
17	0	0	0	0	2	44	197	363	540	743	837	754	364	428	466	205	110	123	71	12	1	0	0	0	219	837	0
18	0	0	0	0	1	41	175	356	540	691	832	832	794	875	764	743	525	456	245	76	2	0	0	0	331	875	0
19	0	0	0	0	1	41	192	359	542	703	830	914	948	930	879	769	610	311	147	74	2	0	0	0	344	948	0
20	0	0	0	0	3	37	53	186	495	734	791	885	1019	922	845	748	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	420	1019	0
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	608	689	809	789	910	930	859	745	595	416	231	67	1	0	0	0	478	930	0
22	0	0	0	0	1	37	184	359	542	703	826	910	948	897	836	676	427	361	49	11	0	0	0	0	324	948	0
23	0	0	0	0	0	5	12	23	112	133	352	335	577	782	221	17	97	187	95	32	2	0	0	0	124	782	0
24	0	0	0	0	0	18	59	261	219	638	829	554	754	516	683	548	252	256	207	33	0	0	0	0	243	829	0
25	0	0	0	0	0	38	144	311	534	570	669	886	819	845	850	751	600	417	232	65	1	0	0	0	322	886	0
26	0	0	0	0	1	38	181	354	539	702	828	926	966	942	870	745	595	411	229	60	1	0	0	0	350	966	0
27	0	0	0	0	1	30	173	345	528	690	818	904	936	886	847	725	579	399	216	33	1	0	0	0	338	936	0
28	0	0	0	0	1	9	25	68	325	625	426	508	642	377	331	153	106	78	95	44	1	0	0	0	159	642	0
29	0	0	0	0	0	27	140	302	494	660	782	870	841	875	843	766	609	221	123	36	1	0	0	0	316	875	0
30	0	0	0	0	0	31	154	314	492	654	784	885	410	836	742	739	567	381	127	15	0	0	0	0	297	885	0
31	0	0	0	0	0	24	152	319	503	668	795	890	923	913	793	440	493	177	141	38	0	0	0	0	303	923	0
Avg	0	0	0	0	2	45	158	310	487	646	774	793	814	752	714	592	437	334	183	59	2	0	0	0	300	906	0
Max	0	0	0	0	6	76	238	399	608	762	888	990	1019	962	904	771	622	460	259	127	7	0	0	0	478	1019	0
Min	0	0	0	0	0	5	12	23	112	133	352	311	145	64	210	17	50	48	23	9	0	0	0	0	124	642	0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
August 2020

A-20

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0	0	0	0	1	21	151	321	506	663	782	859	849	714	548	705	383	308	121	29	0	0	0	0	290	859	0
2	0	0	0	0	0	15	120	308	490	653	781	871	910	673	570	642	601	375	212	39	0	0	0	0	303	910	0
3	0	0	0	0	1	19	130	294	152	563	126	577	855	872	516	573	548	367	197	46	0	0	0	0	243	872	0
4	0	0	0	0	0	23	149	317	500	668	802	890	930	914	840	714	564	383	201	37	0	0	0	0	331	930	0
5	0	0	0	0	0	19	145	318	501	664	794	881	921	860	623	556	276	170	42	1	0	0	0	0	282	921	0
6	0	0	0	0	0	20	132	316	512	674	617	533	785	901	820	461	161	91	21	10	0	0	0	0	252	901	0
7	0	0	0	0	0	20	117	289	491	465	772	891	930	908	839	714	560	377	193	33	0	0	0	0	317	930	0
8	0	0	0	0	0	16	143	319	507	665	753	780	835	868	731	699	390	161	163	13	0	0	0	0	293	868	0
9	0	0	0	0	0	20	142	308	479	637	635	567	773	552	587	691	521	348	182	23	0	0	0	0	269	773	0
10	0	0	0	0	0	15	141	304	489	656	787	874	912	889	821	700	541	361	178	25	0	0	0	0	321	912	0
11	0	0	0	0	0	12	132	304	490	656	790	882	933	913	721	652	588	377	188	24	0	0	0	0	319	933	0
12	0	0	0	0	0	10	123	294	476	582	693	774	593	524	390	304	175	59	23	3	0	0	0	0	209	774	0
13	0	0	0	0	0	15	127	306	451	552	546	773	790	504	372	333	172	65	28	6	0	0	0	0	210	790	0
14	0	0	0	0	0	12	123	296	484	651	786	870	908	884	813	686	526	341	159	17	0	0	0	0	315	908	0
15	0	0	0	0	0	10	120	288	474	644	776	863	902	875	808	686	524	341	159	15	0	0	0	0	312	902	0
16	0	0	0	0	0	9	118	295	483	654	792	884	916	896	756	424	350	222	59	4	0	0	0	0	286	916	0
17	0	0	0	0	0	13	121	254	322	577	492	639	570	624	699	647	503	276	111	13	0	0	0	0	244	699	0
18	0	0	0	0	0	8	93	197	253	408	757	413	544	448	226	378	460	247	50	6	0	0	0	0	187	757	0
19	0	0	0	0	0	11	112	217	433	207	182	79	318	828	776	640	318	174	67	4	0	0	0	0	182	828	0
20	0	0	0	0	0	6	57	126	263	453	582	632	503	488	492	288	117	113	83	6	0	0	0	0	175	632	0
21	0	0	0	0	0	6	104	269	454	618	742	820	848	824	763	630	466	276	70	3	0	0	0	0	287	848	0
22	0	0	0	0	0	6	59	169	338	497	643	731	775	749	667	526	388	217	68	4	0	0	0	0	243	775	0
23	0	0	0	0	0	5	75	225	406	570	720	813	848	843	775	634	462	271	82	3	0	0	0	0	281	848	0
24	0	0	0	0	0	6	65	224	372	552	691	733	657	403	279	140	144	94	47	2	0	0	0	0	184	733	0
25	0	0	0	0	0	4	58	176	249	471	578	416	325	604	585	234	35	3	17	10	0	0	0	0	157	604	0
26	0	0	0	0	0	3	38	237	417	587	715	798	845	824	736	555	291	162	25	1	0	0	0	0	260	845	0
27	0	0	0	0	0	4	55	160	306	423	160	74	313	574	533	447	355	155	51	2	0	0	0	0	151	574	0
28	0	0	0	0	0	3	79	248	427	594	729	815	848	777	681	617	455	264	80	2	0	0	0	0	276	848	0
29	0	0	0	0	0	3	74	238	417	585	721	804	848	828	742	618	444	237	72	1	0	0	0	0	276	848	0
30	0	0	0	0	0	1	31	213	428	536	540	316	500	789	720	644	457	272	77	1	0	0	0	0	230	789	0
31	0	0	0	0	0	1	41	88	159	312	552	373	303	152	377	276	123	90	58	1	0	0	0	0	121	552	0
Avg	0	0	0	0	0	11	102	255	411	562	646	685	735	726	639	542	384	232	99	12	0	0	0	0	252	815	0
Max	0	0	0	0	1	23	151	321	512	674	802	891	933	914	840	714	601	383	212	46	0	0	0	0	331	933	0
Min	0	0	0	0	0	1	31	88	152	207	126	74	303	152	226	140	35	3	17	1	0	0	0	0	121	552	0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
September 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0	0	0	0	0	2	68	242	420	593	560	757	753	852	738	594	393	263	70	1	0	0	0	0	263	852	0
2	0	0	0	0	0	4	75	185	226	349	496	754	789	794	560	574	390	134	54	1	0	0	0	0	224	794	0
3	0	0	0	0	0	2	66	225	404	571	708	801	833	804	717	516	446	256	60	1	0	0	0	0	267	833	0
4	0	0	0	0	0	2	58	225	378	486	673	788	826	806	726	599	431	245	55	0	0	0	0	0	262	826	0
5	0	0	0	0	0	1	50	133	322	526	559	760	716	644	381	271	214	117	39	0	0	0	0	0	197	760	0
6	0	0	0	0	0	1	48	202	376	539	677	761	795	765	681	548	387	192	28	1	0	0	0	0	250	795	0
7	0	0	0	0	0	0	4	13	64	71	108	124	136	164	201	160	149	60	14	0	0	0	0	0	53	201	0
8	0	0	0	0	0	1	66	233	408	579	715	801	827	798	711	578	407	221	35	0	0	0	0	0	266	827	0
9	0	0	0	0	0	1	50	238	420	583	704	788	812	776	690	560	393	210	36	0	0	0	0	0	261	812	0
10	0	0	0	0	0	1	60	231	401	570	705	793	822	781	694	565	395	210	32	0	0	0	0	0	261	822	0
11	0	0	0	0	0	1	47	220	401	570	704	792	818	778	693	560	390	207	31	0	0	0	0	0	259	818	0
12	0	0	0	0	0	1	43	206	381	548	683	772	805	769	680	549	378	181	10	0	0	0	0	0	250	805	0
13	0	0	0	0	0	0	21	98	216	334	483	566	594	524	437	327	181	76	11	0	0	0	0	0	161	594	0
14	0	0	0	0	0	0	18	152	311	493	512	310	362	253	222	182	91	52	8	0	0	0	0	0	124	512	0
15	0	0	0	0	0	0	20	111	242	418	Au	Au	Au	Au	464	309	203	84	14	0	0	0	0	0	93	464	0
16	0	0	0	0	0	0	23	123	258	403	524	630	647	593	508	374	211	95	12	0	0	0	0	0	183	647	0
17	0	0	0	0	0	0	27	120	279	437	566	653	657	598	504	368	216	70	5	0	0	0	0	0	188	657	0
18	0	0	0	0	0	0	20	94	262	458	586	645	700	574	373	278	237	42	3	0	0	0	0	0	178	700	0
19	0	0	0	0	0	0	16	36	78	144	120	115	35	39	156	132	79	51	1	0	0	0	0	0	42	156	0
20	0	0	0	0	0	0	12	53	142	321	646	634	417	540	309	363	190	140	7	0	0	0	0	0	157	646	0
21	0	0	0	0	0	0	25	178	351	514	645	721	761	685	606	491	319	137	6	0	0	0	0	0	227	761	0
22	0	0	0	0	0	0	28	174	327	482	617	632	710	530	341	165	113	96	2	0	0	0	0	0	176	710	0
23	0	0	0	0	0	0	15	81	296	358	549	585	628	590	532	303	199	48	1	0	0	0	0	0	174	628	0
24	0	0	0	0	0	0	9	136	314	417	302	147	86	154	68	93	114	114	6	0	0	0	0	0	82	417	0
25	0	0	0	0	0	0	24	174	259	228	164	155	228	220	133	140	103	59	1	0	0	0	0	0	79	259	0
26	0	0	0	0	0	0	11	155	285	499	617	604	588	457	534	301	127	103	2	0	0	0	0	0	178	617	0
27	0	0	0	0	0	0	21	169	339	418	348	671	550	626	583	278	220	58	2	0	0	0	0	0	178	671	0
28	0	0	0	0	0	0	19	178	270	444	601	599	554	531	435	311	143	37	3	0	0	0	0	0	172	601	0
29	0	0	0	0	0	0	17	170	332	493	615	693	712	673	580	442	275	97	1	0	0	0	0	0	213	712	0
30	0	0	0	0	0	0	17	152	320	482	601	675	694	655	562	428	264	85	1	0	0	0	0	0	206	694	0
Avg	0	0	0	0	0	1	33	157	303	444	544	611	616	585	494	379	255	125	18	0	0	0	0	0	188	653	0
Max	0	0	0	0	0	4	75	242	420	593	715	801	833	852	738	599	446	263	70	1	0	0	0	0	267	852	0
Min	0	0	0	0	0	0	4	13	64	71	108	115	35	39	68	93	79	37	1	0	0	0	0	0	42	156	0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
July 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	24.31	24.30	24.30	24.29	24.29	24.28	24.28	24.27	24.27	24.27	24.26	24.26	24.27	24.29	24.28	24.28	24.28	24.28	24.29	24.30	24.31	24.33	24.33	24.34	24.29	24.34	24.26
2	24.35	24.36	24.36	24.35	24.36	24.37	24.38	24.39	24.40	24.40	24.40	24.40	24.42	24.42	24.43	24.43	24.44	24.44	24.45	24.46	24.48	24.50	24.50	24.51	24.42	24.51	24.35
3	24.50	24.51	24.51	24.51	24.52	24.53	24.55	24.55	24.55	24.55	24.55	24.54	24.54	24.53	24.52	24.53	24.53	24.53	24.54	24.55	24.56	24.56	24.56	24.56	24.54	24.56	24.50
4	24.56	24.55	24.54	24.54	24.54	24.55	24.56	24.55	24.55	24.54	24.54	24.53	24.51	24.49	24.48	24.51	24.53	24.54	24.53	24.54	24.54	24.56	24.56	24.56	24.54	24.56	24.48
5	24.56	24.55	24.56	24.56	24.57	24.58	24.58	24.59	24.58	24.57	24.57	24.56	24.55	24.55	24.53	24.53	24.52	24.51	24.51	24.53	24.53	24.54	24.54	24.54	24.55	24.59	24.51
6	24.55	24.52	24.52	24.53	24.52	24.52	24.52	24.53	24.54	24.52	24.52	24.51	24.50	24.49	24.48	24.47	24.46	24.45	24.44	24.44	24.44	24.45	24.44	24.43	24.49	24.55	24.43
7	24.42	24.40	24.38	24.36	24.35	24.33	24.30	24.27	24.26	24.25	24.27	24.28	24.31	24.33	24.33	24.34	24.33	24.32	24.32	24.34	24.36	24.38	24.39	24.40	24.33	24.42	24.25
8	24.40	24.40	24.40	24.40	24.41	24.42	24.42	24.42	24.41	24.42	24.43	24.42	24.42	24.42	24.43	24.43	24.44	24.44	24.45	24.46	24.47	24.48	24.49	24.49	24.43	24.49	24.40
9	24.49	24.49	24.49	24.49	24.48	24.49	24.49	24.50	24.49	24.47	24.47	24.46	24.45	24.44	24.43	24.43	24.44	24.44	24.45	24.45	24.46	24.47	24.47	24.47	24.47	24.50	24.43
10	24.46	24.45	24.45	24.44	24.43	24.46	24.52	24.58	24.57	24.58	24.58	24.58	24.59	24.60	24.61	24.61	24.61	24.62	24.62	24.63	24.63	24.64	24.65	24.67	24.57	24.67	24.43
11	24.67	24.67	24.67	24.67	24.67	24.67	24.68	24.67	24.66	24.65	24.65	24.64	24.63	24.62	24.61	24.59	24.57	24.56	24.54	24.53	24.53	24.53	24.51	24.49	24.61	24.68	24.49
12	24.48	24.46	24.45	24.44	24.44	24.47	24.47	24.47	24.46	24.45	24.44	24.43	24.42	24.42	24.40	24.39	24.37	24.38	24.39	24.41	24.40	24.41	24.41	24.40	24.43	24.48	24.37
13	24.40	24.41	24.41	24.41	24.42	24.43	24.45	24.44	24.45	24.45	24.44	24.44	24.44	24.43	24.43	24.42	24.42	24.42	24.43	24.44	24.45	24.46	24.46	24.47	24.43	24.47	24.40
14	24.48	24.48	24.48	24.48	24.48	24.49	24.53	24.54	24.54	24.54	24.54	24.54	24.54	24.53	24.53	24.52	24.52	24.52	24.53	24.53	24.54	24.55	24.55	24.55	24.52	24.55	24.48
15	24.55	24.54	24.53	24.53	24.54	24.54	24.55	24.56	24.55	24.55	24.54	24.54	24.53	24.52	24.52	24.51	24.51	24.51	24.51	24.52	24.53	24.54	24.54	24.54	24.53	24.56	24.51
16	24.54	24.53	24.53	24.53	24.53	24.53	24.54	24.54	24.53	24.52	24.51	24.50	24.48	24.47	24.46	24.45	24.43	24.43	24.42	24.42	24.43	24.45	24.45	24.46	24.49	24.54	24.42
17	24.46	24.46	24.45	24.45	24.45	24.46	24.48	24.48	24.48	24.47	24.45	24.43	24.42	24.42	24.41	24.39	24.40	24.41	24.41	24.42	24.44	24.46	24.47	24.48	24.44	24.48	24.39
18	24.49	24.49	24.51	24.52	24.53	24.54	24.56	24.57	24.58	24.58	24.59	24.58	24.58	24.57	24.56	24.56	24.55	24.55	24.55	24.55	24.56	24.56	24.56	24.56	24.55	24.59	24.49
19	24.56	24.56	24.56	24.55	24.55	24.56	24.57	24.57	24.56	24.56	24.56	24.56	24.55	24.54	24.54	24.54	24.53	24.53	24.52	24.52	24.54	24.55	24.54	24.55	24.55	24.57	24.52
20	24.56	24.56	24.55	24.57	24.58	24.60	24.61	24.62	24.62	24.61	24.61	24.60	24.59	24.59	24.59	24.58	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	24.59	24.62	24.55
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	24.50	24.49	24.48	24.46	24.45	24.45	24.44	24.42	24.42	24.41	24.41	24.41	24.42	24.43	24.43	24.43	24.44	24.50	24.41
22	24.42	24.42	24.42	24.42	24.42	24.42	24.43	24.43	24.43	24.42	24.42	24.41	24.40	24.39	24.37	24.36	24.35	24.35	24.37	24.39	24.40	24.41	24.40	24.39	24.40	24.43	24.35
23	24.39	24.38	24.38	24.39	24.40	24.41	24.41	24.41	24.42	24.42	24.42	24.41	24.40	24.38	24.38	24.44	24.41	24.42	24.44	24.43	24.42	24.42	24.43	24.43	24.41	24.44	24.38
24	24.42	24.41	24.41	24.41	24.42	24.43	24.44	24.45	24.45	24.44	24.44	24.43	24.42	24.41	24.40	24.39	24.38	24.37	24.37	24.37	24.38	24.39	24.41	24.42	24.41	24.45	24.37
25	24.44	24.45	24.46	24.46	24.47	24.48	24.50	24.51	24.52	24.52	24.53	24.53	24.53	24.53	24.53	24.52	24.51	24.52	24.53	24.54	24.56	24.58	24.59	24.60	24.52	24.60	24.44
26	24.60	24.60	24.61	24.62	24.63	24.64	24.66	24.67	24.67	24.67	24.67	24.67	24.67	24.66	24.66	24.66	24.65	24.64	24.63	24.63	24.65	24.67	24.67	24.67	24.65	24.67	24.60
27	24.67	24.67	24.67	24.66	24.66	24.66	24.67	24.67	24.65	24.63	24.62	24.61	24.59	24.58	24.56	24.54	24.52	24.51	24.50	24.50	24.51	24.51	24.51	24.51	24.59	24.67	24.50
28	24.51	24.51	24.50	24.49	24.48	24.49	24.49	24.50	24.50	24.49	24.48	24.48	24.48	24.47	24.46	24.46	24.47	24.46	24.46	24.46	24.47	24.47	24.47	24.48	24.48	24.51	24.46
29	24.48	24.48	24.49	24.50	24.51	24.52	24.54	24.55	24.55	24.54	24.54	24.54	24.54	24.54	24.53	24.53	24.53	24.55	24.58	24.60	24.62	24.63	24.64	24.64	24.55	24.64	24.48
30	24.64	24.64	24.65	24.65	24.66	24.66	24.67	24.68	24.68	24.68	24.67	24.66	24.66	24.66	24.66	24.65	24.65	24.65	24.65	24.66	24.67	24.67	24.68	24.68	24.66	24.68	24.64
31	24.67	24.67	24.66	24.66	24.66	24.67	24.68	24.68	24.68	24.67	24.66	24.66	24.64	24.64	24.63	24.62	24.61	24.60	24.60	24.61	24.64	24.65	24.66	24.66	24.65	24.68	24.60
Avg	24.50	24.50	24.50	24.50	24.50	24.51	24.52	24.52	24.52	24.51	24.51	24.51	24.50	24.50	24.49	24.49	24.48	24.48	24.48	24.49	24.50	24.51	24.51	24.51	24.50	24.55	24.45
Max	24.67	24.67	24.67	24.67	24.67	24.67	24.68	24.68	24.68	24.68	24.67	24.67	24.67	24.66	24.66	24.65	24.65	24.65	24.65	24.66	24.67	24.67	24.68	24.68	24.66	24.68	24.64
Min	24.31	24.30	24.30	24.29	24.29	24.28	24.28	24.27	24.26	24.25	24.26	24.26	24.27	24.29	24.28	24.28	24.28	24.28	24.29	24.30	24.31	24.33	24.33	24.34	24.29	24.34	24.25

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
August 2020

A-23

	<< Hour >>																											
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min	
1	24.66	24.65	24.64	24.64	24.64	24.65	24.66	24.65	24.64	24.64	24.63	24.62	24.61	24.61	24.61	24.60	24.58	24.58	24.58	24.59	24.61	24.61	24.61	24.61	24.62	24.66	24.58	
2	24.61	24.60	24.60	24.59	24.59	24.60	24.60	24.59	24.59	24.57	24.57	24.56	24.55	24.54	24.53	24.52	24.51	24.50	24.50	24.51	24.53	24.54	24.53	24.53	24.56	24.61	24.50	
3	24.52	24.52	24.52	24.51	24.51	24.51	24.52	24.51	24.52	24.49	24.51	24.50	24.49	24.47	24.46	24.46	24.46	24.46	24.48	24.49	24.51	24.52	24.54	24.54	24.50	24.54	24.46	
4	24.55	24.56	24.56	24.57	24.58	24.58	24.60	24.61	24.60	24.60	24.59	24.59	24.58	24.57	24.56	24.55	24.54	24.53	24.52	24.53	24.54	24.55	24.55	24.55	24.56	24.61	24.52	
5	24.54	24.54	24.54	24.53	24.53	24.54	24.54	24.54	24.53	24.51	24.50	24.49	24.48	24.46	24.44	24.43	24.41	24.40	24.38	24.41	24.46	24.42	24.42	24.41	24.48	24.54	24.38	
6	24.40	24.39	24.38	24.37	24.36	24.36	24.36	24.36	24.37	24.35	24.34	24.34	24.34	24.31	24.29	24.29	24.32	24.32	24.35	24.34	24.34	24.32	24.32	24.31	24.34	24.40	24.29	
7	24.32	24.33	24.35	24.37	24.38	24.39	24.41	24.43	24.44	24.46	24.47	24.48	24.48	24.48	24.48	24.47	24.47	24.47	24.48	24.50	24.52	24.53	24.54	24.54	24.45	24.54	24.32	
8	24.54	24.53	24.53	24.52	24.52	24.52	24.54	24.54	24.54	24.53	24.53	24.52	24.50	24.49	24.48	24.47	24.46	24.46	24.45	24.47	24.48	24.49	24.50	24.51	24.50	24.54	24.45	
9	24.52	24.52	24.52	24.52	24.53	24.54	24.56	24.57	24.57	24.57	24.57	24.56	24.55	24.54	24.53	24.52	24.52	24.53	24.54	24.55	24.57	24.58	24.58	24.58	24.55	24.58	24.52	
10	24.58	24.57	24.56	24.56	24.55	24.55	24.56	24.57	24.56	24.55	24.54	24.53	24.51	24.49	24.49	24.48	24.46	24.45	24.44	24.44	24.45	24.46	24.45	24.44	24.51	24.58	24.44	
11	24.44	24.44	24.43	24.43	24.43	24.44	24.45	24.45	24.44	24.43	24.42	24.42	24.41	24.39	24.38	24.36	24.35	24.34	24.33	24.34	24.35	24.35	24.35	24.34	24.40	24.45	24.33	
12	24.33	24.32	24.33	24.33	24.32	24.32	24.34	24.34	24.34	24.34	24.35	24.34	24.34	24.33	24.34	24.34	24.35	24.38	24.40	24.42	24.44	24.45	24.45	24.46	24.47	24.36	24.47	24.32
13	24.47	24.47	24.48	24.48	24.48	24.49	24.50	24.51	24.50	24.49	24.48	24.48	24.47	24.47	24.47	24.46	24.46	24.48	24.50	24.51	24.51	24.52	24.53	24.53	24.49	24.53	24.46	
14	24.53	24.54	24.54	24.55	24.56	24.57	24.59	24.61	24.61	24.61	24.61	24.60	24.60	24.59	24.59	24.58	24.57	24.57	24.57	24.58	24.59	24.60	24.61	24.61	24.58	24.61	24.53	
15	24.61	24.61	24.60	24.60	24.60	24.61	24.63	24.64	24.64	24.64	24.64	24.63	24.63	24.62	24.61	24.60	24.60	24.60	24.60	24.62	24.64	24.66	24.66	24.67	24.62	24.67	24.60	
16	24.67	24.66	24.66	24.67	24.67	24.68	24.69	24.71	24.71	24.70	24.70	24.70	24.70	24.69	24.68	24.68	24.67	24.67	24.67	24.68	24.71	24.71	24.71	24.71	24.69	24.71	24.66	
17	24.71	24.72	24.71	24.71	24.70	24.70	24.70	24.70	24.70	24.70	24.69	24.69	24.68	24.68	24.67	24.66	24.65	24.65	24.66	24.67	24.69	24.70	24.70	24.70	24.69	24.72	24.65	
18	24.70	24.69	24.70	24.69	24.69	24.68	24.69	24.70	24.69	24.69	24.67	24.67	24.66	24.64	24.63	24.63	24.62	24.60	24.60	24.60	24.61	24.61	24.61	24.60	24.65	24.70	24.60	
19	24.60	24.59	24.58	24.58	24.58	24.57	24.57	24.57	24.56	24.58	24.59	24.60	24.58	24.56	24.53	24.50	24.49	24.48	24.47	24.47	24.48	24.48	24.48	24.48	24.54	24.60	24.47	
20	24.48	24.47	24.45	24.45	24.44	24.45	24.45	24.45	24.44	24.43	24.41	24.40	24.39	24.38	24.37	24.37	24.37	24.41	24.41	24.41	24.43	24.45	24.45	24.45	24.43	24.48	24.37	
21	24.45	24.46	24.46	24.47	24.47	24.48	24.49	24.50	24.50	24.50	24.49	24.49	24.48	24.48	24.46	24.44	24.44	24.43	24.43	24.43	24.44	24.44	24.44	24.44	24.46	24.50	24.43	
22	24.44	24.43	24.43	24.44	24.44	24.46	24.47	24.49	24.49	24.50	24.49	24.49	24.49	24.49	24.48	24.48	24.48	24.48	24.49	24.50	24.52	24.53	24.54	24.54	24.48	24.54	24.43	
23	24.53	24.53	24.53	24.53	24.53	24.54	24.55	24.56	24.56	24.56	24.55	24.54	24.52	24.52	24.51	24.49	24.49	24.48	24.48	24.49	24.50	24.50	24.50	24.50	24.52	24.56	24.48	
24	24.50	24.50	24.49	24.49	24.49	24.49	24.50	24.51	24.51	24.50	24.49	24.47	24.46	24.46	24.46	24.45	24.45	24.45	24.44	24.46	24.47	24.47	24.47	24.48	24.48	24.51	24.44	
25	24.48	24.48	24.48	24.49	24.50	24.50	24.50	24.51	24.51	24.50	24.49	24.48	24.47	24.45	24.44	24.42	24.45	24.52	24.52	24.48	24.50	24.50	24.50	24.48	24.49	24.52	24.42	
26	24.48	24.47	24.47	24.47	24.48	24.48	24.48	24.50	24.50	24.50	24.50	24.49	24.48	24.46	24.45	24.44	24.43	24.42	24.42	24.43	24.44	24.43	24.43	24.42	24.46	24.50	24.42	
27	24.43	24.42	24.41	24.41	24.40	24.40	24.41	24.42	24.41	24.42	24.44	24.46	24.45	24.44	24.44	24.42	24.42	24.45	24.46	24.48	24.50	24.52	24.53	24.54	24.44	24.54	24.40	
28	24.55	24.55	24.56	24.56	24.57	24.58	24.59	24.60	24.60	24.59	24.58	24.57	24.55	24.52	24.51	24.49	24.49	24.48	24.48	24.49	24.49	24.49	24.48	24.48	24.54	24.60	24.48	
29	24.47	24.45	24.44	24.43	24.42	24.41	24.41	24.40	24.39	24.38	24.37	24.36	24.34	24.33	24.31	24.29	24.28	24.28	24.27	24.27	24.27	24.27	24.28	24.28	24.35	24.47	24.27	
30	24.29	24.29	24.30	24.31	24.32	24.33	24.34	24.35	24.37	24.38	24.40	24.42	24.44	24.43	24.43	24.43	24.42	24.41	24.41	24.41	24.41	24.41	24.39	24.38	24.38	24.44	24.29	
31	24.37	24.36	24.35	24.35	24.35	24.36	24.36	24.36	24.37	24.38	24.38	24.36	24.36	24.37	24.37	24.37	24.37	24.38	24.39	24.39	24.39	24.40	24.40	24.39	24.38	24.37	24.40	24.35
Avg	24.51	24.51	24.50	24.50	24.50	24.51	24.52	24.52	24.52	24.52	24.52	24.51	24.50	24.49	24.48	24.47	24.47	24.47	24.47	24.48	24.50	24.50	24.50	24.50	24.50	24.55	24.45	
Max	24.71	24.72	24.71	24.71	24.70	24.70	24.70	24.71	24.71	24.70	24.70	24.70	24.70	24.69	24.68	24.68	24.67	24.67	24.67	24.68	24.71	24.71	24.71	24.71	24.69	24.72	24.66	
Min	24.29	24.29	24.30	24.31	24.32	24.32	24.34	24.34	24.34	24.34	24.34	24.34	24.34	24.31	24.29	24.29	24.28	24.28	24.27	24.27	24.27	24.27	24.28	24.28	24.34	24.40	24.27	

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
September 2020

A-24

	<< Hour >>																											
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min	
1	24.37	24.37	24.37	24.38	24.38	24.39	24.40	24.42	24.42	24.43	24.43	24.42	24.42	24.42	24.42	24.43	24.44	24.45	24.46	24.48	24.48	24.49	24.49	24.42	24.49	24.37		
	24.48	24.48	24.47	24.46	24.44	24.43	24.41	24.42	24.41	24.42	24.41	24.39	24.37	24.37	24.37	24.39	24.41	24.44	24.48	24.51	24.53	24.55	24.55	24.56	24.45	24.56	24.37	
	24.56	24.56	24.56	24.55	24.55	24.55	24.57	24.58	24.59	24.59	24.59	24.58	24.57	24.56	24.55	24.54	24.54	24.54	24.55	24.57	24.60	24.61	24.62	24.63	24.57	24.63	24.54	
	4	24.63	24.63	24.64	24.64	24.65	24.66	24.67	24.69	24.70	24.69	24.69	24.68	24.67	24.65	24.64	24.63	24.62	24.61	24.61	24.62	24.63	24.63	24.62	24.62	24.65	24.70	24.61
	5	24.62	24.61	24.61	24.61	24.61	24.60	24.60	24.61	24.61	24.60	24.59	24.57	24.56	24.55	24.54	24.53	24.54	24.55	24.56	24.57	24.58	24.59	24.60	24.61	24.58	24.62	24.53
6	24.62	24.62	24.62	24.63	24.64	24.64	24.66	24.67	24.68	24.67	24.66	24.65	24.63	24.61	24.59	24.57	24.56	24.55	24.54	24.54	24.53	24.51	24.50	24.50	24.60	24.68	24.50	
	7	24.50	24.49	24.48	24.49	24.49	24.50	24.52	24.54	24.56	24.58	24.61	24.62	24.64	24.67	24.67	24.69	24.72	24.73	24.74	24.76	24.78	24.80	24.81	24.63	24.81	24.48	
	8	24.80	24.80	24.80	24.81	24.82	24.82	24.82	24.81	24.79	24.78	24.76	24.74	24.72	24.71	24.69	24.67	24.67	24.67	24.66	24.66	24.67	24.67	24.68	24.67	24.74	24.82	24.66
	9	24.67	24.66	24.67	24.65	24.67	24.67	24.68	24.69	24.70	24.71	24.70	24.69	24.67	24.67	24.67	24.66	24.66	24.66	24.67	24.68	24.70	24.70	24.69	24.69	24.68	24.71	24.65
	10	24.69	24.68	24.68	24.68	24.68	24.68	24.68	24.69	24.69	24.69	24.67	24.66	24.64	24.63	24.61	24.60	24.58	24.58	24.58	24.57	24.57	24.57	24.56	24.64	24.69	24.56	
11	24.55	24.54	24.53	24.52	24.51	24.51	24.51	24.52	24.52	24.52	24.50	24.49	24.48	24.47	24.46	24.46	24.46	24.47	24.48	24.48	24.49	24.50	24.50	24.50	24.50	24.50	24.55	24.46
	12	24.50	24.50	24.51	24.51	24.51	24.52	24.53	24.55	24.55	24.55	24.53	24.52	24.50	24.49	24.48	24.47	24.47	24.47	24.48	24.49	24.50	24.50	24.51	24.52	24.51	24.55	24.47
	13	24.52	24.53	24.54	24.54	24.55	24.56	24.56	24.58	24.59	24.59	24.58	24.57	24.56	24.55	24.54	24.54	24.55	24.55	24.56	24.57	24.58	24.58	24.58	24.58	24.56	24.59	24.52
	14	24.58	24.57	24.56	24.55	24.55	24.56	24.56	24.57	24.57	24.57	24.56	24.55	24.55	24.55	24.55	24.54	24.54	24.54	24.55	24.56	24.58	24.59	24.59	24.60	24.56	24.60	24.54
	15	24.60	24.60	24.60	24.61	24.61	24.61	24.62	24.63	24.64	24.64	24.63	24.63	24.63	24.62	24.62	24.61	24.62	24.62	24.63	24.64	24.66	24.67	24.69	24.71	24.63	24.71	24.60
16	24.72	24.72	24.72	24.70	24.69	24.68	24.68	24.68	24.69	24.69	24.68	24.66	24.65	24.64	24.62	24.61	24.61	24.61	24.61	24.61	24.62	24.62	24.62	24.62	24.62	24.66	24.72	24.61
	17	24.62	24.62	24.62	24.62	24.62	24.62	24.62	24.64	24.65	24.66	24.65	24.63	24.63	24.62	24.61	24.60	24.60	24.60	24.61	24.62	24.63	24.62	24.61	24.61	24.62	24.66	24.60
	18	24.60	24.59	24.57	24.56	24.55	24.55	24.54	24.54	24.54	24.53	24.52	24.49	24.48	24.46	24.44	24.43	24.43	24.43	24.44	24.44	24.44	24.44	24.43	24.43	24.49	24.60	24.43
	19	24.42	24.41	24.39	24.37	24.36	24.36	24.35	24.34	24.35	24.35	24.37	24.38	24.38	24.39	24.38	24.38	24.38	24.39	24.40	24.40	24.40	24.40	24.41	24.40	24.38	24.42	24.34
	20	24.40	24.40	24.39	24.39	24.40	24.41	24.42	24.44	24.45	24.46	24.47	24.47	24.47	24.47	24.47	24.47	24.48	24.49	24.50	24.51	24.52	24.52	24.52	24.51	24.46	24.52	24.39
21	24.51	24.51	24.51	24.51	24.51	24.51	24.52	24.52	24.54	24.54	24.53	24.52	24.51	24.50	24.49	24.47	24.47	24.47	24.48	24.48	24.48	24.48	24.48	24.47	24.50	24.54	24.47	
	22	24.47	24.47	24.46	24.46	24.47	24.48	24.49	24.50	24.50	24.48	24.47	24.46	24.44	24.43	24.43	24.45	24.48	24.48	24.49	24.52	24.52	24.52	24.51	24.52	24.48	24.52	24.43
	23	24.52	24.52	24.52	24.52	24.52	24.53	24.53	24.54	24.54	24.54	24.53	24.52	24.51	24.49	24.47	24.46	24.46	24.45	24.43	24.43	24.41	24.39	24.37	24.35	24.48	24.54	24.35
	24	24.34	24.33	24.32	24.30	24.29	24.28	24.28	24.28	24.27	24.27	24.30	24.33	24.36	24.38	24.38	24.38	24.39	24.39	24.39	24.40	24.39	24.40	24.40	24.39	24.34	24.40	24.27
	25	24.40	24.40	24.40	24.39	24.38	24.37	24.38	24.40	24.40	24.40	24.37	24.35	24.33	24.29	24.26	24.27	24.28	24.26	24.26	24.27	24.28	24.27	24.26	24.24	24.22	24.32	24.40
26	24.22	24.21	24.22	24.23	24.27	24.27	24.28	24.30	24.32	24.33	24.35	24.35	24.36	24.36	24.37	24.37	24.38	24.39	24.40	24.42	24.43	24.44	24.45	24.47	24.34	24.47	24.21	
	27	24.48	24.49	24.50	24.52	24.54	24.56	24.58	24.61	24.64	24.66	24.67	24.68	24.69	24.68	24.68	24.69	24.70	24.71	24.71	24.72	24.73	24.74	24.76	24.76	24.65	24.76	24.48
	28	24.77	24.77	24.78	24.77	24.77	24.77	24.77	24.75	24.76	24.76	24.75	24.74	24.73	24.72	24.71	24.70	24.69	24.69	24.68	24.68	24.68	24.67	24.67	24.73	24.78	24.67	
	29	24.66	24.66	24.66	24.66	24.66	24.66	24.65	24.66	24.67	24.66	24.65	24.63	24.62	24.61	24.59	24.58	24.59	24.59	24.59	24.61	24.62	24.63	24.65	24.66	24.63	24.67	24.58
	30	24.67	24.70	24.72	24.72	24.73	24.73	24.74	24.76	24.78	24.78	24.79	24.79	24.78	24.77	24.76	24.76	24.77	24.78	24.79	24.79	24.79	24.80	24.80	24.79	24.76	24.80	24.67
Avg	24.55	24.55	24.55	24.55	24.55	24.55	24.55	24.56	24.57	24.57	24.57	24.56	24.55	24.54	24.54	24.53	24.54	24.54	24.54	24.54	24.55	24.56	24.56	24.56	24.55	24.62	24.49	
	Max	24.80	24.80	24.80	24.81	24.82	24.82	24.82	24.81	24.79	24.78	24.79	24.79	24.78	24.77	24.76	24.76	24.77	24.78	24.79	24.79	24.79	24.80	24.80	24.81	24.76	24.82	24.67
	Min	24.22	24.21	24.22	24.23	24.27	24.27	24.28	24.28	24.27	24.27	24.30	24.33	24.29	24.26	24.27	24.28	24.26	24.26	24.27	24.28	24.27	24.26	24.24	24.22	24.32	24.40	24.21

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
July 2020

A-25

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	88.4	90.2	91.3	91.9	91.7	91.0	80.0	63.3	58.8	53.6	48.9	46.8	50.8	70.7	73.3	66.6	61.2	60.0	56.2	65.2	78.1	83.6	86.4	87.1	72.3	91.9	46.8
2	89.4	89.0	81.2	86.7	88.0	86.6	81.0	63.7	51.0	40.2	33.7	32.2	32.8	31.2	30.1	29.1	29.1	30.4	33.4	43.7	63.4	66.0	73.8	83.1	57.0	89.4	29.1
3	87.0	87.9	89.3	89.6	90.0	85.8	75.5	63.5	39.9	39.0	35.1	30.5	26.1	28.6	31.4	36.1	51.1	43.8	42.0	53.2	54.7	72.4	70.3	77.2	58.3	90.0	26.1
4	80.1	87.8	89.3	89.7	91.4	88.7	80.2	61.5	44.8	36.7	35.6	28.7	26.8	24.4	27.3	37.9	43.7	57.4	62.0	70.1	78.0	82.6	83.1	77.6	61.9	91.4	24.4
5	83.0	85.0	86.4	89.1	89.8	87.5	80.8	67.6	48.1	37.4	37.9	36.2	34.0	35.2	33.1	30.5	35.1	39.0	39.4	50.2	67.9	72.5	82.0	83.0	59.6	89.8	30.5
6	81.6	82.6	86.1	87.9	89.0	89.3	85.9	77.0	71.2	63.2	44.6	48.9	40.7	36.6	35.6	35.5	33.1	31.7	32.0	50.4	69.2	69.9	67.1	71.2	61.7	89.3	31.7
7	73.7	72.8	72.3	69.7	65.1	62.3	60.4	56.3	54.9	48.2	55.0	55.8	65.4	72.1	59.9	45.8	38.5	36.9	38.3	44.3	50.2	58.6	59.3	58.8	57.3	73.7	36.9
8	64.5	64.4	52.3	61.6	65.3	62.4	58.0	57.1	53.3	49.0	46.5	44.1	42.0	40.1	38.5	36.0	33.5	33.3	35.7	42.7	60.0	73.8	75.8	80.9	53.0	80.9	33.3
9	84.8	88.3	88.8	89.2	89.6	86.2	74.9	64.7	43.8	38.7	37.7	37.5	34.8	32.1	30.7	28.5	29.3	31.3	35.3	44.4	67.2	69.8	76.6	81.5	57.7	89.6	28.5
10	86.8	88.1	89.2	90.5	90.2	86.5	76.5	81.7	83.7	70.1	68.2	62.9	53.5	51.5	48.3	43.2	39.6	38.1	41.7	47.6	62.3	72.8	80.4	81.9	68.1	90.5	38.1
11	85.8	89.1	87.3	89.5	90.2	88.6	79.6	68.3	51.0	34.9	35.4	35.7	28.8	26.3	24.6	23.5	22.9	25.6	30.4	45.2	57.1	71.6	75.6	70.3	55.7	90.2	22.9
12	50.5	58.0	72.0	77.1	81.3	79.8	72.8	54.2	43.2	41.9	40.1	38.0	38.7	37.5	33.7	32.6	33.8	33.6	36.8	37.8	47.2	49.2	57.2	53.1	50.0	81.3	32.6
13	60.2	65.0	62.9	57.3	58.5	66.4	64.0	48.1	49.5	47.0	43.7	37.2	35.5	32.1	29.5	27.6	24.8	22.3	26.9	35.0	48.5	59.2	69.5	72.6	47.6	72.6	22.3
14	78.9	81.6	84.4	86.7	87.2	84.5	76.8	57.9	43.5	41.1	36.5	33.7	32.5	30.6	29.8	28.1	25.0	24.0	25.3	31.6	44.9	60.0	66.8	79.4	53.0	87.2	24.0
15	82.7	84.3	86.5	86.1	86.5	85.8	77.8	62.7	43.9	41.5	38.9	37.3	35.6	33.8	32.0	31.6	31.2	29.3	35.4	44.6	62.7	69.9	79.4	81.9	57.6	86.5	29.3
16	87.4	87.6	88.9	89.3	89.9	87.7	76.8	60.9	43.1	37.6	35.6	32.3	31.7	29.7	27.2	26.8	26.5	28.6	30.9	40.0	58.3	62.6	71.6	79.6	55.4	89.9	26.5
17	83.8	84.6	85.9	88.1	88.8	86.5	74.7	59.8	44.2	40.5	38.3	36.9	40.5	51.7	45.9	45.1	45.9	50.2	54.4	64.7	75.0	86.5	87.5	88.8	64.5	88.8	36.9
18	90.6	91.1	92.2	92.8	92.7	93.1	93.1	77.4	56.5	54.9	48.3	44.8	42.7	38.3	35.6	34.2	33.2	31.2	31.7	40.8	61.8	71.1	74.3	83.8	62.8	93.1	31.2
19	85.6	87.2	88.4	89.1	90.0	90.4	76.4	66.4	48.1	40.8	38.7	34.2	31.4	30.0	29.4	29.9	28.4	30.8	36.1	51.4	67.5	75.5	83.4	84.1	58.9	90.4	28.4
20	85.1	87.7	88.8	89.3	88.3	84.2	84.5	80.7	60.8	51.8	50.6	46.0	42.2	36.3	35.5	29.8	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	65.1	89.3	29.8
21	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	48.7	43.6	39.3	35.9	32.2	29.1	25.9	22.7	20.9	21.5	26.1	39.0	53.2	63.1	67.6	74.4	40.2	74.4	20.9
22	83.6	84.5	84.7	86.3	86.1	83.2	69.4	54.8	43.3	29.7	28.7	27.5	21.9	18.0	19.2	16.9	17.7	20.1	27.0	32.3	40.7	52.3	60.2	68.5	48.2	86.3	16.9
23	71.5	66.9	74.0	75.0	72.0	78.0	83.4	86.7	84.9	82.0	75.9	68.3	63.2	56.1	51.6	71.7	80.6	77.3	72.8	80.4	86.2	89.0	89.1	88.5	76.0	89.1	51.6
24	91.0	92.3	92.2	92.7	92.4	92.0	89.3	81.0	78.2	63.8	54.4	50.7	48.3	44.6	39.5	33.5	33.2	34.5	32.4	39.1	47.3	61.0	69.2	77.9	63.8	92.7	32.4
25	82.2	81.2	84.8	87.2	90.2	89.7	86.3	73.2	51.2	33.5	33.1	32.4	31.0	31.3	28.0	22.0	19.4	20.1	28.0	41.2	58.0	63.6	72.8	75.1	54.8	90.2	19.4
26	80.6	82.9	85.8	87.3	88.7	86.7	76.1	63.7	40.1	35.0	32.8	25.5	19.6	18.3	17.7	19.1	19.1	22.6	28.8	34.5	49.2	61.1	74.9	80.4	51.3	88.7	17.7
27	84.0	85.1	84.8	86.1	84.5	82.7	74.4	59.5	40.5	29.4	27.6	24.6	23.7	23.5	22.6	21.5	18.9	20.0	25.0	32.1	38.4	42.6	43.0	47.2	46.7	86.1	18.9
28	54.6	61.7	67.9	70.2	69.3	63.9	69.0	72.1	64.0	43.9	39.1	37.8	32.1	29.7	31.3	39.6	44.4	48.8	55.9	63.7	69.2	74.1	78.8	78.7	56.7	78.8	29.7
29	83.8	86.2	88.4	89.8	90.0	88.4	82.3	67.4	50.8	38.0	33.3	30.9	26.5	24.3	20.6	20.3	20.0	26.9	33.4	39.1	52.3	63.9	66.1	77.1	54.2	90.0	20.0
30	79.5	82.2	86.5	88.3	88.4	88.7	80.1	62.3	45.9	34.8	30.9	30.5	28.5	28.8	29.4	26.5	25.0	25.0	33.2	35.5	45.0	51.8	56.1	65.6	52.0	88.7	25.0
31	74.9	78.3	81.2	81.4	83.7	81.6	73.2	55.7	41.8	29.7	30.1	26.6	21.4	22.0	21.5	23.9	26.9	29.9	33.7	42.9	45.3	48.3	45.3	46.3	47.7	83.7	21.4
Avg	79.9	81.8	83.1	84.5	85.0	83.6	77.1	65.6	52.3	44.2	41.1	38.4	36.0	35.3	33.5	32.8	33.1	34.1	37.3	46.1	58.6	66.6	71.4	75.2	57.2	86.9	28.5
Max	91.0	92.3	92.2	92.8	92.7	93.1	93.1	86.7	84.9	82.0	75.9	68.3	65.4	72.1	73.3	71.7	80.6	77.3	72.8	80.4	86.2	89.0	89.1	88.8	76.0	93.1	51.6
Min	50.5	58.0	52.3	57.3	58.5	62.3	58.0	48.1	39.9	29.4	27.6	24.6	19.6	18.0	17.7	16.9	17.7	20.0	25.0	31.6	38.4	42.6	43.0	46.3	40.2	72.6	16.9

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
August 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	46.0	48.3	49.4	52.0	58.0	61.0	55.7	43.8	39.5	37.3	34.2	32.1	30.8	31.7	34.0	31.3	32.9	33.0	34.2	35.8	36.5	42.2	45.3	46.7	41.3	61.0	30.8
2	43.9	47.0	55.1	59.7	61.0	65.6	69.4	54.9	40.2	35.0	32.4	30.6	28.4	28.1	26.6	21.5	18.2	24.0	30.5	35.7	41.0	41.4	37.3	37.5	40.2	69.4	18.2
3	45.0	53.2	63.7	69.4	74.1	77.8	71.3	54.7	58.2	42.6	40.2	60.8	38.9	33.1	32.8	31.5	28.0	27.3	27.5	30.3	33.2	52.4	62.5	70.4	49.1	77.8	27.3
4	75.8	80.1	84.6	86.6	88.6	90.2	78.7	62.3	42.6	34.4	32.0	28.5	25.2	19.2	17.4	19.4	17.9	18.0	21.4	36.3	52.0	60.0	64.4	60.8	49.8	90.2	17.4
5	73.0	78.6	80.0	78.6	77.2	77.2	72.7	49.0	41.4	36.7	34.2	31.5	26.9	25.1	25.6	24.2	26.6	31.7	34.9	51.5	69.4	71.6	78.2	84.8	53.4	84.8	24.2
6	89.6	88.6	88.4	89.6	89.5	89.0	85.3	73.8	52.2	39.6	36.0	34.1	32.0	26.3	23.3	21.9	34.5	35.1	45.2	58.7	64.4	69.7	77.3	82.5	59.4	89.6	21.9
7	84.4	80.1	80.9	84.8	87.9	88.4	83.3	66.7	57.9	49.1	38.5	35.2	29.1	24.5	19.3	20.7	21.1	21.1	23.1	28.0	39.4	52.4	65.3	69.3	52.1	88.4	19.3
8	73.1	74.6	75.4	77.6	79.7	77.6	71.5	53.1	36.3	27.1	24.1	20.4	18.0	18.8	21.2	22.0	22.8	25.3	28.0	36.7	46.3	57.3	64.4	60.2	46.3	79.7	18.0
9	50.7	53.8	67.2	71.6	75.9	80.7	74.2	56.3	47.2	43.8	40.2	39.5	36.6	35.0	33.2	31.4	30.0	30.3	31.0	39.2	52.1	68.4	75.1	81.8	51.9	81.8	30.0
10	85.1	86.3	88.1	88.9	89.9	89.3	79.3	66.2	45.1	38.5	33.4	29.4	28.2	26.0	24.2	22.4	20.6	20.9	23.6	29.2	46.9	56.7	64.6	71.6	52.3	89.9	20.6
11	76.1	79.8	82.2	82.9	83.6	83.8	74.6	57.4	37.2	29.9	27.2	24.6	21.0	20.2	20.5	19.4	17.4	15.5	17.6	26.3	40.1	42.0	51.4	63.9	45.6	83.8	15.5
12	64.0	68.6	72.6	77.2	76.9	79.0	70.1	53.5	34.5	24.9	22.8	20.1	18.7	18.6	21.1	23.8	30.2	31.3	31.9	36.8	40.6	45.5	47.3	54.6	44.4	79.0	18.6
13	62.3	62.5	59.9	68.8	73.8	75.9	71.3	54.8	46.3	44.9	41.5	37.9	34.6	34.9	35.0	35.9	38.1	39.5	41.2	48.7	56.6	61.5	71.8	76.9	53.1	76.9	34.6
14	81.0	83.2	85.0	85.4	86.2	85.9	80.3	66.3	43.0	36.8	32.6	29.5	26.6	24.1	21.8	20.1	19.5	20.1	21.3	25.5	40.0	53.2	60.8	67.5	49.8	86.2	19.5
15	70.8	75.8	78.3	80.4	82.1	82.6	73.1	54.2	36.3	27.6	26.3	24.9	21.7	20.3	19.1	17.7	17.3	17.7	20.4	27.8	44.6	51.1	60.4	68.3	45.8	82.6	17.3
16	73.6	78.5	78.9	81.0	82.8	85.0	74.1	53.2	34.5	22.9	16.2	13.7	13.3	11.6	9.2	9.8	11.7	17.0	22.2	35.4	38.0	45.9	42.5	49.1	41.7	85.0	9.2
17	65.0	64.7	60.9	63.3	64.0	68.4	62.6	48.3	41.4	25.8	19.7	20.0	19.9	18.9	18.2	17.6	15.0	18.0	21.7	26.2	41.5	50.0	57.6	63.3	40.5	68.4	15.0
18	69.0	70.9	71.6	72.7	70.0	73.1	66.8	54.7	45.7	31.7	20.3	21.6	23.9	20.8	23.0	23.6	20.3	22.0	28.0	37.2	48.5	57.9	64.4	74.0	46.3	74.0	20.3
19	77.0	79.9	80.8	82.5	84.2	85.9	78.5	63.7	44.8	41.0	48.7	58.5	69.8	56.9	33.9	26.9	27.9	31.0	41.0	55.0	58.9	57.4	61.0	65.5	58.8	85.9	26.9
20	74.3	77.5	77.4	83.8	84.0	85.8	85.4	80.4	67.9	51.0	33.3	30.6	32.7	32.1	30.2	30.7	33.9	53.2	51.0	58.3	70.6	78.4	82.1	83.1	61.2	85.8	30.2
21	87.2	89.7	90.5	90.9	91.7	92.1	88.4	71.0	51.3	33.1	29.1	26.7	25.1	23.0	21.8	21.5	21.2	22.4	28.4	40.6	48.0	60.8	66.2	63.5	53.5	92.1	21.2
22	53.8	58.6	66.1	72.4	76.1	79.6	79.8	72.7	56.6	36.8	30.0	25.8	23.2	22.7	23.0	22.9	23.9	27.0	33.1	43.4	50.9	59.9	65.4	68.6	48.8	79.8	22.7
23	73.4	76.2	78.8	80.6	81.0	82.6	81.8	65.1	40.1	31.7	29.5	26.9	24.7	19.4	14.7	13.5	14.3	17.4	22.3	35.7	41.8	46.6	53.7	63.4	46.5	82.6	13.5
24	69.0	72.1	76.0	77.9	81.9	81.9	81.6	63.7	45.6	29.4	22.1	19.1	13.6	14.7	15.7	16.3	17.5	19.3	21.7	30.5	42.4	46.7	59.1	60.5	44.9	81.9	13.6
25	64.5	68.2	68.7	73.7	75.1	78.1	78.5	65.4	58.4	37.6	30.2	28.3	28.7	26.7	24.7	25.9	48.8	80.0	86.5	78.3	87.7	89.9	89.9	91.8	61.9	91.8	24.7
26	92.6	92.7	93.0	93.2	93.5	93.5	93.5	92.0	75.3	54.7	45.5	40.7	34.2	29.4	27.6	22.8	24.6	26.9	39.4	54.0	59.7	67.1	59.2	65.0	61.3	93.5	22.8
27	72.7	76.2	81.4	83.7	85.2	86.7	86.1	80.9	65.5	49.1	64.1	65.1	74.5	55.5	47.1	38.4	37.8	45.3	66.7	76.6	78.5	73.7	82.8	85.1	69.1	86.7	37.8
28	85.6	90.1	91.7	91.8	92.3	91.9	89.3	71.6	50.4	42.0	39.2	37.8	35.1	31.4	27.7	22.3	17.3	18.9	28.2	40.3	48.2	62.5	73.1	75.0	56.4	92.3	17.3
29	80.5	83.9	85.4	87.7	89.3	90.1	86.9	75.2	53.3	28.9	22.8	18.5	15.1	15.2	13.7	12.9	13.4	13.5	16.0	18.3	22.6	25.0	27.6	29.3	42.7	90.1	12.9
30	42.2	54.6	57.1	62.4	63.1	65.5	65.4	58.6	49.1	41.0	41.2	48.4	45.8	37.2	33.7	33.1	31.4	30.1	32.4	52.8	65.8	70.0	79.2	79.9	51.7	79.9	30.1
31	81.9	81.8	80.9	79.9	80.6	78.5	78.3	72.2	58.5	46.0	42.3	37.1	35.9	40.0	37.5	39.0	42.1	43.6	48.9	53.4	60.3	67.2	66.9	69.8	59.3	81.9	35.9
Avg	70.4	73.4	75.8	78.4	80.0	81.4	77.0	63.1	48.3	37.1	33.2	32.2	30.1	27.1	25.1	23.9	25.0	28.3	32.9	41.4	50.5	57.6	63.1	67.2	50.9	83.0	22.2
Max	92.6	92.7	93.0	93.2	93.5	93.5	93.5	92.0	75.3	54.7	64.1	65.1	74.5	56.9	47.1	39.0	48.8	80.0	86.5	78.3	87.7	89.9	89.9	91.8	69.1	93.5	37.8
Min	42.2	47.0	49.4	52.0	58.0	61.0	55.7	43.8	34.5	22.9	16.2	13.7	13.3	11.6	9.2	9.8	11.7	13.5	16.0	18.3	22.6	25.0	27.6	29.3	40.2	61.0	9.2

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
September 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	67.2	65.4	67.8	71.1	75.5	82.5	81.5	66.9	52.8	47.1	43.7	40.1	39.5	33.0	30.5	28.5	29.8	31.7	35.3	39.3	43.8	47.4	60.3	72.1	52.2	82.5	28.5
2	78.0	76.6	79.5	82.1	84.8	86.9	84.1	72.3	44.9	31.5	28.8	25.0	21.2	19.7	22.4	29.9	35.5	42.7	45.1	55.4	62.9	71.9	79.7	82.7	56.0	86.9	19.7
3	86.1	87.4	88.0	89.0	89.6	89.7	87.3	74.0	54.8	42.5	37.9	34.7	30.3	28.0	25.6	22.3	18.4	20.3	23.7	30.4	37.2	55.2	60.8	67.5	53.4	89.7	18.4
4	73.0	77.8	77.9	81.5	82.2	84.2	80.6	61.8	46.2	33.8	27.7	23.8	19.3	15.3	9.6	6.5	5.6	8.1	16.7	29.0	33.4	39.8	49.9	51.1	43.1	84.2	5.6
5	55.8	60.0	60.4	64.9	66.0	68.6	67.6	60.7	43.6	26.2	14.9	12.6	10.5	10.6	10.9	12.5	14.7	15.6	13.5	16.9	16.7	25.4	38.1	44.7	34.6	68.6	10.5
6	51.3	59.5	67.2	73.5	77.2	78.8	77.3	65.7	45.2	32.3	29.8	26.8	23.6	22.2	20.8	20.0	21.8	25.9	35.6	48.4	47.0	52.9	57.2	59.7	46.7	78.8	20.0
7	64.8	71.1	77.0	79.5	82.1	84.0	80.6	78.8	83.6	82.3	81.1	80.2	80.5	80.2	79.8	79.8	76.7	77.7	71.5	73.8	74.4	75.2	70.9	74.2	77.5	84.0	64.8
8	77.0	64.1	69.9	74.3	80.5	83.5	82.5	71.2	58.8	49.2	45.1	41.9	39.3	35.2	31.9	29.3	29.3	32.4	39.0	59.3	71.1	73.1	78.6	81.1	58.2	83.5	29.3
9	81.6	82.7	81.5	82.1	84.1	83.8	83.1	68.3	56.6	40.3	39.6	37.3	34.4	34.2	32.7	30.6	29.9	31.7	39.0	55.5	65.5	70.8	82.4	84.2	58.8	84.2	29.9
10	85.9	86.9	88.4	89.1	89.9	89.7	87.5	74.6	56.2	37.1	29.7	25.2	21.3	21.3	21.6	18.7	20.8	23.5	28.1	33.2	43.9	59.5	62.4	64.1	52.4	89.9	18.7
11	72.4	77.1	80.2	81.7	84.1	84.6	83.4	65.4	45.7	29.9	24.3	22.5	20.3	18.0	16.0	15.3	16.0	18.0	26.2	38.8	43.9	51.4	62.2	67.1	47.7	84.6	15.3
12	69.7	72.7	74.7	77.5	80.4	79.0	80.0	63.4	43.3	33.8	28.7	25.5	21.9	19.5	15.8	14.2	13.6	14.5	21.0	34.5	40.8	54.4	60.3	63.4	45.9	80.4	13.6
13	68.4	67.8	72.0	75.0	77.3	79.9	81.3	78.2	68.9	49.6	31.0	21.2	18.1	16.2	15.3	14.8	16.9	22.9	39.7	47.1	63.9	73.1	78.1	79.3	52.3	81.3	14.8
14	80.2	82.4	83.8	84.0	81.6	77.6	78.6	71.1	54.4	27.3	12.6	11.4	10.7	12.2	16.0	16.2	15.8	33.0	36.3	39.9	44.3	44.8	52.2	54.3	46.7	84.0	10.7
15	59.5	62.3	65.7	66.6	68.7	72.2	73.8	68.9	55.1	36.2	22.0	12.1	10.5	11.1	12.4	11.4	12.5	13.7	19.5	30.3	37.7	46.5	49.3	63.2	40.9	73.8	10.5
16	63.6	73.7	83.2	81.9	87.3	88.8	88.6	83.5	71.8	56.2	43.6	37.5	33.0	26.8	23.3	21.6	23.9	28.1	41.9	51.7	59.2	69.9	74.8	78.3	58.0	88.8	21.6
17	79.8	81.8	83.3	84.1	84.0	84.4	82.9	79.5	60.9	37.1	21.9	10.7	10.9	11.4	10.9	13.4	23.3	28.1	35.2	38.0	42.8	48.5	46.4	54.7	48.1	84.4	10.7
18	62.8	70.4	75.7	79.8	77.7	76.3	79.1	73.3	55.0	36.5	21.9	17.0	14.4	12.7	13.0	12.1	11.9	22.6	33.3	35.4	39.1	48.7	52.8	56.9	44.9	79.8	11.9
19	58.7	60.1	61.8	64.9	67.6	65.5	66.2	69.0	59.8	47.3	50.6	69.1	77.2	82.2	74.8	70.7	72.4	73.5	72.7	75.0	75.8	76.8	77.9	77.4	68.6	82.2	47.3
20	77.0	73.6	71.8	70.6	70.4	69.1	68.5	67.5	63.6	58.9	53.5	48.7	45.9	43.3	44.7	39.4	43.4	40.5	47.3	54.8	60.4	71.1	79.0	84.4	60.3	84.4	39.4
21	86.5	88.1	89.1	89.8	89.9	89.8	89.7	82.2	66.4	45.3	34.6	33.3	28.6	25.8	22.6	20.0	19.1	20.3	32.7	48.0	53.8	56.8	66.5	70.9	56.2	89.9	19.1
22	73.0	74.0	74.7	76.8	78.3	79.3	79.3	67.8	46.7	28.6	18.7	17.9	17.6	16.5	18.7	25.7	30.6	31.7	38.3	47.1	48.8	61.1	65.3	70.1	49.4	79.3	16.5
23	75.2	81.2	85.5	87.5	88.6	88.0	86.8	83.7	65.4	43.5	31.7	29.2	27.4	25.5	23.5	23.2	22.4	26.2	36.8	42.1	47.5	53.5	58.6	59.9	53.9	88.6	22.4
24	42.8	34.0	31.3	29.2	31.5	26.9	29.4	25.9	21.0	19.8	29.6	42.3	45.8	44.2	43.2	43.2	36.8	36.6	39.2	42.4	39.5	41.1	45.1	47.2	36.2	47.2	19.8
25	50.4	59.3	62.5	68.0	73.4	80.6	80.6	71.9	55.9	45.8	42.3	41.8	34.5	30.4	40.8	54.2	45.0	44.0	46.8	47.0	45.3	47.9	51.2	51.0	52.9	80.6	30.4
26	55.0	54.3	62.9	67.5	62.8	66.5	66.0	60.1	51.7	44.9	37.8	35.9	34.2	33.2	31.5	30.5	30.9	31.9	36.6	47.2	51.8	57.5	62.4	66.5	49.2	67.5	30.5
27	66.1	70.8	78.2	80.4	85.1	85.5	86.7	75.1	59.3	48.1	43.7	36.0	33.6	32.3	30.5	29.4	30.7	34.0	41.8	51.1	54.9	66.8	73.0	79.3	57.2	86.7	29.4
28	79.6	83.9	85.0	84.9	84.6	84.9	84.0	76.8	64.9	52.7	44.1	39.7	38.2	35.7	35.0	33.1	33.9	38.1	46.1	60.3	67.5	73.0	77.4	82.7	61.9	85.0	33.1
29	84.4	85.9	87.3	87.7	89.1	89.1	88.7	79.7	65.2	39.9	32.8	28.6	25.9	22.9	21.3	20.2	18.3	20.9	26.6	35.5	47.2	57.4	62.0	66.7	53.5	89.1	18.3
30	66.8	69.7	75.1	80.3	83.3	85.3	85.9	76.3	54.3	33.3	32.2	31.2	30.9	30.5	31.2	32.0	34.6	38.0	49.0	59.6	69.1	74.8	80.0	82.8	57.8	85.9	30.5
Avg	69.8	71.8	74.7	76.8	78.6	79.5	79.1	70.5	55.7	41.2	34.5	32.0	30.0	28.3	27.5	27.3	27.8	30.9	37.1	45.6	51.0	58.2	63.8	67.9	52.5	81.9	23.0
Max	86.5	88.1	89.1	89.8	89.9	89.8	89.7	83.7	83.6	82.3	81.1	80.2	80.5	82.2	79.8	79.8	76.7	77.7	72.7	75.0	75.8	76.8	82.4	84.4	77.5	89.9	64.8
Min	42.8	34.0	31.3	29.2	31.5	26.9	29.4	25.9	21.0	19.8	12.6	10.7	10.5	10.6	9.6	6.5	5.6	8.1	13.5	16.9	16.7	25.4	38.1	44.7	34.6	47.2	5.6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Precipitation (Inches)
July 2020

Day	<< Hour >>																								Tot	Max
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
2	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
3	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
4	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
5	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
6	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
7	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
8	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
9	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
10	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
11	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
12	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
13	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
14	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
15	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
16	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
17	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
18	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
19	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
20	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
21	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
22	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
23	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
24	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
25	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
26	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
27	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
28	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
29	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
30	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
31	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
Tot																										
Max																										

Sandfire Resources America Inc.

Black Butte Copper Project Met Tower Air Monitoring Summary

Precipitation (Inches)

August 2020

[illegible]

A-29

**Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Precipitation (Inches)
September 2020**

[illegible]

A-30

APPENDIX B: PERFORMANCE AUDIT REPORTS
THIRD QUARTER 2020



BISON

ENGINEERING, INC.

Bison Engineering

Preliminary Meteorological Parameters Audit Form

Audit Dates: 09/15/2020 Tower Lowered : 10:50 MST Tower Back Up : 14:15 MST
 Client: Tintina Resources
 Site: Black Butte
 AUDITOR: Steve Heck PRECEDING CALIBRATION BY: Don Milmine

Temperature

Audit Device: Control Company - digital thermometer Model 4000
 Meter S/N: 130236679 Temperature Sensor: Climatronics 100093
 Last certified: Oct 2019 S/N X17929 (Upper), S/N X17927 (Lower) - Matched Set

Temperature bath results

	9m	9m	2m	2m	9m - 2m	
Audit	DAS	DAS	DAS	DAS	DAS	
Value	Value	Diff.	Value	Diff.	Diff.	
°C	°C	°C	°C	°C	°C	
0.09	0.22	0.13	0.23	0.14	-0.01	
19.85	19.83	-0.02	19.82	-0.03	0.01	
39.19	39.39	0.20	39.37	0.18	0.02	

Replaced both aspirator fans as PM
 Both of the removed fans were working properly

Wind Direction

		Linearity Check from DAS			
Sensor height:	9 Meter	Setpoint	Clockwise	Counter-CW	Diff CW
Sensor (Make/model number):	Climatronics/ 102083	0	0.8	0.4	0.8
Serial Number :	P1336C	30	30.4	29.9	0.4
Crossarm orientation (from Garmin GPS):	0.0 / 180.0	60	60.4	60.2	0.4
GPS location at sensor:		90	90.5	90.3	0.5
N 46 deg 46.350 min, W 110 deg 52.949 min		120	120.6	120.4	0.6
GPS location at sighting point:		150	150.4	150.2	0.4
N 46 deg 46.317 min, W 110 deg 52.949 min		180	180.3	180.5	0.3
Sensor response aligned with crossarm (as found):	179.7	210	210.1	209.9	0.1
Sensor response aligned with crossarm (as left):	180.3	240	240.1	239.6	0.1
		270	269.9	269.1	-0.1
		300	300.0	299.4	0.0
		330	330.1	329.6	0.1
				Max Diff	0.8

Linearity Audit Device: Climatronics 101966, SN 70

Threshold Torque: 0.05 oz.-in.
 (Waters Model 366-1 torque watch)

Wind Speed

Sensor height:: 9 Meter
 Sensor (Make/model number): Climatronics/ 102083
 Serial Number : P1336C
 Calibration device: Weathertronics 300 rpm synchronous motor
 Weathertronics 600 rpm synchronous motor

Synchronous motor checks

Known	Known	DAS	DAS
Value	Value	Value	Diff.
RPM	m/s	m/s	m/s
0	0.22	0.22	0.00
300	6.66	6.66	0.00
600	13.09	13.08	-0.01

Threshold Torque: 0.003 oz.-in.
 (Waters Model 366-3 torque watch)

Solar Radiation

Audit Device: Eppley Pyranometer, SN 16166F3 (certified by Eppley January 2019)

Time (MST)	CTS Value (W/m2)	Site Value (W/m2)	Diff. (%)	Diff. (% FS)
1500	394	406	3.0	0.9
1503	372	389	4.6	1.3
1505	368	382	3.8	1.1

Relative Humidity

Site Sensor: Met One 083E-0-35
Sensor Height: 2 meters
Reference Std: Assmann Psychrometer, thermometer calibrations checked September 2020

Ref Dry-Bulb:	25.1	deg C	BP = 24.56 in. Hg
Ref Wet-Bulb	9.8	deg C	
Ref RH:	12.1	%RH	
Station RH:	12.3	%RH	
Diff:	0.2	%RH	

Barometric Pressure

Audit Device: Wallace & Tiernan Model FA185260, S/N LL03297.
Checked against Bison Mercury barometer (Butte) September 2019

Audit Value:	24.56	in Hg
Station Value:	24.62	in Hg
Diff:	0.06	in Hg

Precipitation

Rain Gauge = Met One Model 375D, Serial No. X15682
Level checked OK
Wind Screen in place
8" opening
559 ml water added
Calibration is 8.24 ml per tip
Known audit value is $559 / 8.24 = 67.8$ tips (so 67 or 68 full tips expected)
Unit registered 72 tips
% difference from expected = +5.9%

Installed and connected new heater
Replaced signal cable that had been damaged by cows/rodents
Repeated calibration check with same results following maintenance

Signature Site Operator : _____

Signature Auditor : Steven R. Keel

**APPENDIX C: NEWLAN CREEK RAWS STATION
PRECIPITATION SUMMARIES, THIRD QUARTER 2020**

Newlan Creek Montana

Monthly Summary for

July, 2020

Day of Month	Day of Year	Total Solar Rad. ly.	Ave. mph	Wind V. Dir. Deg	Max. mph	Air Temperature Mean Deg.	Max Fahrenheit	Min Fahrenheit	Fuel Temperature Mean Deg.	Max Fahrenheit	Min Fahrenheit	Humidity Mean Percent	Max Percent	Min Percent	Dew Point Deg.	Wet Bulb Fahrenheit	Total Precip. inches
1	183	442	4.7	146	162.0	48	61	36	47	68	33	78	100	42	41	44	0.12
2	184	729	4.9	286	29.0	53	71	33	54	76	30	63	100	25	37	45	0.02
3	185	590	5.0	186	43.0	58	76	36	57	84	32	61	100	25	42	49	0.00
4	186	564	3.8	344	26.0	58	78	36	57	85	33	67	100	24	44	49	0.03
5	187	581	3.4	320	19.0	57	71	36	56	79	33	65	100	32	42	48	0.00
6	188	563	3.9	188	22.0	61	75	42	61	82	39	65	98	31	46	52	0.03
7	189	422	8.2	244	27.0	61	72	42	60	82	38	59	81	36	45	52	0.03
8	190	592	6.6	278	29.0	52	66	36	52	73	31	55	93	31	35	43	0.00
9	191	687	3.3	311	21.0	56	75	29	56	83	25	62	100	27	39	46	0.00
10	192	514	6.7	312	28.0	54	69	38	54	77	33	69	95	38	42	47	0.10
11	193	721	3.8	281	19.0	59	78	31	59	85	28	57	100	21	39	47	0.00
12	194	417	5.2	310	27.0	61	72	41	58	79	37	53	85	33	42	50	0.00
13	195	668	5.0	296	25.0	53	67	38	53	74	32	51	81	22	33	43	0.00
14	196	720	4.5	306	22.0	50	68	28	50	76	24	56	98	21	31	40	0.00
15	197	689	4.4	314	23.0	53	72	29	54	80	25	61	95	29	37	44	0.00
16	198	696	3.4	307	18.0	60	81	35	59	86	30	60	100	27	42	49	0.00
17	199	472	3.8	333	18.0	59	77	37	59	87	35	68	100	35	46	51	0.09
18	200	621	4.0	312	20.0	55	73	39	55	80	34	67	100	29	42	48	0.00
19	201	655	2.8	320	18.0	56	76	33	57	83	30	63	100	29	41	47	0.00
20	202	682	4.2	324	18.0	58	74	37	59	82	33	63	100	28	43	49	0.00
21	203	689	3.8	304	22.0	62	81	42	62	89	38	57	97	20	43	51	0.00
22	204	639	3.5	316	23.0	66	87	37	65	93	34	52	95	18	42	51	0.00
23	205	256	2.9	90	35.0	58	75	47	57	80	43	82	100	47	52	55	0.38

24	206	513	3.0	240	24.0	59	76	43	60	83	42	69	100	31	47	52	0.01
25	207	636	3.5	321	24.0	58	75	38	59	81	34	60	100	18	40	48	0.12
26	208	689	3.5	316	16.0	59	79	34	59	86	30	55	100	17	37	47	0.00
27	209	672	3.2	251	20.0	66	86	35	65	92	31	49	97	21	41	51	0.00
28	210	312	2.1	327	12.0	64	81	49	63	87	45	60	90	31	48	54	0.01
29	211	629	3.5	319	23.0	64	84	46	64	91	42	59	100	20	45	53	0.00
30	212	611	2.8	357	20.0	64	83	38	65	93	35	55	100	25	44	52	0.00
31	213	634	5.0	146	20.0	68	86	42	68	93	38	49	94	22	45	54	0.00

MONTHLY STATISTICS

	Total	Wind		Air Temperature			Fuel Temperature			Humidity			Dew	Wet	Total	
	Solar Rad.	Ave.	V. Dir.	Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip.
	ly.	mph	Deg	mph	Deg.	Fahrenheit	Deg.	Fahrenheit	Deg.	Fahrenheit	Percent	Deg.	Fahrenheit	inches		
Total	18306															0.94
Ave.	591	4.1	306	27.5	58.4	75.6	37.5	58.2	82.9	33.8	61	97	28	42	49	
Max.	729	8.2		162.0	68	87	49	68	93	45	82	100	47	52	55	0.38
Min.	256	2.1		12.0	48	61	28	47	68	24	49	81	17	31	40	0.00

Data are subject to further review and editing. Please refer any questions to the Western Regional Climate Center.

° 1 ly = 1 cal/cm² = 4.1855 J/cm² = 3.6855 BTU/ft² = .01163 KW-hr/m²

Newlan Creek Montana

Monthly Summary for

August, 2020

Day of Month	Day of Year	Total Solar Rad. ly.	Ave. V. mph	Wind Dir. Max. Deg. mph	Air Temperature Mean Max Min Deg. Fahrenheit			Fuel Temperature Mean Max Min Deg. Fahrenheit			Humidity Mean Max Min Percent			Dew Point Deg. Fahrenheit	Wet Bulb Fahrenheit	Total Precip. inches
1	214	572	7.2	154 23.0	72	83	56	72	86	51	40	62	30	46	56	0.00
2	215	588	5.0	155 17.0	75	88	57	75	96	52	40	67	25	47	58	0.00
3	216	462	3.5	319 27.0	66	82	45	63	87	40	51	82	24	46	54	0.06
4	217	649	2.8	348 23.0	63	82	40	63	90	37	53	100	19	41	50	0.00
5	218	604	5.0	91 31.0	66	85	47	67	94	43	54	99	25	46	54	0.37
6	219	499	4.2	307 29.0	62	83	44	61	91	41	64	100	23	46	52	0.00
7	220	634	6.2	311 31.0	54	69	35	55	77	29	56	99	21	35	44	0.00
8	221	579	4.2	304 18.0	54	76	27	54	84	23	49	89	19	31	42	0.00
9	222	483	5.1	322 25.0	55	71	36	55	78	33	56	90	28	37	45	0.00
10	223	629	4.3	315 20.0	57	79	32	58	88	28	55	99	20	36	45	0.00
11	224	610	4.2	299 27.0	59	82	34	60	90	30	49	93	17	35	46	0.00
12	225	444	4.7	314 27.0	59	79	34	59	90	30	46	87	18	34	46	0.00
13	226	429	4.8	340 25.0	53	69	32	52	79	25	55	87	33	36	44	0.00
14	227	617	4.6	302 31.0	50	73	24	51	80	20	51	92	16	28	39	0.00
15	228	610	4.0	317 21.0	57	80	30	58	89	25	49	90	18	33	44	0.00
16	229	579	3.8	323 20.0	62	87	32	62	95	29	45	93	11	33	47	0.00
17	230	492	4.3	306 25.0	68	90	45	67	98	41	42	71	17	39	51	0.00
18	231	396	2.8	316 17.0	65	85	44	65	99	40	48	82	20	41	51	0.00
19	232	348	2.7	349 22.0	61	81	41	59	88	36	63	97	27	46	52	0.09
20	233	357	2.8	312 27.0	61	82	44	60	88	41	66	95	30	47	52	0.01
21	234	560	3.4	321 18.0	61	83	35	62	92	31	55	100	22	40	49	0.00
22	235	469	4.4	327 23.0	63	82	41	62	90	36	50	89	22	40	50	0.00
23	236	544	3.7	294 20.0	62	85	38	62	94	34	48	86	14	37	48	0.00

24	237	368	3.2	323	17.0	63	85	38	61	92	36	47	86	15	37	48	0.00
25	238	311	3.9	317	36.0	58	80	40	57	89	38	66	100	25	43	49	0.18
26	239	509	3.5	316	27.0	59	78	40	59	87	38	66	100	25	44	50	0.00
27	240	289	2.8	318	27.0	55	71	40	54	73	37	73	98	40	45	49	0.04
28	241	540	4.2	160	20.0	56	78	34	57	84	29	59	100	19	38	46	0.00
29	242	530	4.5	290	29.0	60	81	33	61	90	30	46	100	14	32	45	0.00
30	243	467	6.4	324	27.0	49	60	28	50	69	23	53	87	28	31	40	0.00
31	244	230	3.9	299	17.0	44	55	27	43	68	22	60	89	36	29	37	0.00

MONTHLY STATISTICS

	Total	Wind		Air Temperature			Fuel Temperature			Humidity			Dew	Wet	Total	
	Solar Rad.	Ave.	V. Dir.	Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip.
	ly.	mph	Deg	mph	Deg.	Fahrenheit	Deg.	Fahrenheit	Deg.	Fahrenheit	Percent	Deg.	Fahrenheit	inches		
Total	15399															0.75
Ave.	497	4.2	314	24.1	59.7	78.8	37.8	59.5	86.9	33.8	53	91	23	39	48	
Max.	649	7.2		36.0	75	90	57	75	99	52	73	100	40	47	58	0.37
Min.	230	2.7		17.0	44	55	24	43	68	20	40	62	11	28	37	0.00

Data are subject to further review and editing. Please refer any questions to the Western Regional Climate Center.

° 1 ly = 1 cal/cm² = 4.1855 J/cm² = 3.6855 BTU/ft² = .01163 KW-hr/m²