Alton Coal Development, LLC

463 North 100 West, Suite 1

Cedar City, Utah 84720

Phone (435) 867-5331 / Fax (435) 867-1192

May 30, 2023

Andrea Bartlett
Engineer
Major New Source Review Section
Utah Division of Air Quality
195 North 1950 West
Salt Lake City, UT 84114

RE: 1st QT 2023 Report - Coal Hollow Mine
Project ID: N14047-0004

Dear Mrs. Bartlett,

Please find enclosed the Summary of PM_{10} Data Collected at the Coal Hollow Mine, Utah during the First Quarter, 2023 prepare by Alton Coal Development LLC.

Please do not hesitate to contact me if you have any questions. I can be reached at (435) 867-5331 or (435) 691-1551.

Sincerely,

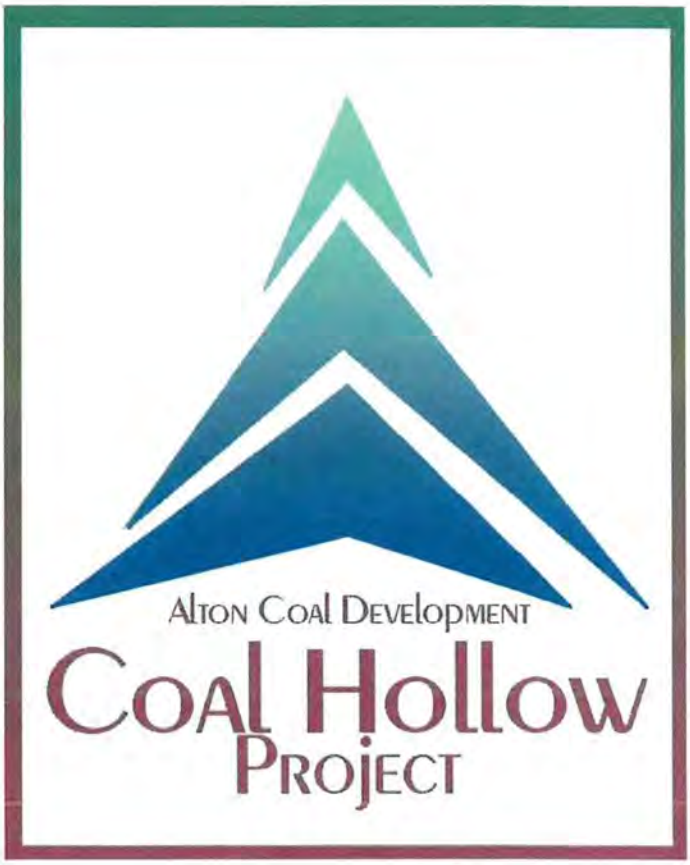
B. Kirk Nicholes
Environmental Specialist
Alton Coal Development LLC

Alton Coal Development LLC.

Summary of PM_{10} Data
Collected at Coal Hollow Mine, Utah
During the First Quarter, 2023

Submitted to:
Utah Division of Environmental Quality
Division of Air Quality
195 North 1950 West
Salt Lake City, Utah
Contact: Andrea Bartlett

Prepared by:
Alton Coal Development, LLC.
463 N 100W, Suite1
Cedar City, Utah 84721
Contact: Kirk Nicholes
435.867.5331



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1.0 INTRODUCTION

This report summarizes measurements of Particulate Matter less than 10 microns nominal aerodynamic diameter (PM_{10}) collected and processed by Alton Coal Development LLC, (ACD) from the five monitoring stations located at the Coal Hollow Mine Facility in Alton, Utah. Monitoring for PM_{10} is a condition of the mines operating permit.

PM_{10} monitoring at the site consists of five BGI PQ200 PM_{10} monitors run by solar power. Figure 2 of this report shows the approximate locations of the monitoring locations. The BGI PQ200 monitors are EPA Reference Method monitors and are operated on the National Particulate 1-in-6 Monitoring Schedule. The data summarized herein covers the data collected during the first quarter of 2023.

2.0 SITE LOCATION

The Coal Hollow Mine is located in Kane County, Utah, approximately three miles southeast of the town of Alton, Utah. Figure I on the following page gives an overview of the site location. Specifically, the Coal Hollow Mine is located in Sections 7, 18, 19, 20, 29, and 30 of Township 39S, Range 5W and Section 12 and 13 of Township 39S, Range 6W; with an approximate facility location of:

Northing: 41401699 meters

Easting: 371534 meters

Universal Transverse Mercator (UTM) Datum NAD27, Zone 12

The three monitoring locations as depicted in Figure 2, are located in positions to collect both background and maximum PM10 concentrations. The background monitor has a manufactures serial #962, therefore this monitor will be referred as monitor 962A. The compliance monitor for the Coal Hollow Mine (CHM) has a manufactures serial #963, therefore this monitor will be referred as monitor 963B. The co-located monitor has a manufactures serial #964, therefore this monitor will be referred as monitor 964C. The background monitor coordinates are Northing: 4140856, Easting 373119, (UTM) Datum NAD27, Zone 12. In preparation for future mining at the South Private Lease (SPL), the CHM compliance monitor and the co-located monitor have been relocated to the coordinates: Northing: 4140833, Easting 371231, (UTM) Datum NAD27, Zone 12. The North Private Lease area of the CHM is located in Sections 12, 13 of Township 39S, Range 6W and Sections 7, 18 of Township 39S, Range 5W. The compliance monitor for the North Private Lease has a manufactures serial #2366, therefore this monitor will be referred as monitor 2366D. The co-located monitor has a manufactures serial #2398, therefore this monitor will be referred as monitor 2398E. The NPL compliance monitor and the co-located monitor coordinates are Northing: 4141570, Easting 370928, (UTM) Datum NAD27, Zone 12.

Figure 1 - Site Location Map

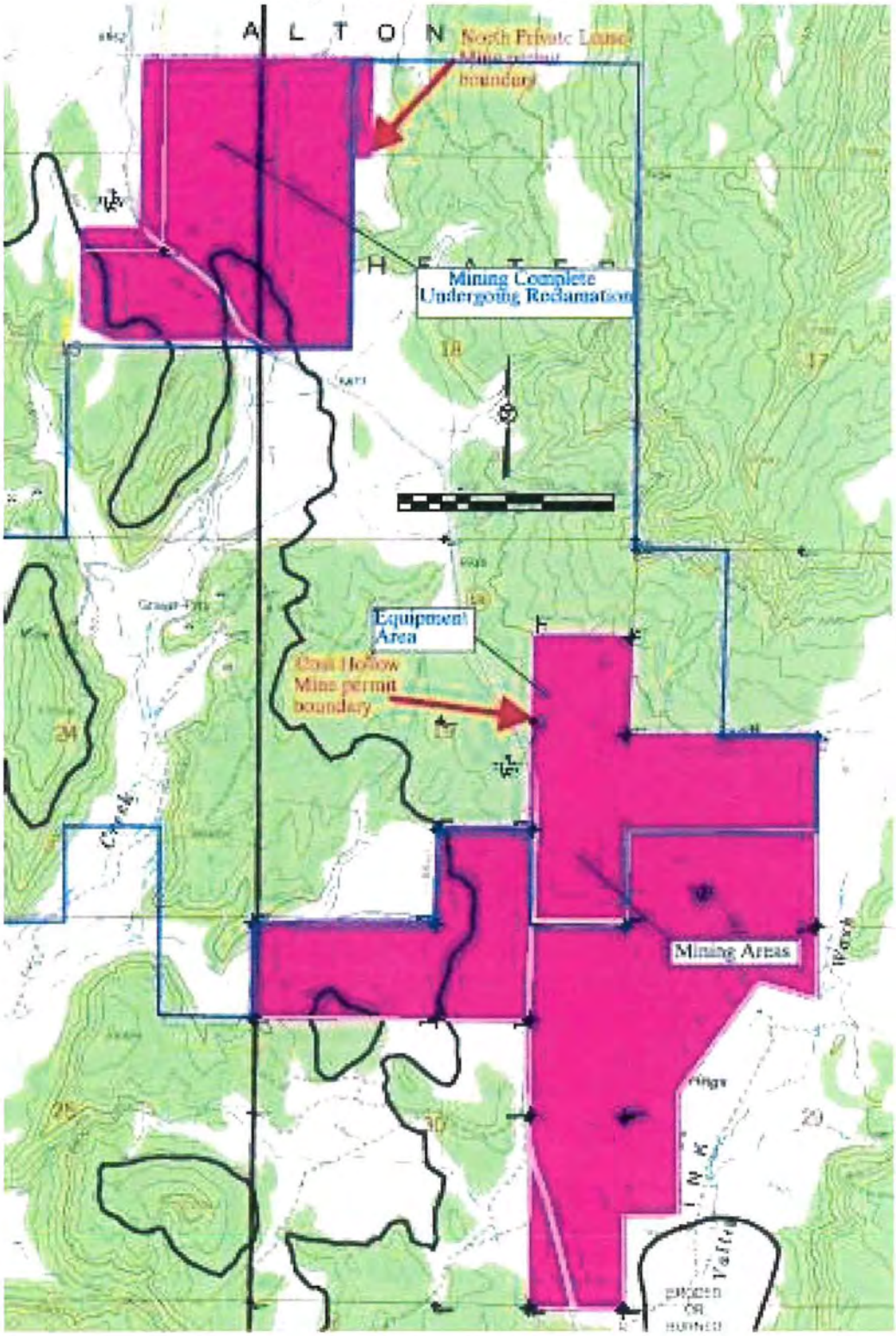


Figure 2 - Satellite View of Monitoring Locations

3.0 AIR QUALITY DATA SUMMARIES

A listing of the measured PM_{10} concentrations for the quarter are presented in Appendix B (individual data sheets are provided on the enclosed disk in the PDF version of Appendix B) and Field Data Sheets generated during the collection of each sample are presented in Appendix D. Measurements were collected during a 24-hour periods and represent the average PM_{10} concentration during the midnight-to-midnight data collection cycle. As required by the operating permit for the CHM, duplicate measurements were made with Sampler #963B (designated as a compliance monitor) and Sampler #964C (designated as a co-located sampler) to the extent possible. The quarterly mean PM_{10} concentration and the comparison of measured concentrations to standards are based on measurements from the primary Sampler #963B. If a measurement from Sampler #963B was missing or invalid, the measurement from the secondary Sampler #964C would be used. Also, required by the operating permit for the NPL, duplicate measurements were made with Sampler #2366D (designated as a compliance monitor) and Sampler #2398E (designated as a co-located sampler) to the extent possible. The quarterly mean PM_{10} concentration and the comparison of measured concentrations to standards are based on measurements from the primary Sampler #2366D. If a measurement from Sampler #2366D was missing or invalid, the measurement from the secondary Sampler #2398E would be used.

The highest 24-hour mean PM_{10} concentrations measured during the quarter from the three monitoring locations are summarized in Table I, Table II, Table III, Table IV and Table V. The three highest concentrations, # of valid samples, and the arithmetic mean concentrations from each of the sites are listed. As reflected in these tables, an unusually hard winter affected data recovery with the inability to access monitors in a timely manner and with malfunction of the monitors. All measured PM_{10} concentrations were below the 24-hour National Ambient Air Quality Standard (NAAQS) of 150 $\mu g/m^3$.

Table I - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Background Monitor - 962A

RANK	DATE	PM_{10} CONCENTRATION
Highest	2/17/23	3.2
2nd Highest	NA	NA
Monthly Mean	1/1/23-1/31/23	NA
Monthly Mean	2/1/23-2/28/23	3.2
Monthly Mean	3/1/23-3/31/23	NA
Quarterly Mean	1/1/23-3/31/23 (1 valid samples)	3.2

Table II - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor - 963B

RANK	DATE	PM_{10} CONCENTRATION
Highest	3/7/23	20.7
2nd Highest	1/30/23	15.1
Monthly Mean	1/1/23-1/31/23	15.1
Monthly Mean	2/1/23-2/28/23	1.1
Monthly Mean	3/1/23-3/31/23	6.8
Quarterly Mean	1/1/23-3/31/23 (7 valid samples)	7.2

Table III - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Collocated Monitor – 964C

RANK	DATE	PM_{10} CONCENTRATION
Highest	2/11/23	65.2
2nd Highest	2/17/23	47.8
Monthly Mean	1/1/23-1/31/23	5.5
Monthly Mean	2/1/23-2/28/23	36.0
Monthly Mean	3/1/23-3/31/23	7.2
Quarterly Mean	1/1/23-3/31/23 (15 valid samples)	14.3

Table IV - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor – 2366D

RANK	DATE	PM_{10} CONCENTRATION
Highest	1/6/23	1.4
2nd Highest	NA	NA
Monthly Mean	1/1/23-1/31/23	1.4
Monthly Mean	2/1/23-2/28/23	NA
Monthly Mean	3/1/23-3/31/23	NA
Quarterly Mean	1/1/23-3/31/23 (1 valid samples)	1.4

Table V - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Collocated Monitor – 2398E

RANK	DATE	PM_{10} CONCENTRATION
Highest	NA	NA
2nd Highest	NA	NA
Monthly Mean	1/1/23-1/31/23	NA
Monthly Mean	2/1/23-2/28/23	NA
Monthly Mean	3/1/23-3/31/23	NA
Quarterly Mean	1/1/23-3/31/23 (0 valid samples)	NA

Table VI – Mean Quarterly and Monthly Wind Speed

	1st Quarter 2023	Jan.	Feb.	Mar.
Mean Wind Speed (m/s)	2.56	2.57	2.80	2.33

4.0 DATA RECOVERY AND QUALITY ASSURANCE

4.1 Data Recovery

Monitor 962A

Monitor 962A collected 1 of the 15 samples during the quarter. The percent recovery for this quarter is 7%. For the sample dates of Jan 6th, Jan 8th, Jan 24thand Feb 11th, the machine malfunctioned. For all other sample dates, the site was inaccessible due to snow/mud.

Monitor 963B

Monitor 963B collected 7 of the 15 samples during the quarter. The percent recovery for this quarter is 47%. For the sample dates of Jan 6th, Jan 12th, Jan 18th, Jan 24, Feb 11th, Feb 17th and Feb 23rd, the machine malfunctioned. For the sample date of Mar 7th, replacement filters were not delivered to set up the run.

Monitor 964C

Monitor 964C collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 2366D

Monitor 2366D collected 1 of the 15 samples during the quarter. The percent recovery for this quarter is 7%. For the sample dates of Jan 12th, Jan 18th, Feb 5ththrough Mar 31st, the machine malfunctioned. For the sample date of Jan 24th and Jan 30th, the site was inaccessible.

Monitor 2398E

Monitor 2398E collected 0 of the 15 samples during the quarter. The percent recovery for this quarter is 0%. The monitor continued to fail to run consistently during the quarter. Currently it is thought that the cold temperatures have an effect on the control board. Testing is being completed to remedy this.

The PM_{10} data recoveries for the five monitoring stations are presented below:

Table VII - Summary of Data Recovery

SAMPLER	POSSIBLE SAMPLES	VALID SAMPLES	PERCENT DATA RECOVERY
962A	15	1	7%
963B	15	7	47%
964C	15	15	100%
2366D	15	1	7%
2398E	15	0	0%

4.2 Quality Assurance

Quality assurance procedures utilized to verify the integrity of the measured PM_{10} data included the following:

1. Review of PM_{10} precision measurements based upon duplicate, collocated measurements.

2. Independent quarterly audits of the PM_{10} samplers.

3. Monthly zero and single point flow rate checks of the PM_{10} samplers.

4.2.1 Precision of PM_{10} Measurements

The precision of the PM_{10} measurements was determined from the duplicate samples collected from the collocated BGI PQ200 Monitors 963B and 964C at the Coal Hollow Mine and 2366D and 2398E at the North Private Lease. As recommended in *40 CFR, Part 58*, Appendix A, Section 5.3.1, PM_{10} precision checks are reported for instances when the concentrations for duplicate samples both exceed 3 $\mu g/m^3$. Duplicate samples that did not meet this condition were omitted for the purposes of the precision checks. Appendix C, of this report summarizes precision calculations between the compliance monitor and the co-located monitor. Monthly flow rate verification data is also summarized in Appendix C.

Precision calculations at the Coal Hollow Mine were developed based on 3 valid pairs of co-located monitoring data during the quarter. Single point precision based on *40 CFR, Part 58*, Appendix A Equation 2 results were -16.0 to 19.6%. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58*, Appendix A Equation 11 is 25.3%. This value is not within the 10% goal for aggregate CV.

Precision calculations at the North Private Lease were not developed due to the lack of operation of 2366E monitor.

4.2.2 Audit Results

The accuracy of the PM_{10} sampler flows was verified by a performance audit conducted by Air Resource Specialist on December 6, 2022. A copy of the audit report is presented in Appendix E and is summarized in Table VI. The audit results indicate that all five samplers were operating properly.

Table VIII- Audit Summary

SAMPLER	AUDIT % DIFFERENCE	LIMIT*	DESIGN % DIFFERENCE	LIMIT*
962A	-1.2	±10%	1.3	±10%
963B	-0.4	±10%	0.4	±10%
964C	0.7	±10%	-0.7	±10%
2366D	Out for repair	±10%	Out for repair	±10%

2398E	5.3	±10%	-5.0	±10%
*Values between ± 7% and ± 10% require recalibration but no data are invalidated.				

4.2.3 Zero and Single Point Flow Rate Checks

Zero and single-point flow rate verifications were performed by a site technician at the time of the audit. The data was then input into a statistical calculator to calculate percent difference and bias between each of the monitors and the monthly single point flow rate measured by a NIST traceable calibration orifice. The calculator used is called the "Data Assessment Statistical Calculator" DASC Tool. DASC was developed for the data user community and can be found in the Precision and Accuracy Reporting System within the Quality Assurance section of EPA's Ambient Monitoring Technology Information System. This data is presented in Appendix C of this report.

APPENDIX A

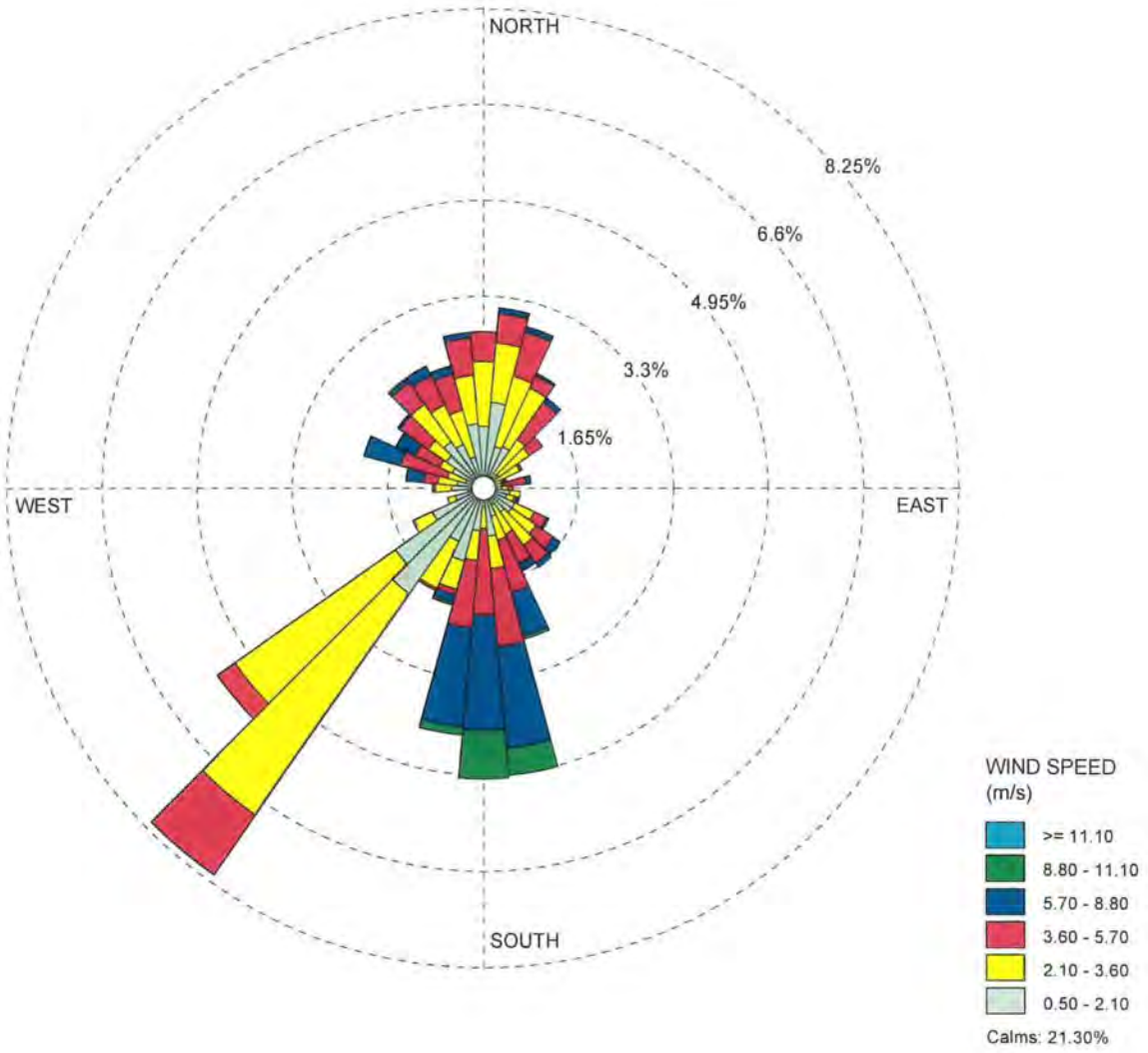
Windrose

WIND ROSE PLOT:

Alton Coal Development LLC
1st Quarter_2023

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2022 - 00:00** **End Date: 3/31/2022 - 23:00**	COMPANY NAME: **Alton Coal Development LLC - Coal Hollow Mine**	
		MODELER: **Kirk Nicholes**	
	CALM WINDS: **21.30%**	TOTAL COUNT: **2147 hrs.**	
	AVG. WIND SPEED: **2.56 m/s**	DATE: **4/26/2023**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Station ID: 1
Start Date: 1/1/2022 - 00:00
End Date: 3/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Count)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	23	24	11	0	0	0	58
5-15	32	22	11	2	0	0	67
15-25	16	27	17	2	0	0	62
25-35	17	24	5	1	0	0	47
35-45	5	17	17	2	0	0	41
45-55	7	14	6	0	0	0	27
55-65	3	12	1	0	0	0	16
65-75	4	3	1	1	0	0	9
75-85	4	3	9	2	0	0	18
85-95	7	2	2	0	0	0	11
95-105	10	4	0	0	0	0	14
105-115	9	3	1	1	0	0	14
115-125	13	8	5	1	0	0	27
125-135	13	11	8	3	0	0	35
135-145	11	15	8	2	0	0	36
145-155	7	12	12	3	0	0	34
155-165	11	9	20	17	1	0	58
165-175	18	12	29	38	10	0	107
175-185	7	8	32	43	18	0	108
185-195	16	11	25	37	3	0	92
195-205	28	11	2	3	1	0	45
205-215	22	19	1	0	0	0	42
215-225	48	100	27	0	0	0	175
225-235	40	73	8	0	0	0	121
235-245	21	8	0	0	0	0	29
245-255	11	3	0	0	0	0	14
255-265	5	1	0	0	0	0	6
265-275	12	6	1	0	0	0	19
275-285	10	7	5	7	0	0	29
285-295	7	7	18	14	0	0	46
295-305	13	5	10	8	0	0	36
305-315	17	8	13	1	0	0	39
315-325	21	17	10	2	0	0	50
325-335	18	16	12	4	0	0	50
335-345	12	18	14	3	0	0	47
345-355	24	18	14	2	0	0	58
Total	542	558	355	199	33	0	2160

Frequency of Calm Winds: 460
Average Wind Speed: 2.56 m/s

Station ID: 1
Start Date: 1/1/2022 - 00:00
End Date: 3/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.010648	0.011111	0.005093	0.000000	0.000000	0.000000	0.026852
5-15	0.014815	0.010185	0.005093	0.000926	0.000000	0.000000	0.031019
15-25	0.007407	0.012500	0.007870	0.000926	0.000000	0.000000	0.028704
25-35	0.007870	0.011111	0.002315	0.000463	0.000000	0.000000	0.021759
35-45	0.002315	0.007870	0.007870	0.000926	0.000000	0.000000	0.018981
45-55	0.003241	0.006481	0.002778	0.000000	0.000000	0.000000	0.012500
55-65	0.001389	0.005556	0.000463	0.000000	0.000000	0.000000	0.007407
65-75	0.001852	0.001389	0.000463	0.000463	0.000000	0.000000	0.004167
75-85	0.001852	0.001389	0.004167	0.000926	0.000000	0.000000	0.008333
85-95	0.003241	0.000926	0.000926	0.000000	0.000000	0.000000	0.005093
95-105	0.004630	0.001852	0.000000	0.000000	0.000000	0.000000	0.006481
105-115	0.004167	0.001389	0.000463	0.000463	0.000000	0.000000	0.006481
115-125	0.006019	0.003704	0.002315	0.000463	0.000000	0.000000	0.012500
125-135	0.006019	0.005093	0.003704	0.001389	0.000000	0.000000	0.016204
135-145	0.005093	0.006944	0.003704	0.000926	0.000000	0.000000	0.016667
145-155	0.003241	0.005556	0.005556	0.001389	0.000000	0.000000	0.015741
155-165	0.005093	0.004167	0.009259	0.007870	0.000463	0.000000	0.026852
165-175	0.008333	0.005556	0.013426	0.017593	0.004630	0.000000	0.049537
175-185	0.003241	0.003704	0.014815	0.019907	0.008333	0.000000	0.050000
185-195	0.007407	0.005093	0.011574	0.017130	0.001389	0.000000	0.042593
195-205	0.012963	0.005093	0.000926	0.001389	0.000463	0.000000	0.020833
205-215	0.010185	0.008796	0.000463	0.000000	0.000000	0.000000	0.019444
215-225	0.022222	0.046296	0.012500	0.000000	0.000000	0.000000	0.081019
225-235	0.018519	0.033796	0.003704	0.000000	0.000000	0.000000	0.056019
235-245	0.009722	0.003704	0.000000	0.000000	0.000000	0.000000	0.013426
245-255	0.005093	0.001389	0.000000	0.000000	0.000000	0.000000	0.006481
255-265	0.002315	0.000463	0.000000	0.000000	0.000000	0.000000	0.002778
265-275	0.005556	0.002778	0.000463	0.000000	0.000000	0.000000	0.008796
275-285	0.004630	0.003241	0.002315	0.003241	0.000000	0.000000	0.013426
285-295	0.003241	0.003241	0.008333	0.006481	0.000000	0.000000	0.021296
295-305	0.006019	0.002315	0.004630	0.003704	0.000000	0.000000	0.016667
305-315	0.007870	0.003704	0.006019	0.000463	0.000000	0.000000	0.018056
315-325	0.009722	0.007870	0.004630	0.000926	0.000000	0.000000	0.023148
325-335	0.008333	0.007407	0.005556	0.001852	0.000000	0.000000	0.023148
335-345	0.005556	0.008333	0.006481	0.001389	0.000000	0.000000	0.021759
345-355	0.011111	0.008333	0.006481	0.000926	0.000000	0.000000	0.026852
Total	0.250926	0.258333	0.164352	0.092130	0.015278	0.000000	0.781019

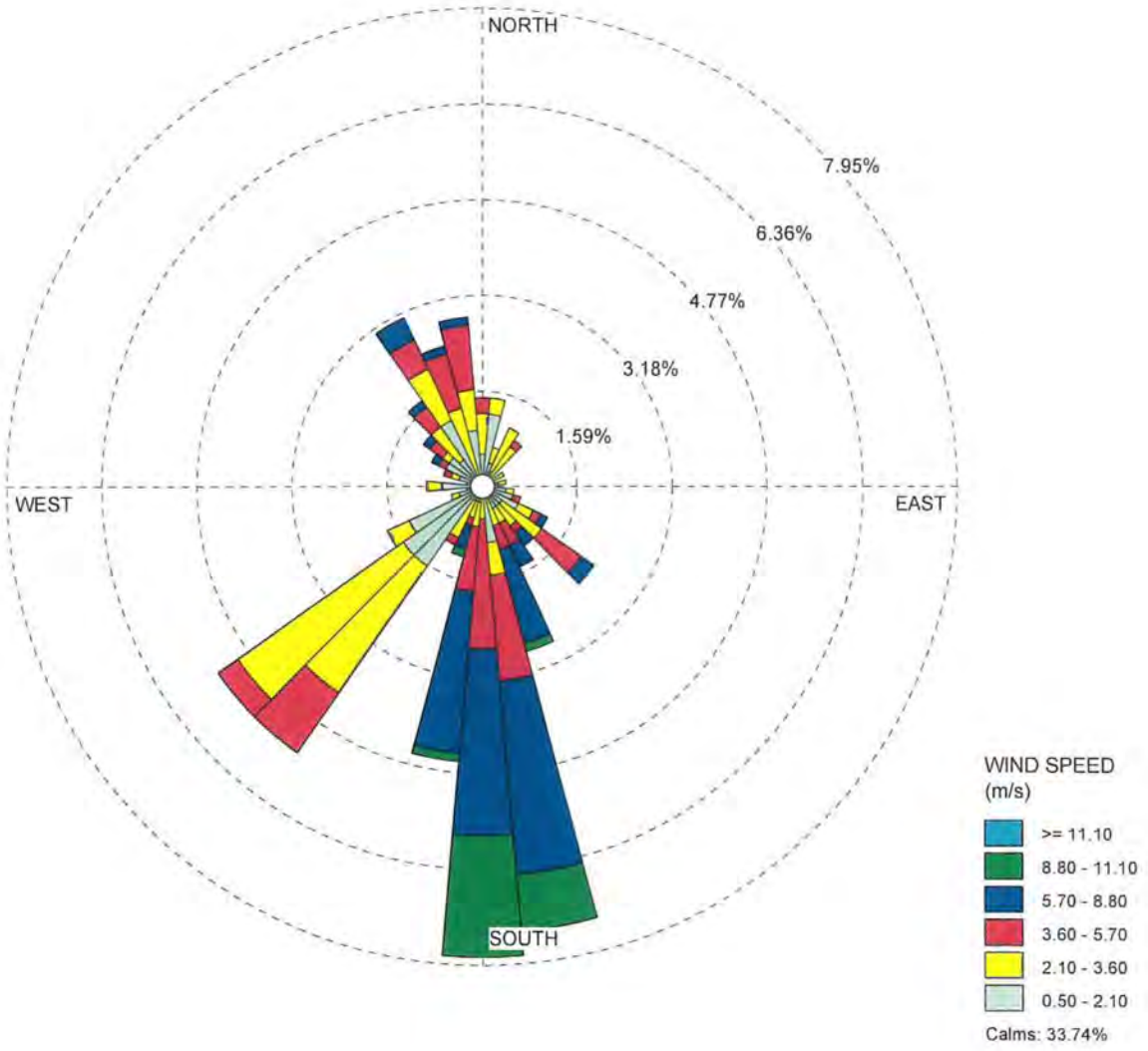
Frequency of Calm Winds: 21.30%
Average Wind Speed: 2.56 m/s

WIND ROSE PLOT:

Alton Coal Development LLC
January_2023

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2022 - 00:00** **End Date: 1/31/2022 - 23:00**	COMPANY NAME: **Alton Coal Development LLC - Coal Hollow Mine**	
		MODELER: **Kirk Nicholes**	
	CALM WINDS: **33.74%**	TOTAL COUNT: **744 hrs.**	
	AVG. WIND SPEED: **2.57 m/s**	DATE: **4/26/2023**	PROJECT NO.:

Station ID: 1
Start Date: 1/1/2022 - 00:00
End Date: 1/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Count)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	4	5	2	0	0	0	11
5-15	9	2	0	0	0	0	11
15-25	3	2	0	0	0	0	5
25-35	2	6	0	0	0	0	8
35-45	1	5	1	0	0	0	7
45-55	0	1	0	0	0	0	1
55-65	1	2	0	0	0	0	3
65-75	0	0	0	0	0	0	0
75-85	2	1	0	0	0	0	3
85-95	0	0	0	0	0	0	0
95-105	3	1	0	0	0	0	4
105-115	4	0	1	0	0	0	5
115-125	5	2	1	1	0	0	9
125-135	3	6	6	2	0	0	17
135-145	3	3	1	2	0	0	9
145-155	3	2	3	3	0	0	11
155-165	1	4	3	12	1	0	21
165-175	7	4	13	24	7	0	55
175-185	1	3	16	23	15	0	58
185-195	2	3	8	20	1	0	34
195-205	2	2	1	3	1	0	9
205-215	2	5	1	0	0	0	8
215-225	12	19	9	0	0	0	40
225-235	12	25	3	0	0	0	40
235-245	10	3	0	0	0	0	13
245-255	3	1	0	0	0	0	4
255-265	2	0	0	0	0	0	2
265-275	5	2	0	0	0	0	7
275-285	2	0	0	0	0	0	2
285-295	3	1	1	0	0	0	5
295-305	5	0	1	1	0	0	7
305-315	5	1	2	1	0	0	9
315-325	4	5	3	1	0	0	13
325-335	9	7	4	3	0	0	23
335-345	1	9	7	1	0	0	18
345-355	7	5	8	1	0	0	21
Total	138	137	95	98	25	0	744

Frequency of Calm Winds: 251
Average Wind Speed: 2.57 m/s

Station ID: 1
Start Date: 1/1/2022 - 00:00
End Date: 1/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.005376	0.006720	0.002688	0.000000	0.000000	0.000000	0.014785
5-15	0.012097	0.002688	0.000000	0.000000	0.000000	0.000000	0.014785
15-25	0.004032	0.002688	0.000000	0.000000	0.000000	0.000000	0.006720
25-35	0.002688	0.008065	0.000000	0.000000	0.000000	0.000000	0.010753
35-45	0.001344	0.006720	0.001344	0.000000	0.000000	0.000000	0.009409
45-55	0.000000	0.001344	0.000000	0.000000	0.000000	0.000000	0.001344
55-65	0.001344	0.002688	0.000000	0.000000	0.000000	0.000000	0.004032
65-75	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
75-85	0.002688	0.001344	0.000000	0.000000	0.000000	0.000000	0.004032
85-95	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
95-105	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
105-115	0.005376	0.000000	0.001344	0.000000	0.000000	0.000000	0.006720
115-125	0.006720	0.002688	0.001344	0.001344	0.000000	0.000000	0.012097
125-135	0.004032	0.008065	0.008065	0.002688	0.000000	0.000000	0.022849
135-145	0.004032	0.004032	0.001344	0.002688	0.000000	0.000000	0.012097
145-155	0.004032	0.002688	0.004032	0.004032	0.000000	0.000000	0.014785
155-165	0.001344	0.005376	0.004032	0.016129	0.001344	0.000000	0.028226
165-175	0.009409	0.005376	0.017473	0.032258	0.009409	0.000000	0.073925
175-185	0.001344	0.004032	0.021505	0.030914	0.020161	0.000000	0.077957
185-195	0.002688	0.004032	0.010753	0.026882	0.001344	0.000000	0.045699
195-205	0.002688	0.002688	0.001344	0.004032	0.001344	0.000000	0.012097
205-215	0.002688	0.006720	0.001344	0.000000	0.000000	0.000000	0.010753
215-225	0.016129	0.025538	0.012097	0.000000	0.000000	0.000000	0.053763
225-235	0.016129	0.033602	0.004032	0.000000	0.000000	0.000000	0.053763
235-245	0.013441	0.004032	0.000000	0.000000	0.000000	0.000000	0.017473
245-255	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
255-265	0.002688	0.000000	0.000000	0.000000	0.000000	0.000000	0.002688
265-275	0.006720	0.002688	0.000000	0.000000	0.000000	0.000000	0.009409
275-285	0.002688	0.000000	0.000000	0.000000	0.000000	0.000000	0.002688
285-295	0.004032	0.001344	0.001344	0.000000	0.000000	0.000000	0.006720
295-305	0.006720	0.000000	0.001344	0.001344	0.000000	0.000000	0.009409
305-315	0.006720	0.001344	0.002688	0.001344	0.000000	0.000000	0.012097
315-325	0.005376	0.006720	0.004032	0.001344	0.000000	0.000000	0.017473
325-335	0.012097	0.009409	0.005376	0.004032	0.000000	0.000000	0.030914
335-345	0.001344	0.012097	0.009409	0.001344	0.000000	0.000000	0.024194
345-355	0.009409	0.006720	0.010753	0.001344	0.000000	0.000000	0.028226
Total	0.185484	0.184140	0.127688	0.131720	0.033602	0.000000	0.662634

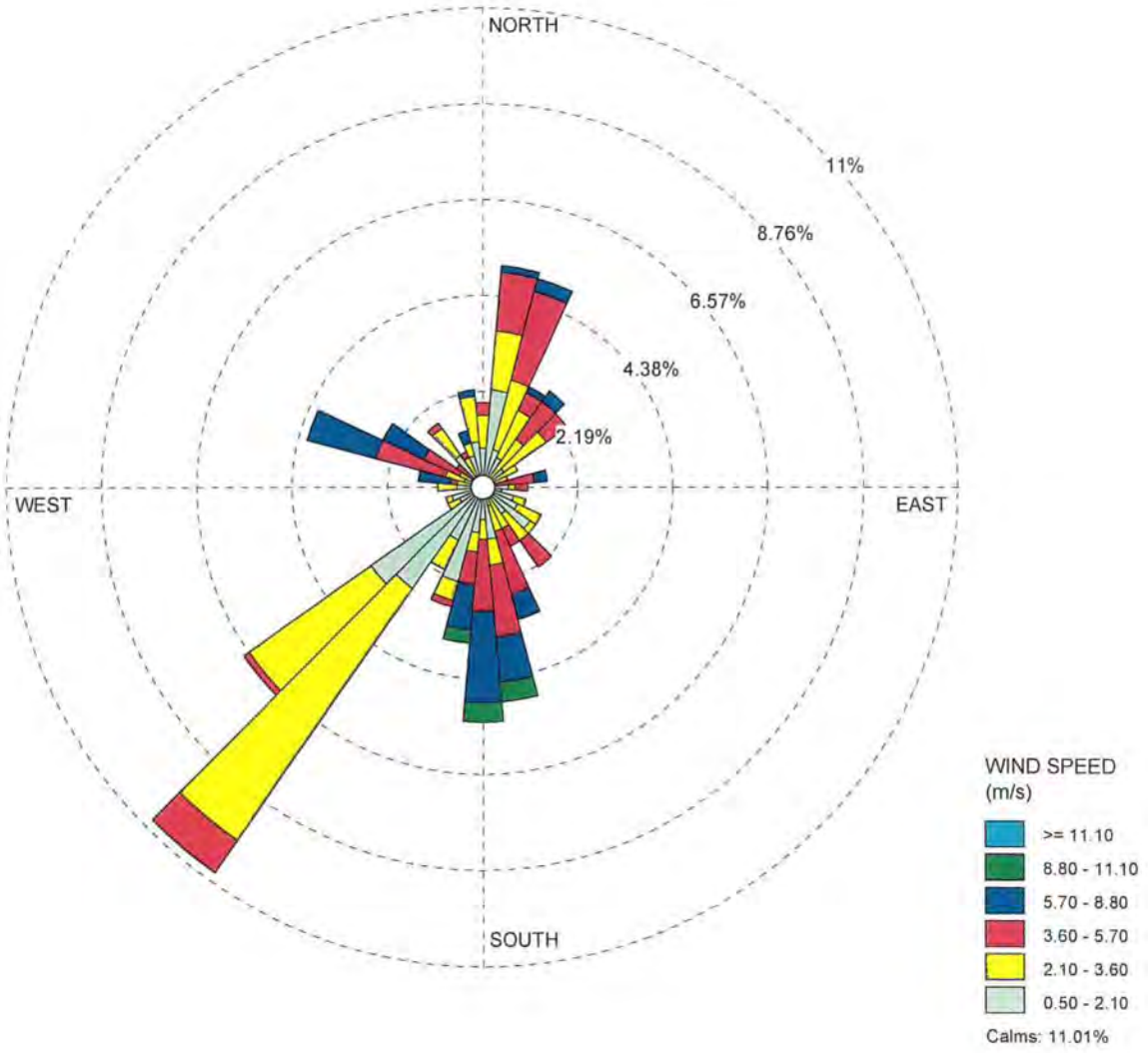
Frequency of Calm Winds: 33.74%
Average Wind Speed: 2.57 m/s

WIND ROSE PLOT:

Alton Coal Development LLC
February_2023

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 2/1/2022 - 00:00** **End Date: 2/28/2022 - 23:00**	COMPANY NAME: **Alton Coal Development LLC - Coal Hollow Mine**	
		MODELER: **Kirk Nicholes**	
	CALM WINDS: **11.01%**	TOTAL COUNT: **672 hrs.**	
	AVG. WIND SPEED: **2.80 m/s**	DATE: **4/26/2023**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Station ID: 1
Start Date: 2/1/2022 - 00:00
End Date: 2/28/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Count)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	6	5	2	0	0	0	13
5-15	15	9	9	1	0	0	34
15-25	6	11	14	2	0	0	33
25-35	5	8	3	1	0	0	17
35-45	1	8	7	2	0	0	18
45-55	4	8	4	0	0	0	16
55-65	0	6	0	0	0	0	6
65-75	2	2	0	0	0	0	4
75-85	0	1	7	2	0	0	10
85-95	4	1	2	0	0	0	7
95-105	3	0	0	0	0	0	3
105-115	5	2	0	0	0	0	7
115-125	6	4	0	0	0	0	10
125-135	9	1	0	0	0	0	10
135-145	5	5	5	0	0	0	15
145-155	2	5	3	0	0	0	10
155-165	3	4	10	4	0	0	21
165-175	8	4	11	7	3	0	33
175-185	5	3	11	14	3	0	36
185-195	7	3	5	7	2	0	24
195-205	15	3	1	0	0	0	19
205-215	9	5	0	0	0	0	14
215-225	19	47	6	0	0	0	72
225-235	21	23	1	0	0	0	45
235-245	4	2	0	0	0	0	6
245-255	5	1	0	0	0	0	6
255-265	0	0	0	0	0	0	0
265-275	4	3	0	0	0	0	7
275-285	2	2	1	5	0	0	10
285-295	3	3	11	11	0	0	28
295-305	2	2	6	7	0	0	17
305-315	2	0	3	0	0	0	5
315-325	6	5	1	0	0	0	12
325-335	2	3	1	0	0	0	6
335-345	5	2	0	2	0	0	9
345-355	7	7	0	1	0	0	15
Total	202	198	124	66	8	0	672

Frequency of Calm Winds: 74
Average Wind Speed: 2.80 m/s

Station ID: 1
Start Date: 2/1/2022 - 00:00
End Date: 2/28/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.008929	0.007440	0.002976	0.000000	0.000000	0.000000	0.019345
5-15	0.022321	0.013393	0.013393	0.001488	0.000000	0.000000	0.050595
15-25	0.008929	0.016369	0.020833	0.002976	0.000000	0.000000	0.049107
25-35	0.007440	0.011905	0.004464	0.001488	0.000000	0.000000	0.025298
35-45	0.001488	0.011905	0.010417	0.002976	0.000000	0.000000	0.026786
45-55	0.005952	0.011905	0.005952	0.000000	0.000000	0.000000	0.023810
55-65	0.000000	0.008929	0.000000	0.000000	0.000000	0.000000	0.008929
65-75	0.002976	0.002976	0.000000	0.000000	0.000000	0.000000	0.005952
75-85	0.000000	0.001488	0.010417	0.002976	0.000000	0.000000	0.014881
85-95	0.005952	0.001488	0.002976	0.000000	0.000000	0.000000	0.010417
95-105	0.004464	0.000000	0.000000	0.000000	0.000000	0.000000	0.004464
105-115	0.007440	0.002976	0.000000	0.000000	0.000000	0.000000	0.010417
115-125	0.008929	0.005952	0.000000	0.000000	0.000000	0.000000	0.014881
125-135	0.013393	0.001488	0.000000	0.000000	0.000000	0.000000	0.014881
135-145	0.007440	0.007440	0.007440	0.000000	0.000000	0.000000	0.022321
145-155	0.002976	0.007440	0.004464	0.000000	0.000000	0.000000	0.014881
155-165	0.004464	0.005952	0.014881	0.005952	0.000000	0.000000	0.031250
165-175	0.011905	0.005952	0.016369	0.010417	0.004464	0.000000	0.049107
175-185	0.007440	0.004464	0.016369	0.020833	0.004464	0.000000	0.053571
185-195	0.010417	0.004464	0.007440	0.010417	0.002976	0.000000	0.035714
195-205	0.022321	0.004464	0.001488	0.000000	0.000000	0.000000	0.028274
205-215	0.013393	0.007440	0.000000	0.000000	0.000000	0.000000	0.020833
215-225	0.028274	0.069940	0.008929	0.000000	0.000000	0.000000	0.107143
225-235	0.031250	0.034226	0.001488	0.000000	0.000000	0.000000	0.066964
235-245	0.005952	0.002976	0.000000	0.000000	0.000000	0.000000	0.008929
245-255	0.007440	0.001488	0.000000	0.000000	0.000000	0.000000	0.008929
255-265	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
265-275	0.005952	0.004464	0.000000	0.000000	0.000000	0.000000	0.010417
275-285	0.002976	0.002976	0.001488	0.007440	0.000000	0.000000	0.014881
285-295	0.004464	0.004464	0.016369	0.016369	0.000000	0.000000	0.041667
295-305	0.002976	0.002976	0.008929	0.010417	0.000000	0.000000	0.025298
305-315	0.002976	0.000000	0.004464	0.000000	0.000000	0.000000	0.007440
315-325	0.008929	0.007440	0.001488	0.000000	0.000000	0.000000	0.017857
325-335	0.002976	0.004464	0.001488	0.000000	0.000000	0.000000	0.008929
335-345	0.007440	0.002976	0.000000	0.002976	0.000000	0.000000	0.013393
345-355	0.010417	0.010417	0.000000	0.001488	0.000000	0.000000	0.022321
Total	0.300595	0.294643	0.184524	0.098214	0.011905	0.000000	0.889881

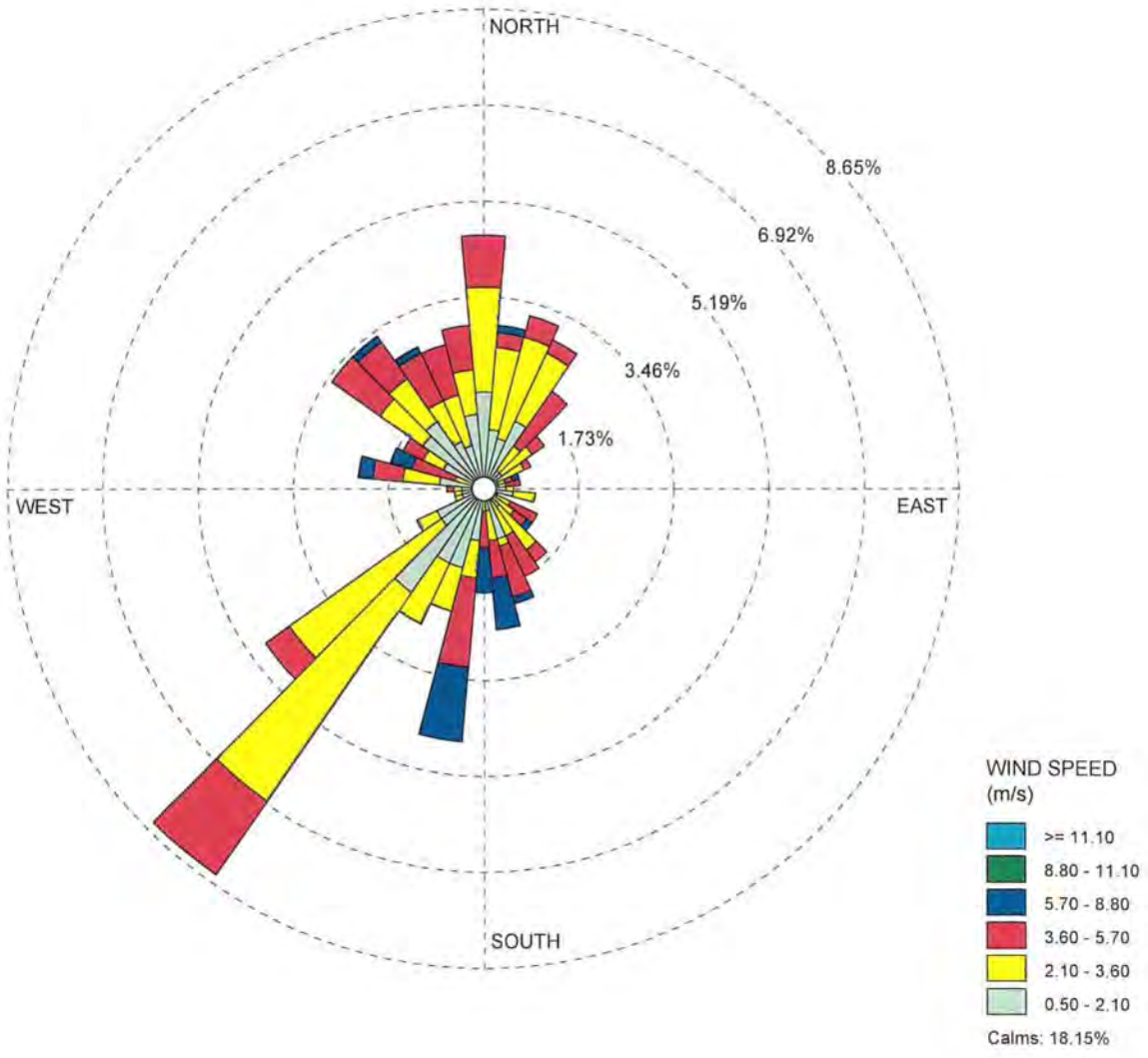
Frequency of Calm Winds: 11.01%
Average Wind Speed: 2.80 m/s

WIND ROSE PLOT:

Alton Coal Development LLC
March_2023

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 3/1/2022 - 00:00** **End Date: 3/31/2022 - 23:00**	COMPANY NAME: **Alton Coal Development LLC - Coal Hollow Mine**	
		MODELER: **Kirk Nicholes**	
	CALM WINDS: **18.15%**	TOTAL COUNT: **731 hrs.**	
	AVG. WIND SPEED: **2.33 m/s**	DATE: **4/26/2023**	PROJECT NO.:

Station ID: 1
Start Date: 3/1/2022 - 00:00
End Date: 3/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Count)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	13	14	7	0	0	0	34
5-15	8	11	2	1	0	0	22
15-25	7	14	3	0	0	0	24
25-35	10	10	2	0	0	0	22
35-45	3	4	9	0	0	0	16
45-55	3	5	2	0	0	0	10
55-65	2	4	1	0	0	0	7
65-75	2	1	1	1	0	0	5
75-85	2	1	2	0	0	0	5
85-95	3	1	0	0	0	0	4
95-105	4	3	0	0	0	0	7
105-115	0	1	0	1	0	0	2
115-125	2	2	4	0	0	0	8
125-135	1	4	2	1	0	0	8
135-145	3	7	2	0	0	0	12
145-155	2	5	6	0	0	0	13
155-165	7	1	7	1	0	0	16
165-175	3	4	5	7	0	0	19
175-185	1	2	5	6	0	0	14
185-195	7	5	12	10	0	0	34
195-205	11	6	0	0	0	0	17
205-215	11	9	0	0	0	0	20
215-225	17	34	12	0	0	0	63
225-235	7	25	4	0	0	0	36
235-245	7	3	0	0	0	0	10
245-255	3	1	0	0	0	0	4
255-265	3	1	0	0	0	0	4
265-275	3	1	1	0	0	0	5
275-285	6	5	4	2	0	0	17
285-295	1	3	6	3	0	0	13
295-305	6	3	3	0	0	0	12
305-315	10	7	8	0	0	0	25
315-325	11	7	6	1	0	0	25
325-335	7	6	7	1	0	0	21
335-345	6	7	7	0	0	0	20
345-355	10	6	6	0	0	0	22
Total	202	223	136	35	0	0	744

Frequency of Calm Winds: 135
Average Wind Speed: 2.33 m/s

Station ID: 1
Start Date: 3/1/2022 - 00:00
End Date: 3/31/2022 - 23:00

Run ID: ACD-CHM

Frequency Distribution
(Normalized)

Flow Vector (Blowing To) / Wind Speed (m/s)

	0.50 - 2.10	2.10 - 3.60	3.60 - 5.70	5.70 - 8.80	8.80 - 11.10	>= 11.10	Total
355-5	0.017473	0.018817	0.009409	0.000000	0.000000	0.000000	0.045699
5-15	0.010753	0.014785	0.002688	0.001344	0.000000	0.000000	0.029570
15-25	0.009409	0.018817	0.004032	0.000000	0.000000	0.000000	0.032258
25-35	0.013441	0.013441	0.002688	0.000000	0.000000	0.000000	0.029570
35-45	0.004032	0.005376	0.012097	0.000000	0.000000	0.000000	0.021505
45-55	0.004032	0.006720	0.002688	0.000000	0.000000	0.000000	0.013441
55-65	0.002688	0.005376	0.001344	0.000000	0.000000	0.000000	0.009409
65-75	0.002688	0.001344	0.001344	0.001344	0.000000	0.000000	0.006720
75-85	0.002688	0.001344	0.002688	0.000000	0.000000	0.000000	0.006720
85-95	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
95-105	0.005376	0.004032	0.000000	0.000000	0.000000	0.000000	0.009409
105-115	0.000000	0.001344	0.000000	0.001344	0.000000	0.000000	0.002688
115-125	0.002688	0.002688	0.005376	0.000000	0.000000	0.000000	0.010753
125-135	0.001344	0.005376	0.002688	0.001344	0.000000	0.000000	0.010753
135-145	0.004032	0.009409	0.002688	0.000000	0.000000	0.000000	0.016129
145-155	0.002688	0.006720	0.008065	0.000000	0.000000	0.000000	0.017473
155-165	0.009409	0.001344	0.009409	0.001344	0.000000	0.000000	0.021505
165-175	0.004032	0.005376	0.006720	0.009409	0.000000	0.000000	0.025538
175-185	0.001344	0.002688	0.006720	0.008065	0.000000	0.000000	0.018817
185-195	0.009409	0.006720	0.016129	0.013441	0.000000	0.000000	0.045699
195-205	0.014785	0.008065	0.000000	0.000000	0.000000	0.000000	0.022849
205-215	0.014785	0.012097	0.000000	0.000000	0.000000	0.000000	0.026882
215-225	0.022849	0.045699	0.016129	0.000000	0.000000	0.000000	0.084677
225-235	0.009409	0.033602	0.005376	0.000000	0.000000	0.000000	0.048387
235-245	0.009409	0.004032	0.000000	0.000000	0.000000	0.000000	0.013441
245-255	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
255-265	0.004032	0.001344	0.000000	0.000000	0.000000	0.000000	0.005376
265-275	0.004032	0.001344	0.001344	0.000000	0.000000	0.000000	0.006720
275-285	0.008065	0.006720	0.005376	0.002688	0.000000	0.000000	0.022849
285-295	0.001344	0.004032	0.008065	0.004032	0.000000	0.000000	0.017473
295-305	0.008065	0.004032	0.004032	0.000000	0.000000	0.000000	0.016129
305-315	0.013441	0.009409	0.010753	0.000000	0.000000	0.000000	0.033602
315-325	0.014785	0.009409	0.008065	0.001344	0.000000	0.000000	0.033602
325-335	0.009409	0.008065	0.009409	0.001344	0.000000	0.000000	0.028226
335-345	0.008065	0.009409	0.009409	0.000000	0.000000	0.000000	0.026882
345-355	0.013441	0.008065	0.008065	0.000000	0.000000	0.000000	0.029570
Total	0.271505	0.299731	0.182796	0.047043	0.000000	0.000000	0.801075

Frequency of Calm Winds: 18.15%
Average Wind Speed: 2.33 m/s

APPENDIX B

Listing of PM_{10} Concentrations

Individual Data Sheets provided on CD

Background Monitor 962A

PM_{10} Sampler Summary

January 1, 2023 - March 31, 2023

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-A
AQS ID:
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
01/06/23	P2980047	Invalid - AN	Invalid - AN				403.7525	403.7694	0.0169	SP,MD	
01/12/23		Invalid - AF	Invalid - AF								
01/18/23	P2981355	Invalid - BB	Invalid - BB				389.4206	389.4339	0.0133	SP,MD	Could not access site
01/24/23	P2981351	Invalid - AN	Invalid - AN	0:00			397.6048	397.6085	0.0037	SP,MD	
01/30/23		Invalid - BB	Invalid - BB								
02/05/23		Invalid - BB	Invalid - BB								
02/11/23	P2981776	Invalid - AN	Invalid - AN	0:00			399.2184	399.2335	0.0151		
02/17/23	P2981780	2.7	3.2	24:00	24.0	20.6	402.1033	402.1698	0.0665		
02/23/23	P2982007	Invalid - BB	Invalid - BB				378.8108	378.9045	0.0937	SP,MD	Could not access site
03/01/23		Invalid - AF	Invalid - AF								
03/07/23		Invalid - AF	Invalid - AF								
03/13/23		Invalid - AF	Invalid - AF								
03/19/23		Invalid - AF	Invalid - AF								
03/25/23		Invalid - AF	Invalid - AF								
03/31/23		Invalid - AF	Invalid - AF								

# Valid	Recovery	Average	St. Dev.	Max	Min
1	7%	3.2	#DIV/0!	3.2	3.2

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services , Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

Compliance Monitor 963B

PM_{10} Sampler Summary

January 1, 2023 - March 31, 2023

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-B **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
01/06/23	P2980048	**Invalid - AN**	**Invalid - AN**	0:00			404.0348	404.0365	0.0017	SP,MD	
01/12/23	P2981352	**Invalid - AN**	**Invalid - AN**				400.4542	400.4617	0.0075	SP,MD	
01/18/23	P2981356	**Invalid - AN**	**Invalid - AN**	0:00			395.7680	395.7894	0.0214	SP,MD	
01/24/23	P2981359	**Invalid - AN**	**Invalid - AN**	0:00			399.1065	399.1213	0.0148	SP,MD	
01/30/23	P2981595	**12.9**	**15.1**	24:00	24.0	20.6	388.4211	388.7321	0.3110		
02/05/23	P2981598	**1.0**	**1.1**	24:00	24.0	20.6	387.1219	387.1461	0.0242		
02/11/23	P2981777	**Invalid - AN**	**Invalid - AN**	0:00			399.5823	399.6049	0.0226		
02/17/23	P2981781	**Invalid - AN**	**Invalid - AN**				397.4537	397.4705	0.0168	SP,MD	
02/23/23	P2982008	**Invalid - AN**	**Invalid - AN**				378.2141	378.5213	0.3072	SP,MD	
03/01/23		**Invalid - AF**	**Invalid - AF**								
03/07/23	P2982136	**17.6**	**20.7**	24:00	24.0	20.4	392.3177	392.7416	0.4239		
03/13/23	P2982139	**1.8**	**2.1**	24:00	24.0	20.3	389.5482	389.5924	0.0442		
03/19/23	P2982142	**4.1**	**4.8**	24:00	24.0	20.4	391.0702	391.1697	0.0995		
03/25/23	P2982344	**2.5**	**2.9**	24:00	24.0	20.8	393.1524	393.2136	0.0612		
03/31/23	P2982346	**3.1**	**3.6**	24:00	24.0	20.7	395.5632	395.6391	0.0759		

# Valid	Recovery	Average	St. Dev.	Max	Min
7	**47%**	**7.2**	**7.6**	**20.7**	**1.1**

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Collocated Monitor 964C

PM_{10} Sampler Summary

January 1, 2023 - March 31, 2023

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-C **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
01/06/23	P2980049	**2.5**	**2.9**	23:59	24.0	20.5	405.0239	405.0842	0.0603		
01/12/23	P2981353	**4.6**	**5.3**	23:59	24.0	20.7	393.1803	393.2913	0.1110		
01/18/23	P2981358	**4.1**	**4.7**	23:59	24.0	20.7	400.4284	400.5275	0.0991		
01/24/23	P2981360	**2.1**	**2.4**	23:59	24.0	20.7	402.4269	402.4786	0.0517		
01/30/23	P2981596	**10.6**	**12.4**	23:59	24.0	20.5	395.7571	396.0130	0.2559		
02/05/23	P2981599	**5.1**	**6.1**	23:59	24.0	20.3	387.8978	388.0221	0.1243		
02/11/23	P2981778	**55.2**	**65.2**	23:59	24.0	20.4	402.1933	403.5227	1.3294		
02/17/23	P2981782	**41.4**	**47.8**	23:59	24.0	20.8	402.9314	403.9264	0.9950		
02/23/23	P2982009	**21.2**	**24.7**	23:59	24.0	20.7	371.5562	372.0672	0.5110		
03/01/23	P2982011	**4.5**	**5.3**	23:59	24.0	20.3	373.9521	374.0605	0.1084		
03/07/23	P2982137	**20.5**	**24.3**	23:59	24.0	20.3	393.4641	393.9584	0.4943		
03/13/23	P2982140	**1.8**	**2.2**	23:59	24.0	20.2	395.1510	395.1955	0.0445		
03/19/23	P2982143	**3.5**	**4.2**	23:59	24.0	20.3	391.8680	391.9544	0.0864		
03/25/23	P2982343	**3.2**	**3.8**	23:59	24.0	20.7	392.3778	392.4569	0.0791		
03/31/23	P2982347	**3.0**	**3.6**	23:59	24.0	20.5	394.8406	394.9146	0.0740		

# Valid	Recovery	Average	St. Dev.	Max	Min
15	**100%**	**14.3**	**18.9**	**65.2**	**2.2**

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services , Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

Compliance Monitor 2366D

PM_{10} Sampler Summary

January 1, 2023 - March 31, 2023

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-D **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
01/06/23	P2980050	1.2	1.4	24:00	24.0	20.0	406.7296	406.7586	0.0290		
01/12/23	P2981354	Invalid - AN	Invalid - AN				385.6619	385.6609	-0.0010	SP,MD,NM	
01/18/23	P2981357	Invalid - AN	Invalid - AN	24:00	24.0	20.5	396.1692	396.1724	0.0032		
01/24/23	P2981594	Invalid - BB	Invalid - BB	0:00	0.0	0.0	403.7041	403.7238	0.0197	SP	Could not access site
01/30/23		Invalid - BB	Invalid - BB								
02/05/23	P2981600	Invalid - AN	Invalid - AN				406.5943	406.6108	0.0165	SP,MD	
02/11/23	P2981779	Invalid - AN	Invalid - AN	0:00	0.0	0.0	399.4365	399.4509	0.0144	SP	
02/17/23	P2981783	Invalid - AN	Invalid - AN				400.0910	400.1089	0.0179	SP,MD	
02/23/23		Invalid - AF	Invalid - AF								
03/01/23		Invalid - AF	Invalid - AF								
03/07/23	P2982010	Invalid - AN	Invalid - AN				376.3551	376.4511	0.0960	SP,MD	Locked up
03/13/23	P2982141	Invalid - AN	Invalid - AN				397.2971	397.3152	0.0181	SP,MD	Locked up
03/19/23	P2982144	Invalid - AN	Invalid - AN				393.6977	393.7195	0.0218	SP,MD	No Data
03/25/23	P2982345	Invalid - AG	Invalid - AG	8:53	8.8	7.8	390.8267	390.8555	0.0288	SP	
03/31/23	P2982348	Invalid - AG	Invalid - AG	0:00	8.8	7.8	392.4684	392.5587	0.0903	SP	

# Valid	Recovery	Average	St. Dev.	Max	Min
1	7%	1.4	#DIV/0!	1.4	1.4

Collocated Monitor 2398E

PM_{10} Sampler Summary

January 1, 2023 - March 31, 2023

Network: Alton Coal Development
Site: Coal Hollow
Sampler ID: Coal Hollow-E **AQS ID:**
Sampler Type: BGI PQ100

Date	Filter ID	Concentration (µg/m3) LTP	Concentration (µg/m3) STP	Sample Period (hr:min)	Sample Volume (m3)	Std Volume (m3)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments
01/06/23		Invalid - AF	Invalid - AF								
01/12/23		Invalid - AF	Invalid - AF								
01/18/23		Invalid - AF	Invalid - AF								
01/24/23		Invalid - AF	Invalid - AF								
01/30/23		Invalid - AF	Invalid - AF								
02/05/23		Invalid - AF	Invalid - AF								
02/11/23		Invalid - AF	Invalid - AF								
02/17/23		Invalid - AF	Invalid - AF								
02/23/23		Invalid - AF	Invalid - AF								
03/01/23		Invalid - AF	Invalid - AF								
03/07/23		Invalid - AF	Invalid - AF								
03/13/23		Invalid - AF	Invalid - AF								
03/19/23		Invalid - AF	Invalid - AF								
03/25/23		Invalid - AF	Invalid - AF								
03/31/23		Invalid - AF	Invalid - AF								

# Valid	Recovery	Average	St. Dev.	Max	Min
0	0%	#DIV/0!	#DIV/0!	0.0	0.0

Validation of data is limited by the provided information. Data have been validated based on laboratory QC, field observations and instrument data if made available, as well as other information available to Pace Analytical Services , Air Science Division. Additional data validation based on information not provided to Pace may be required. Final validation of these data are the responsibility of the data owner.

APPENDIX C

Precision and Single-Point Flow Rate Checks

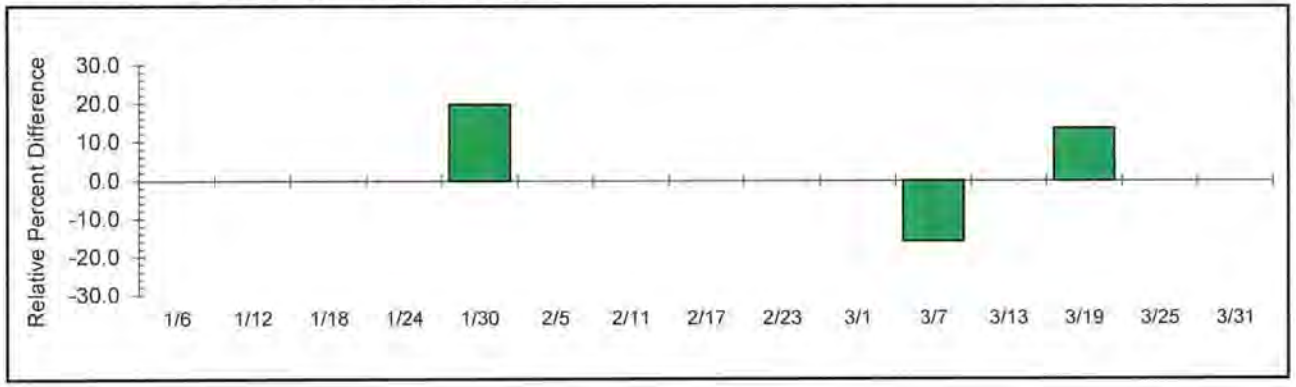
Alton Coal Development
Coal Hollow

Precision Report For Collocated Samplers

STP PM10 Concentrations(µg/m³)
January 1, 2023 - March 31, 2023

Date	1/6	1/12	1/18	1/24	1/30	2/5	2/11	2/17	2/23	3/1	3/7	3/13	3/19	3/25	3/31
Coal Hollow-B					15.1	1.1					20.7	2.1	4.8	2.9	3.6
Coal Hollow-C	2.9	5.3	4.7	2.4	12.4	6.1	65.2	47.8	24.7	5.3	24.3	2.2	4.2	3.8	3.6
Rel. %Diff.	*	*	*	*	19.6	*	*	*	*	*	-16.0	*	13.3	*	0.0

Relative Percent Difference = ((X - Y) / ((X + Y) / 2)) * 100 X=Coal Hollow-B Y =Coal Hollow-C



Statistical Calculations:

n=	4.0	S Dev=	15.8 %
Mean=	4.2	** CV=	25.3 %

*** Both sample concentrations must be greater than or equal to 3 µg/m³ to be used for these precision calculations.**

For a detailed discussion of these precision calculations, refer to 40 CFR 58, Appendix A.

**** CV - Upper 90% Confidence bound for Coefficient of Variation**

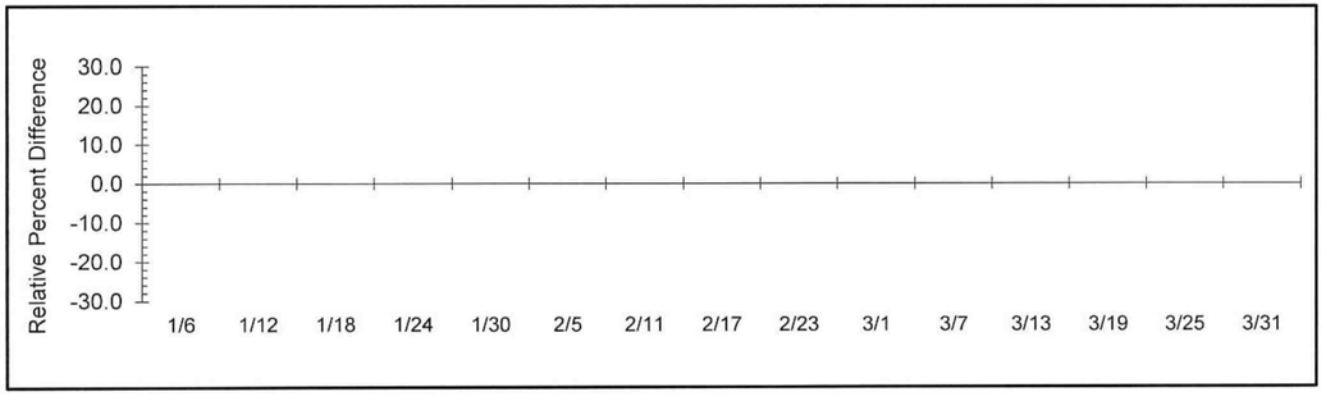
Alton Coal Development
Coal Hollow

Precision Report For Collocated Samplers

STP PM10 Concentrations(µg/m³)
January 1, 2023 - March 31, 2023

Date	1/6	1/12	1/18	1/24	1/30	2/5	2/11	2/17	2/23	3/1	3/7	3/13	3/19	3/25	3/31
Coal Hollow-D	1.4														
Coal Hollow-E															
Rel. %Diff.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Relative Percent Difference = ((X - Y) / ((X + Y) / 2)) * 100 X=Coal Hollow-D Y =Coal Hollow-E



Statistical Calculations:

n=	0.0	S Dev=	N/A %
Mean=	N/A	** CV=	N/A %

*** Both sample concentrations must be greater than or equal to 3 µg/m³ to be used for these precision calculations.**

For a detailed discussion of these precision calculations, refer to 40 CFR 58, Appendix A.

**** CV - Upper 90% Confidence bound for Coefficient of Variation**

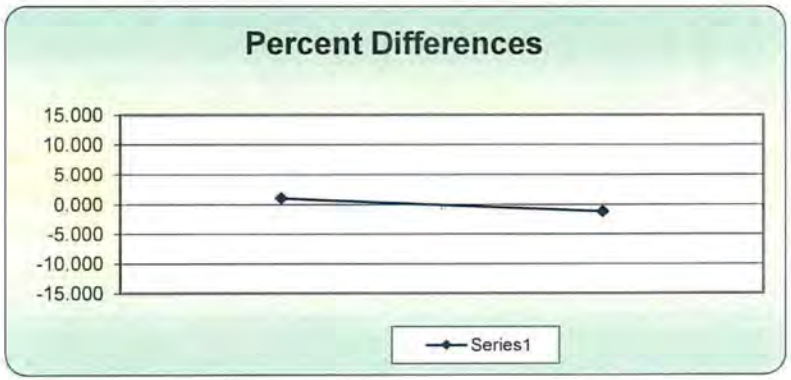
Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 962A		Pollutant type:					Bias (%)
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	$\|d\|$	$\|d\|^2$	
16.7	16.53	1.028	-0.674	1.058	1.028	1.058	
16.7	16.91	-1.242	75th Percentile	1.542	1.242	1.542	
			0.461				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
2	2.270	1.135
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
1	2.600	0.151

Bias (%) (Eqn 3)	Both Signs Positive
1.81	FALSE
Signed Bias (%)	Both Signs Negative
+/-1.81	FALSE

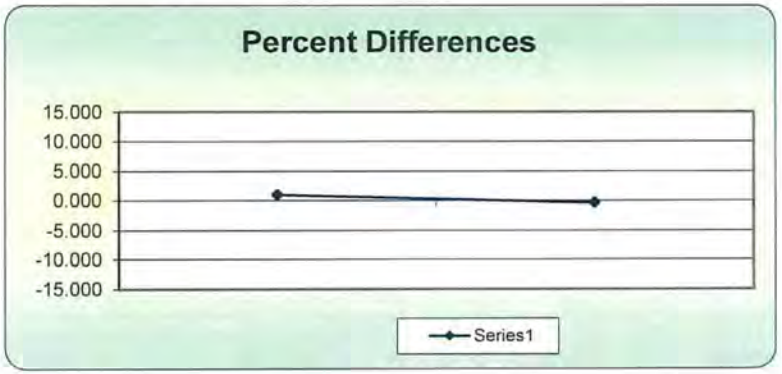


Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 963B		Pollutant type:					Bias (%)		
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	$\|d\|$	$\|d\|^2$			
16.7	16.55	0.906	-0.086	0.821	0.906	0.821			
16.7	16.77	-0.417	75th Percentile	0.174	0.417	0.174	n	$\Sigma\|d\|$	"AB" (Eqn 4)
			0.575				2	1.324	0.662
							n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
							1	0.996	0.346

Bias (%) (Eqn 3)	Both Signs Positive
2.21	FALSE
Signed Bias (%)	Both Signs Negative
+/-2.21	FALSE

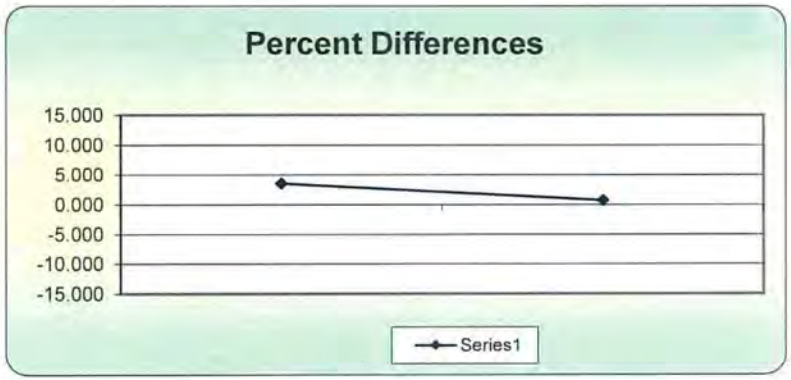


Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 964C		Pollutant type:					Bias (%)		
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	$\|d\|$	$\|d\|^2$			
16.7	16.14	3.470	1.365	12.038	3.470	12.038			
16.7	16.59	0.663	75th Percentile	0.440	0.663	0.440	n	$\Sigma\|d\|$	"AB" (Eqn 4)
			2.768				2	4.133	2.066
							n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
							1	12.478	1.985

Bias (%) (Eqn 3)	Both Signs Positive
10.93	TRUE
Signed Bias (%)	Both Signs Negative
+10.93	FALSE



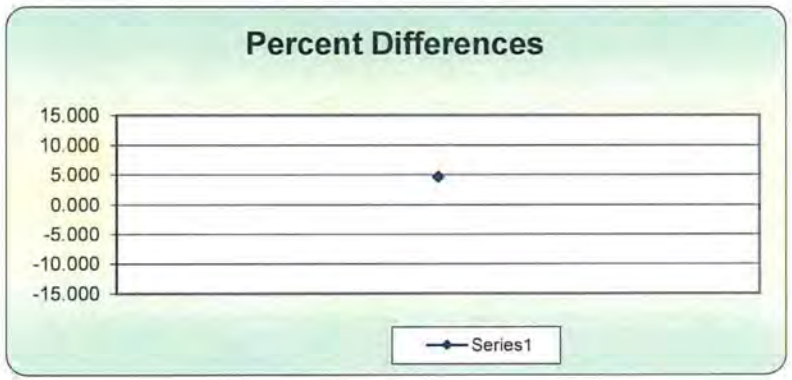
Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 2366D		Pollutant type:					Bias (%)
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	$\|d\|$	$\|d\|^2$	
16.7	15.97	4.571	4.571	20.895	4.571	20.895	
			75th Percentile				
			4.571				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
1	4.571	4.571
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
0	20.895	#DIV/0!

Bias (%) (Eqn 3)	Both Signs Positive
#NUM!	TRUE
Signed Bias (%)	Both Signs Negative
#NUM!	FALSE



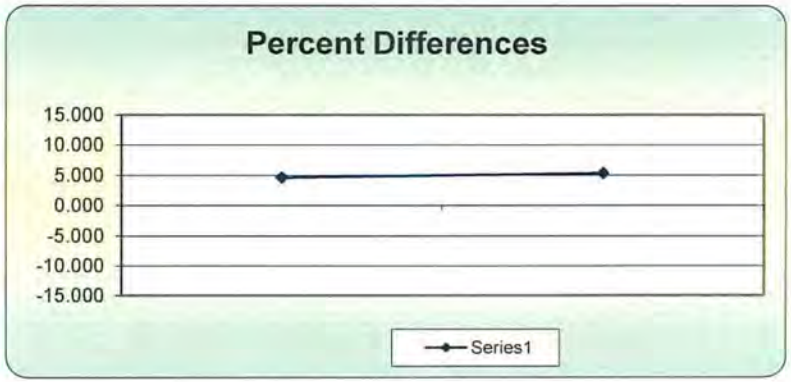
Alton Coal Development, LLC - Coal Hollow Mine

One-Point Flow Rate Bias Estimate

Site ID: Monitor 2398E		Pollutant type:					Bias (%)
Meas Val (Y)	Audit Val (X)	d (Eqn. 1)	25th Percentile	d^2	$\|d\|$	$\|d\|^2$	
16.7	15.97	4.571	4.752	20.895	4.571	20.895	
16.7	15.86	5.296	75th Percentile	28.051	5.296	28.051	
			5.115				

n	$\Sigma\|d\|$	"AB" (Eqn 4)
2	9.867	4.934
n-1	$\Sigma\|d\|^2$	"AS" (Eqn 5)
1	48.946	0.513

Bias (%) (Eqn 3)	Both Signs Positive
7.22	TRUE
Signed Bias (%)	Both Signs Negative
+7.22	FALSE



APPENDIX D

Field Data Sheets

Background Monitor 962A

Table I - Every 6th Day Sampling

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials
1-3-23	1049	1-3-23	1047	10	14	M-M	1-6-23	KN
1-9-23	832	1-9-23	830	14	9	M-M	1-12-23	KN
1-14-23	944	1-14-23	942	9	21	M-M	1-18-23	KN
~~1-19-23~~	~~1041~~	~~1-19-23~~	~~1040~~	~~21~~	~~32~~	~~M-M~~	~~1-24-23~~	~~KN~~
1-8-23	0913	1-14-23	0939	21	35	M-M	2-11-23	KN
2-13-23	1130	2-13-23	1131	35	42	M-M	2-17-23	KN
2-20-23	0904	2-20-23	0904	42	9	M-M	2-23-23	KN
2-24-23		No replacement	Filter	could not Access				
~~3-2-23~~	~~1048~~	~~3-1-23~~	1045	Could Not Access				
3-8-23	0849	3-8-23	0848	9	16	M-M	3-13-23	KN
3-14-23	0945	3-14-23	0845	16	22	M-M	3-19-23	KN

Could not Access

Data load was 12-25-2

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance

Table III - Monthly Flow Rate Verification

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials

Compliance Monitor 963B

Table I - Every 6th Day Sampling

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials
1-3-23	1122	1-3-23	1119	11	18	M-M	1-6-23	KN
1-9-23	906	1-9-23	1-9-23	18	15	M-M	1-12-23	KN
1-14-23	1051	1-14-23	1057	15	22	M-M	1-18-23	KN
1-19-23	1041	1-14-23	1040	22	32	M-M	1-24-23	KN
1-25-23	1458	1-25-23	1458	32	5	M-M	1-30-23	KN
2-1-23	1249	2-1-23	1248	5	7	M-M	2-5-23	KN
2-8-23	1011	2-5-23 4:37	4:36	7	36	M-M	2-11-23	KN
2-13-23	1207	2-13-23	12:05	36	46	M-M	2-17-23	KN
2-20-23	0932	2-20-23	0929	46	10	M-M	2-23-23	KN
2-24-23		No Filters						
3-2-23	1050	3-2-23	1041	10	14	M-M	3-7-23	KN
3-8-23	0939	3-8-23	0939	14	18	M-M	3-13-23	KN
3-14-23	0947	3-14-23	0846	18	22	M-M	3-19-23	KN
3-20-23	1130	3-20-23	1029	22	5	M-M	3-25-23	KN
3-27-23	1205	3-27-23	1103	5	7	M-M	3-31-23	KN
04-03-23	1041	04-03-23	0939	7	10	M-M	04/06/23	KN
04-07-23	0910	04-07-23	0807	10	17	M-M	04/12/23	KN

wrong date & Time
" " "
" " "
" " "
Pump lock 1-30-23

Incomplete Run

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance

Table III - Monthly Flow Rate Verification

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials

Co-located Monitor 964C

Table I - Every 6th Day Sampling

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials
1-3-23	1123	1-3-23	1122	12[illegible]	19 [illegible]	[illegible]	1-6-23	KN
1-9-23	911	1-9-23	910	19	16	[illegible]	1-12-23	KN
1-14-23	1149	1-14-23	1148	16	31	[illegible]	1-18-23	KN
1-19-23	1055	1-19-23	1053	31	34	[illegible]	1-24-23	KN
1-25-23	1508	1-25-23	1505	34	6	[illegible]	[illegible]	KN
2-1-23	1256	2-1-23	1253	6	8	[illegible]	2-5-23	KN
2-8-23	1027	2-8-23	1024	8	37	[illegible]	2-11-23	KN
2-13-23	1212	2-13-23	1212	37	47	[illegible]	2-17-23	KN
2-20-23	0941	2-20-23	0940	47	11	[illegible]	2-23-23	KN
3-2-23	1052	3-2-23	1051	11	15	[illegible]	3-7-23	KN
3-8-23	0945	3-8-23	0944	15	19	[illegible]	3-13-23	KN
3-14-23	0951	3-14-23	0850	19	23	[illegible]	3-19-23	KN
3-20-23	1137	3-20-23	1035	23	4	[illegible]	3-25-23	KN
3-27-23	1213	3-27-23	11:11	4	8	[illegible]	4-1-23	KN
04-03-23	1049	04-03-23	0947	8	11	[illegible]	04-06-23	KN
04-07-23	0917	04-07-23	0815	11	32	[illegible]	04-12-23	KN

← Col. F

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance

Table III - Monthly Flow Rate Verification

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials

Compliance Monitor 2366D

Table I - Every 6th Day Sampling

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials	
1-3-23	1145	1-3-23	1143	13	29	M-M	1-6-23	KN	Display locked
1-9-23	929	1-9-23	927	29	20	M-M	1-12-23	KN	Display locked Ran 16:51
1-14-23	1124	1-14-23	1122	20	23	M-M	1-18-23	KN	" "
1-19-23	1158	1-19-23	1156	23	4	M-M	1-24-23	KN	Max Load
1-25-23									Inaccessable
2-1-23	1326	1-6-23	6:06	4	17	M-M	2-5-23	KN	Max Load Exceeded. Wiring
2-8-23	1449	2-8-23	1446	17	38	M-M	2-11-23	KN	Maxload Exceed Ext
2-13-23	1240	2-13-23	1239	38	48	M-M	2-17-23	KN	Maxload Exceeded Ext Oia
2-20-23	1113	2	Battery Dead	d 48					
2-24-23	Could not		access						
3-									
3-8-23	1039	3-8-23	1038	12	30	M-M	3-13-23	KN	Started to Run Displaylock Incomplete
3-14-23	1156	3-14-23	1055	30	29	M-M	3-19-23	KN	Assume
3-20-23	1157	3-20-23	1055	29	6		325		Ran 3:12 What
3-27-23	1304	3-27-23	1202	6	21	MM	3-31-23	KN	incomplete
04-03-23	1253	04-03-23	1153	21	13	M-M	4-6-23	KN	Max Load
04-07-23	0152	04-07-23	1249	13	33	M-M	4-12-23	KN	Lock up

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance

Table III - Monthly Flow Rate Verification

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials

Co-located Monitor 2398E

Table I - Every 6th Day Sampling

Date	Time	Displayed Date	Displayed Time	Collected Filter ID#	New Filter ID#	Sample Start Time	Sample Start Date	Sampler Initials

Table II - Monthly Leak Test

Date	Time	Initial SP Value	Final SP Value	Pass/Fail	Initials	Maintenance

Table III - Monthly Flow Rate Verification

Date	Time	Monitor Flow (Q Lpm)	Monitor Baro Pressure (mmHg)	Delta Cal Baro Pressure (mmHg)	Monitor Temp (A)	Delta Cal Temp (Ta)	Delta Cal Flow (Qs)	Delta Cal Flow (Qa)	Accuracy	Initials

APPENDIX E

Independent PM_{10} Sampler Performance Audit Report

AUDIT REPORT
FOR

ALTON COAL DEVELOPMENT, LLC
COAL HOLLOW MINE
ALTON, UTAH
FIRST QUARTER 2023

Prepared for

Kirk Nicholes
Alton Coal Development, LLC
463 N 100 W
Cedar City, Utah, 84721

Prepared by

Air Resource SPECIALISTS

1901 Sharp Point Drive, Suite F
Fort Collins, CO 80525
970-484-7941

Site Audited: March 8, 2023

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1.0 INTRODUCTION

Air Resource Specialists, Inc. (ARS) conducted a performance audit of Alton Coal Development, LLC ambient air quality monitoring systems on March 8, 2023. The monitoring sites are located at the Coal Hollow Mine near Alton, Utah.

Table 1-1

Site Location Information

	Primary CHM	Background	Primary NPL
Latitude	37° 24' 5.0" N	37° 24' 20.9" N	37° 24' 43" N
Longitude	112° 27' 21.0" W	112° 26' 1.1" W	112° 27' 30.6" W
UTM	12S 371147 4140396	12S 373119 4140856	12S 370928 4141570
Elevation	6,890 feet MSL	7,158 feet MSL	6,959 feet MSL

Audit results for the particulate samplers are summarized in Table 1-2. Detailed discussions of performance audit findings and other findings can be found in Section 3.0.

Table 1-2

Summary of Particulate Sampler Audit Results

	Parameter	**Instrument**	**Within Accuracy Goal**
Primary CHM	PM_{10}	BGI PQ200S	Yes
	PM_{10} (collocated)	BGI PQ200S	Yes
Background #1	PM_{10}	BGI PQ200S	No
Primary NPL	PM_{10}	BGI PQ200	Yes
	PM_{10} (collocated)	BGI PQ200	Out for service

Details of the audit are presented in the following sections:

Section 2.0	Audit Methods and Equipment
Section 3.0	Audit Results
Appendix A	Audit Data Forms
Appendix B	Audit Standards Certifications

Any questions related to this audit or audit report should be addressed to:

Christian A. Kirk
Quality Assurance Officer / Lead Auditor
Air Resource Specialists, Inc.
1901 Sharp Point Drive, Suite F
Fort Collins, Colorado 80525
Telephone: 970-484-7941
E-mail: ckirk@air-resource.com

2.0 AUDIT METHODS

Audit procedures, audit challenge ranges, and acceptance criteria are described below. These ranges and limits conform to EPA's PSD guidelines. Audit results were verbally communicated to the site operator prior to departure from the site. A follow-up e-mail summarizing audit findings was also sent to Alton Coal Development, LLC personnel. Audit details are provided in Appendix A.

Guidance from the following EPA documents was used to establish the audit procedures:

- 40 CFR 58, Appendix B. *Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring*
- EPA *Quality Assurance Handbook for Air Pollution Measurement Systems:*
  - *Volume I. A Field Guide to Environmental Quality Assurance*
  - *Volume II. Ambient Air Quality Monitoring Program*
  - *Volume IV. Meteorological Measurements*
- EPA *Meteorological Monitoring Guidance for Regulatory Modeling Applications*

2.1 PARTICULATE SAMPLERS (FRM PM_{10})

The filter-based FRM PM_{10} particulate samplers are audited in their normal operating mode. ARS audits the samplers with a BGI deltaCal audit standard which measures flow, temperature, and barometric pressure. Prior to conducting the flow audit, a system leak check is performed in accordance with the manufacturer's specifications. The observed volumetric operational flow and design flow of the sampler are compared to the audit flows measured by the audit standard. Differences between the operational sampler flow and audit flow that are greater than ±10% are considered out of tolerance. Differences between the designated design flow and the audit flow greater than ±10% are considered out of tolerance. In addition to the flow audits, observed ambient temperature, filter temperature, and barometric pressure measurements of the particulate samplers are also audited by comparison to the audit standard. A temperature difference greater than ±2°C and a barometric pressure difference greater than ±10mm Hg are considered out of tolerance. Audit methods and acceptable criteria for the particulate samplers are summarized in Table 2-1.

Table 2-1

Particulate Samplers
Audit Acceptance Criteria

Parameter	Audit Method	Acceptance Criteria
FRM PM_{10}	Leak Check	Manufacturer specs
	Audit flow to actual sampler flow	≤ ± 10%
	Design criteria flow to audit flow	≤ ± 10%
	Audit temperature to sampler temperature	≤ ± 2 °C
	Audit temperature to sampler filter temperature	≤ ± 2 °C
	Audit barometric pressure to sampler pressure	≤ ±10mm Hg

Table 2-2

Particulate Samplers
Audit Equipment

References	Manufacturer	Model Number	Serial Number	Expiration Date
FRM Flow	BGI	DeltaCal	141170	9/27/2023

3.0 AUDIT RESULTS

Audit findings and recommendations are discussed below. Detailed audit results are provided in Appendix A.

Performance Audit Results

Sampler N962 did not pass the initial leak check. The client made adjustments to the tension wheel and applied grease to correct the issue. The PQ200 passed a subsequent leak check.

APPENDIX A

AUDIT DATA FORMS

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	962

Date and Time correct?
☐ Yes ☑ No
If no, time off by:
-1 minute

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail
	5 cm	PASS

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.91	16.70	-1.2%	1.3%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	-4.0	-4.0	0.0	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	-5.3	-5.8	-0.5	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	583.3	580.0	-3.3	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES: Failed initial leak test. After the operator made some adjustment to the tension wheel and applied additional grease it was able to pass.

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	N963B

Date and Time correct?
☑ Yes ☐ No
If no, time off by:

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail
	2 cm	PASS

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.77	16.70	-0.4%	0.4%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	0.0	-0.7	-0.7	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	0.7	1.0	0.3	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	588.5	589.0	0.5	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES: Initially received a "MAX LOAD EXCEEDED" fault when attempting to verify flow. A new external battery resolved this issue.

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	N964C

Date and Time correct?
☐ Yes ☑ No
If no, time off by:
-1 minutes

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail
	1 cm	PASS

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	16.59	16.70	0.7%	-0.7%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	0.2	-0.2	-0.4	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	1.3	1.3	0.0	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	589.0	588.0	-1.0	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2398

Date and Time correct?
☐ Yes ☐ No
If no, time off by:
0 min

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow					

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES: Out for repair.

Air Resource SPECIALISTS

FRM AUDIT (PM_{10})

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL NUMBER	EXPIRATION DATE
PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023

MANUFACTURER	BGI
MODEL	PQ200
SERIAL NUMBER	2367

Date and Time correct?
☑ Yes ☐ No
If no, time off by:

SETTINGS	
Total Flow	16.70

	Automated LEAK CHECK	
	Vacuum Loss Rate	Pass/Fail
	3 cm	PASS

	FLOW VERIFICATION				
	Reference	Instrument	Actual Diff	Design Diff	
Total Flow	15.86	16.70	5.3%	-5.0%	PASS

AUDIT CRITERIA (<=)	
Actual Flow % Diff	10%
Design Flow % Diff	10%

	AMBIENT TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	-0.5	-0.4	0.1	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	FILTER TEMPERATURE SENSOR (°C)			
	Reference	Instrument	Difference	
	-0.4	0.2	0.6	PASS

AUDIT CRITERIA (<=)	
Temperature Difference (°C)	2

	PRESSURE SENSOR (mmHg)			
	Reference	Instrument	Difference	
	589.4	586.0	-3.4	PASS

AUDIT CRITERIA (<=)	
Pressure Difference (mmHg)	10

NOTES:

Air Resource SPECIALISTS

SITE INFORMATION

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

		Deg	Min	Sec		Decimal
LATITUDE	North	37	24	22	--CALCULATE->	37.4061
LONGITUDE	West	112	27	16		112.4544

NOTES:	

Air Resource SPECIALISTS

CALIBRATION AND VERIFICATION STANDARDS

ABBR.	N/A				
CLIENT	Alton Coal Development	FIELD SPECIALIST	J. Wenrick	DATE	3/8/2023
SITE NAME	Coal Hollow Mine				

	MANUFACTURER	MODEL	SERIAL #	Calibration Expiration Date
Ozone Transfer Standard				
Gas Dilution Transfer Standard				
MFC High Flow Reference				
MFC Low Flow Reference				
Temperature Reference				
AT/RH Sensor Reference				
Barometric Pressure Reference				
Wind Speed Reference (high rpm)				
Wind Speed Reference (low rpm)				
Wind Speed Torque Gauge				
Wind Direction Alignment Reference				
Wind Direction Linearity Reference				
Wind Direction Torque Gauge				
Solar Radiation Reference #1				
Solar Radiation Reference #2				
UV Radiation Reference				
Multiplier		W/m2 / mV		
Precipitation Reference				
Volume		mL		

PM Flow Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Flow Standard #2				
PM Flow Standard #3				
PM Flow Standard #4				

PM Temperature Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Temperature Standard #2				
PM Temperature Standard #3				
PM Temperature Standard #4				

PM Barometric Pressure Standard #1	BGI	DeltaCal	141170	9/27/2023
PM Barometric Pressure Standard #2				
PM Barometric Pressure Standard #3				
PM Barometric Pressure Standard #4				

TEOM MTV Standard				

HiVol Direct Flow Reference				
Orifice				
ΔP orifice manometer				

APPENDIX B

AUDIT STANDARDS CERTIFICATIONS

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 141170-27092022
DeltaCal Serial Number: 141170
Calibration Technician: Zabdiel Pimentel
Date: 27-Sep-2022
Recommended Recal Date: 27-Sep-2023

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20004	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20006	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 22.50 °C

Brand:	Eutechnics		
TE Number:	TE12306	**Serial Number:**	308304
Std Cal Date:	8-Apr-22	**Std Cal Due Date:**	8-Apr-23

Ambient Temperature (set): 22.5 °C
Aux (filter) Temperature (set): 22.5 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number:	TE20204	**Serial Number:**	U1220935
Std Cal Date:	21-Apr-22	**Std Cal Due Date:**	21-Apr-23

DeltaCal:
Barometric pressure (set): 624.0 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi				
TE20004	Q= 3.86385	ΔP ^	0.52302	Overall Uncertainty: 0.35%
TE20006	Q= 3.80734	ΔP ^	0.54042	Overall Uncertainty: 0.35%

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	141170
Firmware Version:	4.00P

Date	Technician
27Sep2022	Zabdiel Pimentel

Ambient Pressure:	624.0	mmHg
Ambient Temperature:	22.5	°C

Range 1

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.76	624.0	6.487	6.493	0.092
2	205.13	624.0	9.968	9.911	-0.572
3	268.70	624.0	13.112	13.056	-0.427
4	330.98	624.0	16.193	16.149	-0.272
5	369.45	624.0	18.096	18.063	-0.182
6	394.70	624.0	19.351	19.347	-0.021
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.230
				Result	PASS

Range 2

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	179.19	624.0	2.468	2.480	0.486
2	216.70	624.0	3.000	3.008	0.267
3	255.45	624.0	3.549	3.538	-0.310
4	317.11	624.0	4.424	4.434	0.226
5	387.02	624.0	5.415	5.397	-0.332
6	419.30	624.0	5.873	5.874	0.017
	Maximum allowable error at any flow rate is 0.75%.			Average	0.059
				Result	PASS

Performed By: Zabdiel Pimentel **Date:** 27-Sep-2022

Approved By: Casey Reith **Date:** 27Sep2022

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As-Found data for DeltaCal

Date	Technician
27Sep2022	Zabdiel Pimentel

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	141170
Firmware Version:	4.00P

Ambient Pressure:	624.0	mmHg
Ambient Temperature:	22.5	°C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	**Standard**	**Diff**	**+/- 1 mmHg**	**DUT**	**Standard**	**Diff**	**+/-1 mmHg**
$Pres_{AMB}$ mmHg	622	624	-2	Fail	624	624	0	Pass
	DUT	**Standard**	**Diff**	**+/- 1 °C**	**DUT**	**Standard**	**Diff**	**+/- 1 °C**
$Temp_{AMB}$ °C	22.1	22.5	-0.4	Pass	22.5	22.5	0	Pass
Temp $_{Filter}$ °C	22.2	22.5	-0.3	Pass	22.5	22.5	0	Pass

	Offset	New Offset
PresAMB		2
TempAMB		0.4
Temp Filter		0.3

Range 1

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	138.66	624.0	6.672	6.564	-1.619
2	208.48	624.0	10.120	9.912	-2.055
3	274.26	624.0	13.369	13.142	-1.698
4	334.07	624.0	16.324	16.087	-1.452
5	375.78	624.0	18.384	18.128	-1.393
6	397.89	624.0	19.482	19.226	-1.314
	Maximum allowable error at any flow rate is 0.75%.			Average	-1.588
				Result	FAIL

Range 2

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	150.05	624.0	2.054	2.035	-0.925
2	224.93	624.0	3.116	3.035	-2.599
3	268.63	624.0	3.735	3.678	-1.526
4	333.63	624.0	4.656	4.575	-1.740
5	378.75	624.0	5.296	5.196	-1.888
6	425.12	624.0	5.955	5.850	-1.763
	Maximum allowable error at any flow rate is 0.75%.			Average	-1.740
				Result	FAIL