Air Quality Monitoring and Sampling Summary Report

Air Quality Monitoring of the Work Zone Perimeter and Localized Weather Patterns

DWR Oroville Dam Recovery Operations

April 06, 2018 through April 19, 2018

Prepared For:

California Department of Water Resources
1416 9th Street
Sacramento, California 95814

Prepared By:
Safety Management Systems, LLC
West Coast Operations – Industrial Hygiene Group
4100 Easton Drive, Suite 7
Bakersfield, CA 93309

Air Quality Monitoring and Sampling Summary Report

April 06, 2018 through April 19, 2018

DWR Oroville Dam Recovery Operations

Approved by:

Date: May 4, 2018

Michael Donlon, P.E., CSP

Department of Water Resources

Chief Safety Officer

REGISTERED PROFESSIONAL ENGINEER
MICHAEL TIMOTHY DONLON
SF 3383
SAFETY
STATE OF CALIFORNIA

Date: May 4, 2018

Kevin Dossey, P.E.

Department of Water Resources

Deputy Incident Commander

Compiled by:

Date: May 4, 2018

David S. Beadle, CIH, CSP, CAC

Safety Management Systems, LLC

Industrial Hygiene Project Manager

THE AMERICAN BOARD OF INDUSTRIAL HYGIENE
INCORPORATED
CERTIFICATION NUMBER
6344 CP
EXPIRES
12-1-2020
PENNSYLVANIA-1988
DAVID S. BEADLE, CIH

BCSP
CSP
DAVID S. BEADLE
34002
CERTIFIED
SAFETY PROFESSIONAL

Table of Contents

Summary 5
1.0 Sample Locations 6
2.0 Sample Time/Rates/Volume 9
3.0 Sampling Media and Target Analysis 21
4.0 Photo Documentation 23
5.0 Air Sampling Equipment Malfunctions & Corrective Actions 27
6.0 Exceedances & Corrective Actions 28
7.0 Laboratory Analysis Summary 29
8.0 Perimeter Dust Monitoring Summary 53
9.0 Meteorological Data & Daily Wind Rose 82
10.0 Weather Pattern Events 111
11.0 Potential Offsite Air Contaminant Events 112
12.0 Changes to Proposed Sampling Locations or Methodology 112
Appendix A – Laboratory Reports 113
Appendix B – Perimeter Dust Monitoring 113

Table of Tables

Table 1 Dust and Asbestos Structure Monitoring Station Locations 6
Table 2 Perimeter – Upper Overlook Sample Time/Rates/Volume 10
Table 3 Perimeter – Diversion Dam Sample Time/Rates/Volume 14
Table 4 Perimeter – Burma Road Perimeter Sample Time/Rates/Volume 17
Table 5 Perimeter – Launch Ramp Perimeter Sample Time/Rates/Volume 19
Table 6 Photo Documentation of Air Monitoring Stations and Weather Stations – Current Condition 23
Table 7 – Equipment Failures 27
Table 8 – Sample Failure 27
Table 9 - 2018.04.06 Laboratory Analysis Summary 30
Table 10 - 2018.04.07 Laboratory Analysis Summary 31
Table 11 - 2018.04.08 Laboratory Analysis Summary 32
Table 12 – 2018.04.09 Laboratory Analysis Summary 33
Table 13 - 2018.04.10 Laboratory Analysis Summary 34
Table 14 – 2018.04.11 Laboratory Analysis Summary 35
Table 15 – 2018.04.12 Laboratory Analysis Summary 37
Table 16 – 2018.04.13 Laboratory Analysis Summary 39
Table 17 - 2018.04.14 Laboratory Analysis Summary 41
Table 18 - 2018.04.15 Laboratory Analysis Summary 43
Table 19 - 2018.04.16 Laboratory Analysis Summary 45
Table 20 - 2018.04.17 Laboratory Analysis Summary 47
Table 21 - 2018.04.18 Laboratory Analysis Summary 49
Table 22 - 2018.04.19 Laboratory Analysis Summary 51
Table 23 Weather Pattern Events April 06, 2018 – April 19, 2018 111

Table of Figures

Figure 1 Upper Overlook Sample Station Locations 6
Figure 2 Diversion Sample Station Locations 7
Figure 3 Burma Road Sampling Location..... 7
Figure 4 Launch Ramp Sampling Locations 8
Figure 5 WP 246 Intake Yard Dust Daily Average (mg/m^3) 04/06-04/12 54
Figure 6 WP 246 Intake Yard Dust Daily Average (mg/m^3) 04/13-04/19 55
Figure 7 WP 247 Upper Overlook Entry Dust Daily Average (mg/m^3) 04/06-04/12 56
Figure 8 WP 247 Upper Overlook Entry Dust Daily Average (mg/m^3) 04/13-04/19 57
Figure 9 WP 248 Upper Overlook Dust Daily Average (mg/m^3) 04/06-04/12 58
Figure 10 WP 248 Upper Overlook Dust Daily Average (mg/m^3) 04/13-04/19 59
Figure 11 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 04/06-04/12 60
Figure 12 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 04/13-04/19 61
Figure 13 WP 278 N Diversion Dam Dust Daily Average (mg/m^3) 04/06-04/12 62
Figure 14 WP 278 N Diversion Dam Dust Daily Average (mg/m^3) 04/13-04/19 63
Figure 15 WP 017A Burma Road 01 Daily Dust Average (mg/m^3) 04/06-04/12 64
Figure 16 WP 017A Burma Road 01 Daily Dust Average (mg/m^3) 04/13-04/19 65
Figure 17 WP 281 Cherokee Rd Daily Dust Average (mg/m^3) 04/06-04/12 66
Figure 18 WP 281 Cherokee Rd Daily Dust Average (mg/m^3) 04/13-04/19 67
Figure 19 WP 009A Launch Ramp Parking Daily Dust Average (mg/m^3) 04/06-04/12 68
Figure 20 WP 009A Launch Ramp Parking Daily Dust Average (mg/m^3) 04/13-04/19 69
Figure 21 WP 010A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 04/06-04/12 70
Figure 22 WP 010A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 04/13-04/19 71
Figure 23 WP 019A E Diversion Dam Daily Dust Average (mg/m^3) 04/06-04/12 72
Figure 24 WP 019A E Diversion Dam Daily Dust Average (mg/m^3) 04/13-04/19 73
Figure 25 WP 020A SE Canal Daily Dust Average (mg/m^3) 04/06-04/12..... 74
Figure 26 WP 020A SE Canal Daily Dust Average (mg/m^3) 04/13-04/19..... 75
Figure 27 WP 021A SW Canal (mg/m^3) 04/06-04/12..... 76
Figure 28 WP 021A SW Canal (mg/m^3) 04/13-04/19..... 77
Figure 29 WP 036A Burma Road 02 (mg/m^3) 04/06-04/12 78
Figure 30 WP 036A Burma Road 02 (mg/m^3) 04/13-04/19 79
Figure 31 WP 037A Burma Road 03 (mg/m^3) 04/06-04/12 80
Figure 32 WP 037A Burma Road 03 (mg/m^3) 04/13-04/19 81
Figure 33 Wind Rose – Day & Night Shift Upper Overlook 83
Figure 34 Wind Rose – Day & Night Shift Diversion Dam 97

Summary

The following stations that were temporarily suspended due to inactive work zones were approved by BCAQMD to be reactivated on 04/11/2018 at 06:00 hrs for work performed at the soil test spot at Spoil Pile 3:

- Station 5 – WP278 N. Diversion Dam
- Station 10 – WP281 Cherokee Road
- Station 13 – WP019A E Diversion Dam
- Station 14 – WP020A SE Canal
- Station 15 - WP021A SW Canal
- Station 22 – WP036A Burma Road 02
- Station 23 – WP037A Burma Road 03

Air quality monitoring at all of the perimeter monitoring stations were continuous throughout the time period with few interruptions as noted in this report. All sampling methodology adhered to established protocols and there were no changes or modifications to test methodology. All of the work stations were inspected daily as part of the established quality control protocols.

We experienced six (6) weather events during this time period; however, the sampling continued uninterrupted regardless of weather. Post flow calibrations did not exceed A 5% increase/decrease during this time period.

The majority of the asbestos structure counts at the perimeter remain predominantly “None Detected”:

- Total number of samples: 322
- Total number of samples that were “None Detected”: 298 (92.55%)
- Total number of samples where asbestos was detected but the action level was not exceeded: 23 (7.14%)
- Total number of samples that exceeded the action level: 0
- Total number of samples that were not analyzed: 1 (0.31%)
- Total number of samples that were “Overloaded”: 0

There were concentrations of non-regulated amphibole structures identified at the Upper, Burma, and Launch Ramp zones during the sampling time frame addressed in this report cycle..

The Action Level of 0.0050 S/cc was not met or exceeded during this time frame for regulated amphiboles.

Actinolite and chrysotile asbestos types were detected. Non-asbestos structures are detectible and noted in the sample summary and in the laboratory reports. Non-asbestos structures reported include a contribution from non-regulated amphiboles.

Wet weather and soil moisture conditions assist in dust mitigation to maintain low structure and dust levels at the perimeter of the work zone.

1.0 Sample Locations

Sample locations are established and/or moved in cooperation and with advanced approval by Butte County Air Quality Management District (BCAQMD). The sites that have been selected best represents the quality of the air as it leaves the "outer work zone perimeter". Additionally, the locations are chosen based on alignment with "sensitive receptors".

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Extra care must be taken when dealing with contaminants and pollutants in close proximity to areas recognized as sensitive receptors.

Table 1 Dust and Asbestos Structure Monitoring Station Locations

Station	Location	Way Point ID	Latitude	Longitude
1	Intake Yard	WP 246	39°32'5.44"N	121°28'29.37"W
2	Upper Overlook Entry	WP 247	39°31'51.40"N	121°28'36.65"W
3	Upper Overlook	WP 248	39°31'47.46"N	121°28'41.46"W
4	Canyon Drive	WP 249	39°31'40.23"N	121°28'52.17"W
5	N. Diversion Dam	WP 278	39°31'55.71"N	121°33'2.96"W
9	Burma Road 01	WP 017A	39°32'19.69"N	121°30'48.76"W
10	Cherokee Road	WP 281	39°32'13.44"N	121°32'48.07"W
11	Launch Ramp Parking	WP 009A	39°32'47.34"N	121°29'33.10"W
12	Launch Ramp Turnaround	WP 010A	39°32'50.64"N	121°29'50.25"W
13	E. Diversion Dam	WP 019A	39°31'42.97"N	121°32'35.30"W
14	S.E. Canal	WP 020A	39°31'37.77"N	121°33'2.45"W
15	S.W. Canal	WP 021A	39°31'41.01"N	121°33'17.04"W
22	Burma Road 02	WP 036A	39°32'21.2"N	121°31'12.6"W
23	Burma Road 03	WP 037A	39°32'53.2"N	121°32'18.8"W

Figure 1 Upper Overlook Sample Station Locations

Figure 2 Diversion Sample Station Locations

Figure 3 Burma Road Sampling Location

Figure 4 Launch Ramp Sampling Locations

2.0 Sample Time/Rates/Volume

Air monitoring Sample data is the crux of the monitoring program at the Oroville Dam project and strict quality assurance procedures are practiced.

The sampling strategy dictates that two (2) twelve (12) +/- hour samples are collected each day, representing a continuous history of dust and asbestos structures that are experienced at the work zone perimeter.

The following tables show the critical information that is collected on each sample and is provided for evaluation of the thoroughness and accuracy of air sampling episodes.

The headings of the tables are explained below:

- Sample Date – Date that the sample was started.
- Sample Number – A specific and unique alpha-numeric numbering system to identify and track each individual sample throughout the journey from collection, sample shipping preparation and Chain of Custody through the laboratory analysis and finally to the report.
- Chain of Custody (COC) – In order to use the results of a sampling program as evidence, a written record must be available listing the location of the samples at all times. This is also an important component of good laboratory practices. The COC record is necessary to make a prima facie showing the integrity of the samples. The samples should be handled only by persons associated in some way with the monitoring program.
- Pre-flow Rate (L/min) – The pre-flow rate (liter/minute) is measured using a NIST traceable Primary Standard. Pumps are allowed a warm-up period according to manufactures specifications.
- Post-flow Rate (L/min) – The post-flow rate (liter/minute) is measured using a NIST traceable Primary Standard at the end of the sampling cycle.
- Avg (liter/min) – The average flow rate (liter/minute) is calculated by averaging the pre and post flow rates.
- Time On – Sample Start Time in hours and minutes.
- Time Off – Sample Stop Time in hours and minutes.
- Day/Night Shift – Identifies the portion of the day when this sample was collected.
- Total Minutes – Based on the difference, in minutes, between the start and stop time that the sample was collected.
- Sample Volume (Liters) – is calculated by using the total minutes samples multiplied by the average flow rate.

Table 2 Perimeter – Upper Overlook Sample Time/Rates/Volume

Upper Overlook Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/06/2018	80406-OFD-PMT-01	041810158	2.70	2.69	2.70	06:28	17:57	Day	689	1860.30
	80406-OFD-PMT-02		2.70	2.69	2.70	06:21	17:47		686	1852.20
	80406-OFD-PMT-03		2.70	2.69	2.70	06:17	17:41		684	1846.80
	80406-OFD-PMT-04		2.70	2.69	2.70	06:03	17:27		684	1846.80
	80406-OFD-PMT-05		2.70	2.70	2.70	17:58	05:57	Night	719	1941.30
	80406-OFD-PMT-06		2.70	2.70	2.70	17:48	05:47		719	1941.30
	80406-OFD-PMT-07		2.70	2.69	2.70	17:42	05:40		718	1938.60
	80406-OFD-PMT-08		2.70	2.68	2.69	17:28	05:29		721	1939.49
04/07/2018	80407-OFD-PMT-01	091807418	2.70	2.68	2.69	05:58	17:49	Day	711	1912.59
	80407-OFD-PMT-02		2.70	2.69	2.70	05:48	17:40		712	1922.40
	80407-OFD-PMT-03		2.70	2.70	2.70	05:41	17:34		713	1925.10
	80407-OFD-PMT-04		2.70	2.69	2.70	05:30	17:23		713	1925.10
	80407-OFD-PMT-05		2.70	2.72	2.71	17:50	05:58	Night	728	1972.88
	80407-OFD-PMT-06		2.70	2.72	2.71	17:41	05:45		724	1962.04
	80407-OFD-PMT-07		2.70	2.71	2.71	17:35	05:40		725	1964.75
	80407-OFD-PMT-08		2.70	2.69	2.70	17:24	05:29		725	1957.50
04/08/2018	80408-OFD-PMT-01	331808279	2.70	2.70	2.70	05:59	18:00	Day	721	1946.70
	80408-OFD-PMT-02		2.70	2.68	2.69	05:46	17:47		721	1939.49
	80408-OFD-PMT-03		2.70	2.68	2.69	05:41	17:40		719	1934.11
	80408-OFD-PMT-04		2.70	2.70	2.70	05:30	17:27		717	1935.90
	80408-OFD-PMT-05		2.70	2.70	2.70	18:01	05:50	Night	709	1914.30
	80408-OFD-PMT-06		2.70	2.69	2.70	17:48	05:42		714	1927.80
	80408-OFD-PMT-07		2.70	2.69	2.70	17:41	05:36		715	1930.50
	80408-OFD-PMT-08		2.70	2.70	2.70	17:28	05:26		718	1938.60
04/09/2018	80409-OFD-PMT-01	411802843	2.70	2.70	2.70	05:51	17:56	Day	725	1957.50
	80409-OFD-PMT-02		2.70	2.68	2.69	05:43	17:50		727	1955.63
	80409-OFD-PMT-03		2.70	2.69	2.70	05:37	17:40		723	1952.10
	80409-OFD-PMT-04		2.70	2.69	2.70	05:27	17:25		718	1938.60
	80409-OFD-PMT-05		2.70	2.73	2.72	17:57	05:52	Night	715	1944.80
	80409-OFD-PMT-06		2.70	2.70	2.70	17:51	05:46		715	1930.50
	80409-OFD-PMT-07		2.70	2.71	2.71	17:41	05:39		718	1945.78
	80409-OFD-PMT-08		2.70	2.69	2.70	17:26	05:25		719	1941.30

Upper Lookout Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/10/2018	80410-OFD-PMT-01	311800614	2.70	2.71	2.71	05:53	17:47	Day	714	1934.94
	80410-OFD-PMT-02		2.70	2.71	2.71	05:47	17:37		710	1924.10
	80410-OFD-PMT-03		2.70	2.72	2.71	05:40	17:32		712	1929.52
	80410-OFD-PMT-04		2.70	2.74	2.72	05:26	17:23		717	1950.24
	80410-OFD-PMT-05		2.70	2.70	2.70	17:48	05:54	Night	726	1960.20
	80410-OFD-PMT-06		2.70	2.73	2.72	17:38	05:46		728	1980.16
	80410-OFD-PMT-07		2.70	2.70	2.70	17:33	05:40		727	1962.90
	80410-OFD-PMT-08		2.70	2.68	2.69	17:24	05:28		724	1947.56
04/11/2018	80411-OFD-PMT-01	321808639	2.70	2.73	2.72	05:55	17:50	Day	715	1944.80
	80411-OFD-PMT-02		2.70	2.71	2.71	05:47	17:42		715	1937.65
	80411-OFD-PMT-03		2.70	2.71	2.71	05:41	17:36		715	1937.65
	80411-OFD-PMT-04		2.70	2.72	2.71	05:29	17:27		718	1945.78
	80411-OFD-PMT-05		2.70	2.71	2.71	17:51	05:54	Night	723	1959.33
	80411-OFD-PMT-06		2.70	2.68	2.69	17:43	05:45		722	1942.18
	80411-OFD-PMT-07		2.70	2.70	2.70	17:37	05:40		723	1952.10
	80411-OFD-PMT-08		2.70	2.65	2.68	17:28	05:28		720	1929.60
04/12/2018	80412-OFD-PMT-01	241801893	2.70	2.69	2.70	05:55	17:51	Day	716	1933.20
	80412-OFD-PMT-02		2.70	2.68	2.69	05:46	17:42		716	1926.04
	80412-OFD-PMT-03		2.70	2.68	2.69	05:41	17:33		712	1915.28
	80412-OFD-PMT-04		2.70	2.70	2.70	05:28	17:24		716	1933.20
	80412-OFD-PMT-05		2.70	2.71	2.71	17:52	05:51	Night	719	1948.49
	80412-OFD-PMT-06		2.70	2.70	2.70	17:43	05:41		718	1938.60
	80412-OFD-PMT-07		2.70	2.73	2.72	17:34	05:33		719	1955.68
	80412-OFD-PMT-08		2.70	2.67	2.69	17:25	05:19		714	1920.66
04/13/2018	80413-OFD-PMT-01	041810932	2.70	2.69	2.70	05:52	17:50	Day	718	1938.60
	80413-OFD-PMT-02		2.70	2.68	2.69	05:42	17:39		717	1928.73
	80413-OFD-PMT-03		2.70	2.69	2.70	05:34	17:30		716	1933.20
	80413-OFD-PMT-04		2.70	2.71	2.71	05:20	17:22		722	1956.62
	80413-OFD-PMT-05		2.70	2.70	2.70	17:51	05:52	Night	721	1946.70
	80413-OFD-PMT-06		2.70	2.71	2.71	17:40	05:41		721	1953.91
	80413-OFD-PMT-07		2.70	2.71	2.71	17:31	05:35		724	1962.04
	80413-OFD-PMT-08		2.70	2.68	2.69	17:23	05:22		719	1934.11

Upper Lookout Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/14/2018	80414-OFD-PMT-01	091807785	2.70	2.69	2.70	05:53	17:52	Day	719	1941.30
	80414-OFD-PMT-02		2.70	2.72	2.71	05:42	17:43		721	1953.91
	80414-OFD-PMT-03		2.70	2.69	2.70	05:36	17:36		720	1944.00
	80414-OFD-PMT-04		2.70	2.73	2.72	05:23	17:25		722	1963.84
	80414-OFD-PMT-05		2.70	2.70	2.70	17:53	05:51	Night	718	1938.60
	80414-OFD-PMT-06		2.70	2.72	2.71	17:44	05:43		719	1948.49
	80414-OFD-PMT-07		2.70	2.70	2.70	17:37	05:38		721	1946.70
	80414-OFD-PMT-08		2.70	2.69	2.70	17:26	05:26		720	1944.00
04/15/2018	80415-OFD-PMT-01	341805128	2.70	2.76	2.73	05:52	17:57	Day	725	1979.25
	80415-OFD-PMT-02		2.70	2.73	2.72	05:44	17:45		721	1961.12
	80415-OFD-PMT-03		2.70	2.73	2.72	05:39	17:35		716	1947.52
	80415-OFD-PMT-04		2.70	2.74	2.72	05:27	17:24		717	1950.24
	80415-OFD-PMT-05		2.70	2.70	2.70	17:58	05:55	Night	717	1935.90
	80415-OFD-PMT-06		2.70	2.70	2.70	17:46	05:45		719	1941.30
	80415-OFD-PMT-07		2.70	2.68	2.69	17:36	05:40		724	1947.56
	80415-OFD-PMT-08		2.70	2.68	2.69	17:25	05:26		721	1939.49
04/16/2018	80416-OFD-PMT-01	161806937	2.70	2.69	2.70	05:56	17:45	Day	709	1914.30
	80416-OFD-PMT-02		2.70	2.68	2.69	05:46	17:35		709	1907.21
	80416-OFD-PMT-03		2.70	2.73	2.72	05:41	17:28		707	1923.04
	80416-OFD-PMT-04		2.70	2.70	2.70	05:27	17:19		712	1922.40
	80416-OFD-PMT-05		2.70	2.71	2.71	17:46	05:55	Night	729	1975.59
	80416-OFD-PMT-06		2.70	2.71	2.71	17:36	05:46		730	1978.30
	80416-OFD-PMT-07		2.70	2.69	2.70	17:29	05:41		732	1976.40
	80416-OFD-PMT-08		2.70	2.64	2.67	17:20	05:29		729	1946.43
04/17/2018	80417-OFD-PMT-01	531800055	2.70	2.68	2.69	05:56	17:51	Day	715	1923.35
	80417-OFD-PMT-02		2.70	2.69	2.70	05:47	17:44		717	1935.90
	80417-OFD-PMT-03		2.70	2.70	2.70	05:42	17:37		715	1930.50
	80417-OFD-PMT-04		2.70	2.70	2.70	05:30	17:29		719	1941.30
	80417-OFD-PMT-05		2.70	2.70	2.70	17:52	05:53	Night	721	1946.70
	80417-OFD-PMT-06		2.70	2.69	2.70	17:45	05:45		720	1944.00
	80417-OFD-PMT-07		2.70	2.71	2.71	17:38	05:37		719	1948.49
	80417-OFD-PMT-08		2.70	2.68	2.69	17:30	05:30		720	1936.80

Upper Lookout Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/18/2018	80418-OFD-PMT-01	321809222	2.70	2.69	2.70	05:54	17:50	Day	716	1933.20
	80418-OFD-PMT-02		2.70	2.70	2.70	05:46	17:43		717	1935.90
	80418-OFD-PMT-03		2.70	2.70	2.70	05:38	17:38		720	1944.00
	80418-OFD-PMT-04		2.70	2.70	2.70	05:31	17:28		717	1935.90
	80418-OFD-PMT-05		2.70	2.72	2.71	17:51	05:53	Night	722	1956.62
	80418-OFD-PMT-06		2.70	2.71	2.71	17:44	05:45		721	1953.91
	80418-OFD-PMT-07		2.70	2.21	2.21	17:39	22:56		317	700.57
	80418-OFD-PMT-07		2.70	2.68	2.69	22:56	05:38		402	1081.38
	80418-OFD-PMT-08		2.70	2.67	2.69	17:29	05:23		714	1920.66
04/19/2018	80419-OFD-PMT-01	331809206	2.70	2.71	2.71	05:54	17:56	Day	722	1956.62
	80419-OFD-PMT-02		2.70	2.69	2.70	05:46	17:47		721	1946.70
	80419-OFD-PMT-03		2.70	2.67	2.69	05:39	17:40		721	1939.49
	80419-OFD-PMT-04		2.70	2.71	2.71	05:24	17:28		724	1962.04
	80419-OFD-PMT-05		2.70	2.70	2.70	17:57	05:55	Night	718	1938.60
	80419-OFD-PMT-06		2.70	2.70	2.70	17:48	05:46		718	1938.60
	80419-OFD-PMT-07		2.70	2.70	2.70	17:41	05:38		717	1935.90
	80419-OFD-PMT-08		2.70	2.68	2.69	17:29	05:27		718	1931.42

Table 3 Perimeter – Diversion Dam Sample Time/Rates/Volume

Diversion Dam Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/11/2018	80411-OFD-TPT-01	321808583	2.70	2.70	2.70	05:58	17:47	Day	709	1914.30
	80411-OFD-TPT-02		2.70	2.69	2.70	06:08	17:53		705	1903.50
	80411-OFD-TPT-03		2.70	2.70	2.70	06:18	18:00		702	1895.40
	80411-OFD-TPT-04		2.70	2.73	2.72	06:28	18:08		700	1904.00
	80411-OFD-TPT-05		2.70	2.70	2.70	05:40	17:34		714	1927.80
	80411-OFD-TPT-06		2.70	2.71	2.71	17:49	05:45	Night	716	1940.36
	80411-OFD-TPT-07		2.70	2.70	2.70	17:54	05:53		719	1941.30
	80411-OFD-TPT-08		2.70	2.70	2.70	18:01	06:02		721	1946.70
	80411-OFD-TPT-09		2.70	2.69	2.70	18:10	06:10		720	1944.00
	80411-OFD-TPT-10		2.70	2.69	2.70	17:35	06:26		771	2081.70
04/12/2018	80412-OFD-TPT-01	241801890	2.70	2.67	2.69	05:46	17:40	Day	714	1920.66
	80412-OFD-TPT-02		2.70	2.68	2.69	05:55	17:48		713	1917.97
	80412-OFD-TPT-03		2.70	2.69	2.70	06:03	17:54		711	1919.70
	80412-OFD-TPT-04		2.70	2.72	2.71	06:12	18:01		709	1921.39
	80412-OFD-TPT-05		2.70	2.73	2.72	06:29	18:16		707	1923.04
	80412-OFD-TPT-06		2.70	2.73	2.72	17:41	05:54	Night	733	1993.76
	80412-OFD-TPT-07		2.70	2.74	2.72	17:49	06:04		735	1999.20
	80412-OFD-TPT-08		2.70	2.72	2.71	17:55	06:15		740	2005.40
	80412-OFD-TPT-09		2.70	2.72	2.71	18:02	06:24		742	2010.82
	80412-OFD-TPT-10		2.70	2.70	2.70	18:18	06:40		742	2003.40
04/13/2018	80413-OFD-TPT-01	041810931	2.70	2.67	2.69	05:57	17:32	Day	695	1869.55
	80413-OFD-TPT-02		2.70	2.68	2.69	06:06	17:47		701	1885.69
	80413-OFD-TPT-03		2.70	2.65	2.68	06:18	17:53		695	1862.60
	80413-OFD-TPT-04		2.70	2.68	2.69	06:26	18:02		696	1872.24
	80413-OFD-TPT-05		2.70	2.70	2.70	06:41	18:18		697	1881.90
	80413-OFD-TPT-06		2.70	2.73	2.72	17:37	05:40	Night	723	1966.56
	80413-OFD-TPT-07		2.70	2.71	2.71	17:48	05:48		720	1951.20
	80413-OFD-TPT-08		2.70	2.71	2.71	17:55	05:54		719	1948.49
	80413-OFD-TPT-09		2.70	2.71	2.71	18:03	06:03		720	1951.20
	80413-OFD-TPT-10		2.70	2.70	2.70	18:19	06:23		724	1954.80

Diversion Dam Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/14/2018	80414-OFD-TPT-01	091807788	2.70	2.70	2.70	05:41	17:37	Day	716	1933.20
	80414-OFD-TPT-02		2.70	2.68	2.69	05:49	17:50		721	1939.49
	80414-OFD-TPT-03		2.70	2.69	2.70	05:55	17:58		723	1952.10
	80414-OFD-TPT-04		2.70	2.70	2.70	06:05	18:06		721	1946.70
	80414-OFD-TPT-05		2.70	2.70	2.70	06:24	18:21		717	1935.90
	80414-OFD-TPT-06		2.70	2.73	2.72	17:40	05:34	Night	714	1942.08
	80414-OFD-TPT-07		2.70	2.71	2.71	17:52	05:47		715	1937.65
	80414-OFD-TPT-08		2.70	2.72	2.71	18:02	05:54		712	1929.52
	80414-OFD-TPT-09		2.70	2.72	2.71	18:09	06:06		717	1943.07
	80414-OFD-TPT-10		2.70	2.70	2.70	18:22	06:24		722	1949.40
04/15/2018	80415-OFD-TPT-01	341805129	2.70	2.71	2.71	05:41	17:31	Day	710	1924.10
	80415-OFD-TPT-02		2.70	2.72	2.71	05:49	17:51		722	1956.62
	80415-OFD-TPT-03		2.70	2.73	2.72	05:58	18:01		723	1966.56
	80415-OFD-TPT-04		2.70	2.73	2.72	06:07	18:14		727	1977.44
	80415-OFD-TPT-05		2.70	2.72	2.71	06:26	18:35		729	1975.59
	80415-OFD-TPT-06		2.70	2.69	2.70	17:32	05:33	Night	721	1946.70
	80415-OFD-TPT-07		2.70	2.71	2.71	17:53	05:50		717	1943.07
	80415-OFD-TPT-08		2.70	2.70	2.70	18:04	06:00		716	1933.20
	80415-OFD-TPT-09		2.70	2.69	2.70	18:14	06:08		714	1927.80
	80415-OFD-TPT-10		2.70	2.69	2.70	18:35	06:27		712	1922.40
04/16/2018	80416-OFD-TPT-01	161806940	2.70	2.70	2.70	05:37	17:20	Day	703	1898.10
	80416-OFD-TPT-02		2.70	2.68	2.69	05:53	17:27		694	1866.86
	80416-OFD-TPT-03		2.70	2.69	2.70	06:03	17:32		689	1860.30
	80416-OFD-TPT-04		2.70	2.70	2.70	06:08	17:38		690	1863.00
	80416-OFD-TPT-05		2.70	2.69	2.70	06:28	17:45		677	1827.90
	80416-OFD-TPT-06		2.70	2.73	2.72	17:20	05:27	Night	727	1977.44
	80416-OFD-TPT-07		2.70	2.68	2.69	17:27	05:36		729	1961.01
	80416-OFD-TPT-08		2.70	2.67	2.69	17:35	05:46		731	1966.39
	80416-OFD-TPT-09		2.70	2.69	2.70	17:38	05:54		736	1987.20
	80416-OFD-TPT-10		2.70	2.70	2.70	17:45	06:18		753	2033.10

Diversion Dam Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/17/2018	80417-OFD-TPT-01	531800056	2.70	2.66	2.68	05:30	17:30	Day	720	1929.60
	80417-OFD-TPT-02		2.70	2.68	2.69	05:38	17:37		719	1934.11
	80417-OFD-TPT-03		2.70	2.71	2.71	05:48	17:47		719	1948.49
	80417-OFD-TPT-04		2.70	2.69	2.70	05:56	17:59		723	1952.10
	80417-OFD-TPT-05		2.70	2.72	2.71	06:20	18:19		719	1948.49
	80417-OFD-TPT-06		2.70	2.70	2.70	17:32	05:22	Night	710	1917.00
	80417-OFD-TPT-07		2.70	2.71	2.71	17:40	05:36		716	1940.36
	80417-OFD-TPT-08		2.70	2.73	2.72	17:49	05:46		717	1950.24
	80417-OFD-TPT-09		2.70	2.71	2.71	18:01	05:58		717	1943.07
	80417-OFD-TPT-10		2.70	2.70	2.70	18:23	06:12		709	1914.30
04/18/2018	80418-OFD-TPT-01	321809233	2.70	2.66	2.68	05:25	17:29	Day	724	1940.32
	80418-OFD-TPT-02		2.70	2.66	2.68	05:36	17:36		720	1929.60
	80418-OFD-TPT-03		2.70	2.69	2.70	05:47	17:48		721	1946.70
	80418-OFD-TPT-04		2.70	2.69	2.70	06:01	17:54		713	1925.10
	80418-OFD-TPT-05		2.70	2.72	2.71	06:13	18:11		718	1945.78
	80418-OFD-TPT-06		2.70	2.72	2.71	17:30	05:28	Night	718	1945.78
	80418-OFD-TPT-07		2.70	2.72	2.71	17:37	05:35		718	1945.78
	80418-OFD-TPT-08		2.70	2.71	2.71	17:49	05:45		716	1940.36
	80418-OFD-TPT-09		2.70	2.70	2.70	17:57	05:57		720	1944.00
	80418-OFD-TPT-10		2.70	2.72	2.71	18:12	06:14		722	1956.62
04/19/2018	80419-OFD-TPT-01	331809205	2.70	2.71	2.71	05:30	17:30	Day	720	1951.20
	80419-OFD-TPT-02		2.70	2.70	2.70	05:38	17:39		721	1946.70
	80419-OFD-TPT-03		2.70	2.71	2.71	05:49	17:55		726	1967.46
	80419-OFD-TPT-04		2.70	2.71	2.71	05:59	18:05		726	1967.46
	80419-OFD-TPT-05		2.70	2.70	2.70	06:16	18:21		725	1957.50
	80419-OFD-TPT-06		2.70	2.71	2.71	17:31	05:30	Night	719	1948.49
	80419-OFD-TPT-07		2.70	2.71	2.71	17:41	05:36		715	1937.65
	80419-OFD-TPT-08		2.70	2.72	2.71	17:56	05:51		715	1937.65
	80419-OFD-TPT-09		2.70	2.71	2.71	18:06	06:02		716	1940.36
	80419-OFD-TPT-10		2.70	2.72	2.71	18:23	06:25		722	1956.62

Table 4 Perimeter – Burma Road Perimeter Sample Time/Rates/Volume

Burma Road Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/06/2018	80406-OFD-BPT-01	041810155	2.70	2.67	2.69	05:05	16:57	Day	712	1915.28
	80406-OFD-BPT-02		2.70	2.71	2.71	17:00	04:55	Night	715	1937.65
04/07/208	80407-OFD-BPT-01	091807420	2.70	2.67	2.69	04:58	16:57	Day	719	1934.11
	80407-OFD-BPT-02		2.70	2.72	2.71	17:00	04:59	Night	719	1948.49
04/08/2018	80408-OFD-BPT-01	331808286	2.70	2.69	2.70	05:02	17:00	Day	718	1938.60
	80408-OFD-BPT-02		2.70	2.71	2.71	17:03	04:52	Night	709	1921.39
04/09/2018	80409-OFD-BPT-01	411802845	2.70	2.67	2.69	04:55	16:58	Day	723	1944.87
	80409-OFD-BPT-02		2.70	2.73	2.72	17:01	04:55	Night	714	1942.08
04/10/2018	80410-OFD-BPT-01	311800613	2.70	2.72	2.71	04:59	16:56	Day	717	1943.07
	80410-OFD-BPT-02		2.70	2.72	2.71	16:59	04:50	Night	711	1926.81
04/11/201	80411-OFD-BPT-01	321808607	2.70	2.71	2.71	04:52	16:55	Day	723	1959.33
	80411-OFD-BPT-02		2.70	2.67	2.69	04:59	17:10		731	1966.39
	80411-OFD-BPT-03		2.70	2.68	2.69	05:10	17:20		730	1963.70
	80411-OFD-BPT-04		2.70	2.71	2.71	16:58	04:56	Night	718	1945.78
	80411-OFD-BPT-05		2.70	2.70	2.70	17:12	05:01		709	1914.30
	80411-OFD-BPT-06		2.70	2.71	2.71	17:21	05:13		712	1929.52
04/12/2018	80412-OFD-BPT-01	241801892	2.70	2.68	2.69	04:58	16:58	Day	720	1936.80
	80412-OFD-BPT-02		2.70	2.63	2.67	05:03	17:04		721	1925.07
	80412-OFD-BPT-03		2.70	2.66	2.68	05:15	17:13		718	1924.24
	80412-OFD-BPT-04		2.70	2.70	2.70	16:59	05:00	Night	721	1946.70
	80412-OFD-BPT-05		2.70	2.71	2.71	17:05	05:07		722	1956.62
	80412-OFD-BPT-06		2.70	2.72	2.71	17:14	05:15		721	1953.91
04/13/2018	80413-OFD-BPT-01	041810929	2.70	2.64	2.67	05:02	17:00	Day	718	1917.06
	80413-OFD-BPT-02		2.70	2.63	2.67	05:08	17:09		721	1925.07
	80413-OFD-BPT-03		2.70	2.66	2.68	05:16	17:20		724	1940.32
	80413-OFD-BPT-04		2.70	2.71	2.71	17:02	04:58	Night	716	1940.36
	80413-OFD-BPT-05		2.70	2.72	2.71	17:10	05:04		714	1934.94
	80413-OFD-BPT-06		2.70	2.72	2.71	17:21	05:13		712	1929.52
04/14/2018	80414-OFD-BPT-01	091807764	2.70	2.67	2.69	04:59	16:58	Day	719	1934.11
	80414-OFD-BPT-02		2.70	2.61	2.66	05:05	17:06		721	1917.86
	80414-OFD-BPT-03		2.70	2.66	2.68	05:14	17:15		721	1932.28
	80414-OFD-BPT-04		2.70	2.72	2.71	17:00	05:01	Night	721	1953.91
	80414-OFD-BPT-05		2.70	2.70	2.70	17:08	05:06		718	1938.60
	80414-OFD-BPT-06		2.70	2.71	2.71	17:16	05:15		719	1948.49

04/15/2018	80415-OFD-BPT-01	341805127	2.70	2.70	2.70	05:02	17:01	Day	719	1941.30
	80415-OFD-BPT-02		2.70	2.68	2.69	05:07	17:11		724	1947.56
	80415-OFD-BPT-03		2.70	2.67	2.69	05:16	17:21		725	1950.25
	80415-OFD-BPT-04		2.70	2.71	2.71	17:05	04:59	Night	714	1934.94
	80415-OFD-BPT-05		2.70	2.71	2.71	17:12	05:05		713	1932.23
	80415-OFD-BPT-06		2.70	2.69	2.70	17:23	05:14		711	1919.70
04/16/2018	80416-OFD-BPT-01	161806929	2.70	2.69	2.70	05:00	16:57	Day	717	1935.90
	80416-OFD-BPT-02		2.70	2.67	2.69	05:06	17:06		720	1936.80
	80416-OFD-BPT-03		2.70	2.70	2.70	05:15	17:16		721	1946.70
	80416-OFD-BPT-04		2.70	2.70	2.70	17:00	05:03	Night	723	1952.10
	80416-OFD-BPT-05		2.70	2.71	2.71	17:07	05:08		721	1953.91
	80416-OFD-BPT-06		2.70	2.71	2.71	17:17	05:17		720	1951.20
04/17/2018	80417-OFD-BPT-01	531800054	2.70	2.67	2.69	05:04	16:54	Day	710	1909.90
	80417-OFD-BPT-02		2.70	2.64	2.67	05:09	17:00		711	1898.37
	80417-OFD-BPT-03		2.70	2.68	2.69	05:18	17:11		713	1917.97
	80417-OFD-BPT-04		2.70	2.69	2.70	16:55	05:03	Night	728	1965.60
	80417-OFD-BPT-05		2.70	2.70	2.70	17:01	05:08		727	1962.90
	80417-OFD-BPT-06		2.70	2.71	2.71	17:12	05:15		723	1959.33
04/18/2018	80418-OFD-BPT-01	321809199	2.70	2.69	2.70	05:04	16:58	Day	714	1927.80
	80418-OFD-BPT-02		2.70	2.67	2.69	05:09	17:04		715	1923.35
	80418-OFD-BPT-03		2.70	2.67	2.69	05:17	17:12		715	1923.35
	80418-OFD-BPT-04		2.70	2.69	2.70	16:59	04:55	Night	716	1933.20
	80418-OFD-BPT-05		2.70	2.71	2.71	17:05	05:01		716	1940.36
	80418-OFD-BPT-06		2.70	2.72	2.71	17:14	05:10		716	1940.36
04/19/2018	80419-OFD-BPT-01	331809207	2.70	2.63	2.67	04:57	17:02	Day	725	1935.75
	80419-OFD-BPT-02		2.70	2.65	2.68	05:02	17:08		726	1945.68
	80419-OFD-BPT-03		2.70	2.68	2.69	05:11	17:15		724	1947.56
	80419-OFD-BPT-04		2.70	2.70	2.70	17:03	04:55	Night	712	1922.40
	80419-OFD-BPT-05		2.70	2.70	2.70	17:10	05:03		713	1925.10
	80419-OFD-BPT-06		2.70	2.70	2.70	17:16	05:10		714	1927.80

Table 5 Perimeter – Launch Ramp Perimeter Sample Time/Rates/Volume

Launch Ramp Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/06/2018	80406-OFD-LRP-01	041810153	2.70	2.69	2.70	06:56	18:26	Day	690	1863.00
	80406-OFD-LRP-02		2.70	2.69	2.70	06:44	18:11		687	1854.90
	80406-OFD-LRP-03		2.70	2.70	2.70	18:27	06:31	Night	724	1954.80
	80406-OFD-LRP-04		2.70	2.72	2.71	18:12	06:14		722	1956.62
04/07/2018	80407-OFD-LRP-01	091807419	2.70	2.68	2.69	06:32	18:25	Day	713	1917.97
	80407-OFD-LRP-02		2.70	2.69	2.70	06:15	18:14		719	1941.30
	80407-OFD-LRP-03		2.70	2.72	2.71	18:26	06:28	Night	722	1956.62
	80407-OFD-LRP-04		2.70	2.71	2.71	18:15	06:14		719	1948.49
04/08/2018	80408-OFD-LRP-01	331808282	2.70	2.68	2.69	06:29	18:40	Day	731	1966.39
	80408-OFD-LRP-02		2.70	2.69	2.70	06:15	18:25		730	1971.00
	80408-OFD-LRP-03		2.70	2.72	2.71	18:41	06:33	Night	712	1929.52
	80408-OFD-LRP-04		2.70	2.71	2.71	18:26	06:09		703	1905.13
04/09/2018	80409-OFD-LRP-01	411802844	2.70	2.70	2.70	06:34	18:25	Day	711	1919.70
	80409-OFD-LRP-02		2.70	2.70	2.70	06:10	18:13		723	1952.10
	80409-OFD-LRP-03		2.70	2.70	2.70	18:26	06:23	Night	717	1935.90
	80409-OFD-LRP-04		2.70	2.72	2.71	18:14	06:07		713	1932.23
04/10/2018	80410-OFD-LRP-01	311800612	2.70	2.72	2.71	06:24	18:20	Day	716	1940.36
	80410-OFD-LRP-02		2.70	2.72	2.71	06:08	18:04		716	1940.36
	80410-OFD-LRP-03		2.70	2.69	2.70	18:21	23:24	Night	303	818.10
	80410-OFD-LRP-03		2.70	2.70	2.70	02:16	06:24		248	669.60
	80410-OFD-LRP-04		2.70	2.72	2.71	18:05	06:06		721	1953.91
04/11/2018	80411-OFD-LRP-01	321808619	2.70	2.73	2.72	06:25	18:14	Day	709	1928.48
	80411-OFD-LRP-02		2.70	2.72	2.71	06:07	18:02		715	1937.65
	80411-OFD-LRP-03		2.70	2.69	2.70	18:15	06:22	Night	727	1962.90
	80411-OFD-LRP-04		2.70	2.73	2.72	18:03	06:10		727	1977.44
04/12/2018	80412-OFD-LRP-01	241801891	2.70	2.69	2.70	06:23	18:25	Day	722	1949.40
	80412-OFD-LRP-02		2.70	2.68	2.69	06:11	18:11		720	1936.80
	80412-OFD-LRP-03		2.70	2.72	2.71	18:26	06:26	Night	720	1951.20
	80412-OFD-LRP-04		2.70	2.69	2.70	18:12	06:10		718	1938.60

Launch Ramp Perimeter Samples										
Sample Date	Sample Number	COC	Pre-flow Rate (L/min)	Post-flow Rate (L/min)	Avg (L/min)	Time On	Time Off	Day/Night Shift	Total Minutes	Sample Volume (Liters)
04/13/2018	80413-OFD-LRP-01	041810930	2.70	2.66	2.68	06:27	18:22	Day	715	1916.20
	80413-OFD-LRP-02		2.70	2.69	2.70	06:11	18:07		716	1933.20
	80413-OFD-LRP-03		2.70	2.72	2.71	18:23	06:23	Night	720	1951.20
	80413-OFD-LRP-04		2.70	2.72	2.71	18:08	06:09		721	1953.91
04/14/2018	80414-OFD-LRP-01	091807786	2.70	2.67	2.69	06:24	16:13	Day	589	1584.41
	80414-OFD-LRP-02		2.70	2.73	2.72	06:10	18:11		721	1961.12
	80414-OFD-LRP-03		2.70	2.67	2.69	18:27	06:16	Night	709	1907.21
	80414-OFD-LRP-04		2.70	2.74	2.72	18:12	06:07		715	1944.80
04/15/2018	80415-OFD-LRP-01	341805126	2.70	2.77	2.74	06:17	18:30	Day	733	2008.42
	80415-OFD-LRP-02		2.70	2.73	2.72	06:08	18:15		727	1977.44
	80415-OFD-LRP-03		2.70	2.70	2.70	18:31	06:20	Night	709	1914.30
	80415-OFD-LRP-04		2.70	2.72	2.71	18:16	06:09		713	1932.23
04/16/2018	80416-OFD-LRP-01	161806933	2.70	2.77	2.74	06:21	18:35	Day	734	2011.16
	80416-OFD-LRP-02		2.70	2.78	2.74	06:10	18:20		730	2000.20
	80416-OFD-LRP-03		2.70	2.70	2.70	18:36	06:23	Night	707	1908.90
	80416-OFD-LRP-04		2.70	2.69	2.70	18:21	06:12		711	1919.70
04/17/2018	80417-OFD-LRP-01	531800053	2.70	2.67	2.69	06:24	18:23	Day	719	1934.11
	80417-OFD-LRP-02		2.70	2.71	2.71	06:13	18:09		716	1940.36
	80417-OFD-LRP-03		2.70	2.72	2.71	18:24	06:24	Night	720	1951.20
	80417-OFD-LRP-04		2.70	2.70	2.70	18:10	06:13		723	1952.10
04/18/2018	80418-OFD-LRP-01	321809197	2.70	2.68	2.69	06:25	18:31	Day	726	1952.94
	80418-OFD-LRP-02		2.70	2.71	2.71	06:14	18:12		718	1945.78
	80418-OFD-LRP-03		2.70	2.73	2.72	18:32	06:20	Night	708	1925.76
	80418-OFD-LRP-04		2.70	2.73	2.72	18:13	06:08		715	1944.80
04/19/2018	80419-OFD-LRP-01	331809204	2.70	2.65	2.68	06:21	18:22	Day	721	1932.28
	80419-OFD-LRP-02		2.70	2.70	2.70	06:09	18:13		724	1954.80
	80419-OFD-LRP-03		2.70	2.72	2.71	18:23	06:25	Night	722	1956.62
	80419-OFD-LRP-04		2.70	2.70	2.70	18:14	06:12		718	1938.60

3.0 Sampling Media and Target Analysis

Dust Monitoring Sample Methods

TSI DustTrak DRX 8533

The DustTrak DRX Aerosol Monitors are laser photometers that simultaneously measure mass and size fraction. These monitors are continuous, real-time, 90˚ light-scattering laser photometers that simultaneously measure size-segregated mass fraction concentration corresponding to PM2.5, PM10, and Total PM size fraction. They combine both particle cloud (total area of scattered light) and single particle detection to achieve mass fraction measurements. This size-segregated mass fraction measurement technique is superior to either a basic photometer or optical counter (OPC). It delivers the mass concentration of a photometer and the size resolution of an OPC.

- Photometers can be used at high mass concentration, but they do not give any size information and significantly underestimate large particle mass concentrations.
- OPC's provide size and count information; however, they do not provide any mass concentration information and cannot be used in high mass concentration environments.

TrakPro software shall be utilized for exposure studies and environmental dust monitoring. TrakPro™ Data Analysis Software is a Microsoft Windows®-based software program that works with a variety of TSI data logging instruments. This software helps pre-program instruments, store and organize test data, and generate detailed graphs and reports needed to effectively communicate results.

Perimeter Air Sample Methods – CARB Modified TEM

Analysis of all air samples shall follow the analytical method specified by the United States Environmental Protection Agency, Asbestos Hazard Emergency Response ACT (AHERA) criteria for asbestos (40 CFR, Part 763 Subpart E, Appendix A, adopted October 30, 1987), with the following exceptions CARB Modified TEM:

- The analytical sensitivity shall be 0.001 structures per cubic centimeter (0.001 s/cc); and
- All asbestos structures with an aspect ratio greater than three to one (3 to 1) shall be counted irrespective of length.

The results of the analysis of air samples shall be reported as transmission electron microscopy (TEM) asbestos structures per cubic centimeter (s/cc).

The method requires the use of TEM 25 mm air sampling cassettes, designed and manufactured to meet all applicable NIOSH, OSHA, and EPA standards.

Sampling media for perimeter sampling shall comply with the following:

- 0.45 µm pore size, Mixed Cellulose Esther (MCE) Filter Material
- 5.0 µm Filter is placed under the 0.45 µm filter as a diffuser
- 2" Static Conductive Extension Cowl
- Meets AHERA Requirements Asbestos TEM 25 mm 0.45 µm Cassette-Individual

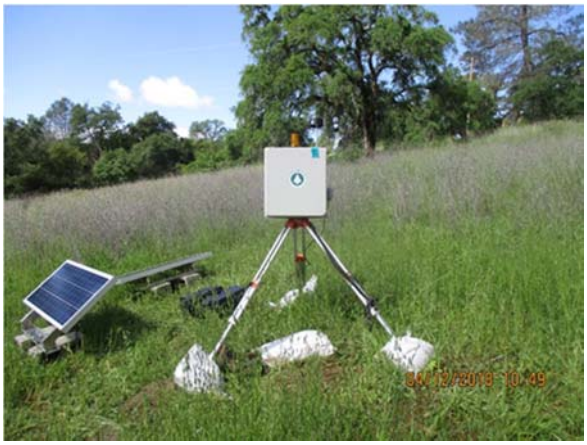
4.0 Photo Documentation

Table 6 Photo Documentation of Air Monitoring Stations and Weather Stations – Current Condition

Station 1 – WP 246 Intake Yard	Station 2 – WP 247 Upper Overlook Entry
Station 3 – WP 248 Upper Overlook	Station 4 – WP 249 Canyon Drive

Station 5 – WP278 N Diversion Dam

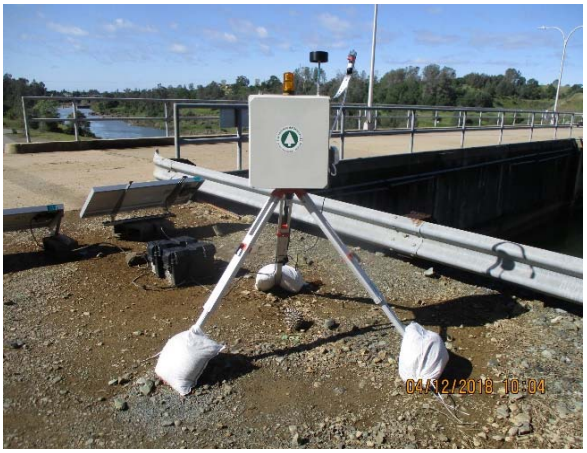
Station 9 – WP017A Burma Road 01



Station 10 – WP0281 Cherokee Rd

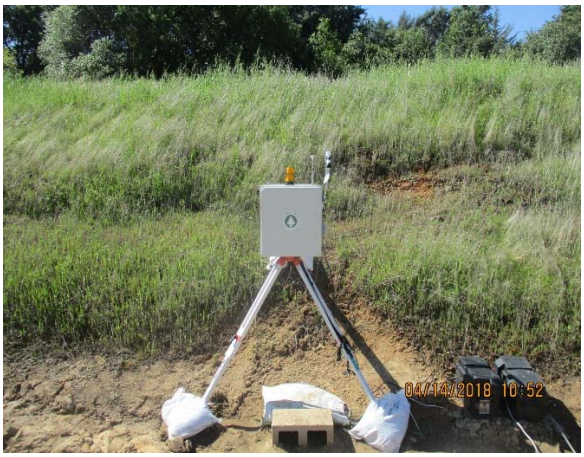
Station 11 – WP 009A Launch Ramp Parking

Station 12 – WP 010A Launch Ramp Turnaround

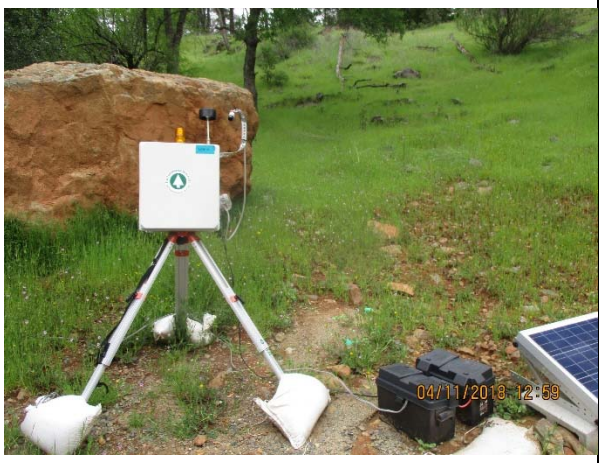


Station 13 – WP019A E. Diversion Dam

Station 14 – WP020A SE Canal



Station 15 – WP021A SW Canal



Station 22 – WP036A Burma Rd 02

Station 23 – WP037A Burma Road 03

Weather Station #1 – WP 045A

Weather Station #2 – WP 044A

5.0 Air Sampling Equipment Malfunctions & Corrective Actions

Table 7 – Equipment Failures

Equipment	Date/Time	Exception	Remedy
DM09	2018.04.17 13:34	Received a negative particulate value alert for WP017A Burma Rd 01 station during AM shift at 13:34.	Technician responded to station and conducted a zero calibration on monitor at 14:13.
DM09	2018.04.19 13:00	WP017A Burma Rd 01: Data was not recorded from 13:00 to 16:00.	Data began recording again at 16:00.
WS2 Modem	2018.04.19 20:26	No data recorded from 20:26 (04/19/2018) to 08:20 (04/20/2018).	Modem was replaced at 08:20 on 04/20/2018.

Table 8 – Sample Failure

Date	Sample ID	Discussion
2018.04.15	80415-OFD-LRP-03	According to laboratory analysis, the sample was not analyzed due to filter damage.

6.0 Exceedances & Corrective Actions

No apparent exceedances recorded.

7.0 Laboratory Analysis Summary

Copies of the Laboratory reports are included as Appendix A – Laboratory

Table Heading Explanations	
Zone	A designation of area of the work zone.
Sample ID	An alpha-numeric identified, unique to a particular sample.
Location	A description of the location where the sample was collected, often accompanied by a way point.
Non – Asbestos Structures	Non-asbestos minerals that have fibrous morphology and aspect ratio of 3:1, irrespective of length.
Asbestos Type	Regulated asbestiforms of the following minerals: chrysotile (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummingtonite—grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.
Structure	A microscopic bundle, cluster, fiber, or matrix which may contain asbestos ranked by aspect ratio of 3:1 and length.
Analytical Sensitivity	The analytical sensitivity is defined as the concentration that would result from the finding of one fiber or structure. The higher the total volume of air pulled through the filter and the more filter area analyzed the lower the analytical sensitivity. The target analytical sensitivity for this method is 0.001 structures per cc of air (s/cc).
Asbestos Concentration	The asbestos concentration in structures per cc (S/cc) is equal to the analytical sensitivity for that sample multiplied by the number of asbestos structures identified. BCAQMD has approved the DWR Community Action Level at the Perimeter of the Oroville Dam property of 0.005 regulated asbestos structures/cubic centimeter (S/cc) of air.

Table 9 - 2018.04.06 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80406-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80406-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Burma Road	80406-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	80406-OFD-BPT-02	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	80406-OFD-LRP-01	WP009A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80406-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	80406-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80406-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 10 - 2018.04.07 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80407-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80407-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80407-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0009	<0.0010
	80407-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0010
	80407-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80407-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80407-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80407-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Burma Road	80407-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	80407-OFD-BPT-02	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	80407-OFD-LRP-01	WP009A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80407-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	80407-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80407-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 11 - 2018.04.08 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80408-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80408-OFD-PMT-07	WP248 PM Upper Overlook	1	None Detected			0.0010	<0.0010
	80408-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Burma Road	80408-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	80408-OFD-BPT-02	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	80408-OFD-LRP-01	WP009A AM Launch Ramp Parking	1	None Detected			0.0010	<0.0010
	80408-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	1	None Detected			0.0010	<0.0010
	80408-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80408-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 12 – 2018.04.09 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80409-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-02	WP247 AM Upper Overlook Entry	1	None Detected			0.0010	<0.0010
	80409-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80409-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Burma Road	80409-OFD-BPT-01	WP017A AM Burma Road 01	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles					
	80409-OFD-BPT-02	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	80409-OFD-LRP-01	WP009A AM Launch Ramp Parking	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles					
	80409-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	80409-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80409-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 13 - 2018.04.10 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80410-OFD-PMT-01	WP246 AM Intake Yard	9	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-PMT-02	WP247 AM Upper Overlook Entry	7	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-PMT-03	WP248 AM Upper Overlook	4	Actinolite	1	0	0.0010	0.00098
	80410-OFD-PMT-04	WP249 AM Canyon Drive	6	None Detected			0.0010	<0.0010
	80410-OFD-PMT-05	WP246 PM Intake Yard	10	None Detected			0.0010	<0.0010
	80410-OFD-PMT-06	WP247 PM Upper Overlook Entry	12	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-PMT-07	WP248 PM Upper Overlook	19	Actinolite	1	0	0.0010	0.00097
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-PMT-08	WP249 PM Canyon Drive	6	Actinolite	2	0	0.0010	0.0019
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
Burma Road	80410-OFD-BPT-01	WP017A AM Burma Road 01	6	None Detected			0.0010	<0.0010
	80410-OFD-BPT-02	WP017A PM Burma Road 01	2	None Detected			0.0010	<0.0010
Launch Ramp	80410-OFD-LRP-01	WP009A AM Launch Ramp Parking	6	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	9	Actinolite	1	0	0.0010	0.00098
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-LRP-03	WP009A PM Launch Ramp Parking	13	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80410-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	7	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					

Table 14 – 2018.04.11 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80411-OFD-PMT-01	WP246 AM Intake Yard	7	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-PMT-02	WP247 AM Upper Overlook Entry	7	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-PMT-03	WP248 AM Upper Overlook	8	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-PMT-04	WP249 AM Canyon Drive	1	None Detected			0.0010	<0.0010
	80411-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0010
	80411-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80411-OFD-PMT-07	WP248 PM Upper Overlook	1	None Detected			0.0009	<0.0010
	80411-OFD-PMT-08	WP249 PM Canyon Drive	1	None Detected			0.0010	<0.0010
Diversion Dam	80411-OFD-TPT-01	WP278 AM N Diversion Dam	3	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-TPT-02	WP019A AM E Diversion Dam	1	None Detected			0.0010	<0.0010
	80411-OFD-TPT-03	WP020A AM SE Canal	4	None Detected			0.0010	<0.0010
	80411-OFD-TPT-04	WP021A AM SW Canal	1	None Detected			0.0010	<0.0010
	80411-OFD-TPT-05	WP281 AM Cherokee Rd	3	None Detected			0.0010	<0.0010
	80411-OFD-TPT-06	WP278 PM N Diversion Dam	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-TPT-07	WP019A PM E Diversion Dam	2	None Detected			0.0010	<0.0010
	80411-OFD-TPT-08	WP020A PM SE Canal	0	Actinolite	1	0	0.0010	0.00095
	80411-OFD-TPT-09	WP021A PM SW Canal	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-TPT-10	WP281 PM Cherokee Rd	1	None Detected			0.0009	<0.0010

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Burma Road	80411-OFD-BPT-01	WP017A AM Burma Road 01	2	None Detected			0.0009	<0.0010
	80411-OFD-BPT-02	WP036A AM Burma Road 02	3	None Detected			0.0009	<0.0009
	80411-OFD-BPT-03	WP037A AM Burma Road 03	2	None Detected			0.0009	<0.0009
	80411-OFD-BPT-04	WP017A PM Burma Road 01	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-BPT-05	WP036A PM Burma Road 02	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-BPT-06	WP037A PM Burma Road 03	3	None Detected			0.0010	<0.0010
Launch Ramp	80411-OFD-LRP-01	WP009A AM Launch Ramp Parking	18	Actinolite	0	2	0.0010	0.0019
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	21	Actinolite	1	1	0.0010	0.0019
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-LRP-03	WP009A PM Launch Ramp Parking	3	None Detected			0.0009	<0.0009
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80411-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	2	Actinolite	3	0	0.0010	0.0030
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					

Table 15 – 2018.04.12 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80412-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0009	<0.0009
	80412-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0009	<0.0010
	80412-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80412-OFD-PMT-04	WP249 AM Canyon Drive	2	None Detected			0.0009	<0.0009
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80412-OFD-PMT-06	WP247 PM Upper Overlook Entry	1	None Detected			0.0009	<0.0009
	80412-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80412-OFD-PMT-08	WP249 PM Canyon Drive	1	None Detected			0.0009	<0.0010
Diversion Dam	80412-OFD-TPT-01	WP278 AM N Diversion Dam	1	None Detected			0.0009	<0.0010
	80412-OFD-TPT-02	WP019A AM E Diversion Dam	1	None Detected			0.0010	<0.0010
	80412-OFD-TPT-03	WP020A AM SE Canal	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0009	<0.0010
	80412-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0009	<0.0010
	80412-OFD-TPT-06	WP278 PM N Diversion Dam	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-TPT-07	WP019A PM E Diversion Dam	1	None Detected			0.0010	<0.0010
	80412-OFD-TPT-08	WP020A PM SE Canal	0	None Detected			0.0010	<0.0010
	80412-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80412-OFD-TPT-10	WP281 PM Cherokee Rd	4	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Burma Road	80412-OFD-BPT-01	WP017A AM Burma Road 01	2	None Detected			0.0009	<0.0009
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-BPT-02	WP036A AM Burma Road 02	2	None Detected			0.0009	<0.0010
	80412-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0009	<0.0010
	80412-OFD-BPT-04	WP017A PM Burma Road 01	1	None Detected			0.0010	<0.0010
	80412-OFD-BPT-05	WP036A PM Burma Road 02	1	None Detected			0.0010	<0.0010
	80412-OFD-BPT-06	WP037A PM Burma Road 03	3	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
Launch Ramp	80412-OFD-LPR-01	WP009A AM Launch Ramp Parking	3	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-LPR-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009
	80412-OFD-LPR-03	WP009A PM Launch Ramp Parking	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80412-OFD-LPR-04	WP010A PM Launch Ramp Turnaround	1	None Detected			0.0009	<0.0009

Table 16 – 2018.04.13 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80413-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80413-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Diversion Dam	80413-OFD-TPT-01	WP278 AM N Diversion Dam	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80413-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0009	<0.0010
	80413-OFD-TPT-03	WP020A AM SE Canal	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0009	<0.0010
	80413-OFD-TPT-06	WP278 PM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-07	WP019A PM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-08	WP020A PM SE Canal	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80413-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80413-OFD-BPT-01	WP017A AM Burma Road 01	0	Actinolite	1	0	0.0010	0.00099
	80413-OFD-BPT-02	WP036A AM Burma Road 02	0	None Detected			0.0010	<0.0010
	80413-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0010	<0.0010
	80413-OFD-BPT-04	WP017A PM Burma Road 01	0	Actinolite	1	1	0.0010	0.0020
	80413-OFD-BPT-05	WP036A PM Burma Road 02	0	None Detected			0.0010	<0.0010
	80413-OFD-BPT-06	WP037A PM Burma Road 03	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80413-OFD-LRP-01	WP009A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80413-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	80413-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80413-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 17 - 2018.04.14 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80414-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80414-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80414-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80414-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80414-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
	80414-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	Chrysotile	0	1	0.0010	0.0010
	80414-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80414-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Diversion Dam	80414-OFD-TPT-01	WP278 AM N Diversion Dam	0	None Detected			0.0009	<0.0010
	80414-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0009	<0.0009
	80414-OFD-TPT-03	WP020A AM SE Canal	0	None Detected			0.0010	<0.0010
	80414-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0010	<0.0010
	80414-OFD-TPT-05	WP281 AM Cherokee Rd	1	None Detected			0.0009	<0.0009
	80414-OFD-TPT-06	WP278 PM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80414-OFD-TPT-07	WP019A PM E Diversion Dam	0	None Detected			0.0009	<0.0009
	80414-OFD-TPT-08	WP020A PM SE Canal	0	None Detected			0.0009	<0.0010
	80414-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80414-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80414-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	80414-OFD-BPT-02	WP036A AM Burma Road 02	0	None Detected			0.0010	<0.0010
	80414-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0009	<0.0010
	80414-OFD-BPT-04	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
	80414-OFD-BPT-05	WP036A PM Burma Road 02	1	None Detected			0.0009	<0.0009
	80414-OFD-BPT-06	WP037A PM Burma Road 03	0	None Detected			0.0010	<0.0010

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80414-OFD-LRP-01	WP009A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80414-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	1	None Detected			0.0010	<0.0010
	80414-OFD-LRP-03	WP009A PM Launch Ramp Parking	1	None Detected			0.0010	<0.0010
	80414-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					

Table 18 - 2018.04.15 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80415-OFD-PMT-01	WP246 AM Intake Yard	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80415-OFD-PMT-02	WP247 AM Upper Overlook Entry	1	None Detected			0.0010	<0.0010
	80415-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80415-OFD-PMT-04	WP249 AM Canyon Drive	1	None Detected			0.0010	<0.0010
	80415-OFD-PMT-05	WP246 PM Intake Yard	4	None Detected			0.0010	<0.0010
	80415-OFD-PMT-06	WP247 PM Upper Overlook Entry	1	None Detected			0.0010	<0.0010
	80415-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80415-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
Diversion Dam	80415-OFD-TPT-01	WP278 AM N Diversion Dam	10	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80415-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80415-OFD-TPT-03	WP020A AM SE Canal	1	None Detected			0.0010	<0.0010
	80415-OFD-TPT-04	WP021A AM SW Canal	1	None Detected			0.0010	<0.0010
	80415-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0010	<0.0010
	80415-OFD-TPT-06	WP278 PM N Diversion Dam	1	None Detected			0.0010	<0.0010
	80415-OFD-TPT-07	WP019A PM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80415-OFD-TPT-08	WP020A PM SE Canal	1	None Detected			0.0010	<0.0010
	80415-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80415-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80415-OFD-BPT-01	WP017A AM Burma Road 01	2	None Detected			0.0010	<0.0010
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80415-OFD-BPT-02	WP036A AM Burma Road 02	1	None Detected			0.0010	<0.0010
	80415-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0010	<0.0010
	80415-OFD-BPT-04	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
	80415-OFD-BPT-05	WP036A PM Burma Road 02	0	None Detected			0.0010	<0.0010
	80415-OFD-BPT-06	WP037A PM Burma Road 03	0	None Detected			0.0010	<0.0010

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80415-OFD-LRP-01	WP009A AM Launch Ramp Parking	7	Actinolite	1	0	0.0010	0.00095
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80415-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	15	Actinolite	0	1	0.0010	0.00097
			Non-asbestos structures reported include a contribution from non-regulated amphiboles.					
	80415-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	Filter Damaged				
	80415-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	1	None Detected			0.0010	<0.0010

Table 19 - 2018.04.16 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80416-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80416-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0009
Diversion Dam	80416-OFD-TPT-01	WP278 AM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-03	WP020A AM SE Canal	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0009	<0.0010
	80416-OFD-TPT-06	WP278 PM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-07	WP019A PM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-08	WP020A PM SE Canal	1	None Detected			0.0010	<0.0010
	80416-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80416-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80416-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0009	<0.0010
	80416-OFD-BPT-02	WP036A AM Burma Road 02	0	None Detected			0.0009	<0.0010
	80416-OFD-BPT-03	WP037A AM Burma Road 03	2	None Detected			0.0009	<0.0009
	80416-OFD-BPT-04	WP017A PM Burma Road 01	0	None Detected			0.0009	<0.0009
	80416-OFD-BPT-05	WP036A PM Burma Road 02	0	None Detected			0.0009	<0.0009
	80416-OFD-BPT-06	WP037A PM Burma Road 03	0	None Detected			0.0009	<0.0009

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80416-OFD-LRP-01	WP009A AM Launch Ramp Parking	2	Actinolite	0	1	0.0010	0.00097
	80416-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	1	None Detected			0.0010	<0.0010
	80416-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80416-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 20 - 2018.04.17 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80417-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80417-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0009	<0.0010
	80417-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80417-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0010
	80417-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
	80417-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0009	<0.0010
	80417-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0009	<0.0009
	80417-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0010
Diversion Dam	80417-OFD-TPT-01	WP278 AM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80417-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80417-OFD-TPT-03	WP020A AM SE Canal	0	None Detected			0.0009	<0.0009
	80417-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0009	<0.0009
	80417-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0009	<0.0009
	80417-OFD-TPT-06	WP278 PM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80417-OFD-TPT-07	WP019A PM E Diversion Dam	0	None Detected			0.0009	<0.0010
	80417-OFD-TPT-08	WP020A PM SE Canal	0	None Detected			0.0009	<0.0009
	80417-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0009	<0.0010
	80417-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80417-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	80417-OFD-BPT-02	WP036A AM Burma Road 02	0	None Detected			0.0010	<0.0010
	80417-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0010	<0.0010
	80417-OFD-BPT-04	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
	80417-OFD-BPT-05	WP036A PM Burma Road 02	0	None Detected			0.0010	<0.0010
	80417-OFD-BPT-06	WP037A PM Burma Road 03	0	None Detected			0.0010	<0.0010

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80417-OFD-LRP-01	WP009A AM Launch Ramp Parking	1	None Detected			0.0010	<0.0010
	80417-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	1	None Detected			0.0009	<0.0010
	80417-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	80417-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009

Table 21 - 2018.04.18 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80418-OFD-PMT-01	WP246 AM Intake Yard	1	None Detected			0.0010	<0.0010
	80418-OFD-PMT-02	WP247 AM Upper Overlook Entry	4	None Detected			0.0010	<0.0010
	80418-OFD-PMT-03	WP248 AM Upper Overlook	3	None Detected			0.0010	<0.0010
	80418-OFD-PMT-04	WP249 AM Canyon Drive	0	Actinolite	1	0	0.0010	0.00096
	80418-OFD-PMT-05	WP246 PM Intake Yard	4	None Detected			0.0009	<0.0010
	80418-OFD-PMT-06	WP247 PM Upper Overlook Entry	2	None Detected			0.0009	<0.0010
	80418-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80418-OFD-PMT-08	WP249 PM Canyon Drive	2	None Detected			0.0010	<0.0010
Diversion Dam	80418-OFD-TPT-01	WP278 AM N Diversion Dam	5	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-02	WP019A AM E Diversion Dam	3	Actinolite	0	1	0.0010	0.00096
	80418-OFD-TPT-03	WP020A AM SE Canal	4	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-04	WP021A AM SW Canal	4	Actinolite	1	0	0.0010	0.00096
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-05	WP281 AM Cherokee Rd	6	Actinolite	0	1	0.0010	0.00095
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-06	WP278 PM N Diversion Dam	5	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-07	WP019A PM E Diversion Dam	7	Actinolite	2	0	0.0010	0.0019
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-TPT-08	WP020A PM SE Canal	8	None Detected			0.0010	<0.0010
	80418-OFD-TPT-09	WP021A PM SW Canal	1	None Detected			0.0010	<0.0010
	80418-OFD-TPT-10	WP281 PM Cherokee Rd	8	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Burma Road	80418-OFD-BPT-01	WP017A AM Burma Road 01	4	None Detected			0.0010	<0.0010
	80418-OFD-BPT-02	WP036A AM Burma Road 02	2	None Detected			0.0010	<0.0010
	80418-OFD-BPT-03	WP037A AM Burma Road 03	2	None Detected			0.0010	<0.0010
	80418-OFD-BPT-04	WP017A PM Burma Road 01	3	None Detected			0.0010	<0.0010
	80418-OFD-BPT-05	WP036A PM Burma Road 02	3	None Detected			0.0010	<0.0010
	80418-OFD-BPT-06	WP037A PM Burma Road 03	0	Actinolite	1	0	0.0010	0.00095
Launch Ramp	80418-OFD-LRP-01	WP009A AM Launch Ramp Parking	2	Actinolite	1	0	0.0009	0.00095
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	5	Actinolite	1	0	0.0010	0.00095
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	80418-OFD-LRP-03	WP009A PM Launch Ramp Parking	2	None Detected			0.0010	<0.0010
	80418-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	4	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					

Table 22 - 2018.04.19 Laboratory Analysis Summary

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Upper Perimeter	80419-OFD-PMT-01	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-02	WP247 AM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-03	WP248 AM Upper Overlook	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-04	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-05	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-06	WP247 PM Upper Overlook Entry	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-07	WP248 PM Upper Overlook	0	None Detected			0.0010	<0.0010
	80419-OFD-PMT-08	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
								<0.0010
Diversion Dam	80419-OFD-TPT-01	WP278 AM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-02	WP019A AM E Diversion Dam	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-03	WP020A AM SE Canal	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-04	WP021A AM SW Canal	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-05	WP281 AM Cherokee Rd	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-06	WP278 PM N Diversion Dam	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-07	WP019A PM E Diversion Dam	0	Actinolite	0	1	0.0010	0.00099
	80419-OFD-TPT-08	WP020A PM SE Canal	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-09	WP021A PM SW Canal	0	None Detected			0.0010	<0.0010
	80419-OFD-TPT-10	WP281 PM Cherokee Rd	0	None Detected			0.0010	<0.0010
Burma Road	80419-OFD-BPT-01	WP017A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	80419-OFD-BPT-02	WP036A AM Burma Road 02	0	None Detected			0.0010	<0.0010
	80419-OFD-BPT-03	WP037A AM Burma Road 03	0	None Detected			0.0010	<0.0010
	80419-OFD-BPT-04	WP017A PM Burma Road 01	0	None Detected			0.0010	<0.0010
	80419-OFD-BPT-05	WP036A PM Burma Road 02	1	None Detected			0.0010	<0.0010
	80419-OFD-BPT-06	WP037A PM Burma Road 03	0	None Detected			0.0010	<0.0010

Zone	Sample ID	Location	Non-Asbestos Structures	Asbestos Type	# Structures		Analytical Sensitivity (S/cc)	Asbestos Concentration (S/cc)
					≥0.5µm <5µm	≥5µm		
Launch Ramp	80419-OFD-LRP-01	WP009A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80419-OFD-LRP-02	WP010A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	80419-OFD-LRP-03	WP009A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	80419-OFD-LRP-04	WP010A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

8.0 Perimeter Dust Monitoring Summary

The dust monitoring data is compiled in twelve (12) hour increments for day/night shifts. Information is logged for PM10, PM2.5, and Total Dust.

Particle pollution includes:

- PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller; and
- PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.
- Total inhalable dust is the fraction of airborne material which enters the nose and mouth during breathing and is therefore liable to deposition anywhere in the respiratory tract. The particle sizes of total inhalable dust are up to 100 microns.

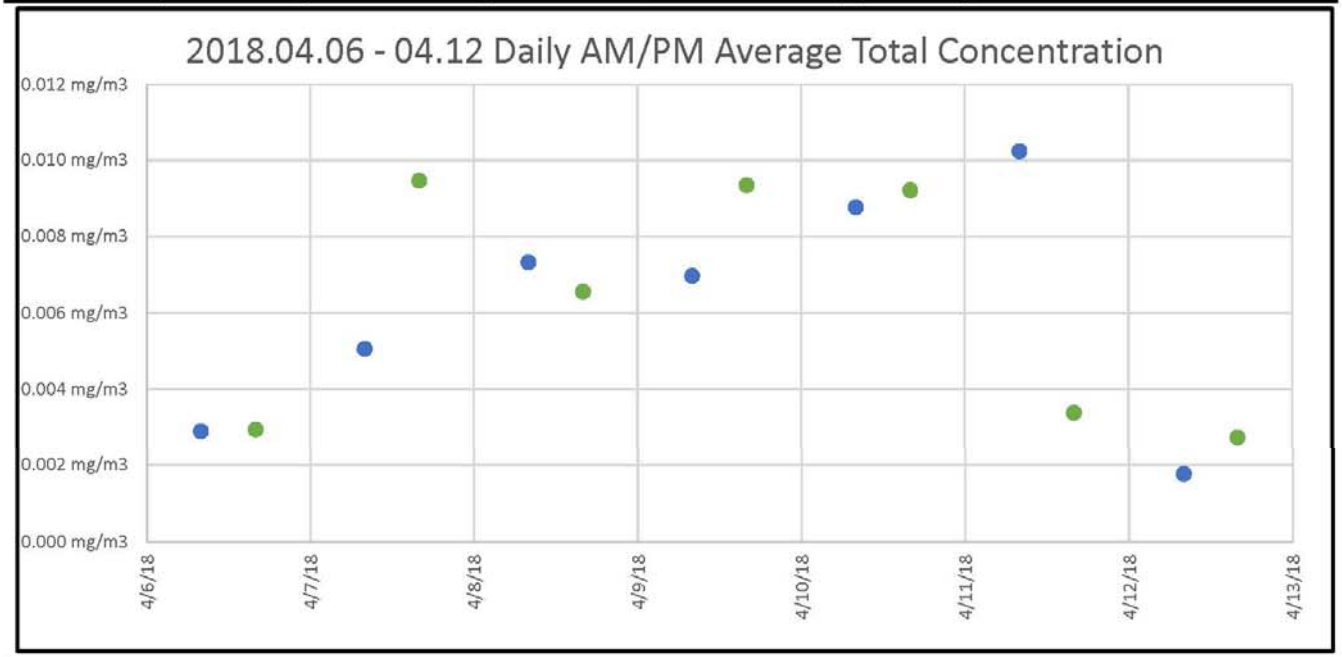
Perimeter dust levels for this time period were unremarkable, with intermittent spikes due to wind gust. There were no citable episodes of “visible emissions” at the work zone perimeter.

Dust results are presented in Appendix B.

Figure 5 WP 246 Intake Yard Dust Daily Average (mg/m^3) 04/06-04/12

WP 246 Intake Yard

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
Intake Yard	Dustrak DRX	8533141006	39°32'5.44"N, 121°28'29.37"W	Episode Stop:	4/13/18 5:59 AM

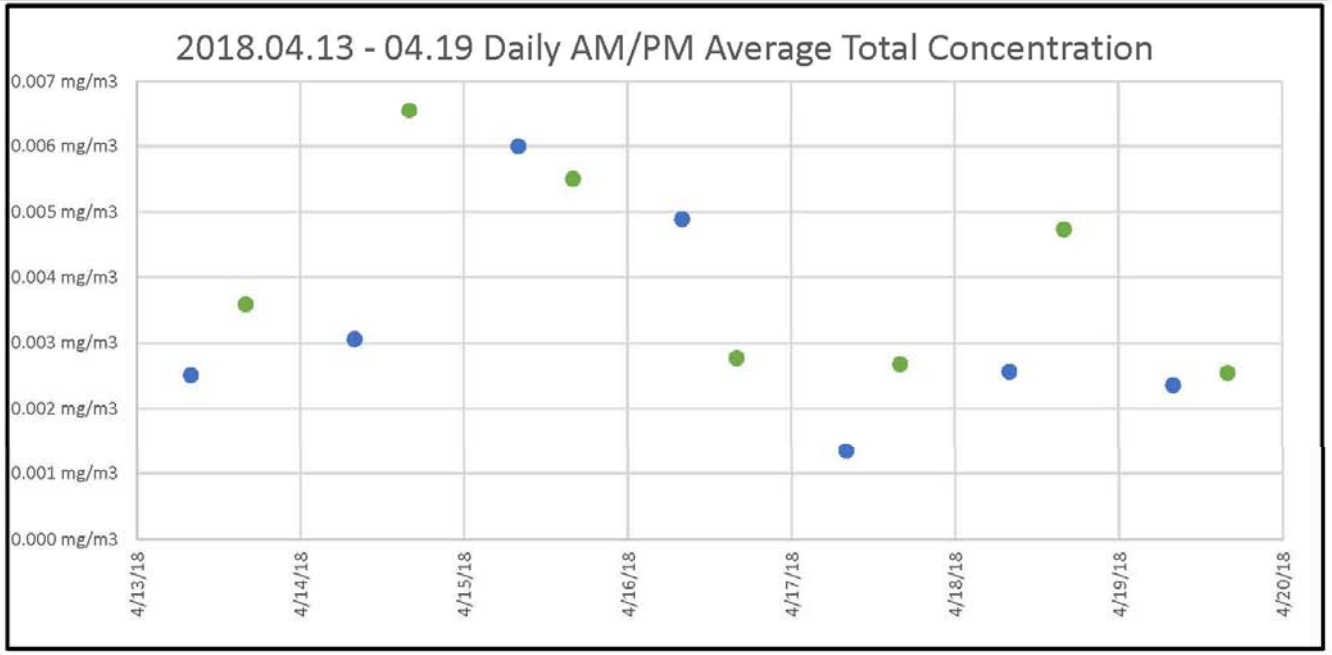


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.003	0.005	0.007	0.007	0.009	0.010	0.002
Night Shift	0.003	0.009	0.007	0.009	0.009	0.003	0.003

Figure 6 WP 246 Intake Yard Dust Daily Average (mg/m^3) 04/13-04/19

WP 246 Intake Yard

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Intake Yard	Dustrak DRX	8533141006	39°32'5.44"N, 121°28'29.37"W	Episode Stop:	4/20/18 5:59 AM

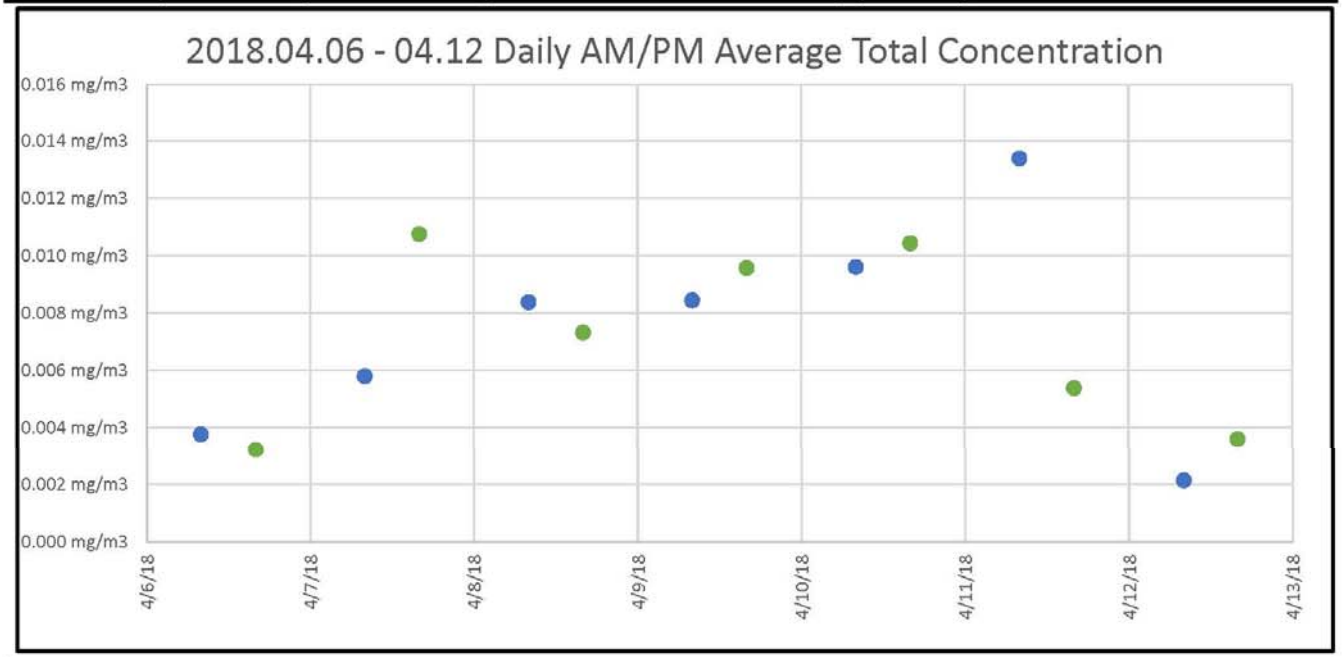


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.003	0.006	0.005	0.001	0.003	0.002
Night Shift	0.004	0.007	0.006	0.003	0.003	0.005	0.003

Figure 7 WP 247 Upper Overlook Entry Dust Daily Average (mg/m^3) 04/06-04/12

WP 247 Upper Overlook Entry

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
Overlook Entry	Dustrak DRX	8533143017	39°31'51.40"N, 121°28'36.65"W	Episode Stop:	4/13/18 5:59 AM

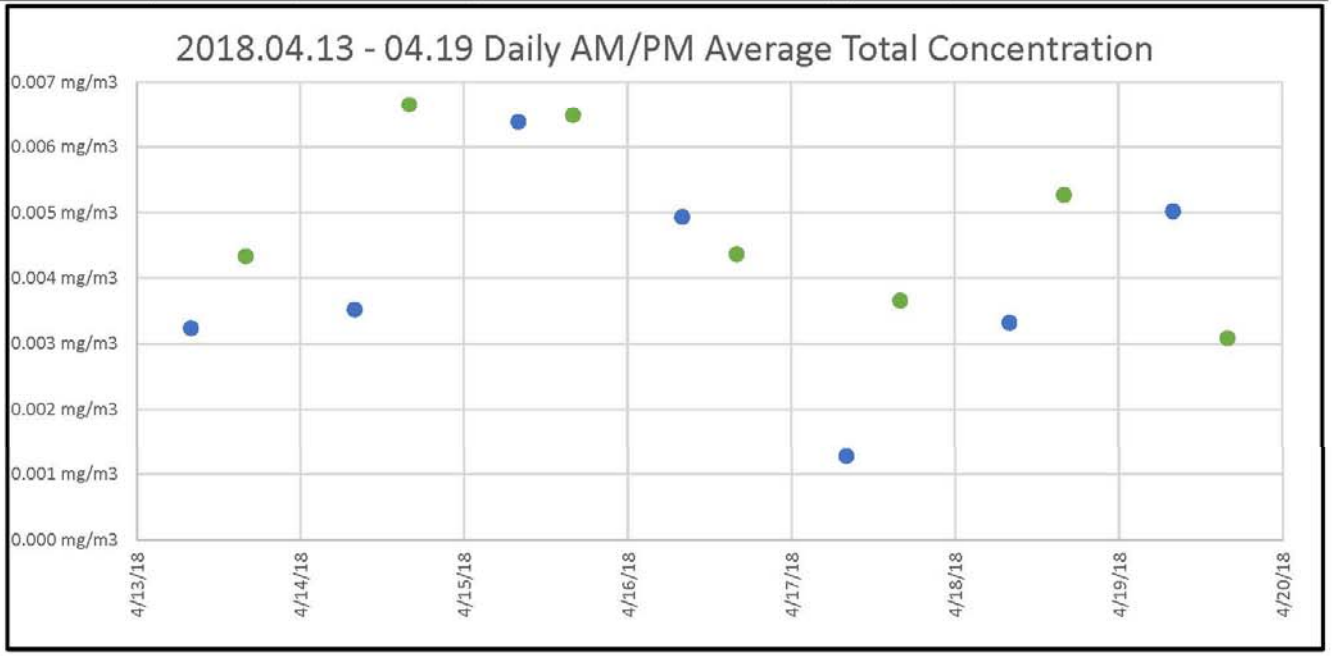


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.004	0.006	0.008	0.008	0.010	0.013	0.002
Night Shift	0.003	0.011	0.007	0.010	0.010	0.005	0.004

Figure 8 WP 247 Upper Overlook Entry Dust Daily Average (mg/m^3) 04/13-04/19

WP 247 Upper Overlook Entry

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Overlook Entry	Dustrak DRX	8533143017	39°31'51.40"N, 121°28'36.65"W	Episode Stop:	4/20/18 5:59 AM

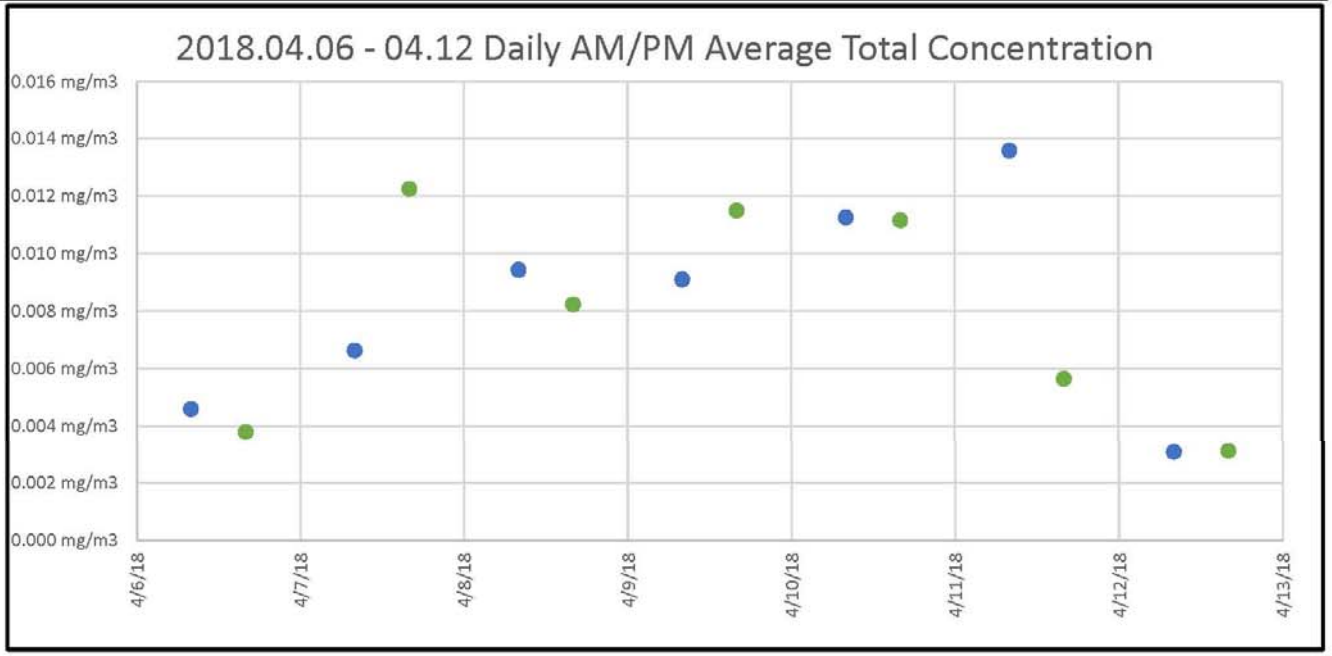


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.004	0.006	0.005	0.001	0.003	0.005
Night Shift	0.004	0.007	0.006	0.004	0.004	0.005	0.003

Figure 9 WP 248 Upper Overlook Dust Daily Average (mg/m^3) 04/06-04/12

WP 248 Upper Overlook

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
Upper Overlook	Dustrak DRX	8533143702	39°31'47.46"N, 121°28'41.46"W	Episode Stop:	4/13/18 5:59 AM

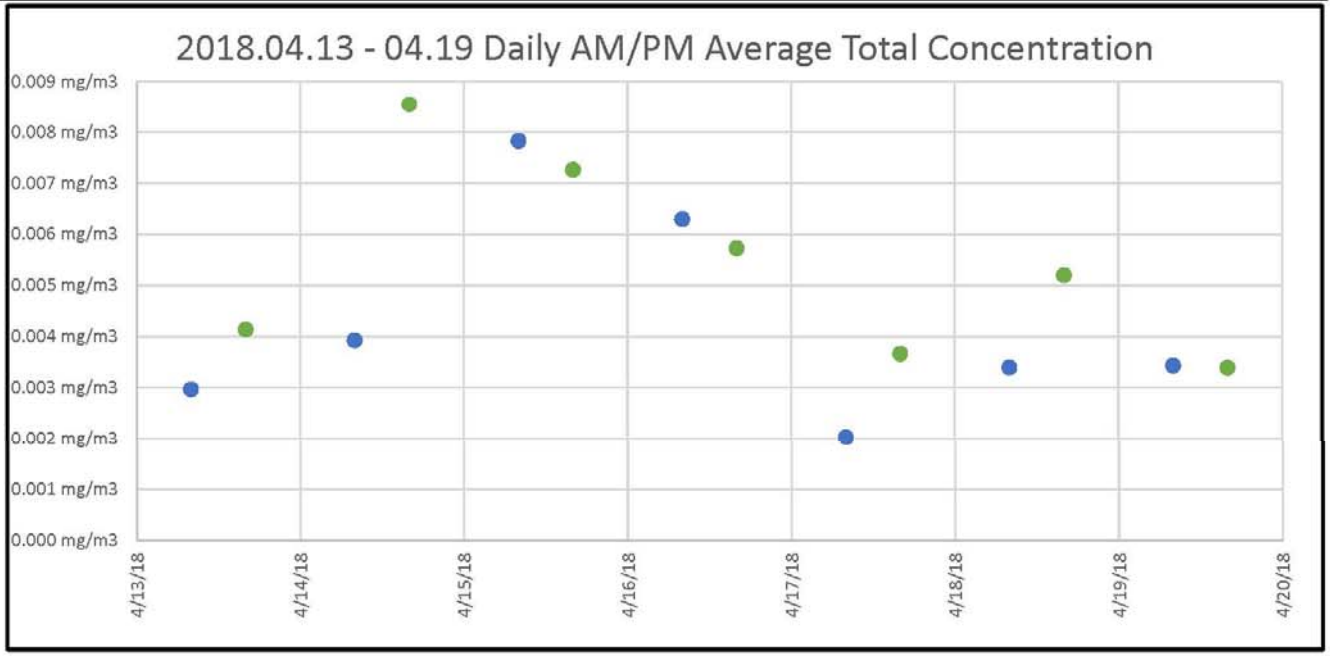


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.005	0.007	0.009	0.009	0.011	0.014	0.003
Night Shift	0.004	0.012	0.008	0.011	0.011	0.006	0.003

Figure 10 WP 248 Upper Overlook Dust Daily Average (mg/m^3) 04/13-04/19

WP 248 Upper Overlook

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Upper Overlook	Dustrak DRX	8533143702	39°31'47.46"N, 121°28'41.46"W	Episode Stop:	4/20/18 5:59 AM

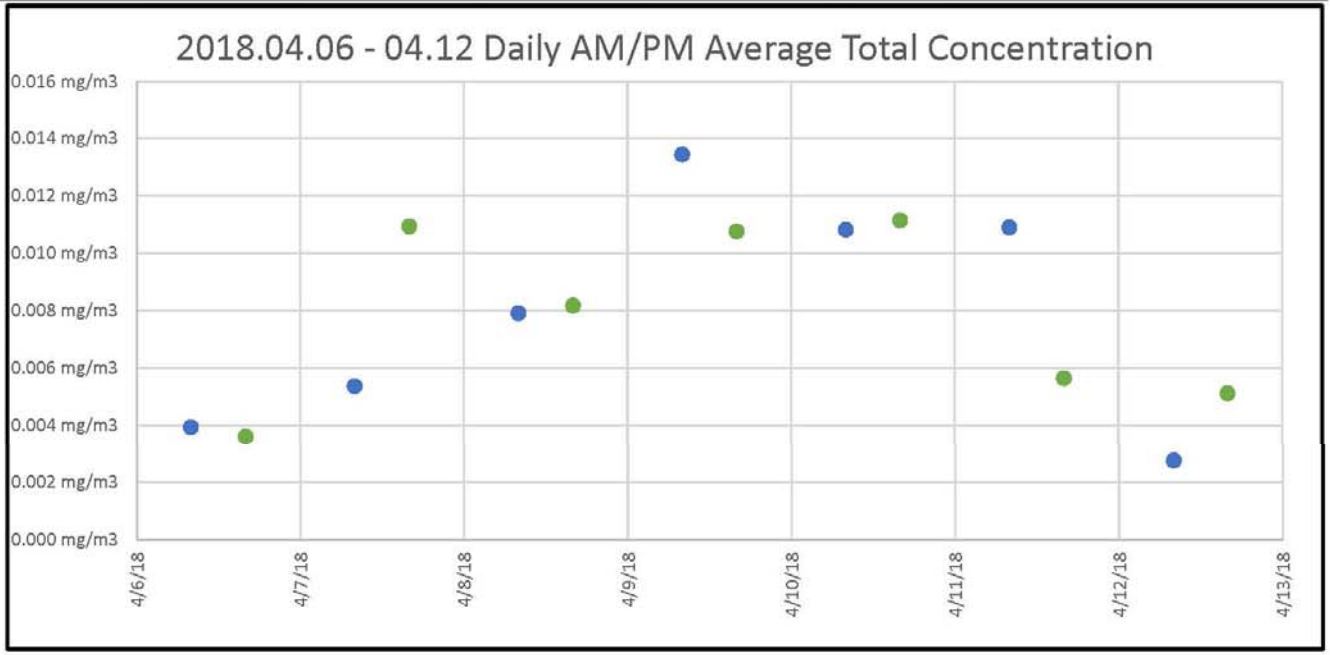


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.004	0.008	0.006	0.002	0.003	0.003
Night Shift	0.004	0.009	0.007	0.006	0.004	0.005	0.003

Figure 11 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 04/06-04/12

WP 249 Canyon Drive

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
Canyon Dr	Dustrak DRX	8533172206	39°31'40.23"N, 121°28'52.17"W	Episode Stop:	4/13/18 5:59 AM

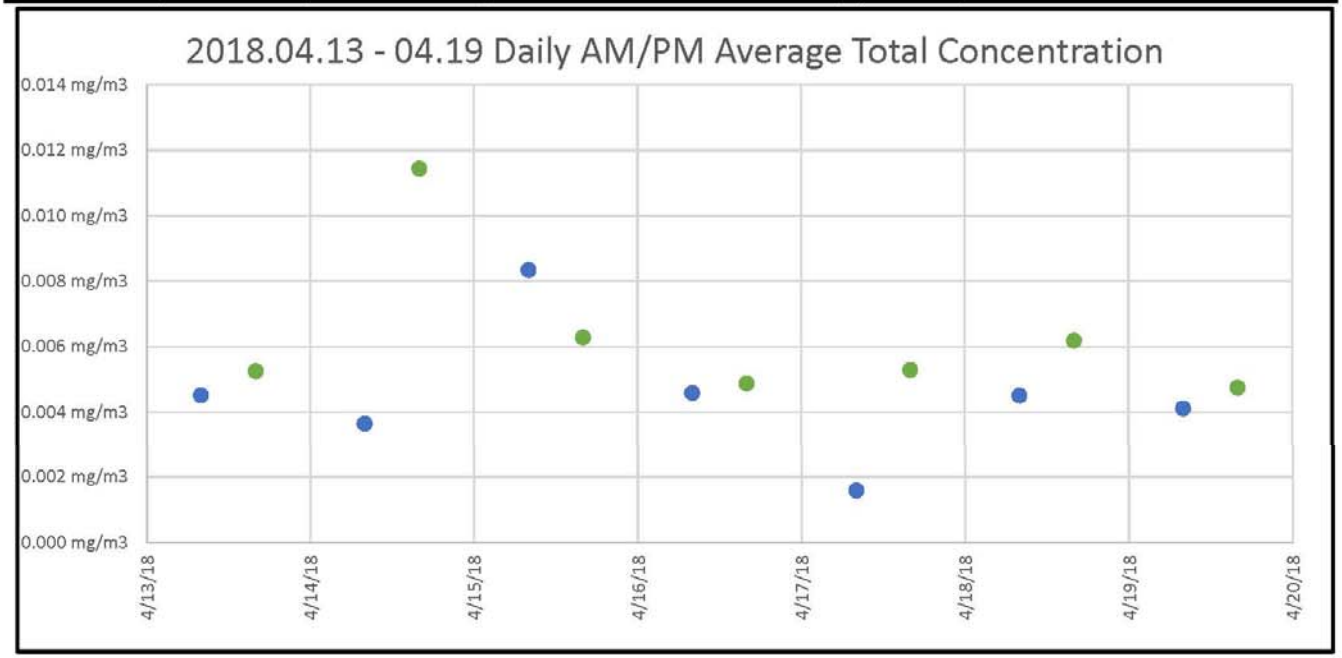


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.004	0.005	0.008	0.013	0.011	0.011	0.003
Night Shift	0.004	0.011	0.008	0.011	0.011	0.006	0.005

Figure 12 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 04/13-04/19

WP 249 Canyon Drive

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Canyon Dr	Dustrak DRX	8533172206	39°31'40.23"N, 121°28'52.17"W	Episode Stop:	4/20/18 5:59 AM

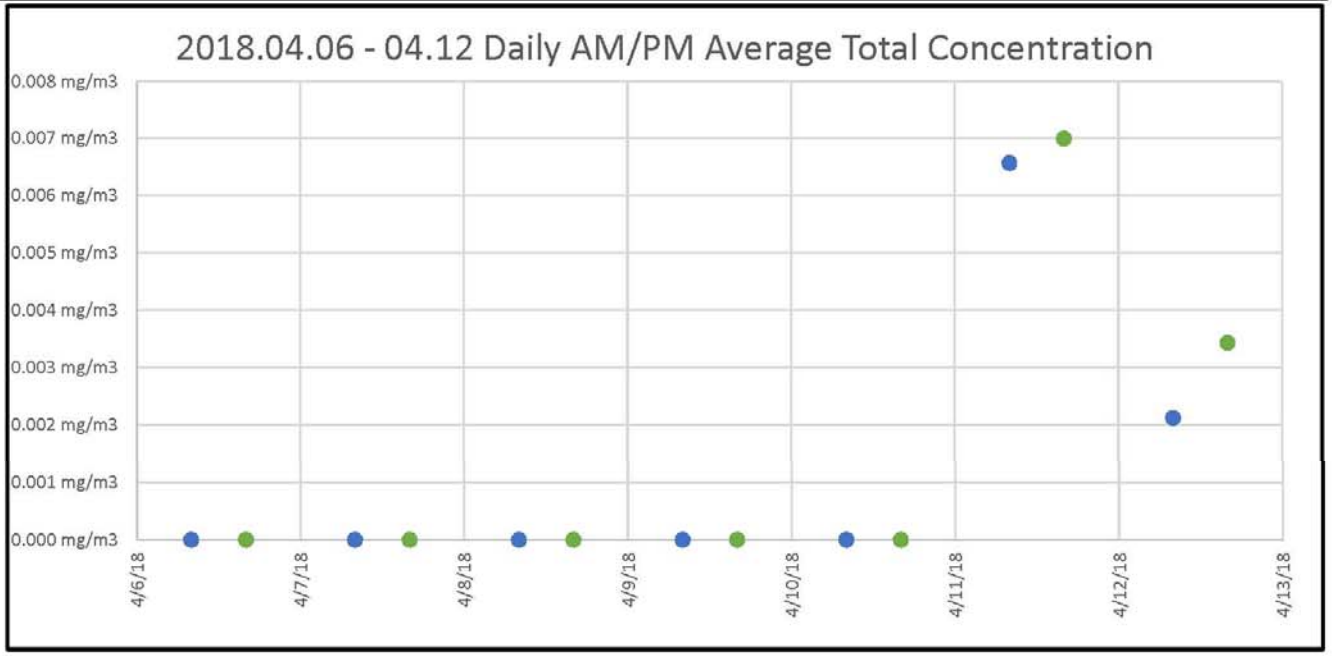


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.005	0.004	0.008	0.005	0.002	0.005	0.004
Night Shift	0.005	0.011	0.006	0.005	0.005	0.006	0.005

Figure 13 WP 278 N Diversion Dam Dust Daily Average (mg/m^3) 04/06-04/12

WP 278 N. Diversion Dam

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
N Div Dam	Dustrak DRX	8533133301	39°31'55.71"N, 121°33'2.96"W	Episode Stop:	4/13/18 5:59 AM



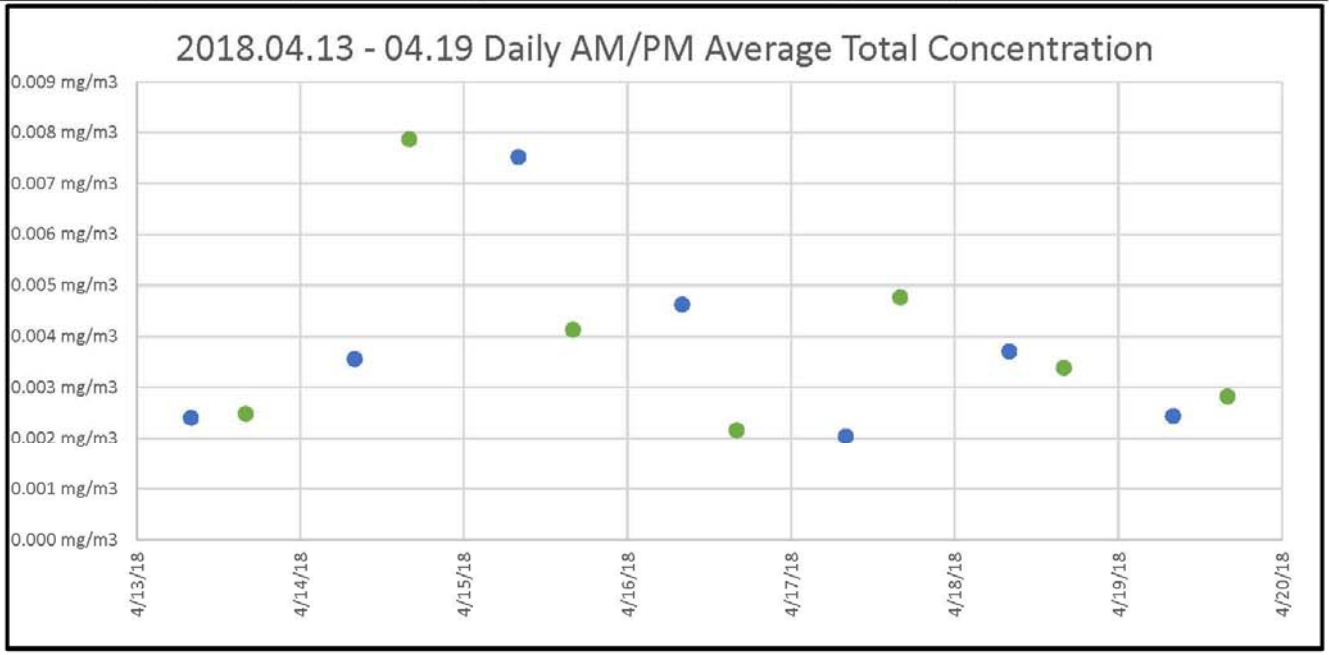
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.007	0.002
Night Shift	No Data	No Data	No Data	No Data	No Data	0.007	0.003

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 14 WP 278 N Diversion Dam Dust Daily Average (mg/m^3) 04/13-04/19

WP 278 N. Diversion Dam

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
N Div Dam	Dustrak DRX	8533133301	39°31'55.71"N, 121°33'2.96"W	Episode Stop:	4/20/18 5:59 AM

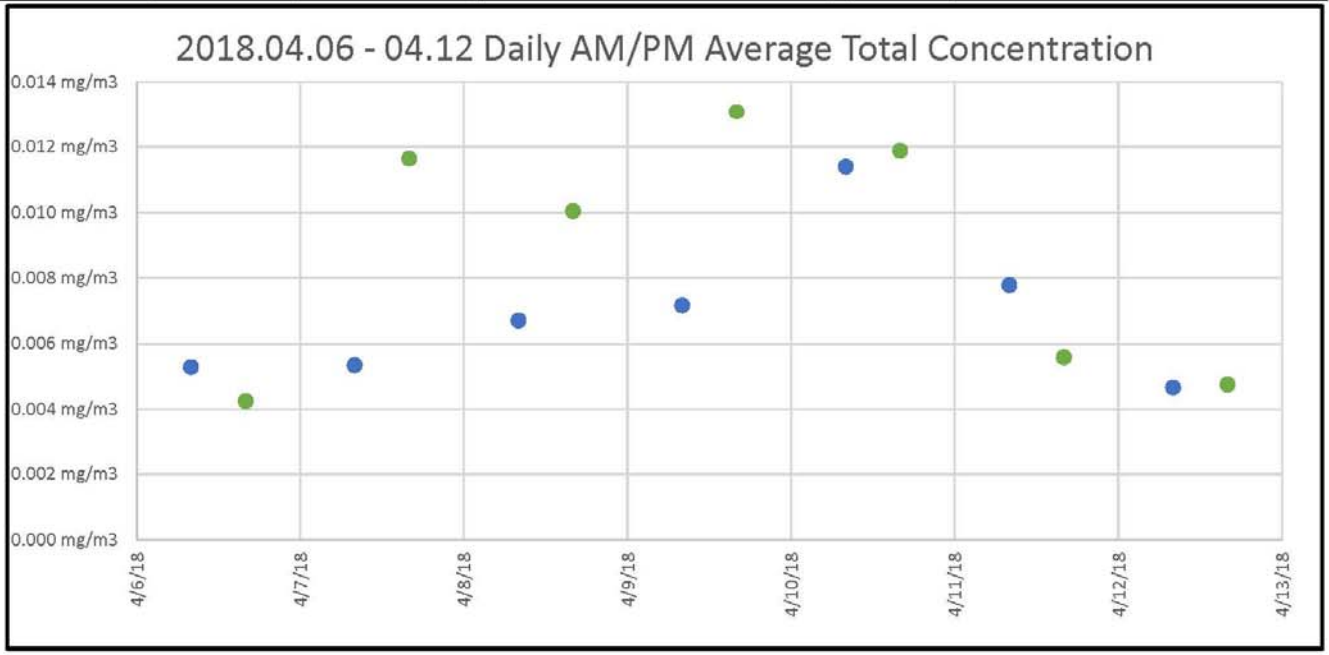


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.002	0.004	0.008	0.005	0.002	0.004	0.002
Night Shift	0.002	0.008	0.004	0.002	0.005	0.003	0.003

Figure 15 WP 017A Burma Road 01 Daily Dust Average (mg/m^3) 04/06-04/12

WP 017A Burma Road 01

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:21 AM
Burma Rd 01	Dustrak DRX	8533143005	39°32'19.69"N, 121°30'48.76"W	Episode Stop:	4/13/18 5:32 AM

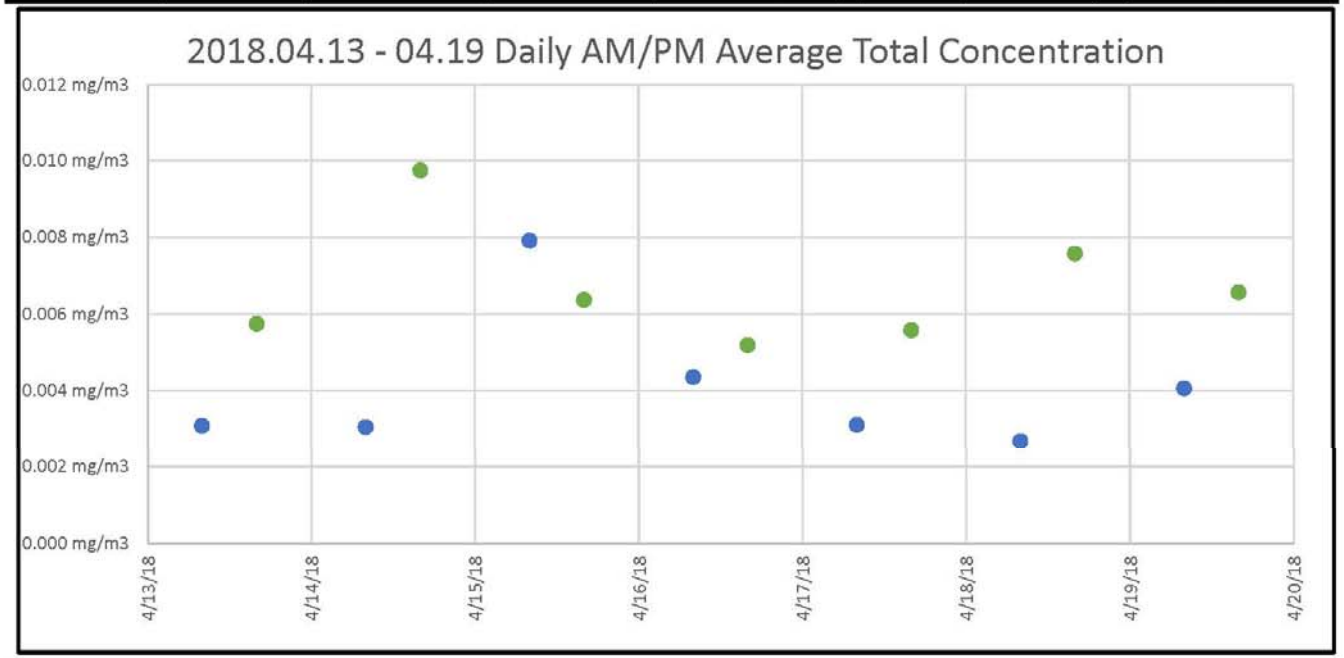


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.005	0.005	0.007	0.007	0.011	0.008	0.005
Night Shift	0.004	0.012	0.010	0.013	0.012	0.006	0.005

Figure 16 WP 017A Burma Road 01 Daily Dust Average (mg/m^3) 04/13-04/19

WP 017A Burma Road 01

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Burma Rd 01	Dustrak DRX	8533143005	39°32'19.69"N, 121°30'48.76"W	Episode Stop:	4/20/18 5:59 AM

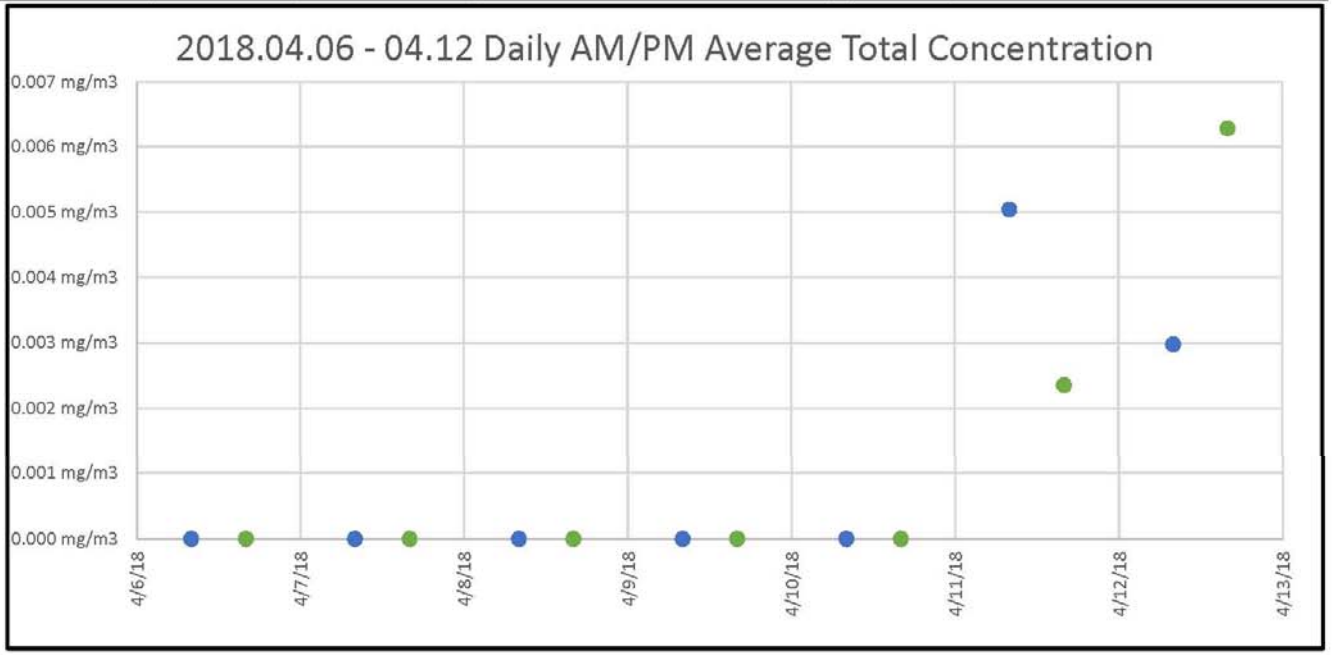


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.003	0.008	0.004	0.003	0.003	0.004
Night Shift	0.006	0.010	0.006	0.005	0.006	0.008	0.007

Figure 17 WP 281 Cherokee Rd Daily Dust Average (mg/m^3) 04/06-04/12

WP 281 Cherokee Rd

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
Cherokee Rd	Dustrak DRX	8533151202	39°32'13.44"N, 121°32'48.07"W	Episode Stop:	4/13/18 5:59 AM



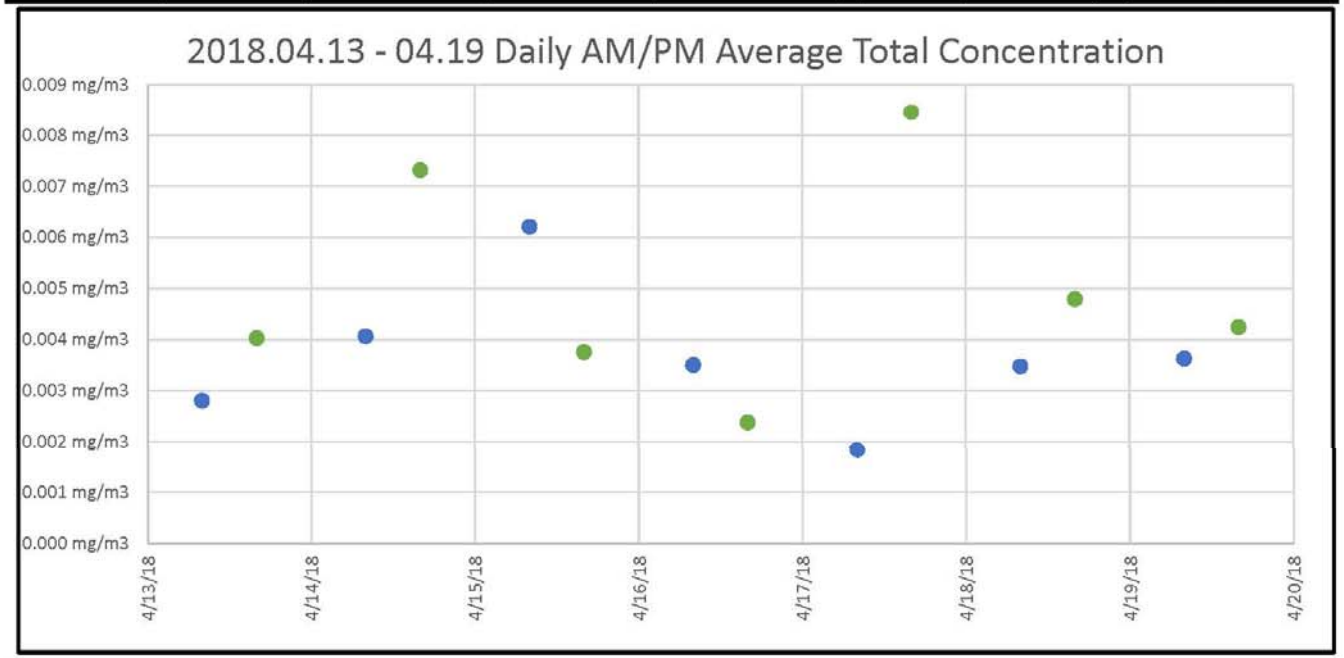
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.005	0.003
Night Shift	No Data	No Data	No Data	No Data	No Data	0.002	0.006

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 18 WP 281 Cherokee Rd Daily Dust Average (mg/m^3) 04/13-04/19

WP 281 Cherokee Rd

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Cherokee Rd	Dustrak DRX	8533151202	39°32'13.44"N, 121°32'48.07"W	Episode Stop:	4/20/18 5:37 AM

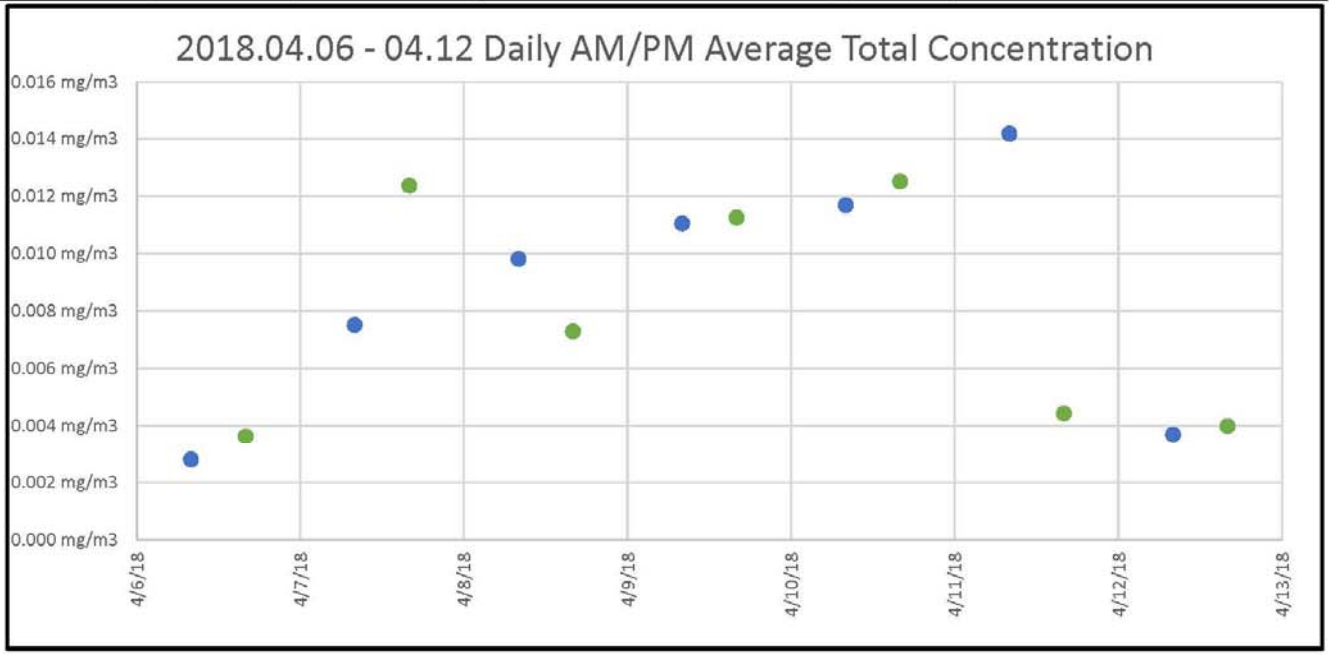


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.004	0.006	0.004	0.002	0.003	0.004
Night Shift	0.004	0.007	0.004	0.002	0.008	0.005	0.004

Figure 19 WP 009A Launch Ramp Parking Daily Dust Average (mg/m^3) 04/06-04/12

WP 009A Launch Ramp Parking

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
L.R. Parking	Dustrak DRX	8533171302	39°32'47.34"N, 121°29'33.10"W	Episode Stop:	4/13/18 5:59 AM

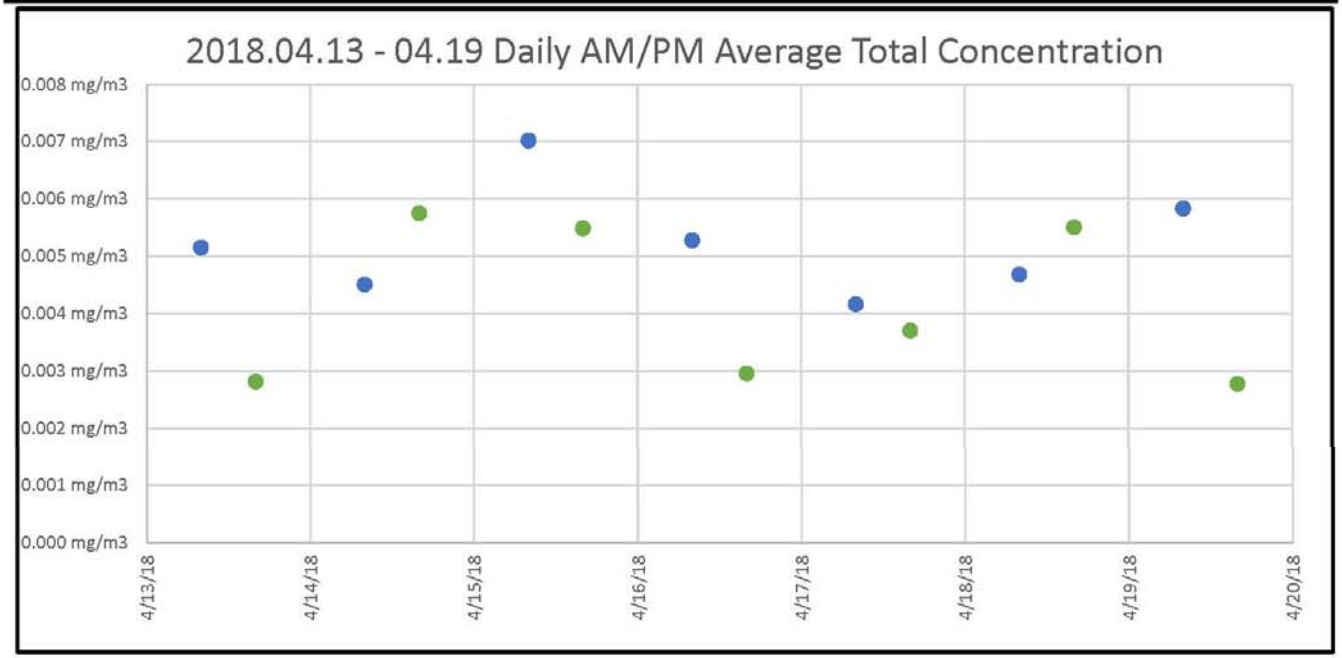


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.003	0.008	0.010	0.011	0.012	0.014	0.004
Night Shift	0.004	0.012	0.007	0.011	0.013	0.004	0.004

Figure 20 WP 009A Launch Ramp Parking Daily Dust Average (mg/m^3) 04/13-04/19

WP 009A Launch Ramp Parking

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
L.R. Parking	Dustrak DRX	8533171302	39°32'47.34"N, 121°29'33.10"W	Episode Stop:	4/20/18 5:59 AM

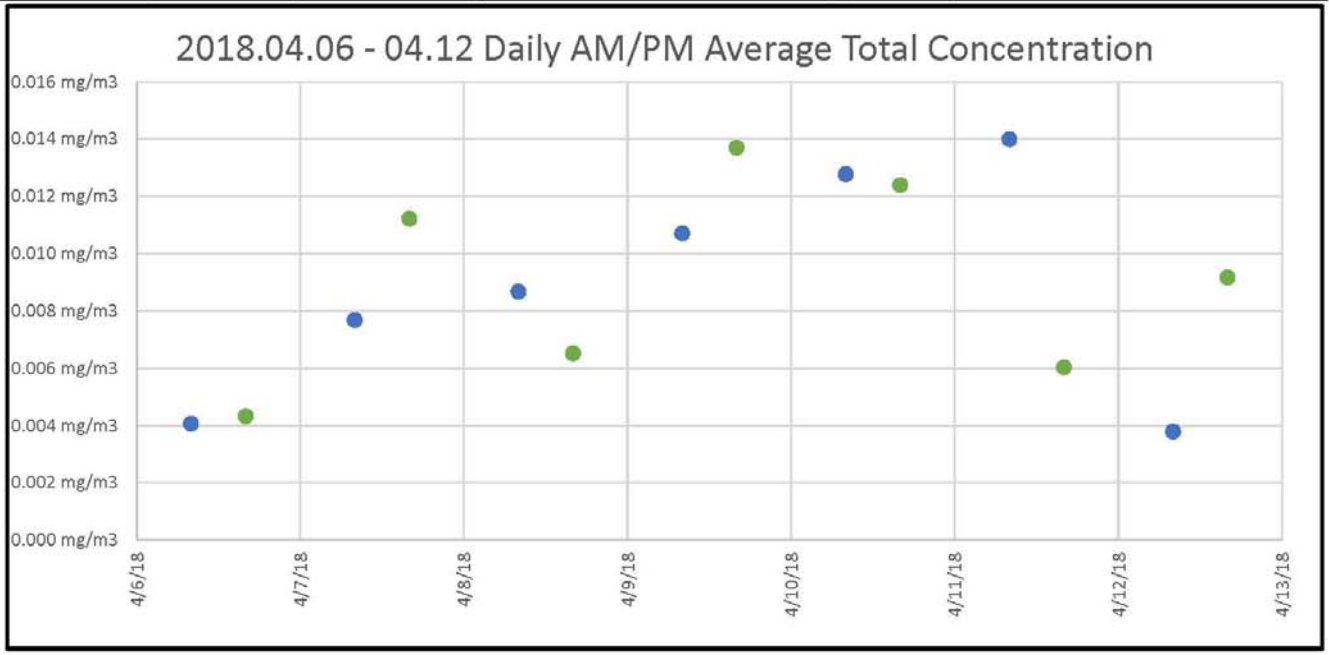


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.005	0.005	0.007	0.005	0.004	0.005	0.006
Night Shift	0.003	0.006	0.005	0.003	0.004	0.005	0.003

Figure 21 WP 010A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 04/06-04/12

WP 010A Launch Ramp Turnaround

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/6/18 6:00 AM
L.R. Turnaround	Dustrak DRX	8533151804	39°32'50.64"N, 121°29'50.25"W	Episode Stop:	4/13/18 5:59 AM

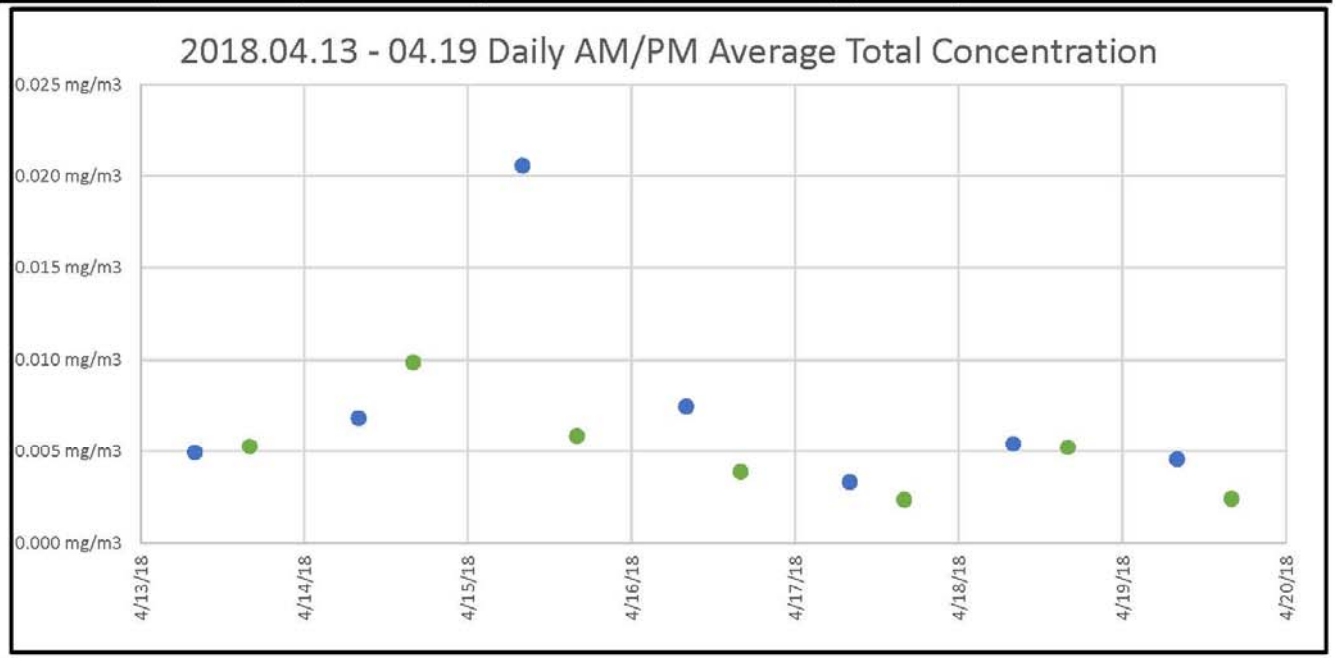


	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	0.004	0.008	0.009	0.011	0.013	0.014	0.004
Night Shift	0.004	0.011	0.007	0.014	0.012	0.006	0.009

Figure 22 WP 010A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 04/13-04/19

WP 010A Launch Ramp Turnaround

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
L.R. Turnaround	Dustrak DRX	8533151804	39°32'50.64"N, 121°29'50.25"W	Episode Stop:	4/20/18 5:59 AM

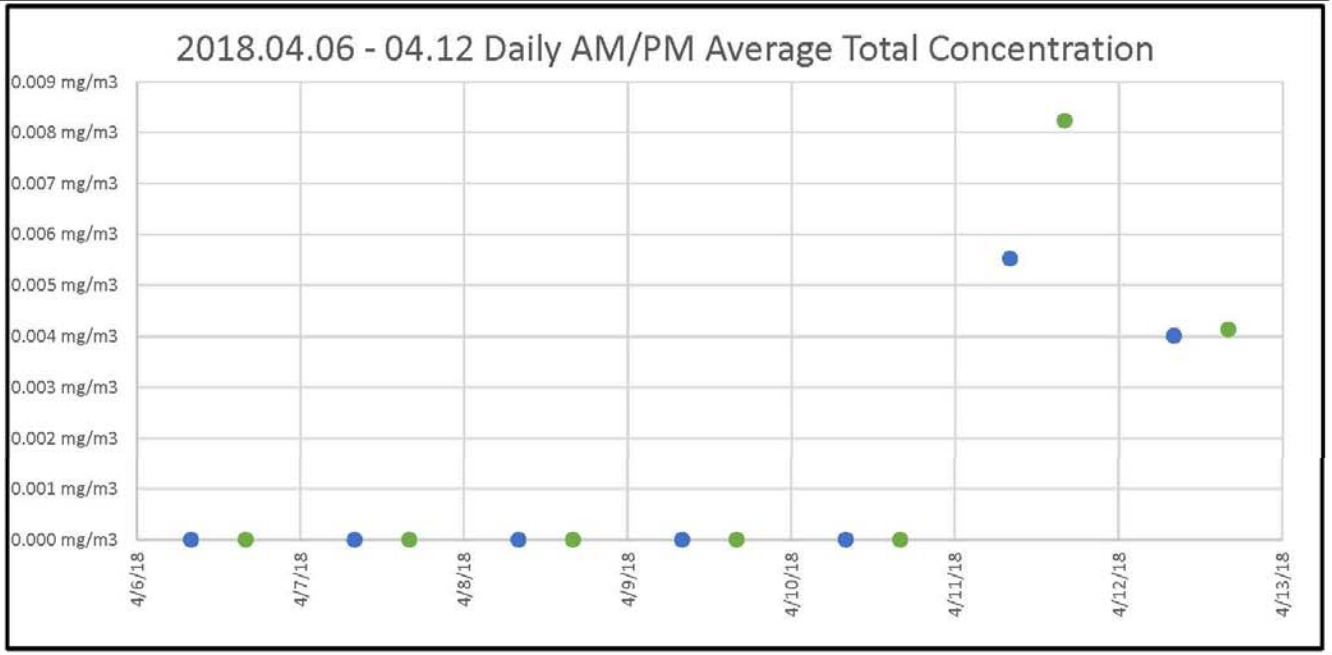


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.005	0.007	0.021	0.007	0.003	0.005	0.005
Night Shift	0.005	0.010	0.006	0.004	0.002	0.005	0.002

Figure 23 WP 019A E Diversion Dam Daily Dust Average (mg/m^3) 04/06-04/12

WP 019A East Diversion Dam

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
E Div Dam	Dustrak DRX	8533172403	39°31'42.97"N, 121°32'35.30"W	Episode Stop:	4/13/18 5:59 AM



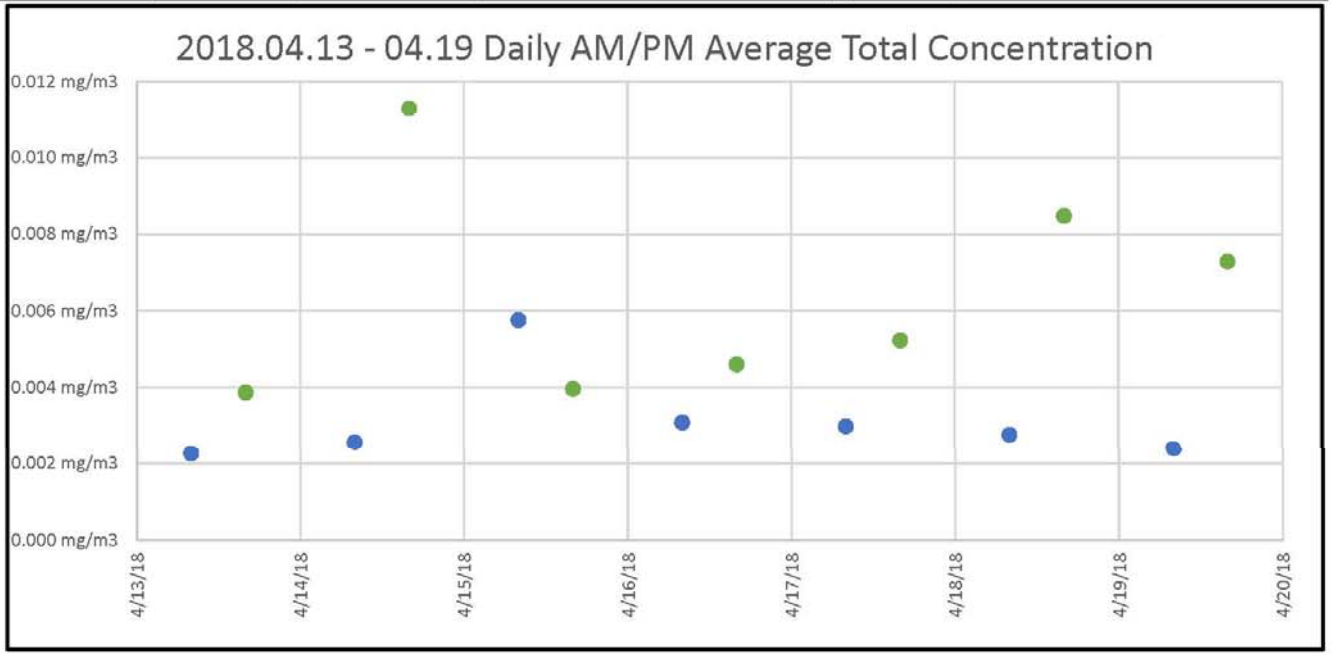
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.006	0.004
Night Shift	No Data	No Data	No Data	No Data	No Data	0.008	0.004

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 24 WP 019A E Diversion Dam Daily Dust Average (mg/m^3) 04/13-04/19

WP 019A East Diversion Dam

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
E Div Dam	Dustrak DRX	8533172403	39°31'42.97"N, 121°32'35.30"W	Episode Stop:	4/20/18 5:59 AM

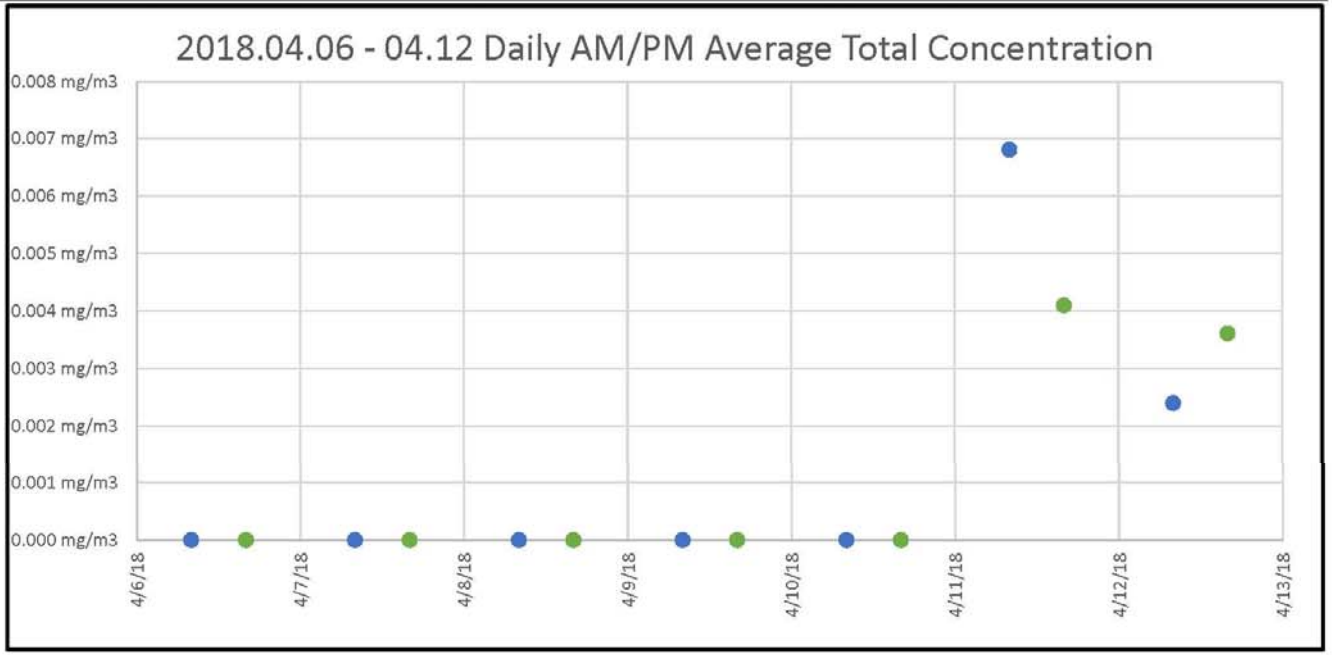


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.002	0.003	0.006	0.003	0.003	0.003	0.002
Night Shift	0.004	0.011	0.004	0.005	0.005	0.008	0.007

Figure 25 WP 020A SE Canal Daily Dust Average (mg/m^3) 04/06-04/12

WP 020A SE Canal

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
SE Canal	Dustrak DRX	8533172303	39°31'37.77"N, 121°33'2.45"W	Episode Stop:	4/13/18 5:59 AM



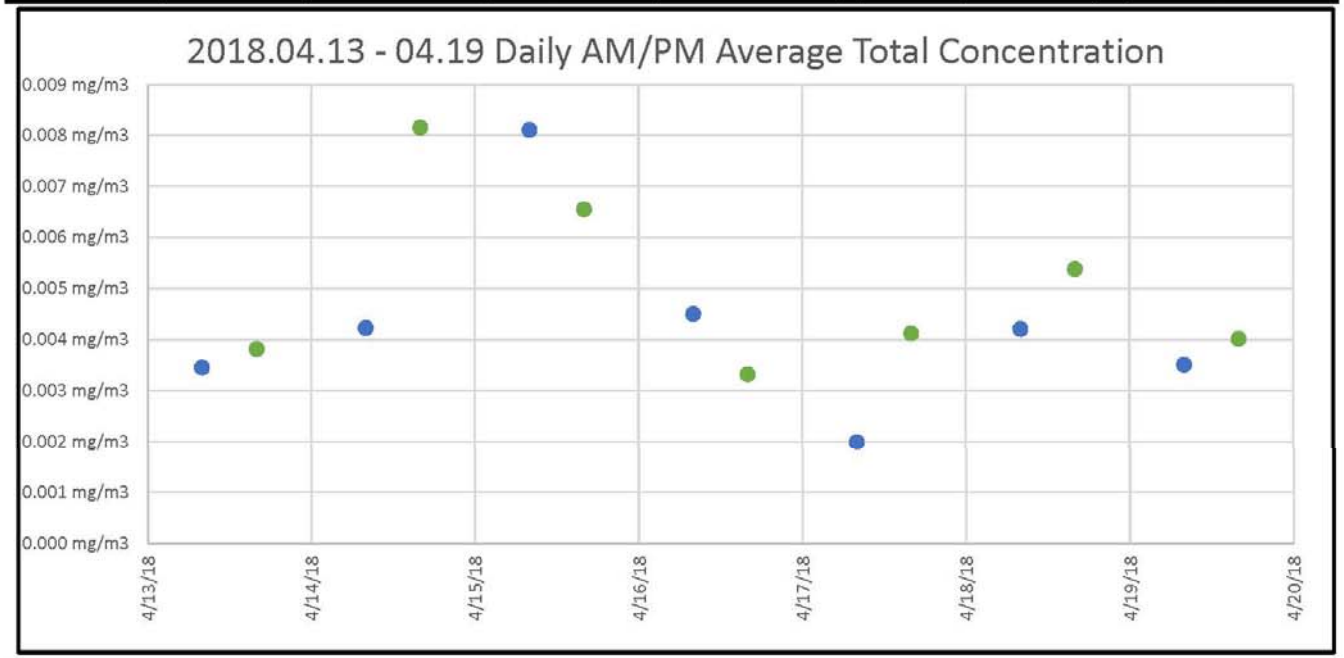
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.007	0.002
Night Shift	No Data	No Data	No Data	No Data	No Data	0.004	0.004

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 26 WP 020A SE Canal Daily Dust Average (mg/m^3) 04/13-04/19

WP 020A SE Canal

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
SE Canal	Dustrak DRX	8533172303	39°31'37.77"N, 121°33'2.45"W	Episode Stop:	4/20/18 5:59 AM

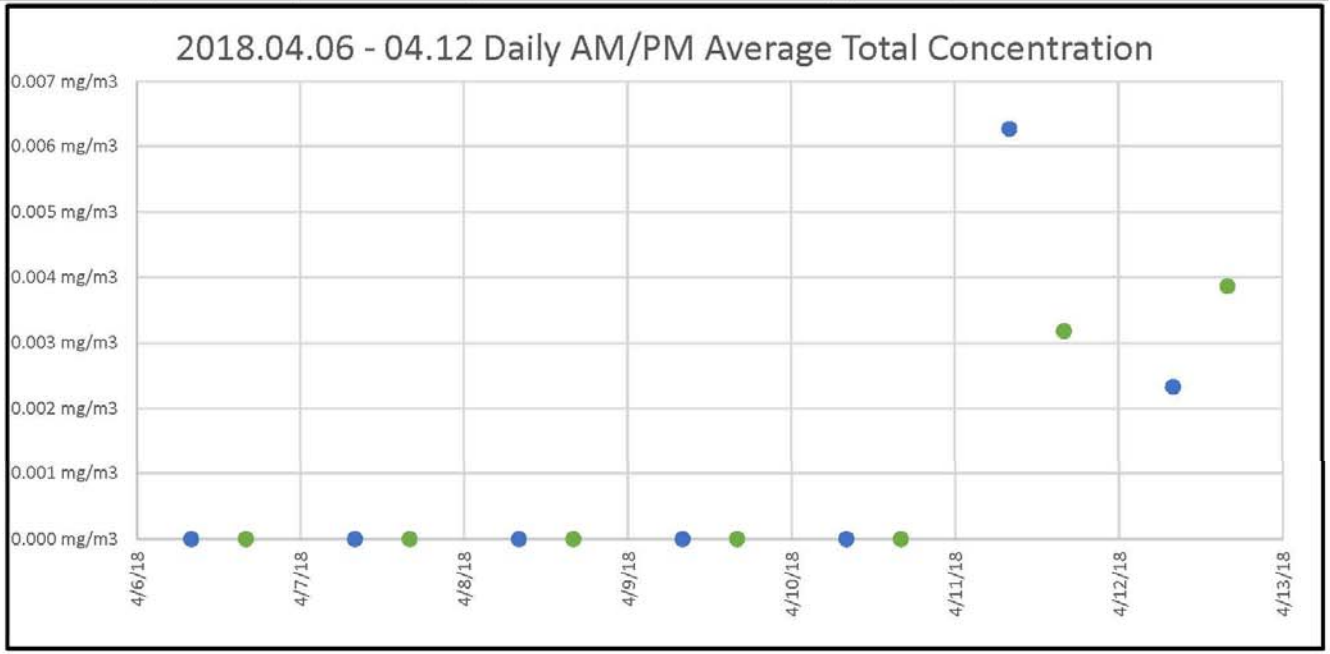


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.004	0.008	0.004	0.002	0.004	0.004
Night Shift	0.004	0.008	0.007	0.003	0.004	0.005	0.004

Figure 27 WP 021A SW Canal (mg/m^3) 04/06-04/12

WP 021A SW Canal

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
SW Canal	Dustrak DRX	8533113404	39°31'41.01"N, 121°33'17.04"W	Episode Stop:	4/13/18 5:59 AM



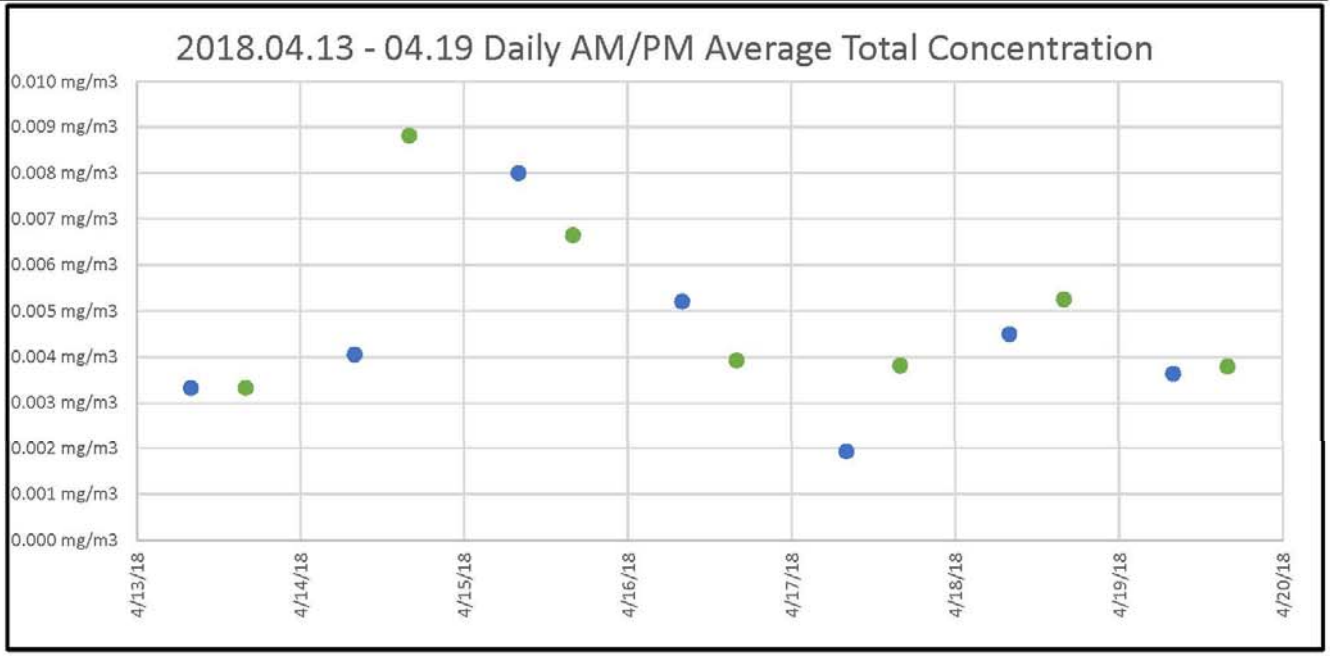
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.006	0.002
Night Shift	No Data	No Data	No Data	No Data	No Data	0.003	0.004

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 28 WP 021A SW Canal (mg/m^3) 04/13-04/19

WP 021A SW Canal

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
SW Canal	Dustrak DRX	8533113404	39°31'41.01"N, 121°33'17.04"W	Episode Stop:	4/20/18 5:59 AM

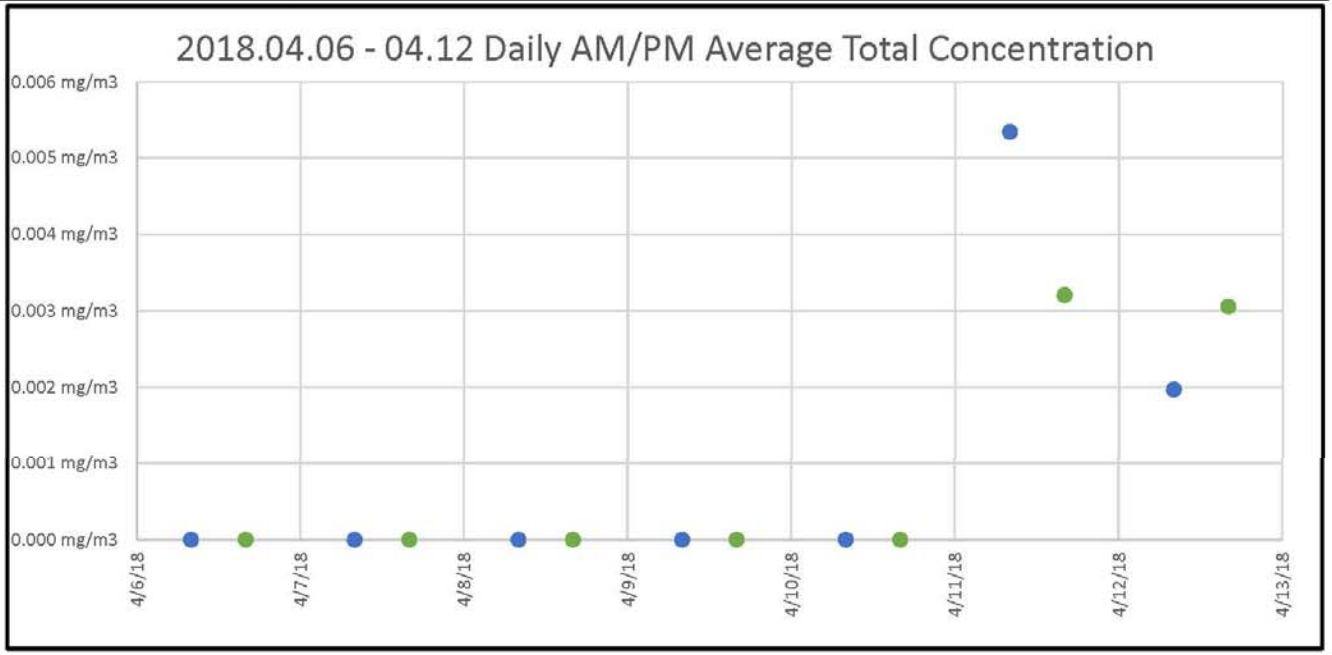


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.004	0.008	0.005	0.002	0.004	0.004
Night Shift	0.003	0.009	0.007	0.004	0.004	0.005	0.004

Figure 29 WP 036A Burma Road 02 (mg/m^3) 04/06-04/12

WP 036A Burma Road 02

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
Burma Rd 02	Dustrak DRX	8533124506	39°32'21.2"N, 121°31'12.6"W	Episode Stop:	4/13/18 5:59 AM



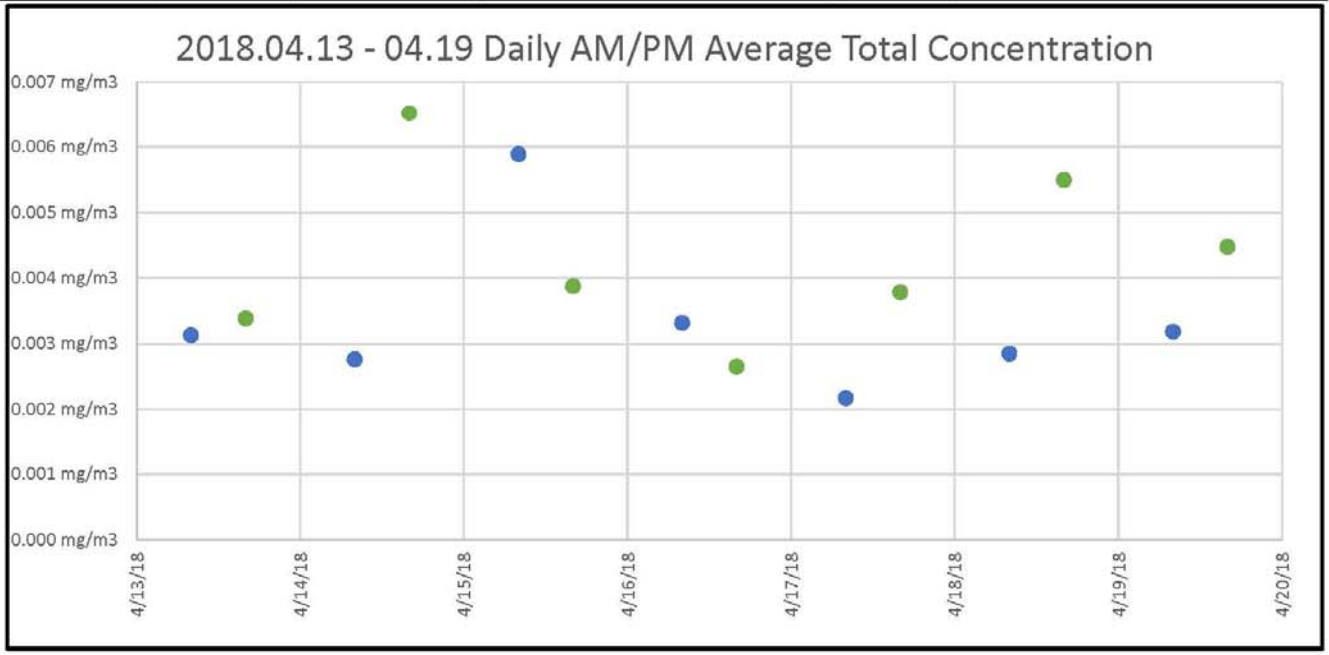
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.005	0.002
Night Shift	No Data	No Data	No Data	No Data	No Data	0.003	0.003

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 30 WP 036A Burma Road 02 (mg/m^3) 04/13-04/19

WP 036A Burma Road 02

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Burma Rd 02	Dustrak DRX	8533124506	39°32'21.2"N, 121°31'12.6"W	Episode Stop:	4/20/18 5:59 AM

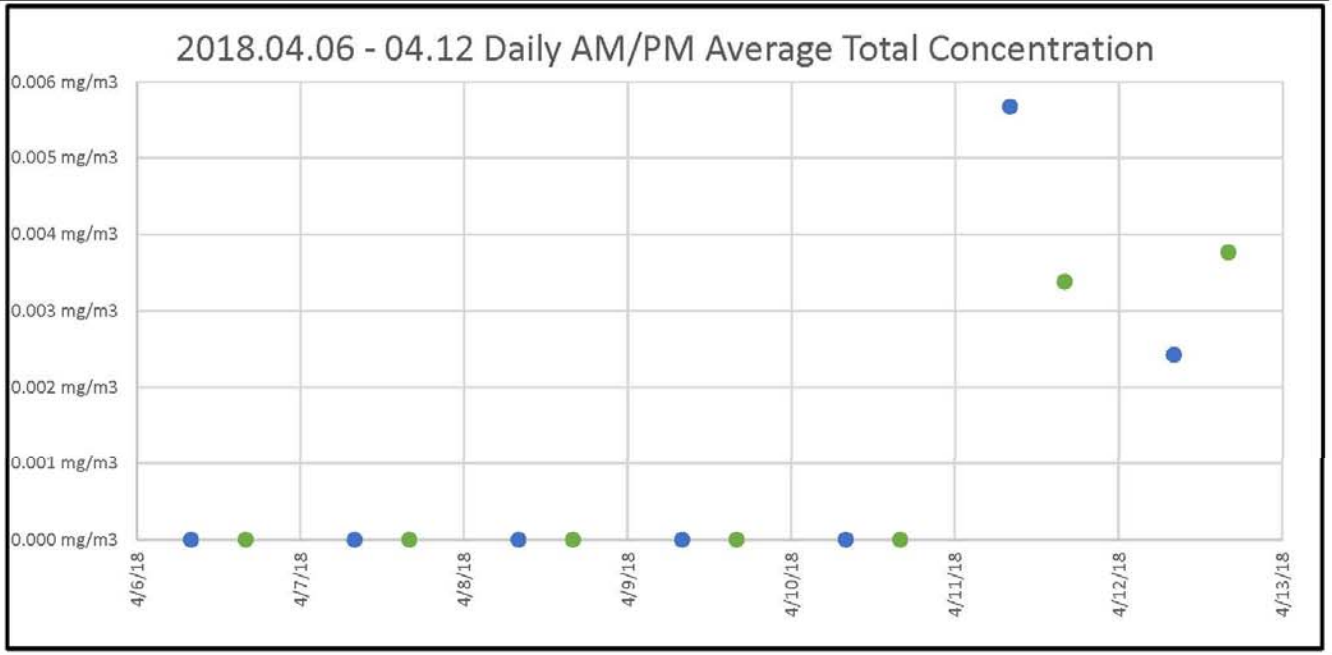


	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.003	0.006	0.003	0.002	0.003	0.003
Night Shift	0.003	0.007	0.004	0.003	0.004	0.005	0.004

Figure 31 WP 037A Burma Road 03 (mg/m^3) 04/06-04/12

WP 037A Burma Road 03

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/11/18 6:00 AM
Burma Rd 03	Dustrak DRX	8533103808	39°32'53.2"N, 121°32'18.8"W	Episode Stop:	4/13/18 5:59 AM



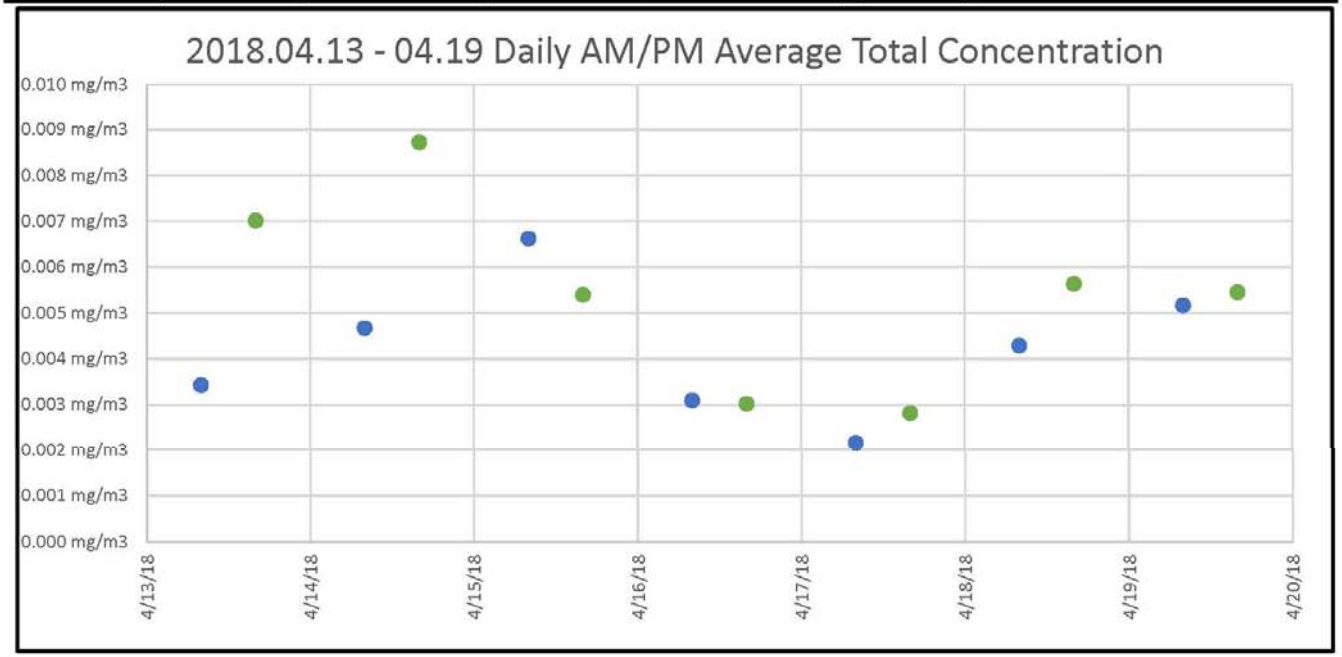
	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18
Day Shift	No Data	No Data	No Data	No Data	No Data	0.006	0.002
Night Shift	No Data	No Data	No Data	No Data	No Data	0.003	0.004

This station was reinstated on 04/11/2018 at 06:00 hrs.

Figure 32 WP 037A Burma Road 03 (mg/m^3) 04/13-04/19

WP 037A Burma Road 03

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	4/13/18 6:00 AM
Burma Rd 03	Dustrak DRX	8533103808	39°32'53.2"N, 121°32'18.8"W	Episode Stop:	4/20/18 5:59 AM



	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18
Day Shift	0.003	0.005	0.007	0.003	0.002	0.004	0.005
Night Shift	0.007	0.009	0.005	0.003	0.003	0.006	0.005

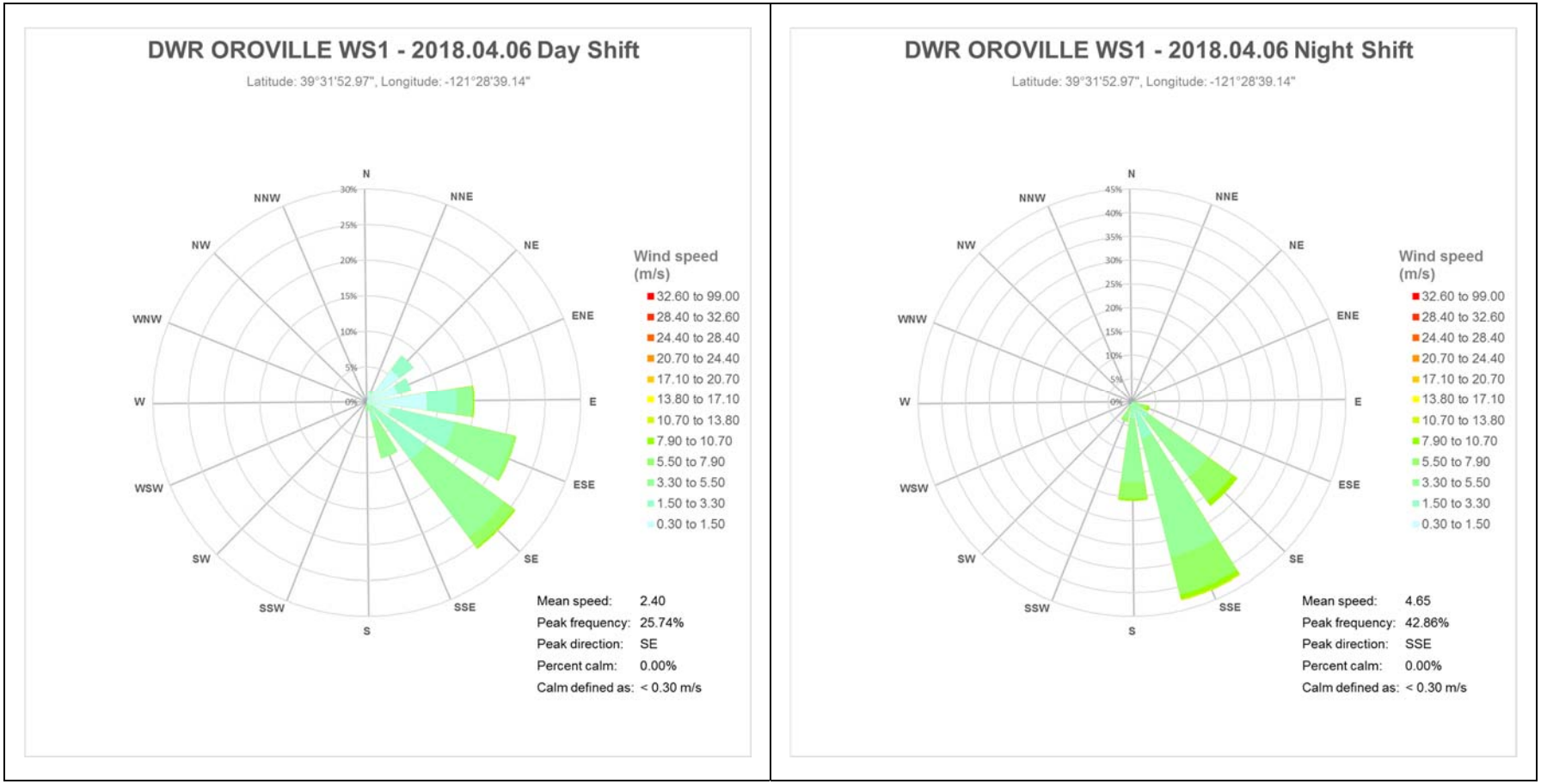
9.0 Meteorological Data & Daily Wind Rose

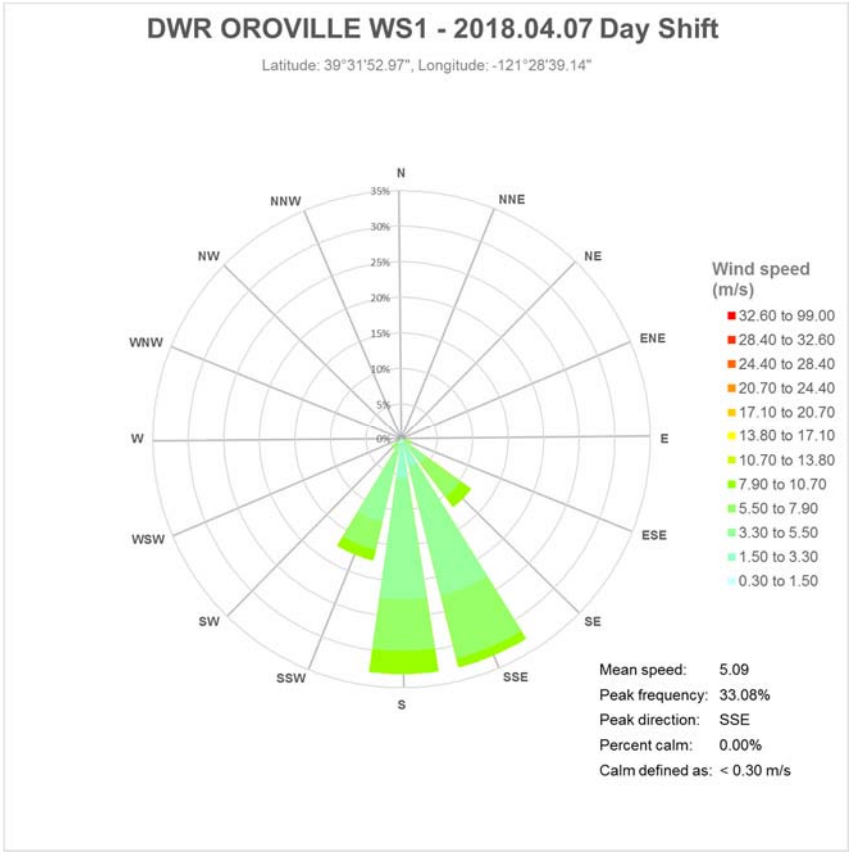
WS1 Weather Station is a Davis Instruments Vantage Pro2. This station is at WP045A 39˚31’52.97”N 121˚28’39.14”W at the Upper Overlook area.

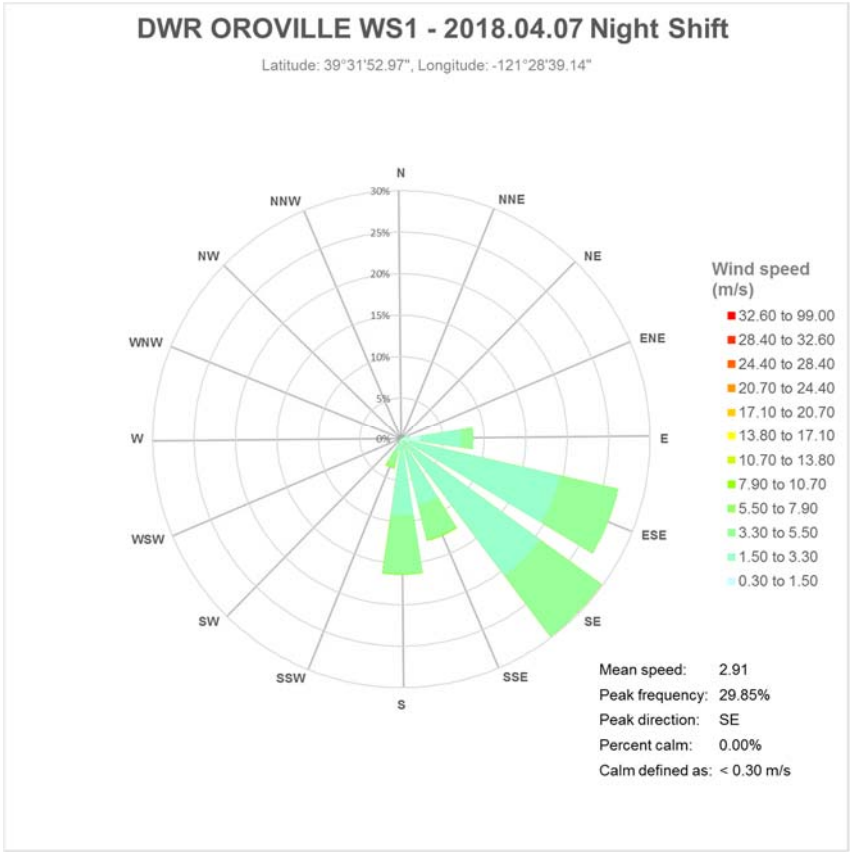
WS2 Weather Station is a Davis Instruments Vantage Pro2. This station is at WP044A 39˚31’47.96”N 121˚33’6.42”W at the Diversion Dam area.

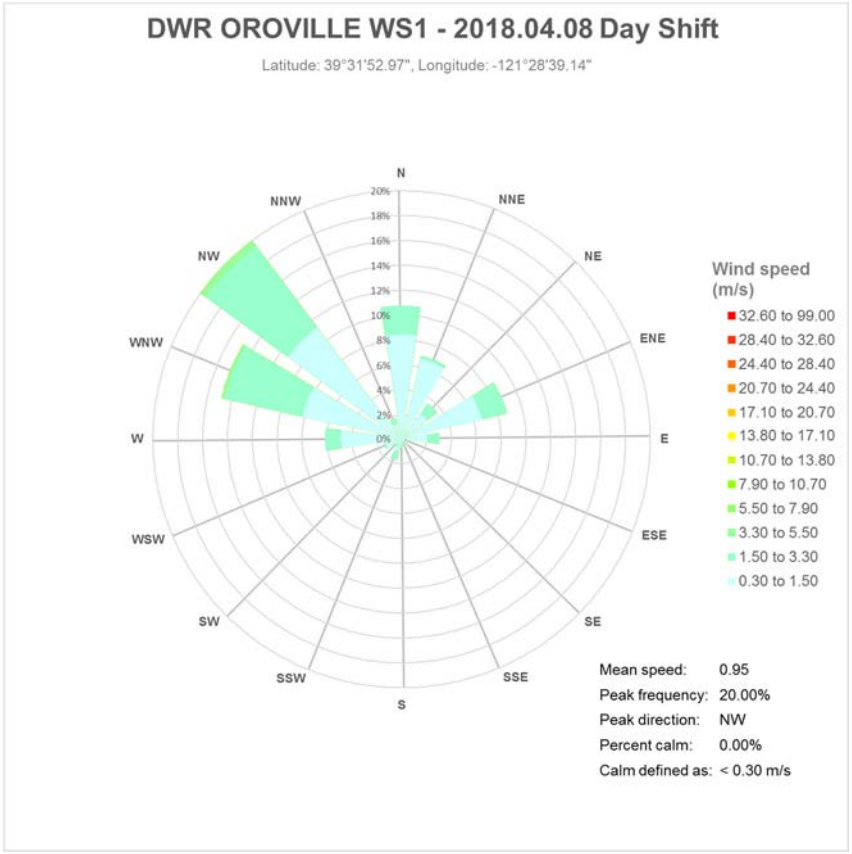
The standard Vantage Pro 2 station consists of three main components: the indoor console on which all the weather readings are displayed; the anemometer for measuring wind speed and direction; and an assembly known as the Integrated Sensor Suite (ISS for short) that contains all the other outside sensors, such as those for temperature, humidity, rainfall etc.

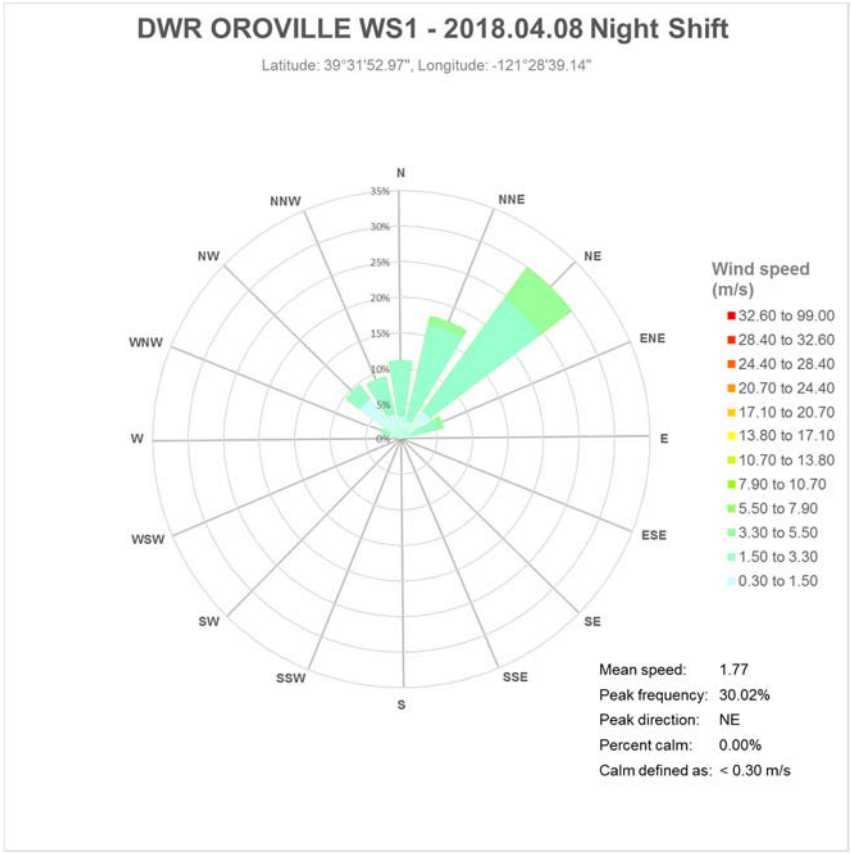
Figure 33 Wind Rose – Day & Night Shift Upper Overlook

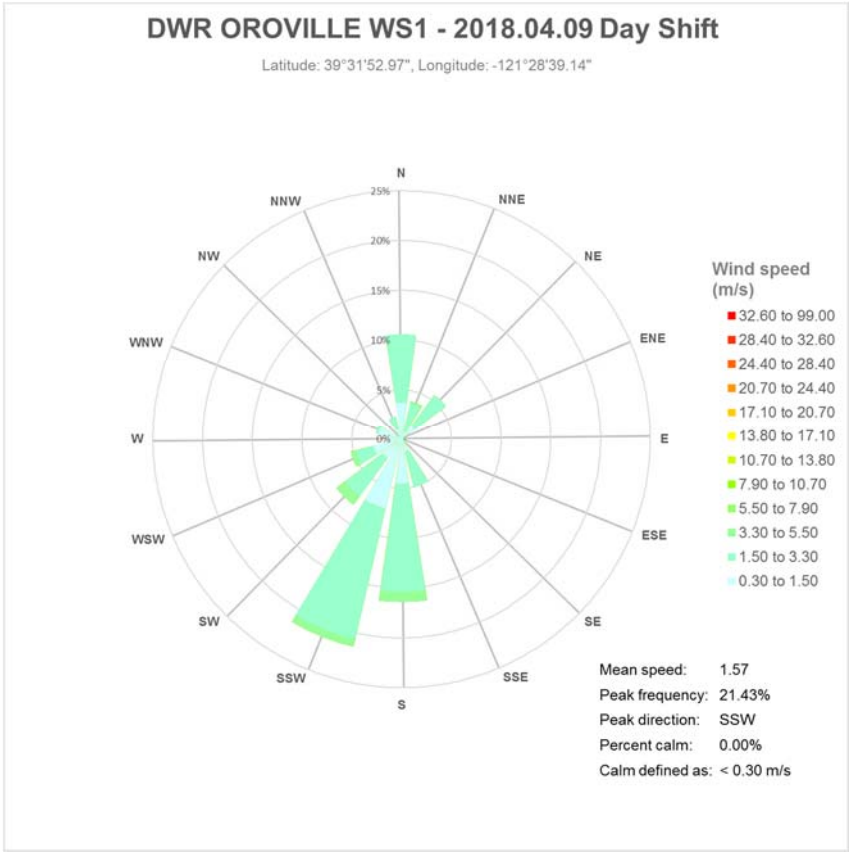


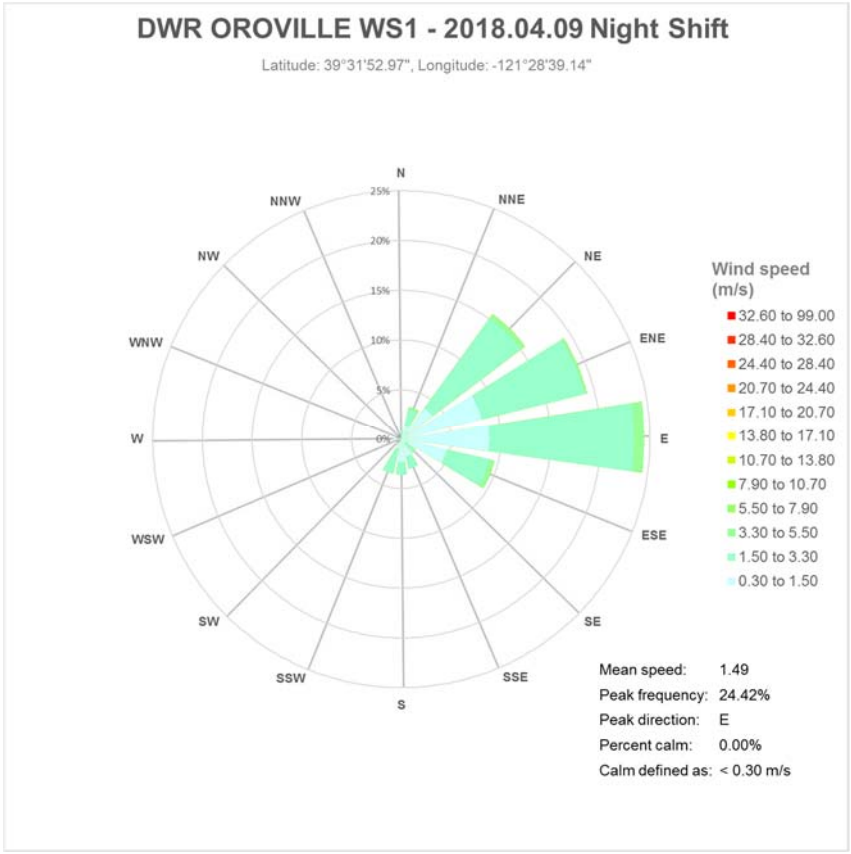

DWR OROVILLE WS1 - 2018.04.07 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 5.09
Peak frequency: 33.08%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

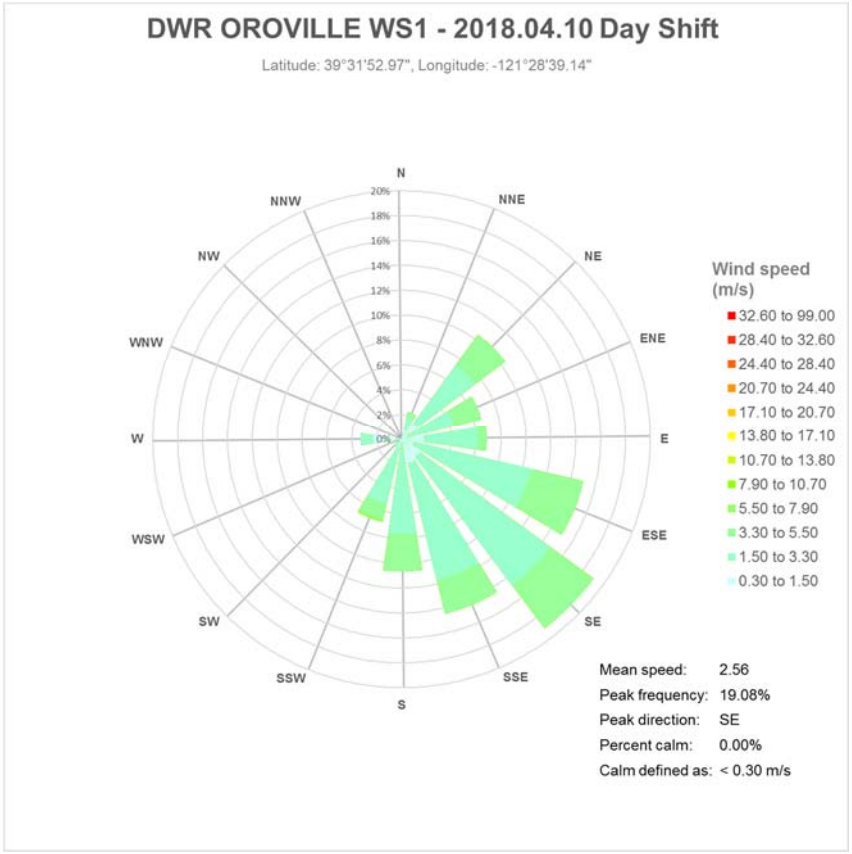

DWR OROVILLE WS1 - 2018.04.07 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.91
Peak frequency: 29.85%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

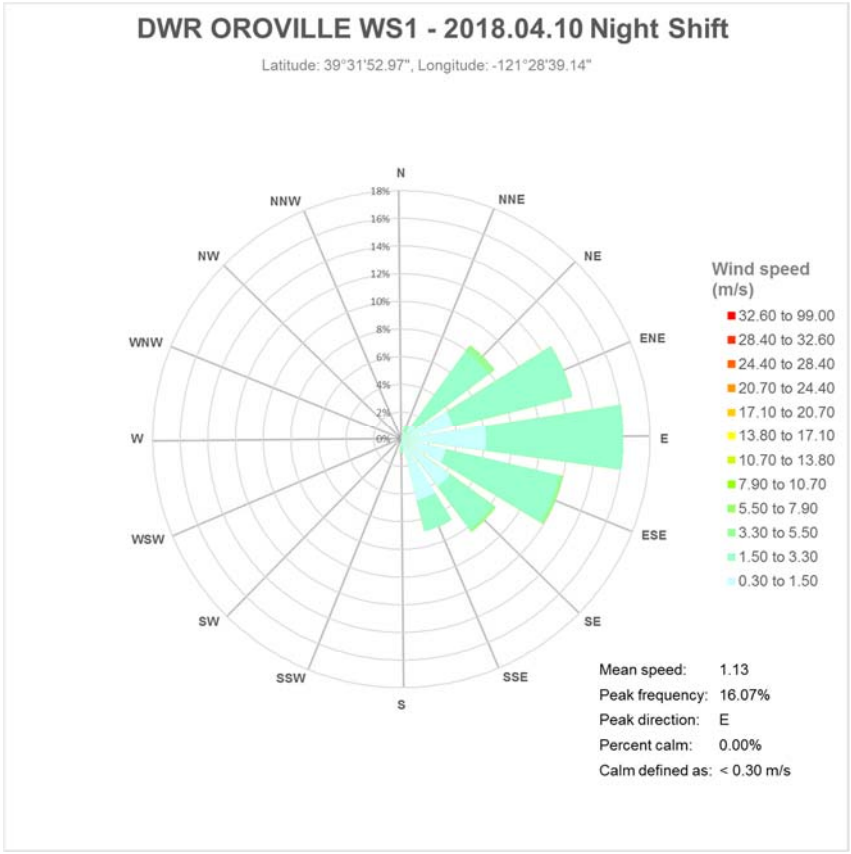

DWR OROVILLE WS1 - 2018.04.08 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.95
Peak frequency: 20.00%
Peak direction: NW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

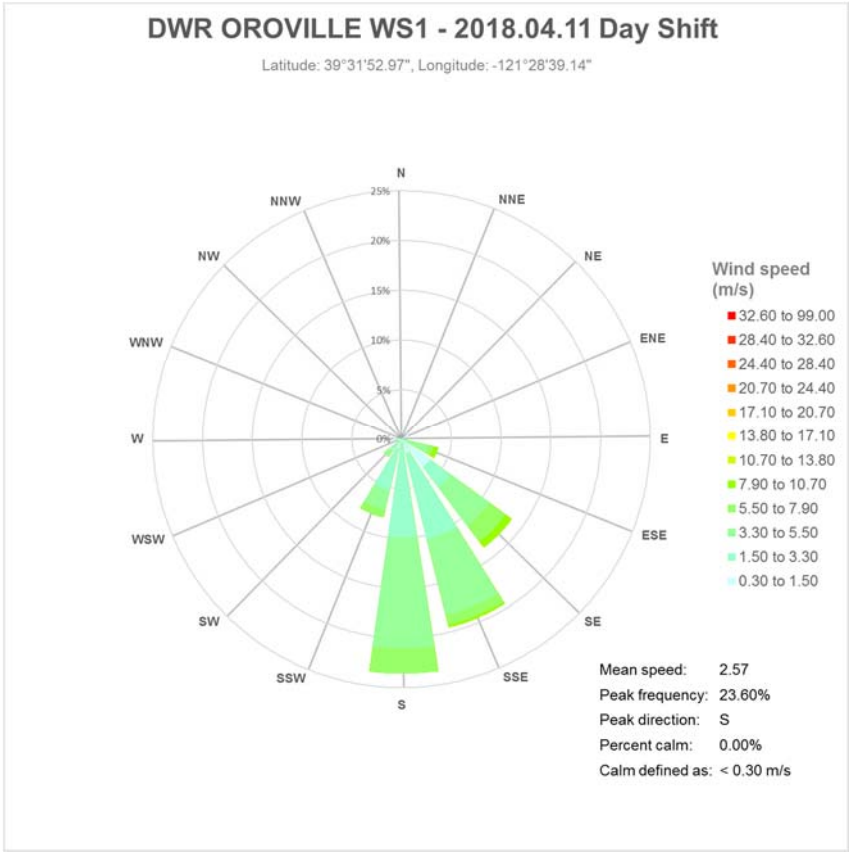

DWR OROVILLE WS1 - 2018.04.08 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.77
Peak frequency: 30.02%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

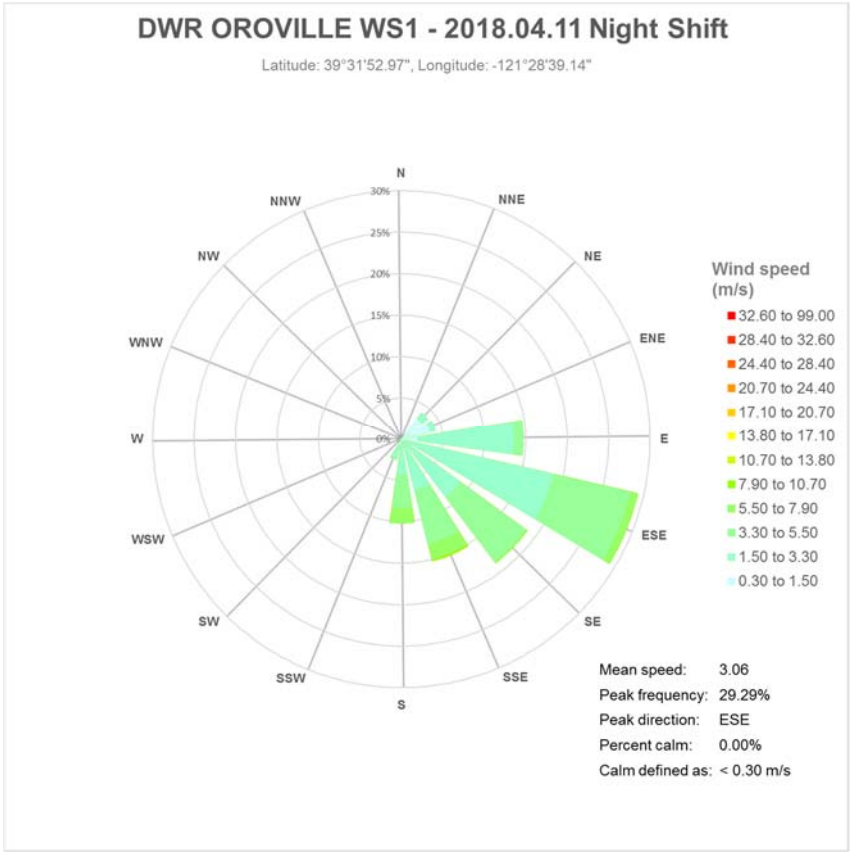

DWR OROVILLE WS1 - 2018.04.09 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.57
Peak frequency: 21.43%
Peak direction: SSW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

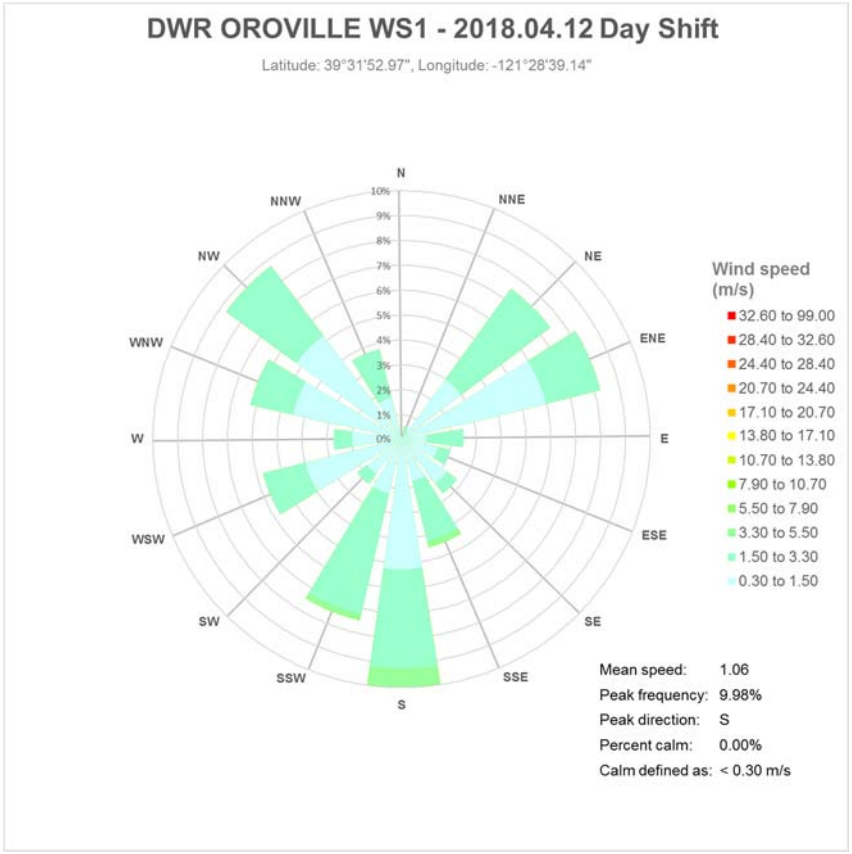

DWR OROVILLE WS1 - 2018.04.09 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.49
Peak frequency: 24.42%
Peak direction: E
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

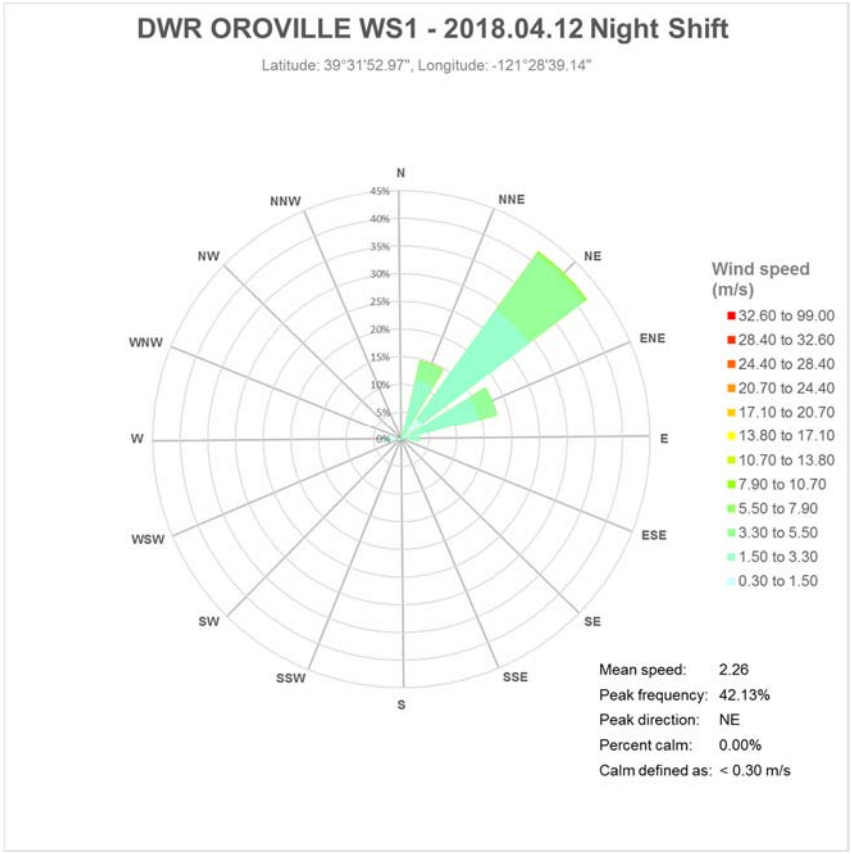

DWR OROVILLE WS1 - 2018.04.10 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.56
Peak frequency: 19.08%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

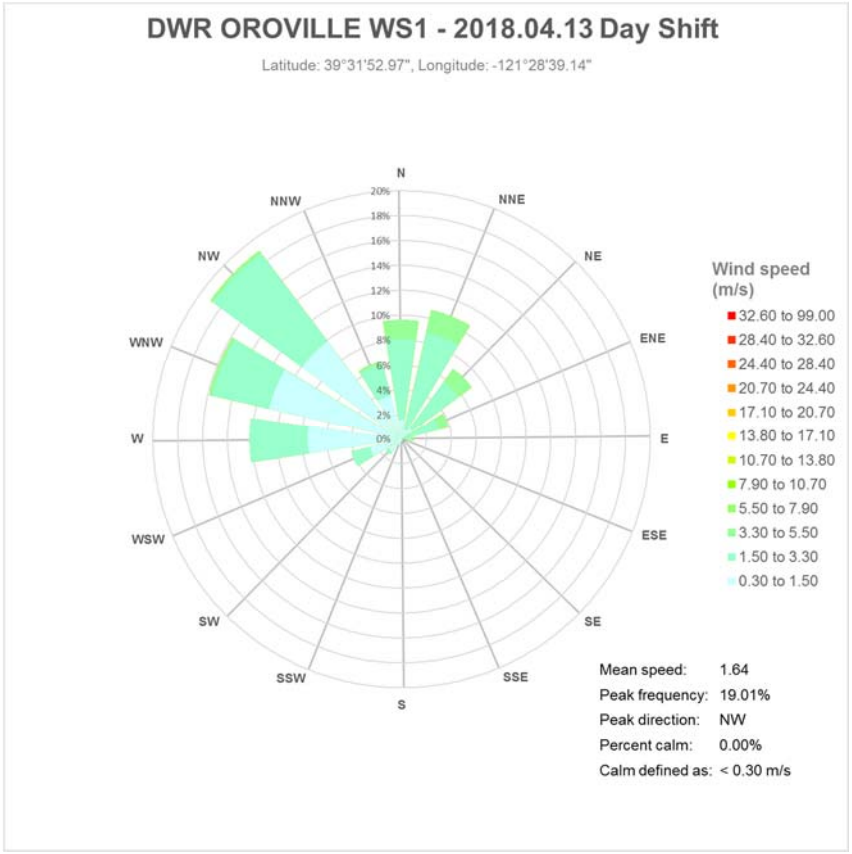

DWR OROVILLE WS1 - 2018.04.10 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.13
Peak frequency: 16.07%
Peak direction: E
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

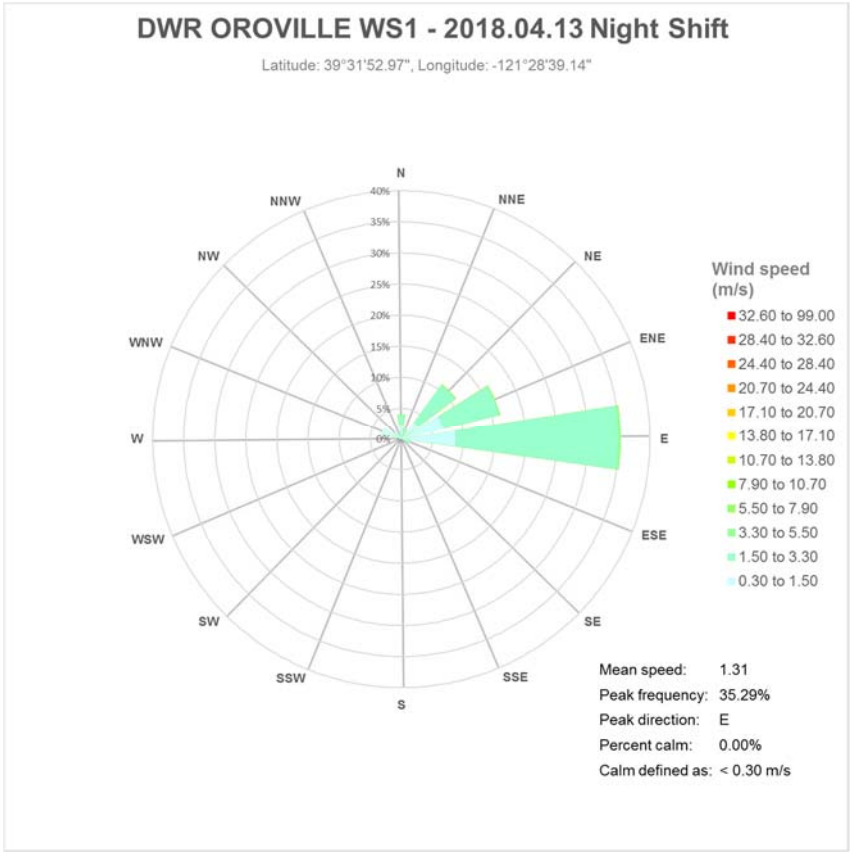

DWR OROVILLE WS1 - 2018.04.11 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.57
Peak frequency: 23.60%
Peak direction: S
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

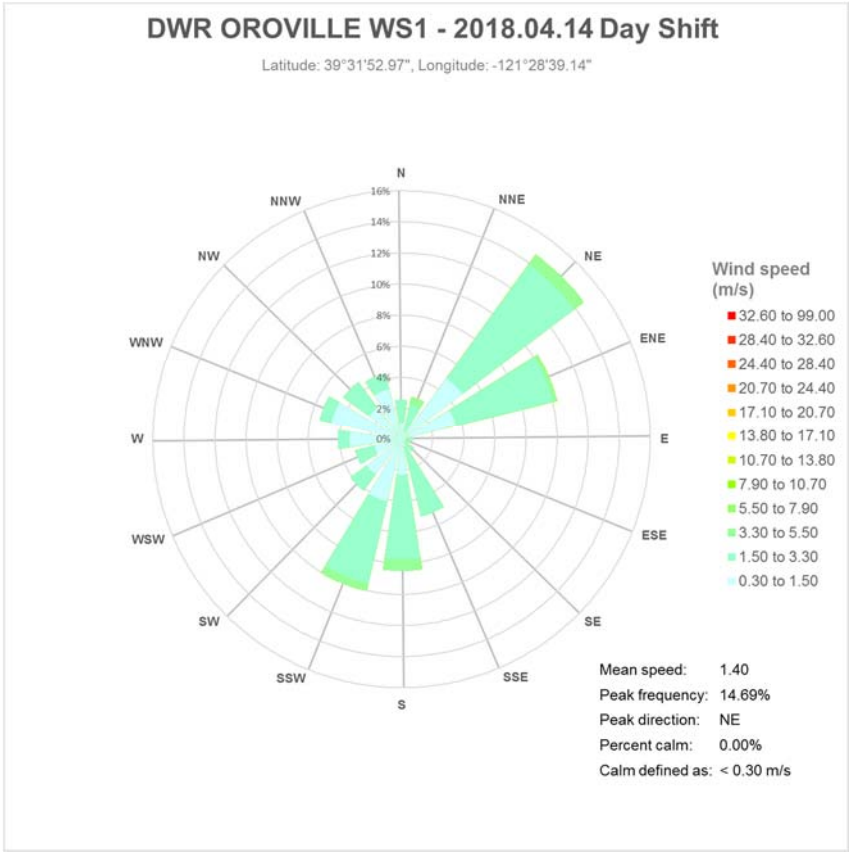

DWR OROVILLE WS1 - 2018.04.11 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 3.06
Peak frequency: 29.29%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

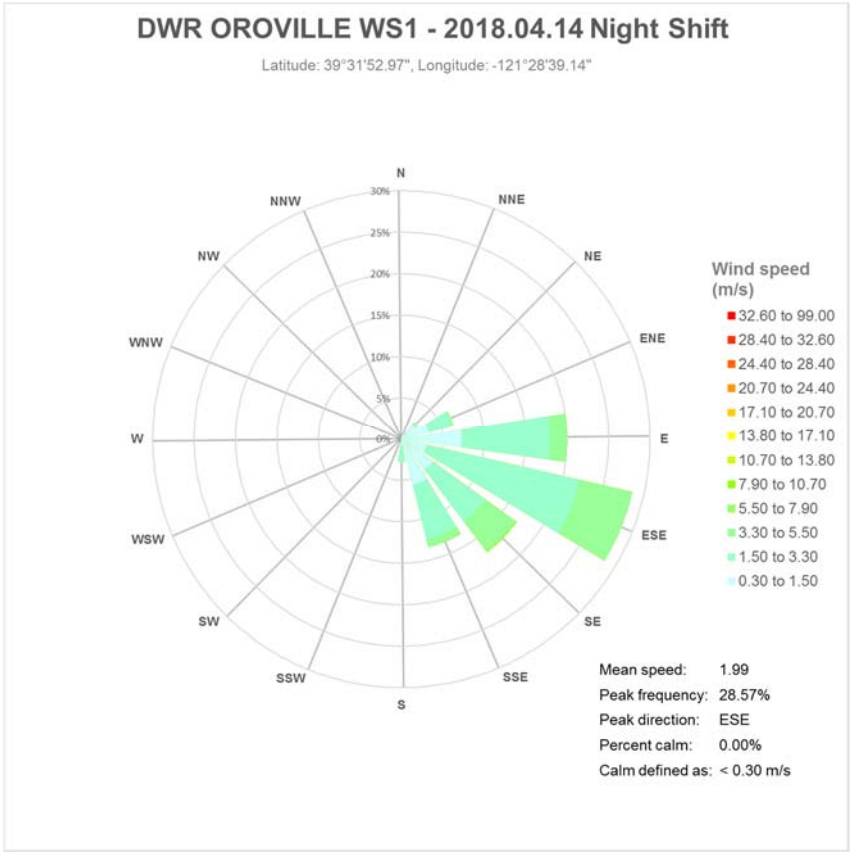

DWR OROVILLE WS1 - 2018.04.12 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.06
Peak frequency: 9.98%
Peak direction: S
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

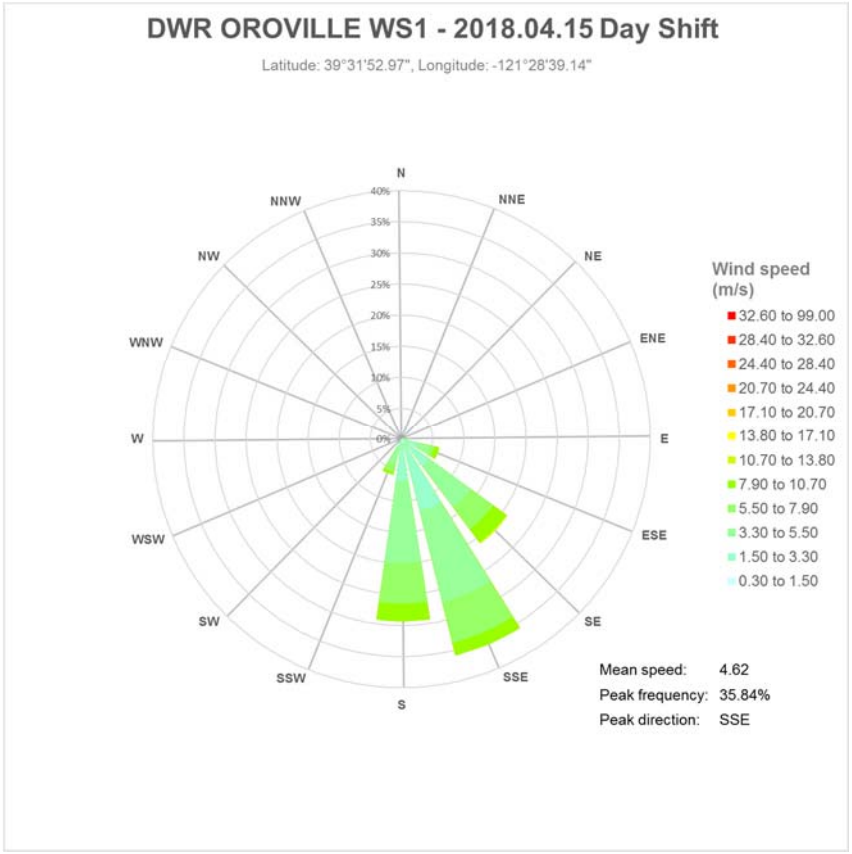

DWR OROVILLE WS1 - 2018.04.12 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.26
Peak frequency: 42.13%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

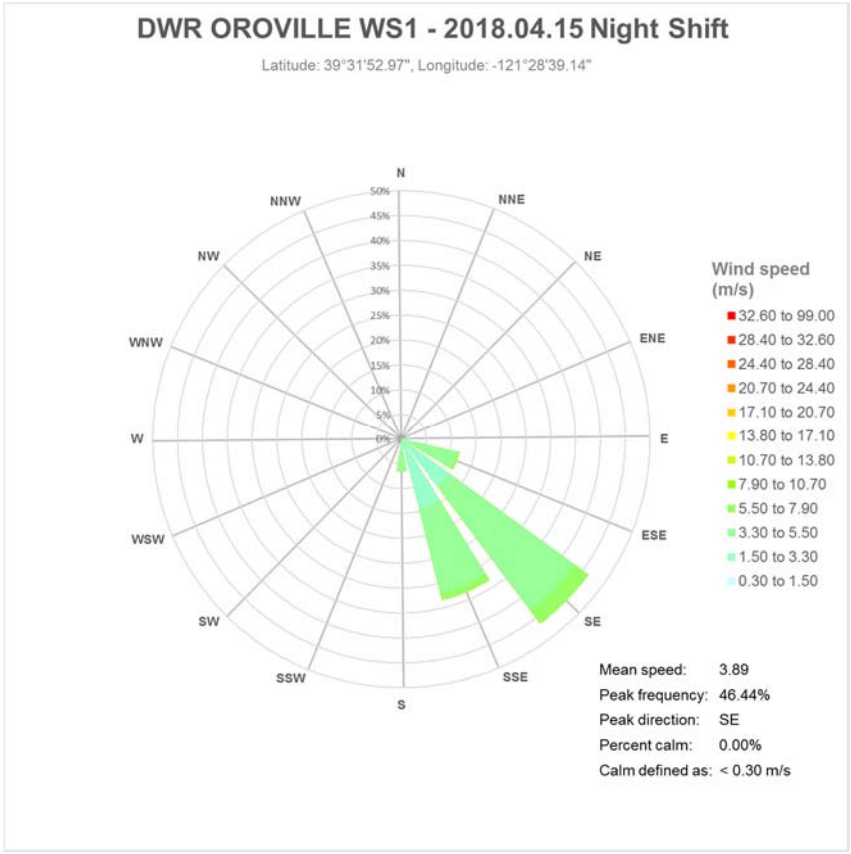

DWR OROVILLE WS1 - 2018.04.13 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.64
Peak frequency: 19.01%
Peak direction: NW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

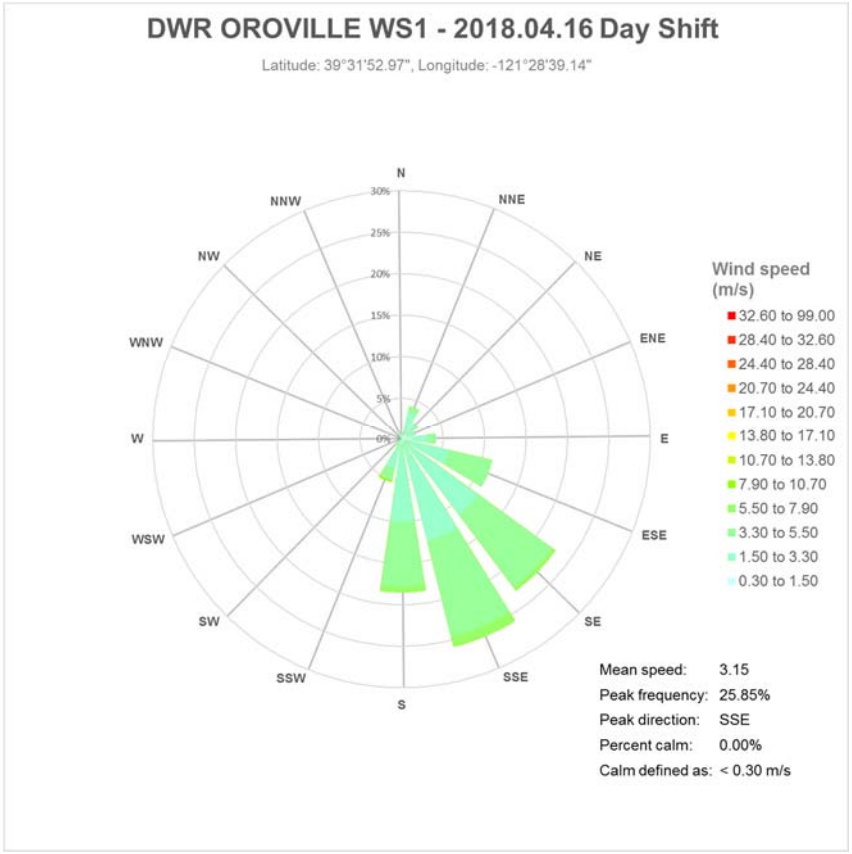

DWR OROVILLE WS1 - 2018.04.13 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.31
Peak frequency: 35.29%
Peak direction: E
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

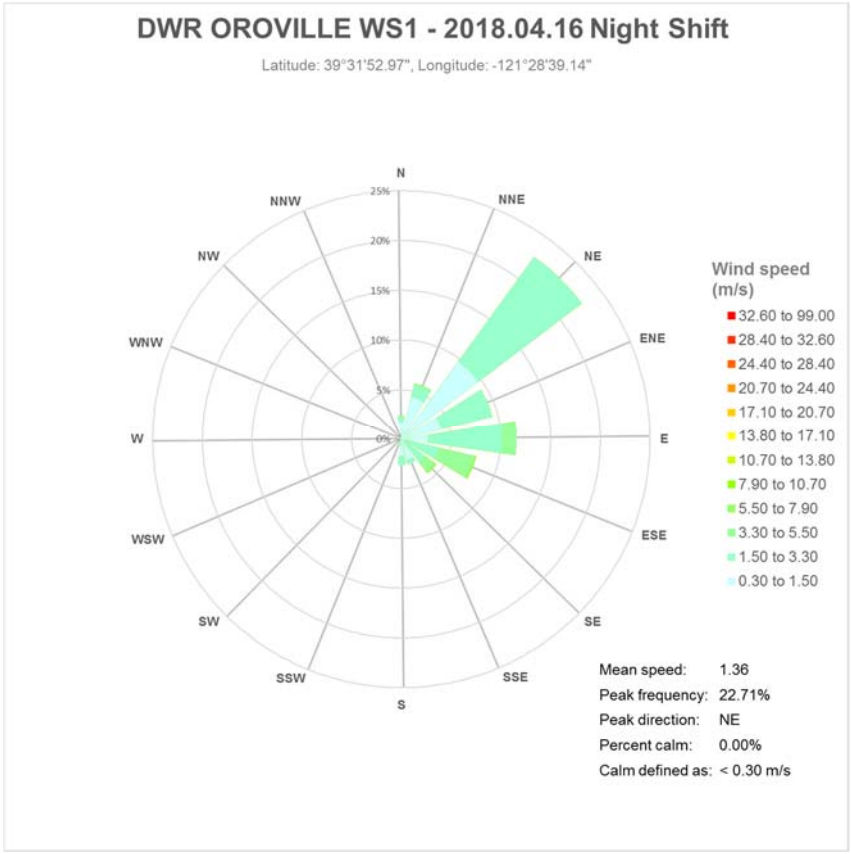

DWR OROVILLE WS1 - 2018.04.14 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.40
Peak frequency: 14.69%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

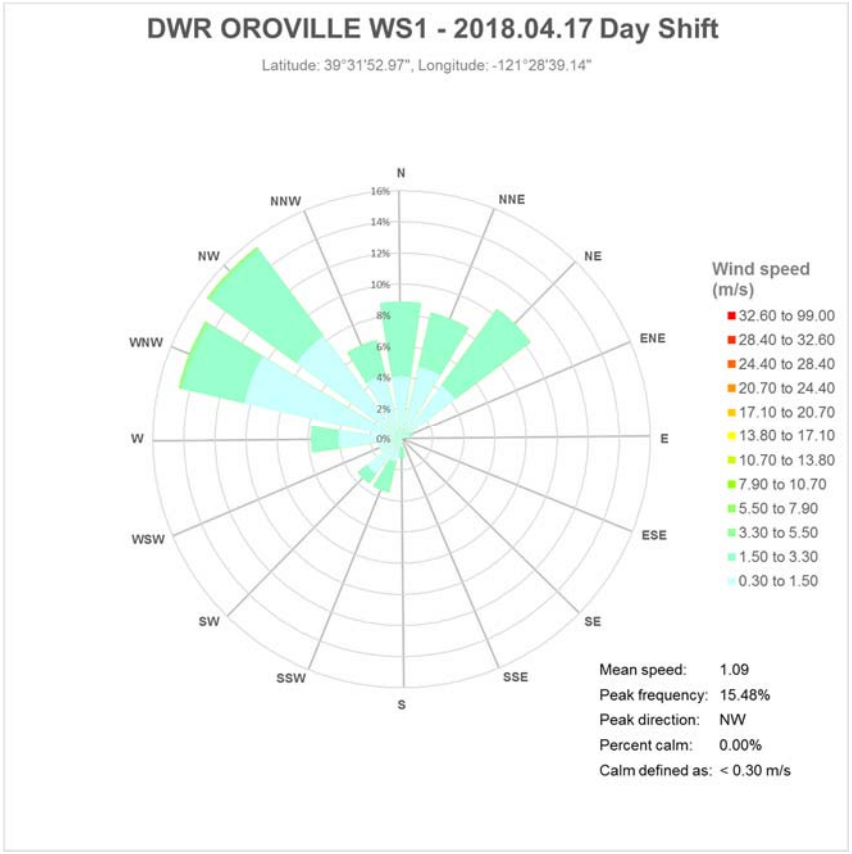

DWR OROVILLE WS1 - 2018.04.14 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.99
Peak frequency: 28.57%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

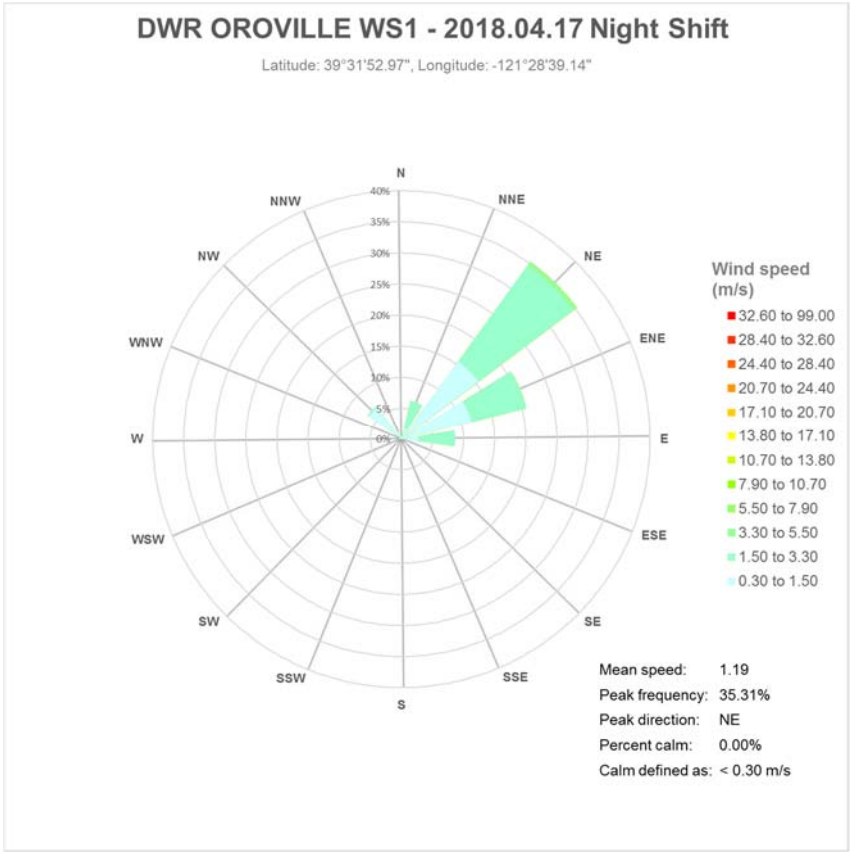

DWR OROVILLE WS1 - 2018.04.15 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 4.62
Peak frequency: 35.84%
Peak direction: SSE

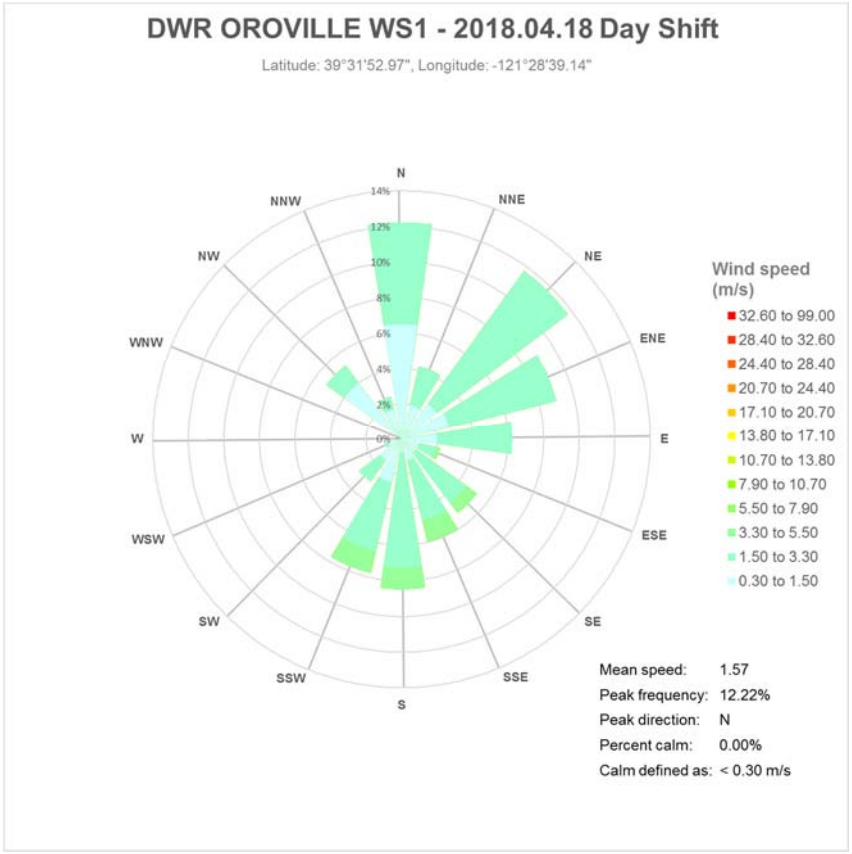

DWR OROVILLE WS1 - 2018.04.15 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 3.89
Peak frequency: 46.44%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

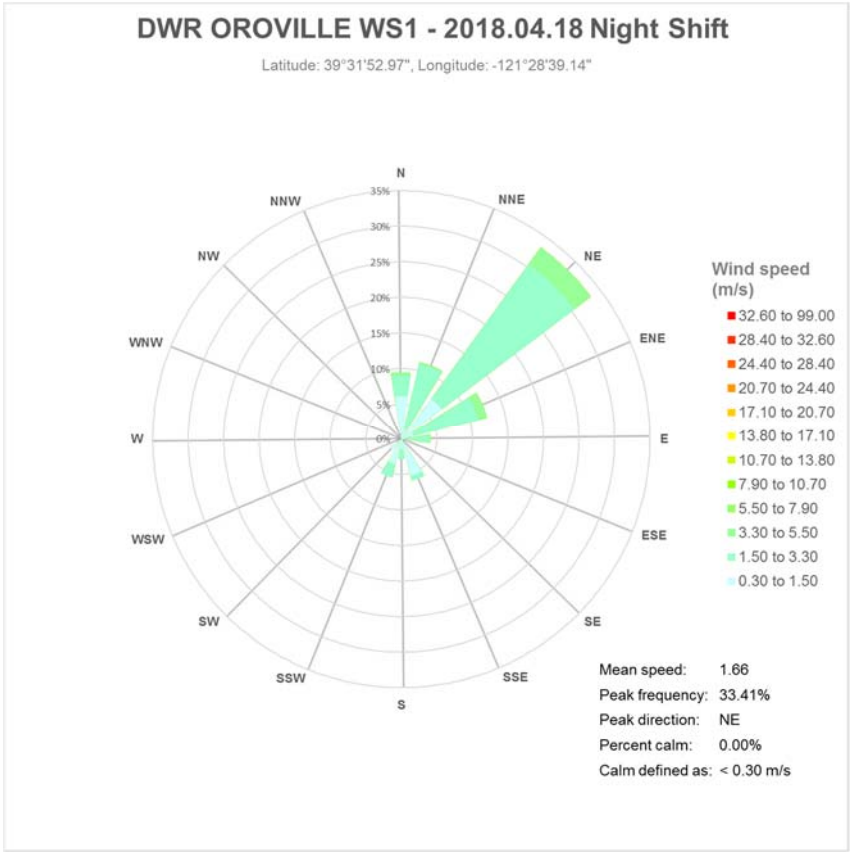

DWR OROVILLE WS1 - 2018.04.16 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 3.15
Peak frequency: 25.85%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

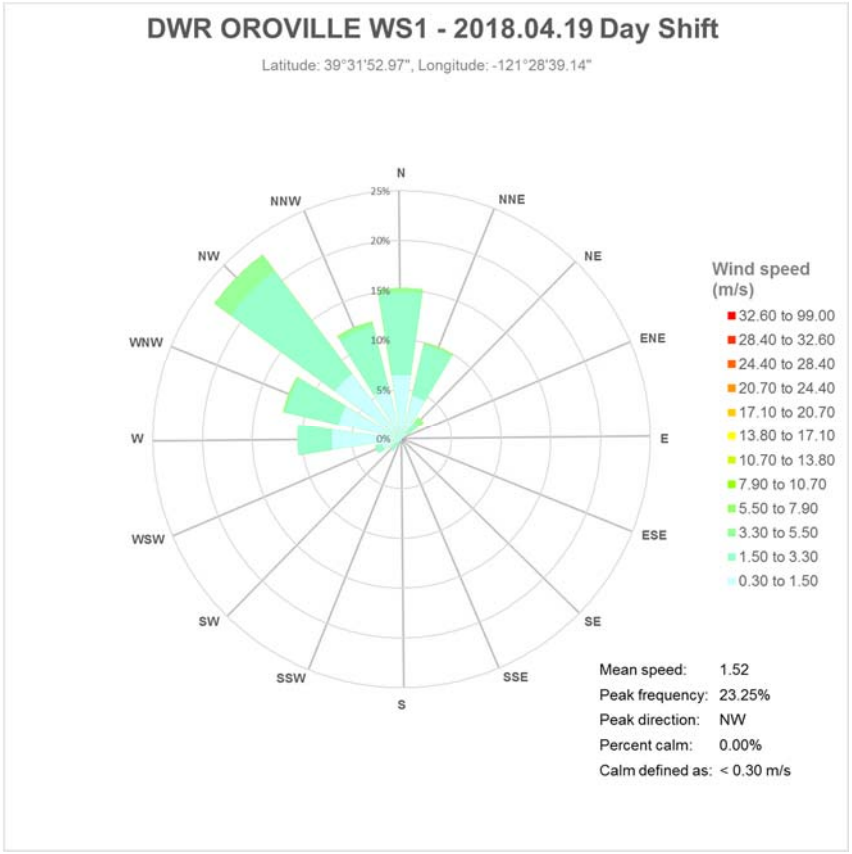

DWR OROVILLE WS1 - 2018.04.16 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.36
Peak frequency: 22.71%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2018.04.17 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.09
Peak frequency: 15.48%
Peak direction: NW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2018.04.17 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.19
Peak frequency: 35.31%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2018.04.18 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.57
Peak frequency: 12.22%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2018.04.18 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.66
Peak frequency: 33.41%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2018.04.19 Day Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.52
Peak frequency: 23.25%
Peak direction: NW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

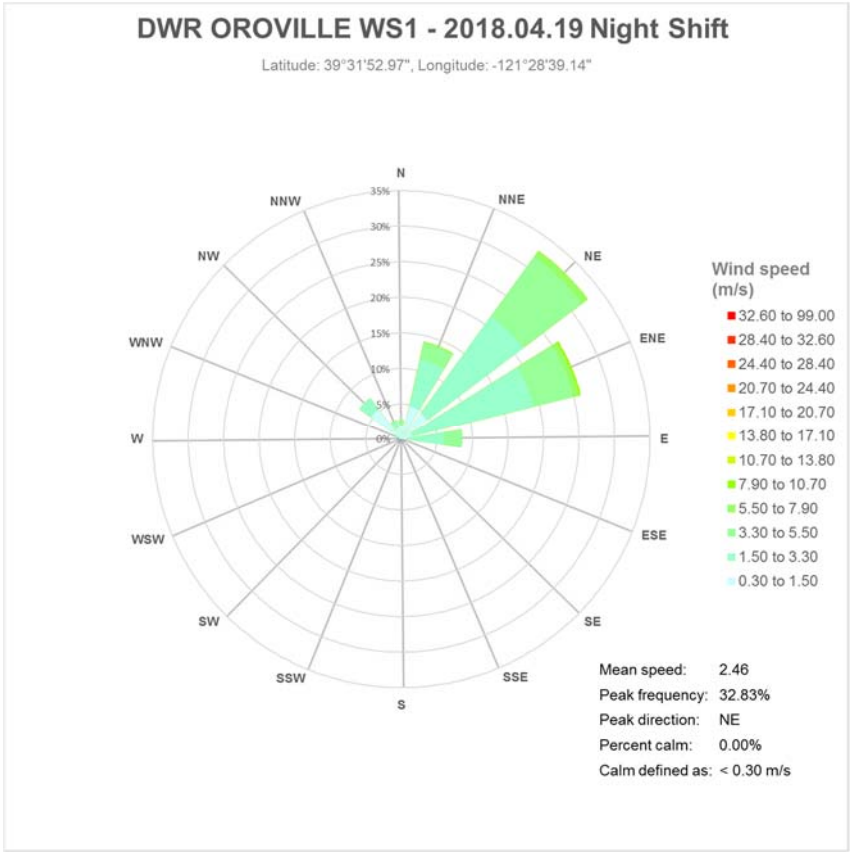
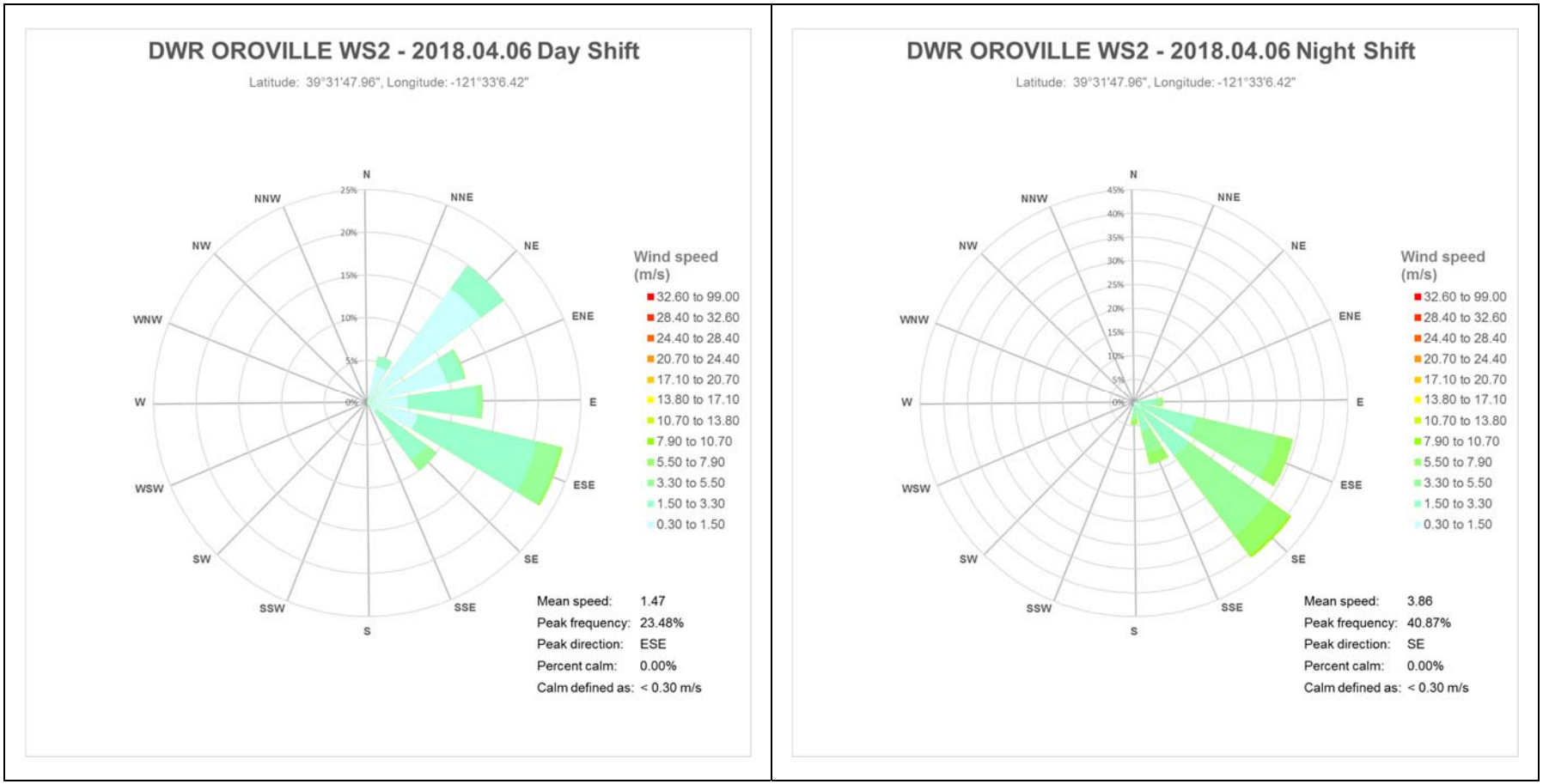
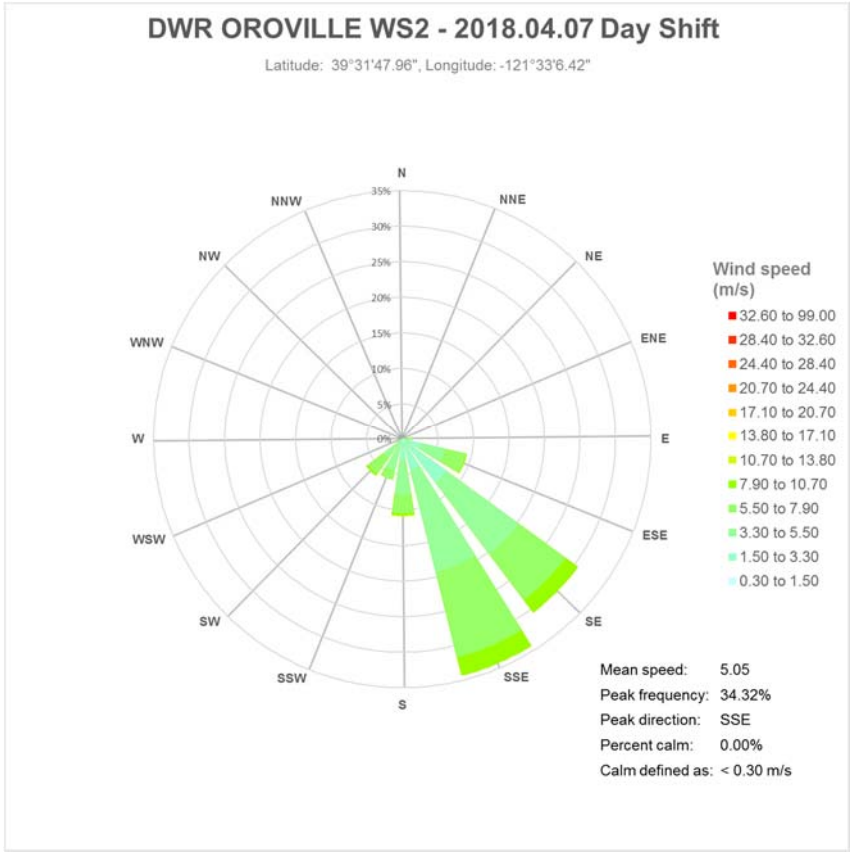
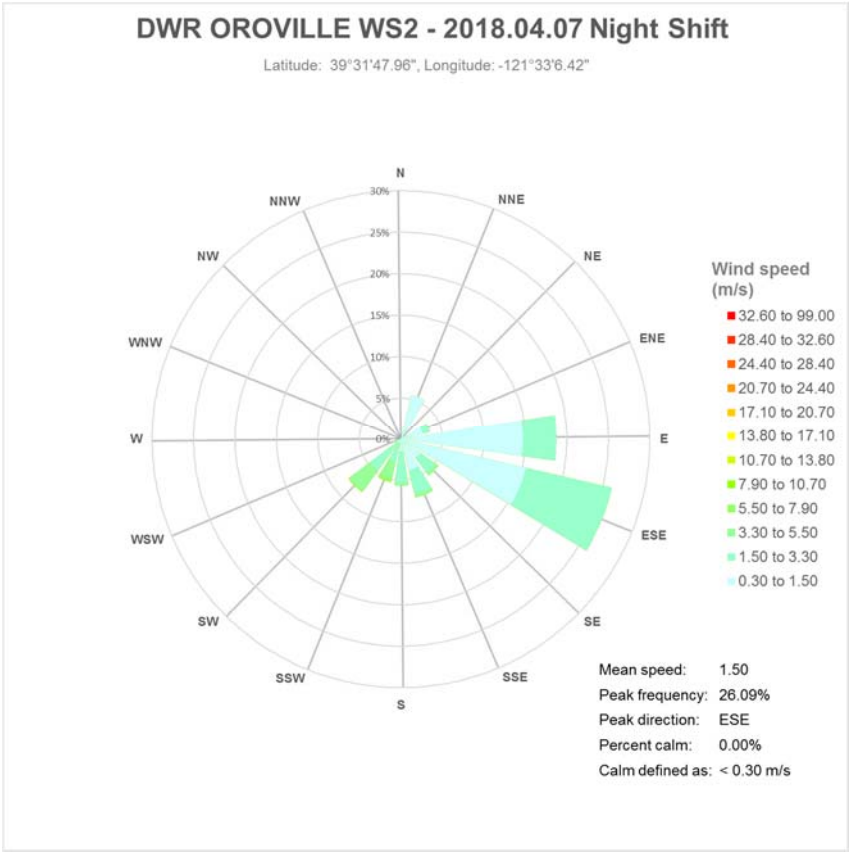
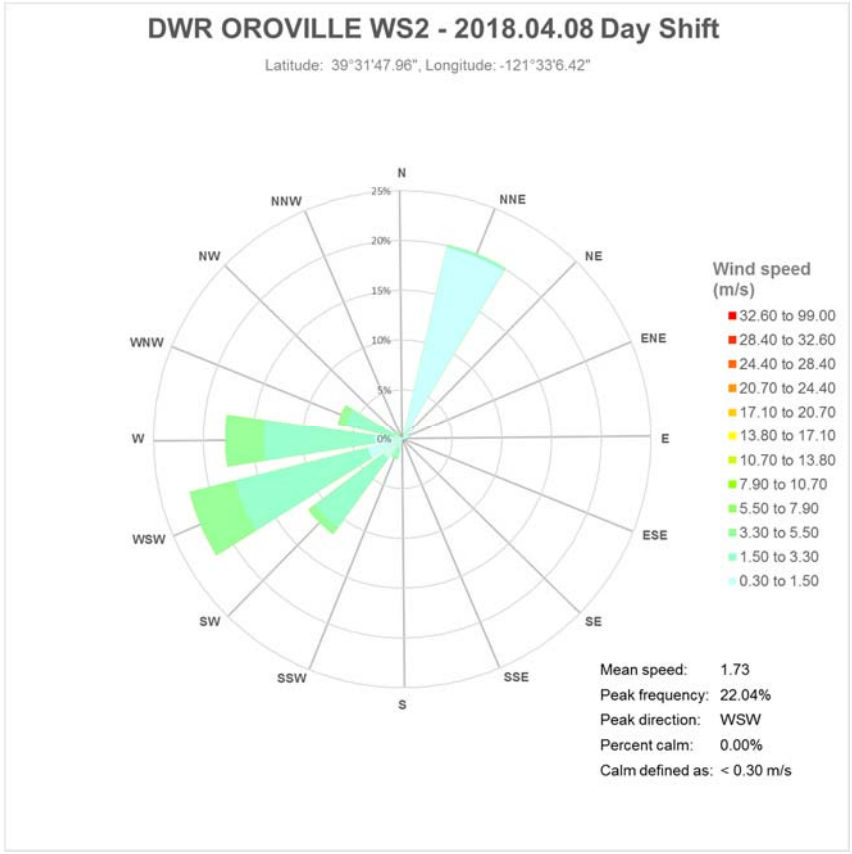

DWR OROVILLE WS1 - 2018.04.19 Night Shift
Latitude: 39°31'52.97", Longitude: -121°28'39.14"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.46
Peak frequency: 32.83%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

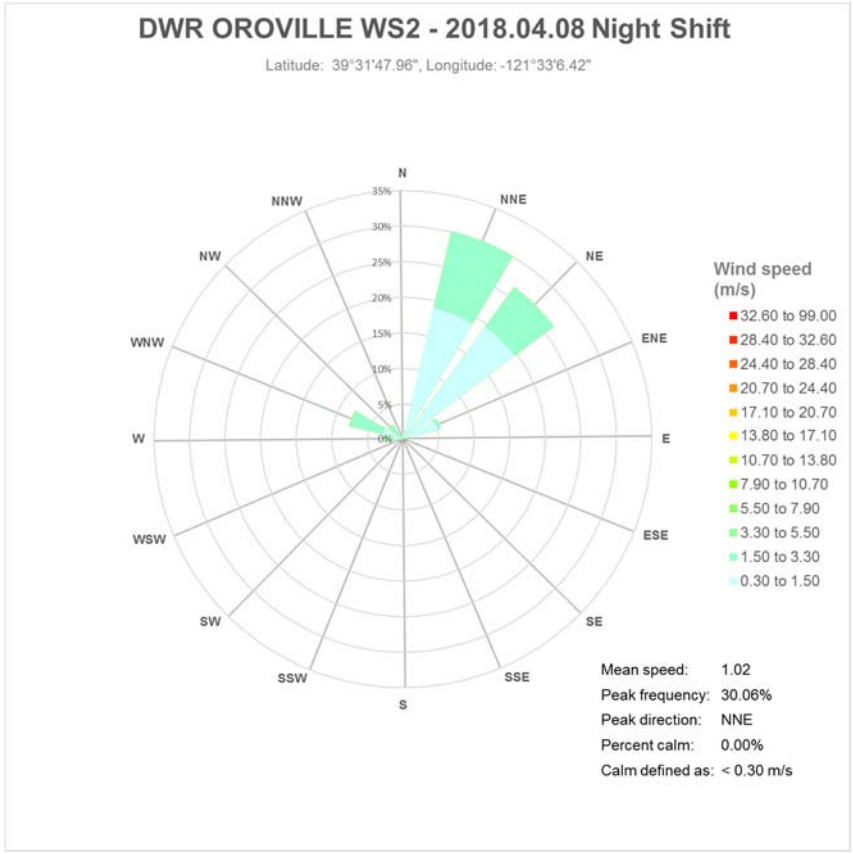
Figure 34 Wind Rose – Day & Night Shift Diversion Dam

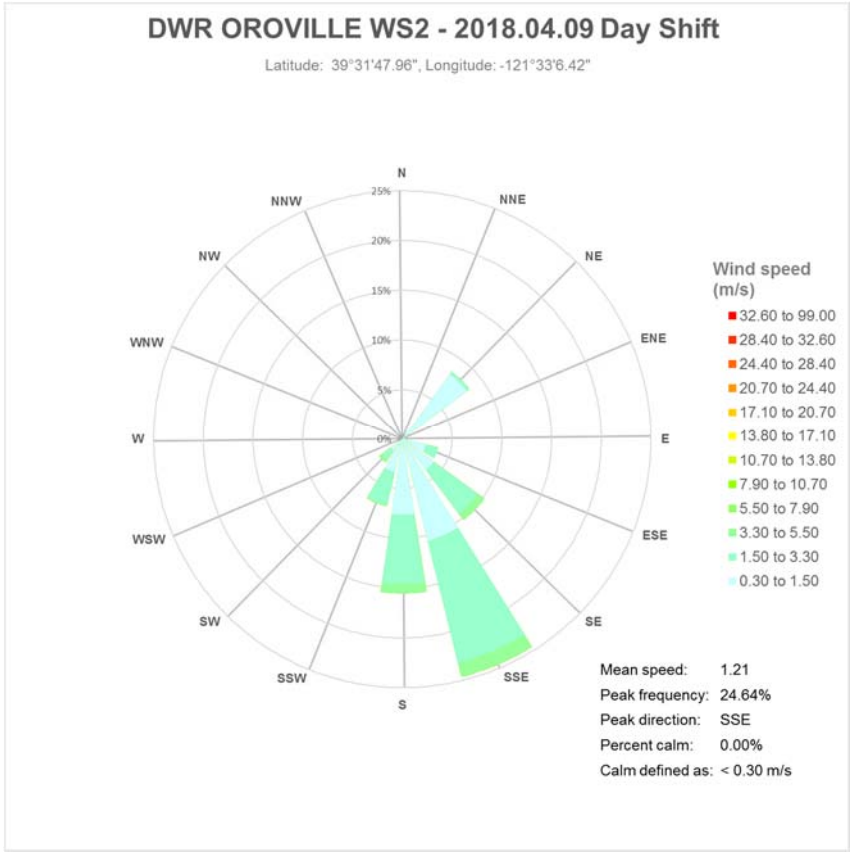


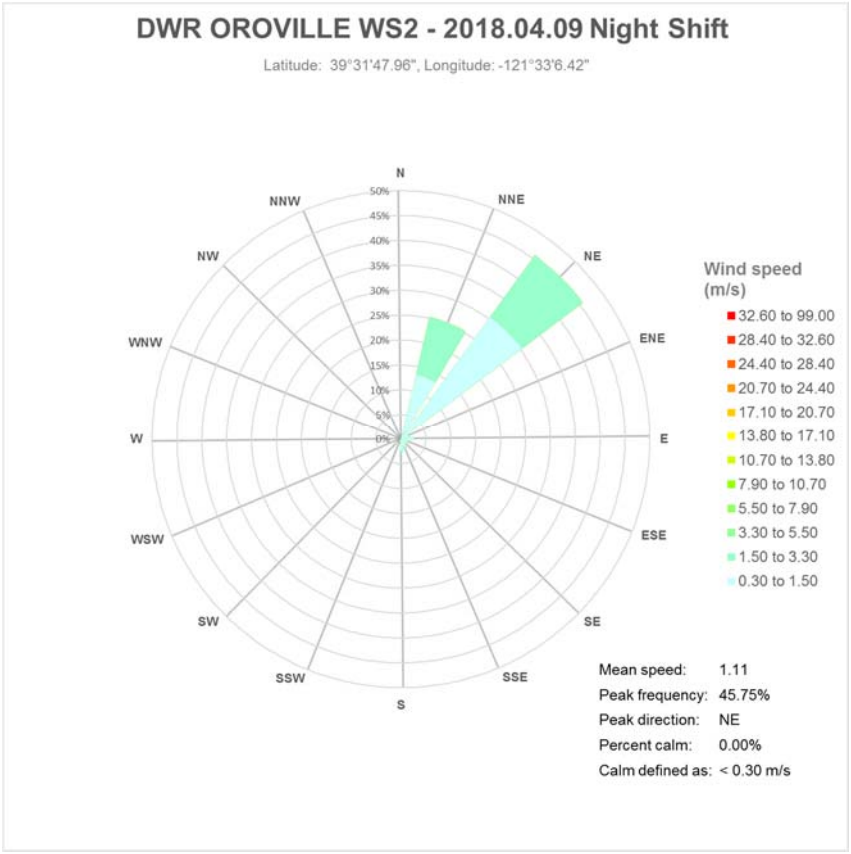

DWR OROVILLE WS2 - 2018.04.07 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 5.05
Peak frequency: 34.32%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

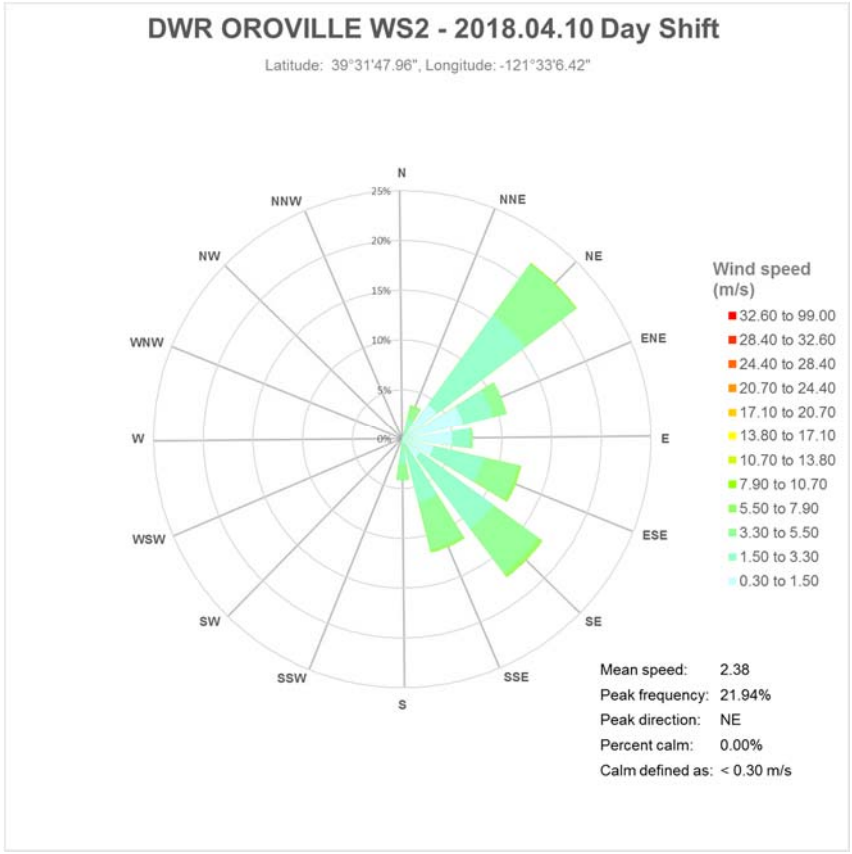

DWR OROVILLE WS2 - 2018.04.07 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.50
Peak frequency: 26.09%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

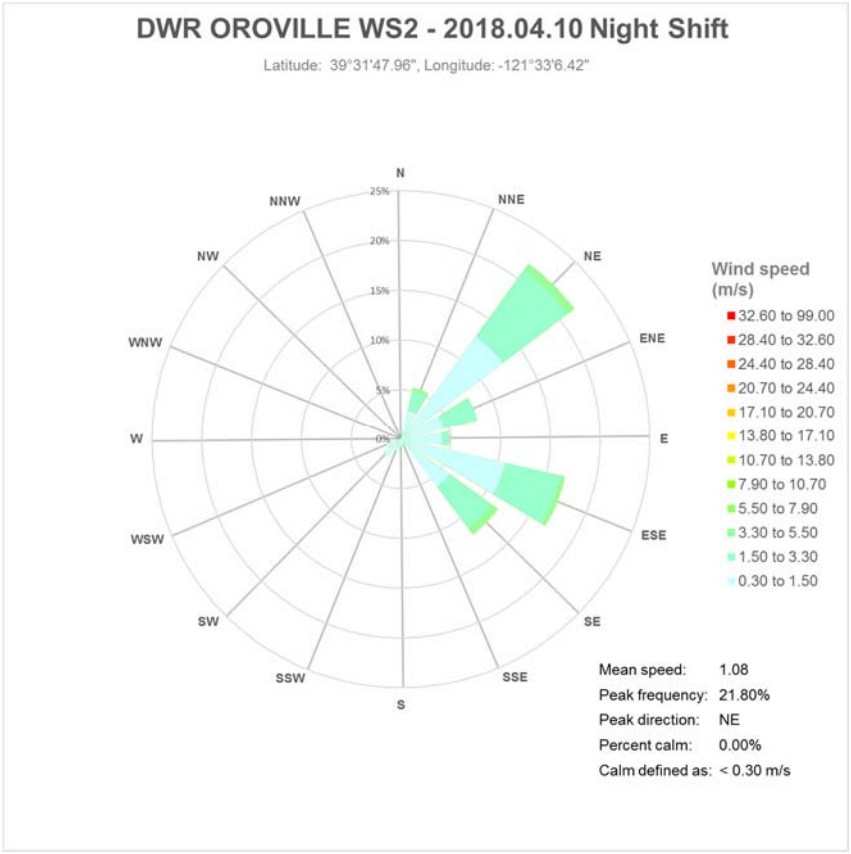

DWR OROVILLE WS2 - 2018.04.08 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.73
Peak frequency: 22.04%
Peak direction: WSW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

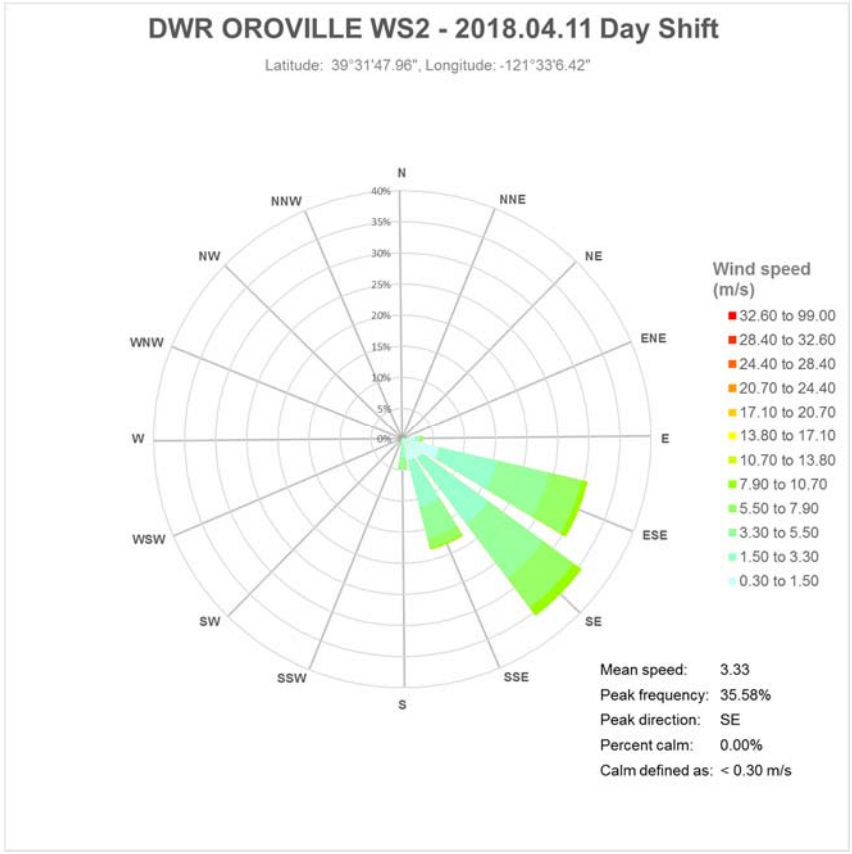

DWR OROVILLE WS2 - 2018.04.08 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.02
Peak frequency: 30.06%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

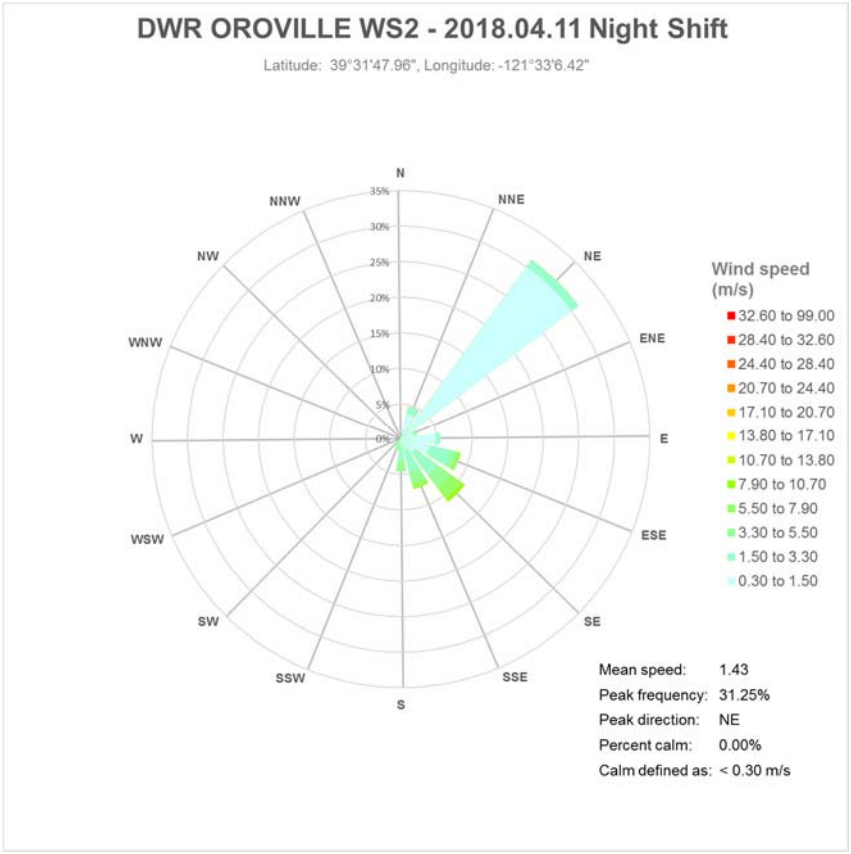

DWR OROVILLE WS2 - 2018.04.09 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.21
Peak frequency: 24.64%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

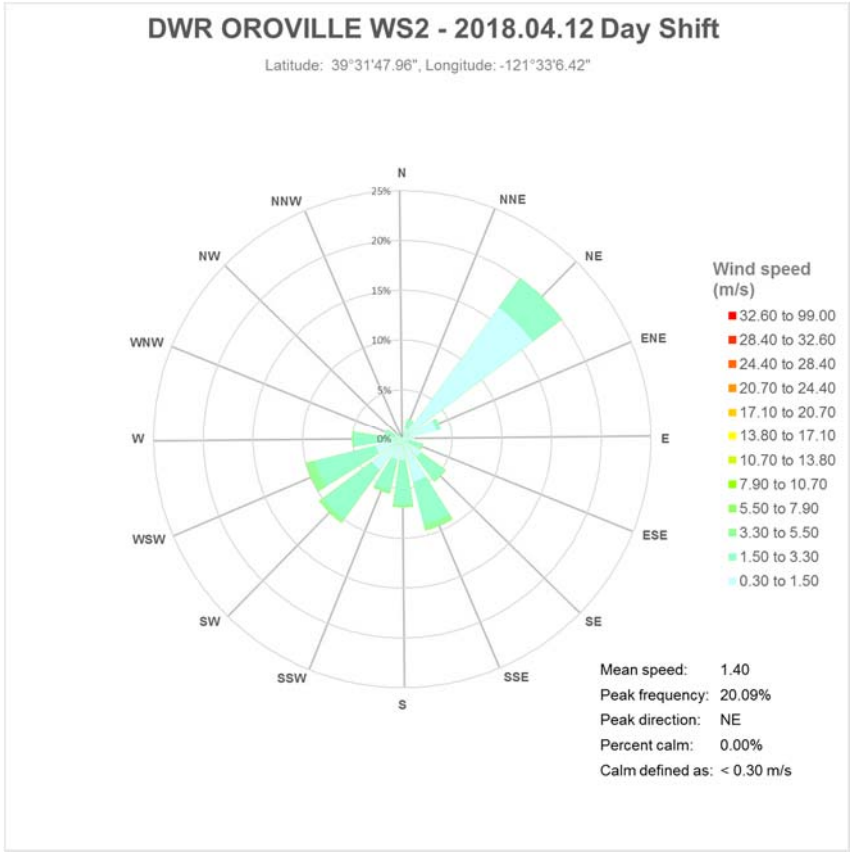

DWR OROVILLE WS2 - 2018.04.09 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.11
Peak frequency: 45.75%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

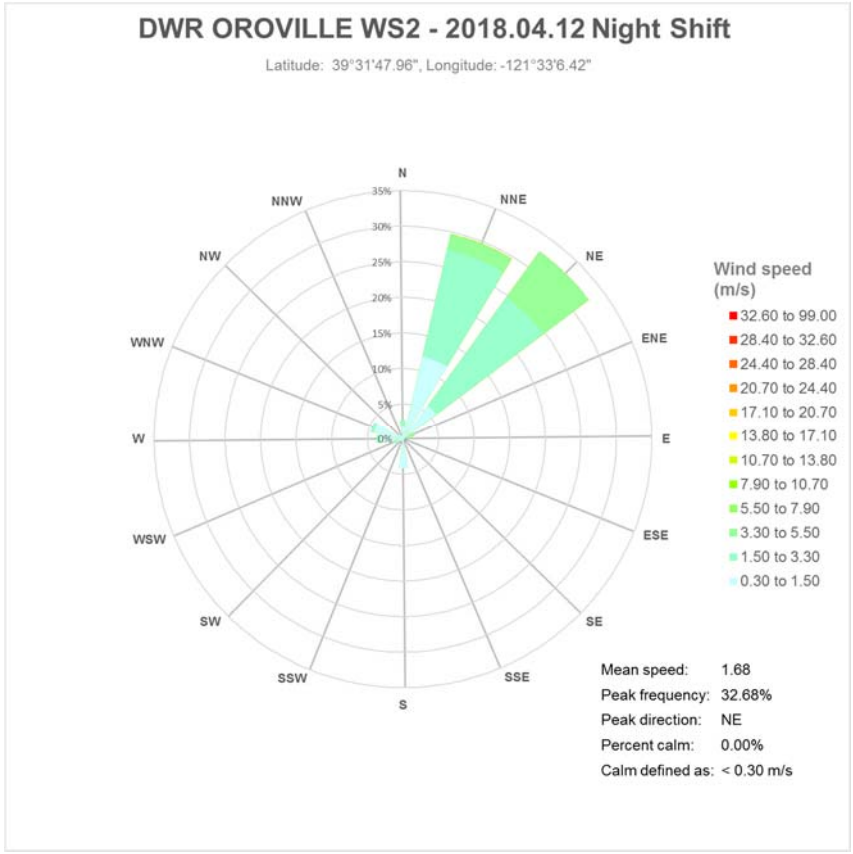

DWR OROVILLE WS2 - 2018.04.10 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.38
Peak frequency: 21.94%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

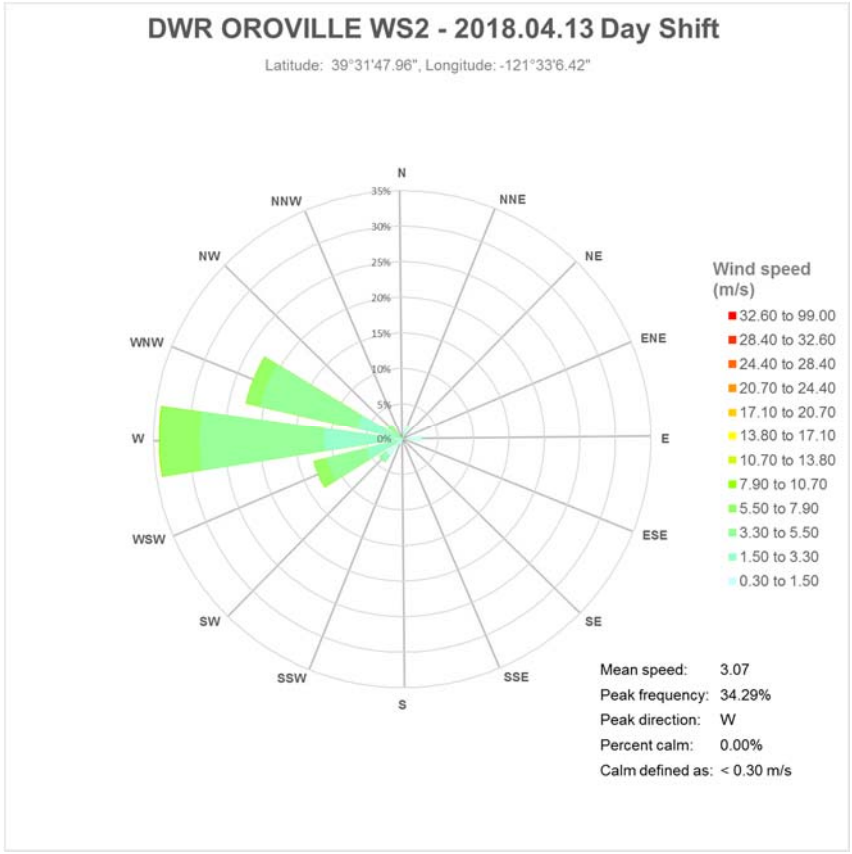

DWR OROVILLE WS2 - 2018.04.10 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.08
Peak frequency: 21.80%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

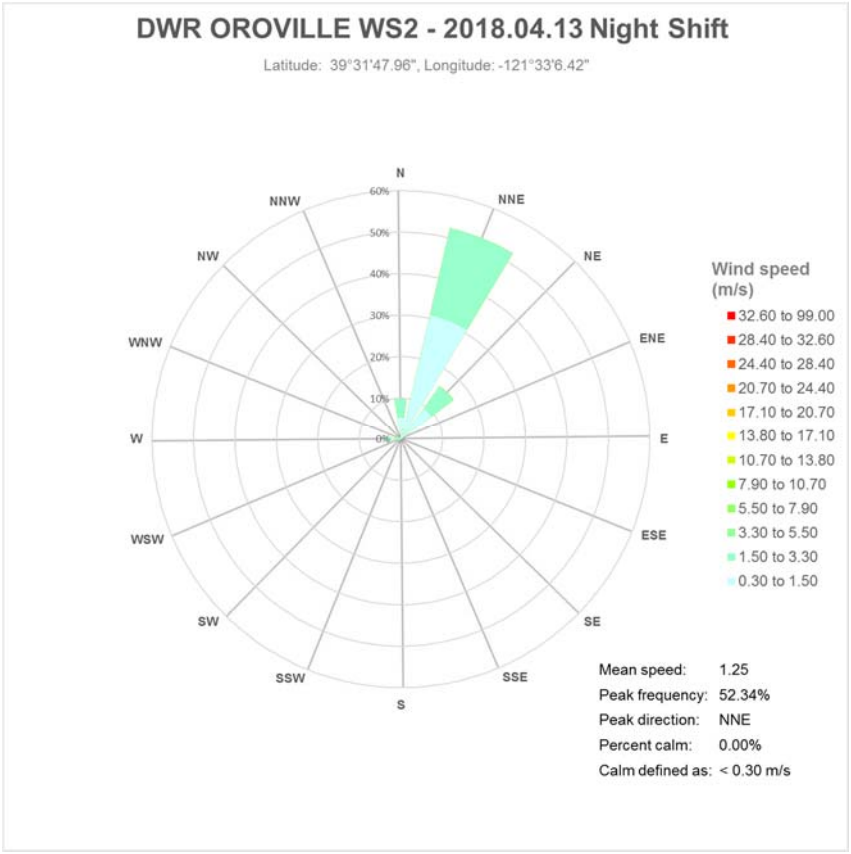

DWR OROVILLE WS2 - 2018.04.11 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 3.33
Peak frequency: 35.58%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

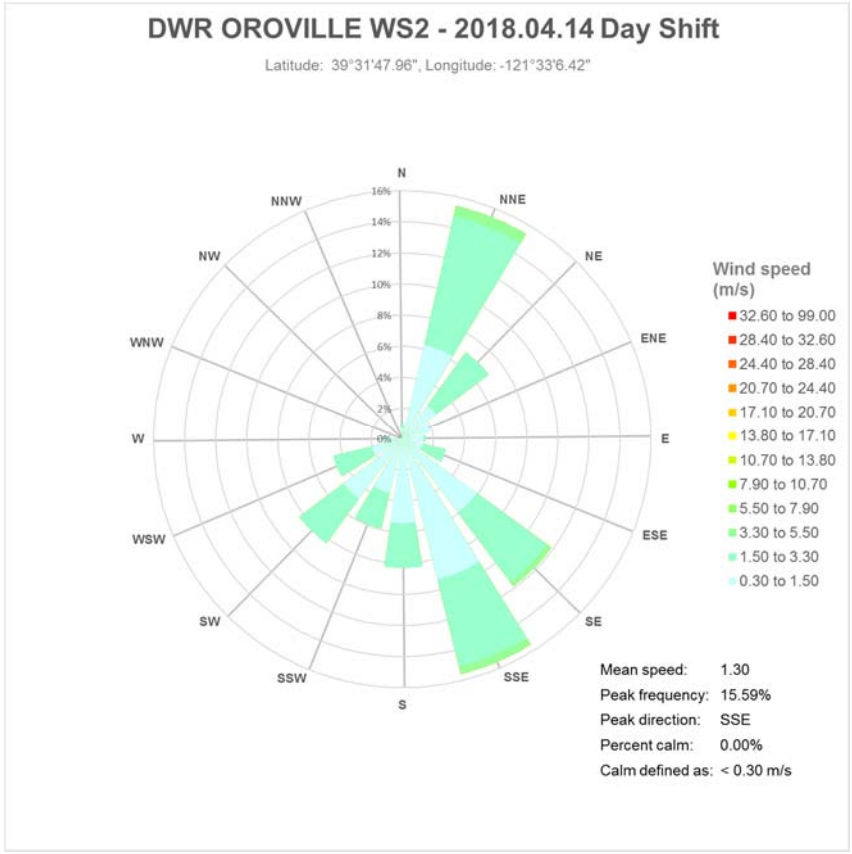

DWR OROVILLE WS2 - 2018.04.11 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.43
Peak frequency: 31.25%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

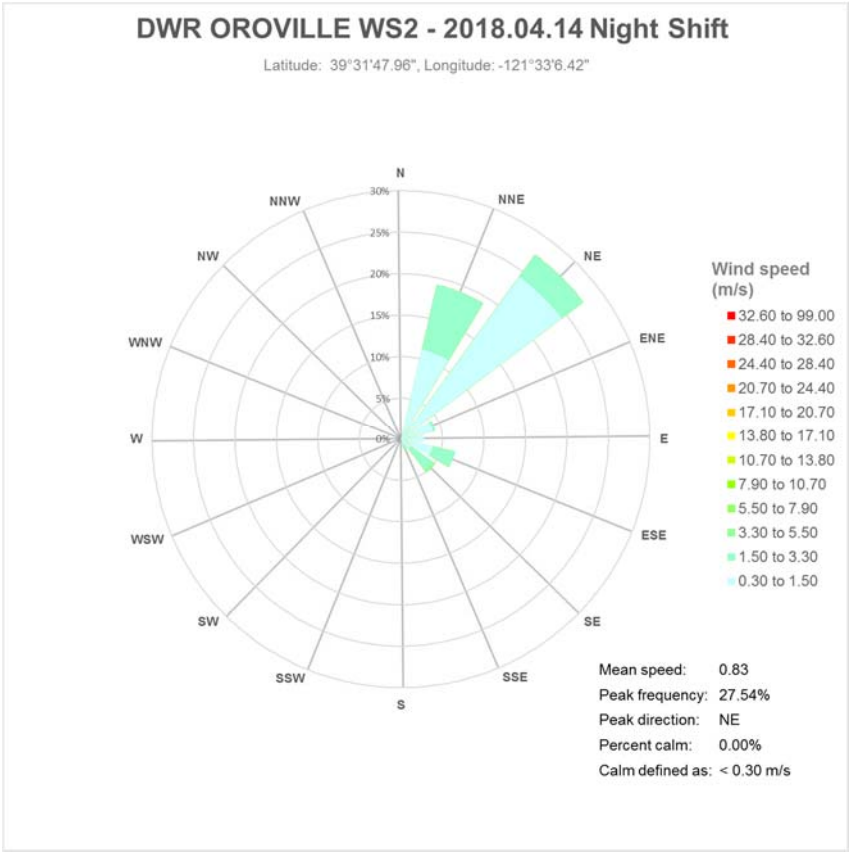

DWR OROVILLE WS2 - 2018.04.12 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.40
Peak frequency: 20.09%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

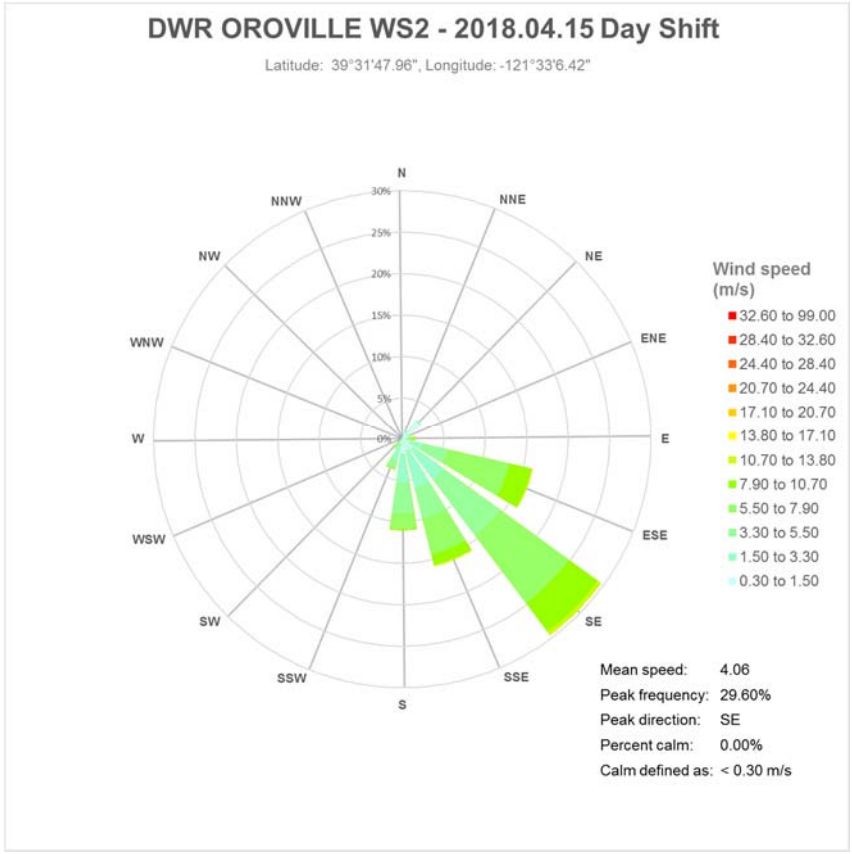

DWR OROVILLE WS2 - 2018.04.12 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.68
Peak frequency: 32.68%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

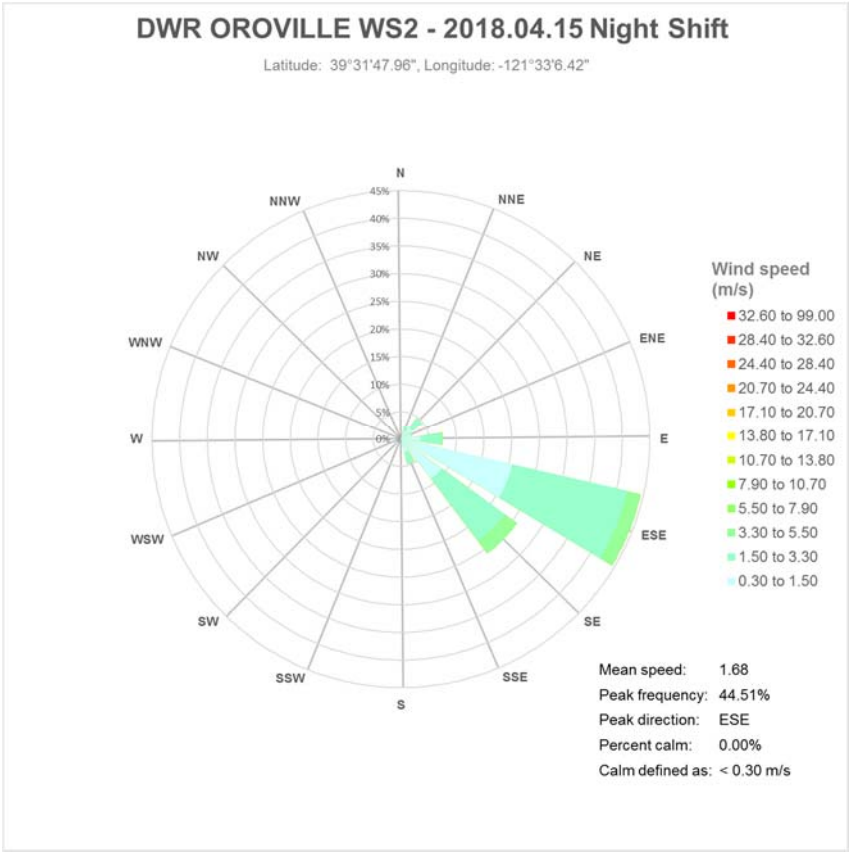

DWR OROVILLE WS2 - 2018.04.13 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 3.07
Peak frequency: 34.29%
Peak direction: W
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

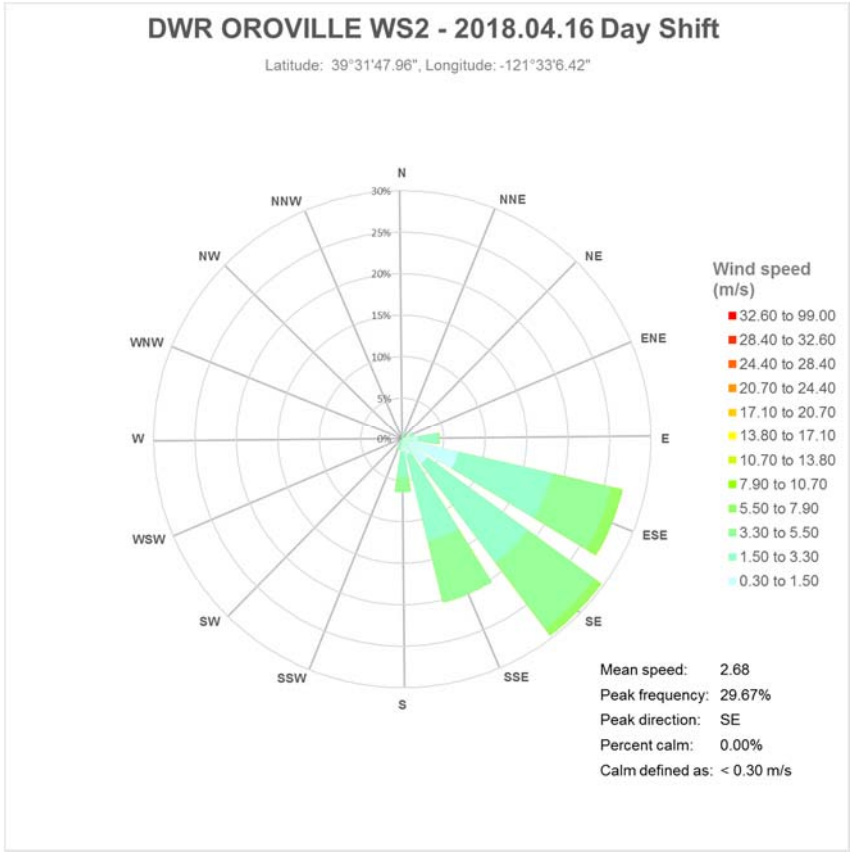

DWR OROVILLE WS2 - 2018.04.13 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60%
50%
40%
30%
20%
10%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.25
Peak frequency: 52.34%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

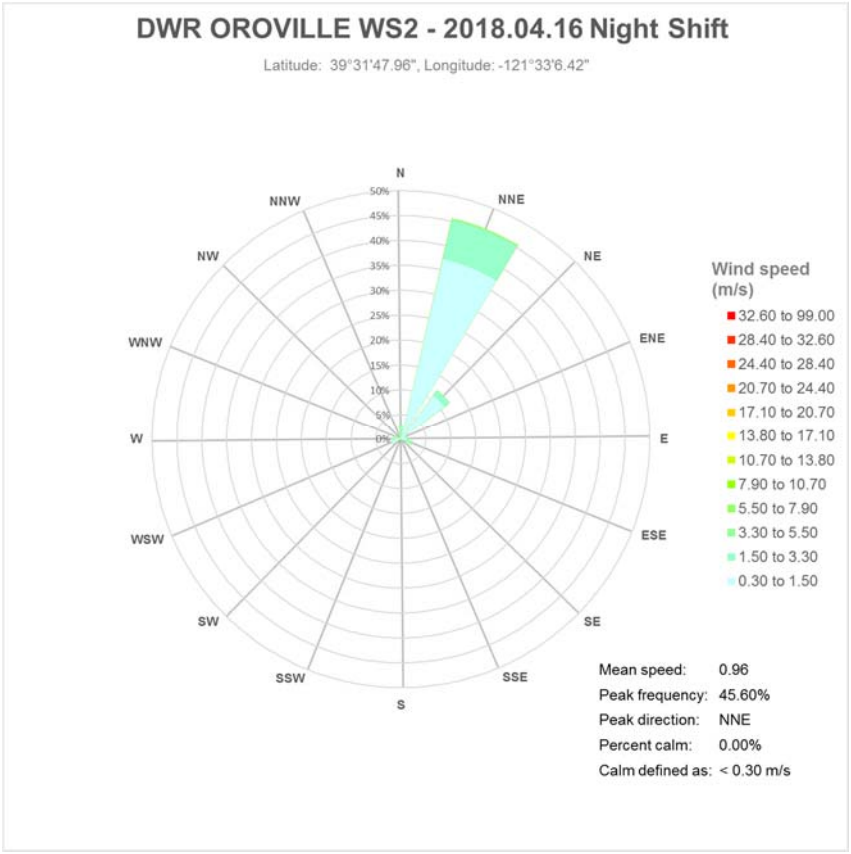

DWR OROVILLE WS2 - 2018.04.14 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.30
Peak frequency: 15.59%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

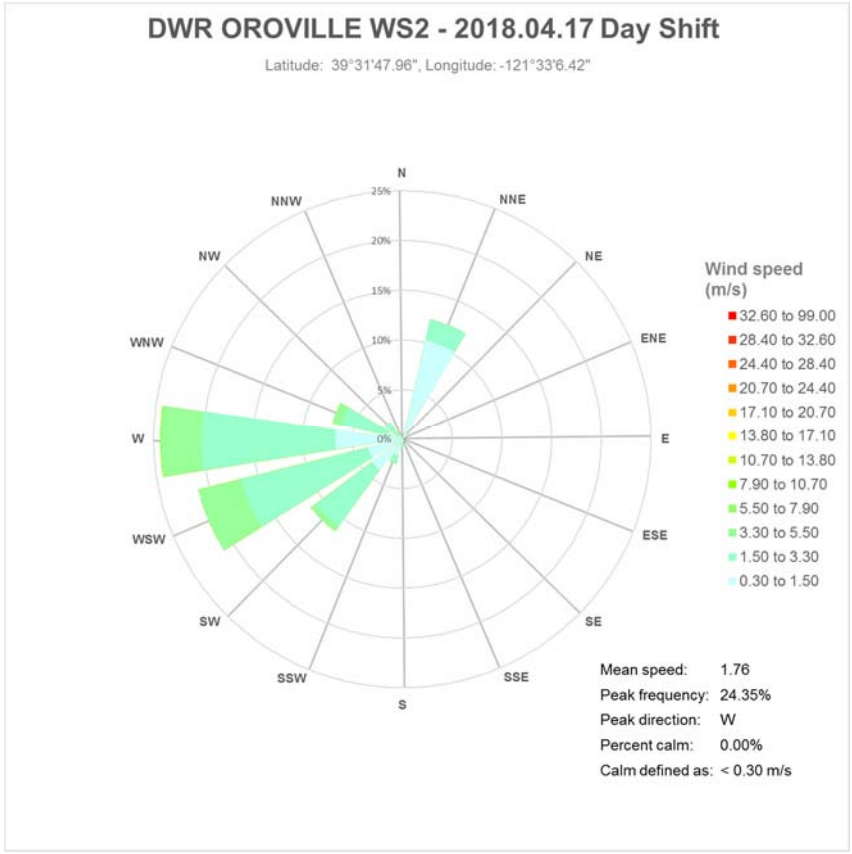

DWR OROVILLE WS2 - 2018.04.14 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.83
Peak frequency: 27.54%
Peak direction: NE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

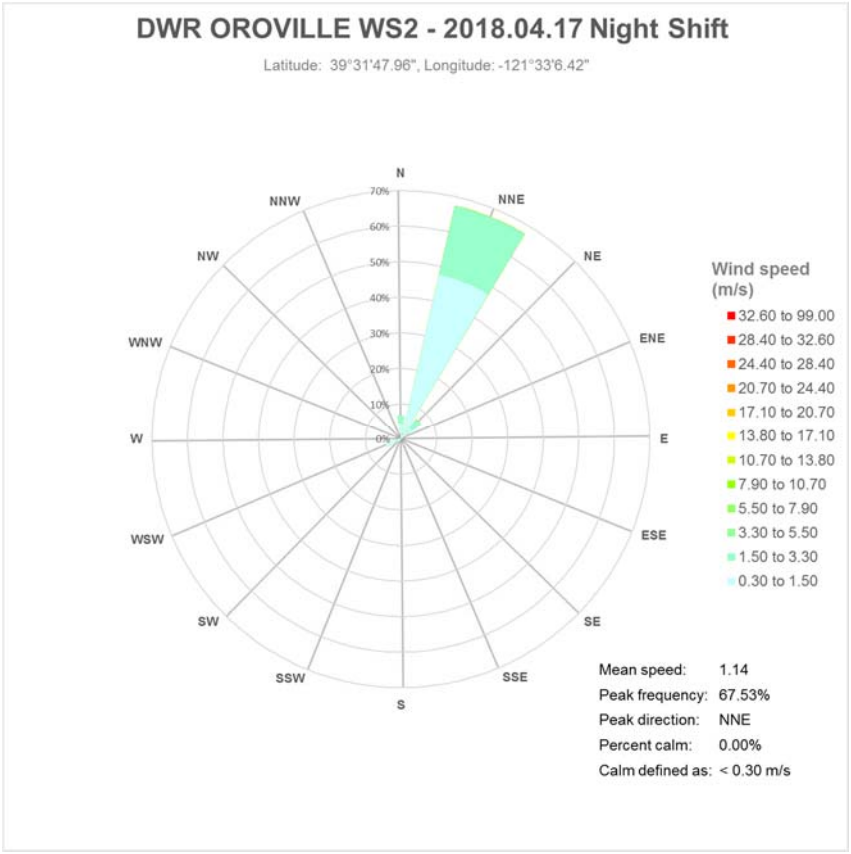

DWR OROVILLE WS2 - 2018.04.15 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 4.06
Peak frequency: 29.60%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

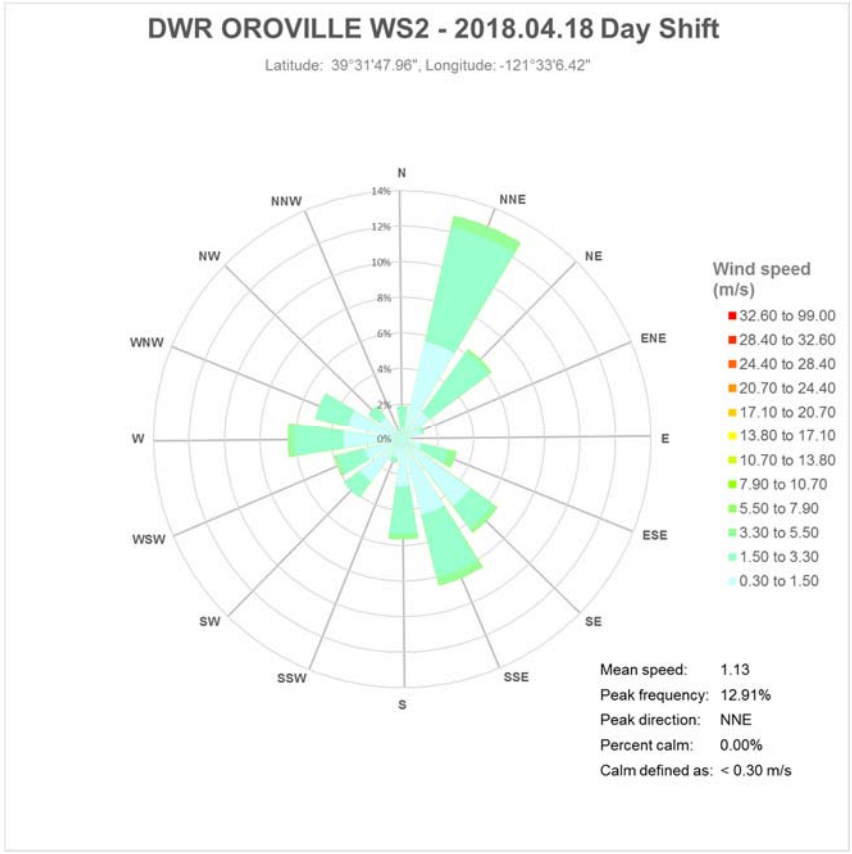

DWR OROVILLE WS2 - 2018.04.15 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.68
Peak frequency: 44.51%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

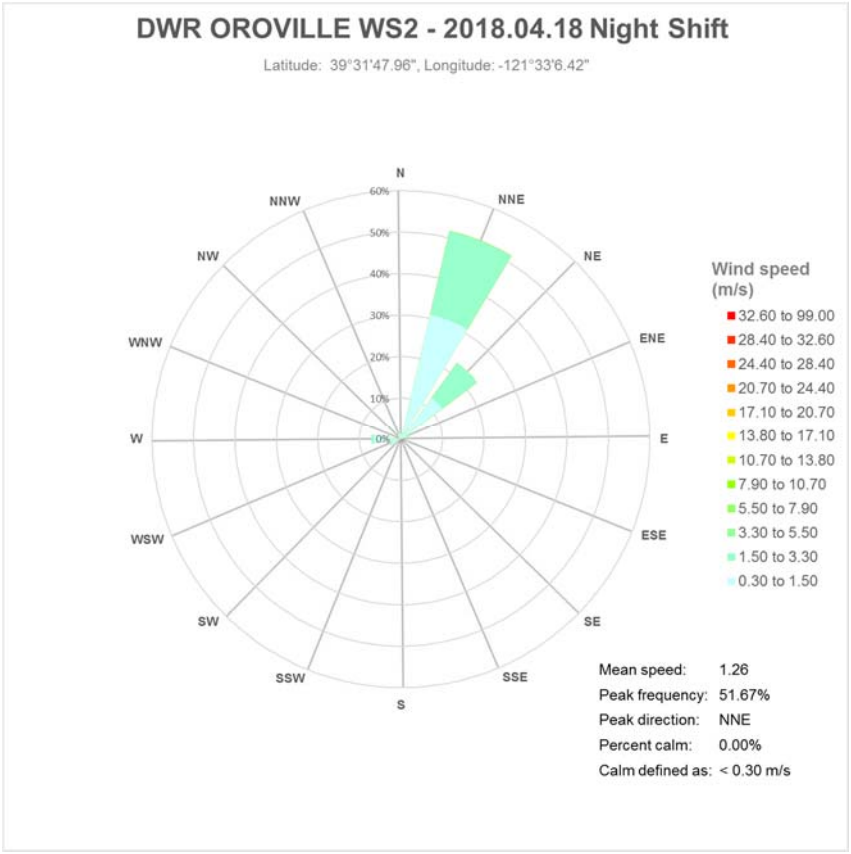

DWR OROVILLE WS2 - 2018.04.16 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.68
Peak frequency: 29.67%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

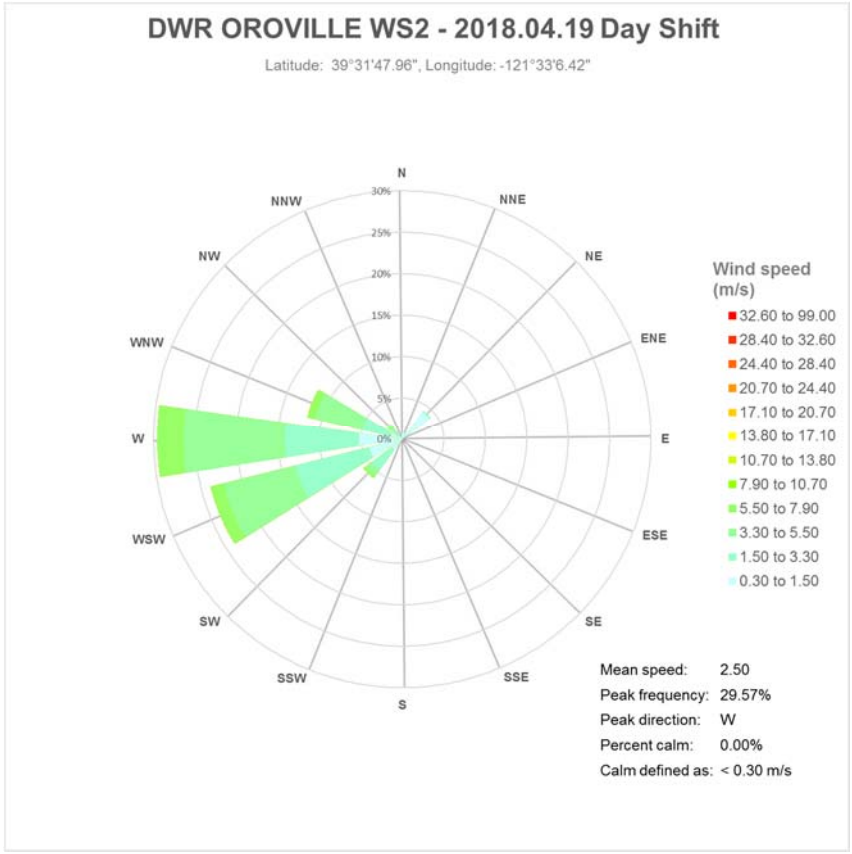

DWR OROVILLE WS2 - 2018.04.16 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.96
Peak frequency: 45.60%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

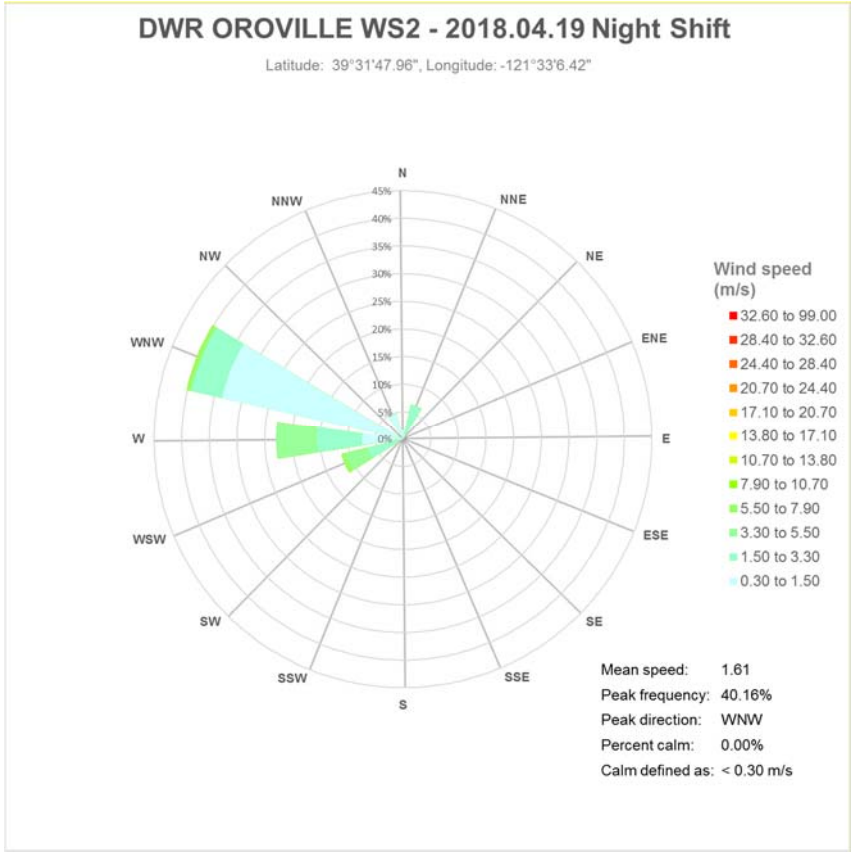

DWR OROVILLE WS2 - 2018.04.17 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.76
Peak frequency: 24.35%
Peak direction: W
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2018.04.17 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
70%
60%
50%
40%
30%
20%
10%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.14
Peak frequency: 67.53%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2018.04.18 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.13
Peak frequency: 12.91%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2018.04.18 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60%
50%
40%
30%
20%
10%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.26
Peak frequency: 51.67%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2018.04.19 Day Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.50
Peak frequency: 29.57%
Peak direction: W
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2018.04.19 Night Shift
Latitude: 39°31'47.96", Longitude: -121°33'6.42"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.61
Peak frequency: 40.16%
Peak direction: WNW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

10.0 Weather Pattern Events

Table 23 Weather Pattern Events April 06, 2018 – April 19, 2018

2018	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
April	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
06	61	57	53	59	57	53	100	96	93	30.06	29.93	29.86	10	4	2	22	9	28	2.23	Rain
07	71	62	54	60	54	41	100	80	39	30.12	29.90	29.79	10	7	2	24	16	32	0.57	Rain
08	69	58	48	49	46	42	89	66	42	30.22	30.17	30.13	10	10	10	10	6	-	0.00	
09	73	59	45	57	50	43	93	70	48	30.15	30.06	29.98	10	10	10	10	5	-	0.00	
10	69	64	59	57	52	41	87	64	36	30.06	30.03	29.99	10	10	8	17	10	-	0.03	Rain
11	62	54	46	55	48	43	97	81	57	30.06	29.97	29.86	10	9	2	30	12	39	0.22	Rain
12	61	52	42	43	39	33	93	66	35	30.38	30.24	30.05	10	10	10	9	6	-	0.00	
13	72	56	41	48	42	37	89	62	35	30.43	30.38	30.31	10	10	10	14	5	21	0.00	
14	75	62	48	53	48	45	89	60	38	30.33	30.22	30.05	10	10	10	10	4	-	0.00	
15	69	58	46	51	45	39	93	64	40	30.04	29.91	29.81	10	10	9	25	13	32	0.11	Rain
16	57	48	41	44	42	37	97	80	57	30.21	30.03	29.91	10	8	1	16	10	22	0.59	Rain , Thunderstorm
17	63	50	39	43	40	27	97	69	26	30.35	30.27	30.17	10	10	10	7	3	-	0.00	
18	64	56	48	46	42	36	80	63	38	30.16	30.08	29.99	10	10	10	8	4	-	0.00	
19	72	56	39	44	41	38	93	60	33	30.12	30.05	30.02	10	10	10	12	4	20	0.00	

11.0 Potential Offsite Air Contaminant Events

Trains continue to be actively traveling through the Diversion Dam work area throughout the day and night shifts.

12.0 Changes to Proposed Sampling Locations or Methodology

The following stations were approved by BCAQMD to be reactivated on 04/11/2018 at 06:00 hrs:

Station	Location	Way Point ID	Latitude	Longitude
5	N. Diversion Dam	WP 278	39°31'55.71"N	121°33'2.96"W
10	Cherokee Road	WP 281	39°32'13.44"N	121°32'48.07"W
13	E. Diversion Dam	WP 019A	39°31'42.97"N	121°32'35.30"W
14	S.E. Canal	WP 020A	39°31'37.77"N	121°33'2.45"W
15	S.W. Canal	WP 021A	39°31'41.01"N	121°33'17.04"W
22	Burma Road 02	WP 036A	39°32'21.2"N	121°31'12.6"W
23	Burma Road 03	WP 037A	39°32'53.2"N	121°32'18.8"W

Appendix A – Laboratory Reports

Appendix B – Perimeter Dust Monitoring