Air Quality Monitoring and Sampling Summary Report

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

DWR Oroville Dam Recovery Operations

December 27, 2019 through January 9, 2020

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Approved by:

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Summary

The work site air monitoring activities were stable during this time period. None of the established stations were modified or moved. On 12/20/2019, all stations were temporarily taken out of service at the close of the AM shift for the Christmas Holiday. The stations were restarted at the start of the 12/30/2019 AM Shift. On 12/31/2019, all stations were temporarily taken out of service at the close of the AM shift for the New Year Holiday. The stations were restarted at the start of the 01/02/2019 AM Shift.

Air quality monitoring at all 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. The air monitoring equipment is inspected throughout the sampling episodes to ensure proper operation and to assess the site conditions which may impact sample results. Eight (8) weather events were experienced during this time period.

The equipment in the field continues to perform well and meets the sampling design for flow rates, volumes, and dependability for the CARB Modified AHERA TEM methodology. 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: 133
- Total number of samples that were “None Detected”: 133 (100%)
- Total number of samples where asbestos was detected but the action level was not exceeded: 0
- Total number of samples that exceeded the action level: 0
- Total number of samples that were not analyzed: 0
- Total number of samples that were “Overloaded”: 0

The Action Level of 0.0050 S/cc was not exceeded during this time frame for regulated asbestos minerals.

Non-asbestos structures were detected and noted in the sample summary and in the laboratory reports. Non-regulated amphibole structures were identified at the Upper zone.

Wet weather and elevated soil moisture conditions reduce the frequency and quantity of the application of water and dust mitigation techniques to achieve lower 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
4	Canyon Drive	WP 249	39°31'40.23"N	121°28'52.17"W
9	Burma Road 01	WP 088A	39°32'26.4"N	121°30'24.7"W
11	Launch Ramp Parking	WP 092A	39°32'47.0"N	121°29'41.3"W
12	Launch Ramp Turnaround	WP 081A	39°32'51.01"N	121°29'53.76"W
24	Dan Beebe Trail	WP 083A	39°31'55.35"N	121°30'11.70" W
25	Upper Overlook	WP 091A	39°31'50.24"N	121°28'41.31"W

Figure 1 Upper Overlook Sample Station Locations

Figure 2 Burma Road Sampling Locations

Figure 3 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 always be available listing the location of the samples. This is also an important component of good laboratory practices. The COC record is necessary to make 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)
12/30/2019	91230-OFD-PMT-01	142000006	2.70	2.70	2.70	05:00	17:30	Day	750	2025.00
	91230-OFD-PMT-02		2.70	2.66	2.68	05:24	17:40		736	1972.48
	91230-OFD-PMT-03		2.70	2.77	2.74	05:33	17:50		737	2019.38
	91230-OFD-PMT-04		2.70	2.72	2.71	05:43	17:56		733	1986.43
	91230-OFD-PMT-05		2.70	2.69	2.70	17:30	05:30	Night	720	1944.00
	91230-OFD-PMT-06		2.70	2.67	2.69	17:40	05:43		723	1944.87
	91230-OFD-PMT-07		2.70	2.74	2.72	17:50	05:51		721	1961.12
	91230-OFD-PMT-08		2.70	2.68	2.69	17:56	06:00		724	1947.56
12/31/2019	91231-OFD-PMT-01	412000040	2.71	2.70	2.71	05:30	14:12	Day	522	1414.62
	91231-OFD-PMT-02		2.70	2.69	2.70	05:43	14:26		523	1412.10
	91231-OFD-PMT-03		2.71	2.66	2.69	05:51	14:40		529	1423.01
	91231-OFD-PMT-04		2.70	2.69	2.70	06:01	14:46		525	1417.50
01/02/2020	00102-OFD-PMT-01	322000188	2.72	2.78	2.75	04:48	17:30	Day	762	2095.50
	00102-OFD-PMT-02		2.70	2.71	2.71	05:30	17:44		734	1989.14
	00102-OFD-PMT-03		2.70	2.74	2.72	05:13	17:50		757	2059.04
	00102-OFD-PMT-04		2.70	2.77	2.74	05:39	17:57		738	2022.12
	00102-OFD-PMT-05		2.70	2.68	2.69	17:30	05:30	Night	720	1936.80
	00102-OFD-PMT-06		2.70	2.74	2.72	17:44	05:42		718	1952.96
	00102-OFD-PMT-07		2.70	2.70	2.70	17:51	05:51		720	1944.00
	00102-OFD-PMT-08		2.70	2.71	2.71	17:57	05:58		721	1953.91
01/03/2020	00103-OFD-PMT-01	532000036	2.70	2.76	2.73	05:30	17:30	Day	720	1965.60
	00103-OFD-PMT-02		2.70	2.75	2.73	05:42	17:41		719	1962.87
	00103-OFD-PMT-03		2.70	2.73	2.72	05:51	17:50		719	1955.68
	00103-OFD-PMT-04		2.70	2.75	2.73	05:58	17:55		717	1957.41
	00103-OFD-PMT-05		2.70	2.63	2.67	17:30	05:18	Night	708	1890.36
	00103-OFD-PMT-06		2.70	2.67	2.69	17:41	05:32		711	1912.59
	00103-OFD-PMT-07		2.70	2.69	2.70	17:50	05:43		713	1925.10
	00103-OFD-PMT-08		2.70	2.67	2.69	17:55	05:51		716	1926.04
01/04/2020	00104-OFD-PMT-01	312000022	2.70	2.72	2.71	05:18	17:30	Day	732	1983.72
	00104-OFD-PMT-02		2.70	2.71	2.71	05:32	17:40		728	1972.88
	00104-OFD-PMT-03		2.70	2.71	2.71	05:43	17:49		726	1967.46
	00104-OFD-PMT-04		2.70	2.72	2.71	05:51	17:56		725	1964.75
	00104-OFD-PMT-05		2.70	2.68	2.69	17:30	05:30	Night	720	1936.80
	00104-OFD-PMT-06		2.70	2.71	2.71	17:40	05:42		722	1956.62
	00104-OFD-PMT-07		2.70	2.71	2.71	17:49	05:51		722	1956.62
	00104-OFD-PMT-08		2.70	2.73	2.72	17:56	05:58		722	1963.84

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)
01/05/2020	00105-OFD-PMT-01	162000244	2.70	2.72	2.71	05:30	16:56	Day	686	1859.06
	00105-OFD-PMT-02		2.70	2.70	2.70	05:42	17:13		691	1865.70
	00105-OFD-PMT-03		2.70	2.73	2.72	05:51	17:20		689	1874.08
	00105-OFD-PMT-04		2.70	2.73	2.72	05:58	17:28		690	1876.80
	00105-OFD-PMT-05		2.70	2.65	2.68	16:57	05:30	Night	753	2018.04
	00105-OFD-PMT-06		2.70	2.68	2.69	17:13	05:44		751	2020.19
	00105-OFD-PMT-07		2.70	2.68	2.69	17:22	05:52		750	2017.50
	00105-OFD-PMT-08		2.70	2.70	2.70	17:30	05:59		749	2022.30
01/06/2020	00106-OFD-PMT-01	532000048	2.70	2.70	2.70	05:30	17:15	Day	705	1903.50
	00106-OFD-PMT-02		2.70	2.70	2.70	05:45	10:58		313	845.10
	00106-OFD-PMT-02		2.71	2.67	2.69	13:40	17:27		227	610.63
	00106-OFD-PMT-03		2.70	2.72	2.71	05:52	17:34		702	1902.42
	00106-OFD-PMT-04		2.65	2.65	2.65	06:00	10:01		241	638.65
	00106-OFD-PMT-04		2.70	2.78	2.74	10:10	17:40		450	1233.00
	00106-OFD-PMT-05		2.70	2.65	2.68	17:15	05:45	Night	750	2010.00
	00106-OFD-PMT-06		2.70	2.68	2.69	17:27	05:58		751	2020.19
	00106-OFD-PMT-07		2.70	2.70	2.70	17:34	06:04		750	2025.00
	00106-OFD-PMT-08		2.70	2.68	2.69	17:40	06:12		752	2022.88
01/07/2020	00107-OFD-PMT-01	412000248	2.70	2.72	2.71	05:45	17:30	Day	705	1910.55
	00107-OFD-PMT-02		2.70	2.72	2.71	05:57	17:42		705	1910.55
	00107-OFD-PMT-03		2.70	2.71	2.71	06:04	17:49		705	1910.55
	00107-OFD-PMT-04		2.70	2.77	2.74	06:13	17:56		703	1926.22
	00107-OFD-PMT-05		2.70	2.63	2.67	17:30	05:30	Night	720	1922.40
	00107-OFD-PMT-06		2.70	2.67	2.69	17:42	05:43		721	1939.49
	00107-OFD-PMT-07		2.70	2.68	2.69	17:49	05:51		722	1942.18
	00107-OFD-PMT-08		2.70	2.70	2.70	17:56	06:00		724	1954.80
01/08/2020	00108-OFD-PMT-01	162000549	2.70	2.71	2.71	05:30	17:30	Day	720	1951.20
	00108-OFD-PMT-02		2.70	2.71	2.71	05:43	17:42		719	1948.49
	00108-OFD-PMT-03		2.70	2.71	2.71	05:51	17:49		718	1945.78
	00108-OFD-PMT-04		2.70	2.72	2.71	06:00	17:54		714	1934.94
	00108-OFD-PMT-05		2.70	2.66	2.68	17:30	05:30	Night	720	1929.60
	00108-OFD-PMT-06		2.70	2.68	2.69	17:42	05:44		722	1942.18
	00108-OFD-PMT-07		2.70	2.70	2.70	17:49	05:54		725	1957.50
	00108-OFD-PMT-08		2.70	2.73	2.72	17:54	06:03		729	1982.88

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)
01/09/2020	00109-OFD-PMT-01	322000709	2.70	2.67	2.69	05:30	17:30	Day	720	1936.80
	00109-OFD-PMT-02		2.70	2.69	2.70	05:44	17:44		720	1944.00
	00109-OFD-PMT-03		2.70	2.68	2.69	05:54	17:52		718	1931.42
	00109-OFD-PMT-04		2.70	2.72	2.71	06:03	17:58		715	1937.65
	00109-OFD-PMT-05		2.70	2.66	2.68	17:30	05:30	Night	720	1929.60
	00109-OFD-PMT-06		2.70	2.71	2.71	17:44	05:42		718	1945.78
	00109-OFD-PMT-07		2.70	2.73	2.72	17:52	05:50		718	1952.96
	00109-OFD-PMT-08		2.70	2.75	2.73	17:58	05:56		718	1960.14

Table 3 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)
12/30/2020	91230-OFD-BPT-01	142000008	2.71	2.71	2.71	05:45	17:30	Day	705	1910.55
	91230-OFD-BPT-02		2.71	2.69	2.70	17:30	05:30	Night	720	1944.00
12/31/2020	91231-OFD-BPT-01	412000042	2.70	2.71	2.71	05:30	14:30	Day	540	1463.40
01/02/2020	00102-OFD-BPT-01	322000186	2.70	2.74	2.72	06:00	17:30	Day	690	1876.80
	00102-OFD-BPT-02		2.70	2.71	2.71	17:31	05:30	Night	719	1948.49
01/03/2020	00103-OFD-BPT-01	532000034	2.70	2.74	2.72	05:31	17:30	Day	719	1955.68
	00103-OFD-BPT-02		2.70	2.70	2.70	17:31	05:25	Night	714	1927.80
01/04/2020	00104-OFD-BPT-01	312000023	2.70	2.70	2.70	05:26	17:26	Day	720	1944.00
	00104-OFD-BPT-02		2.70	2.69	2.70	17:27	05:25	Night	718	1938.60
01/05/2020	00105-OFD-BPT-01	162000250	2.70	2.73	2.72	05:26	17:25	Day	719	1955.68
	00105-OFD-BPT-02		2.70	2.68	2.69	17:26	05:25	Night	719	1934.11
01/06/2020	00106-OFD-BPT-01	532000047	2.70	2.75	2.73	05:26	17:25	Day	719	1962.87
	00106-OFD-BPT-02		2.70	2.70	2.70	17:26	05:25	Night	719	1941.30
01/07/2020	00107-OFD-BPT-01	412000243	2.70	2.74	2.72	05:26	17:25	Day	719	1955.68
	00107-OFD-BPT-02		2.70	2.70	2.70	17:26	05:25	Night	719	1941.30
01/08/2020	00108-OFD-BPT-01	162000542	2.70	2.70	2.70	05:26	17:30	Day	724	1954.80
	00108-OFD-BPT-02		2.70	2.71	2.71	17:31	05:25	Night	714	1934.94
01/09/2020	00109-OFD-BPT-01	322000707	2.70	2.73	2.72	05:25	17:25	Day	720	1958.40
	00109-OFD-BPT-02		2.70	2.71	2.71	17:26	05:25	Night	719	1948.49

Table 4 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)
12/30/2019	91230-OFD-LRP-01	142000007	2.70	2.70	2.70	05:20	18:18	Day	778	2100.60
	91230-OFD-LRP-02		2.71	2.75	2.73	06:10	18:14		724	1976.52
	91230-OFD-LRP-03		2.70	2.73	2.72	18:18	06:23	Night	725	1972.00
	91230-OFD-LRP-04		2.70	2.74	2.72	18:14	06:13		719	1955.68
12/31/2019	91231-OFD-LRP-01	412000041	2.70	2.71	2.71	06:23	15:23	Day	540	1463.40
	91231-OFD-LRP-02		2.71	2.71	2.71	06:14	15:14		540	1463.40
01/02/2020	00102-OFD-LRP-01	322000187	2.71	2.76	2.74	06:00	18:17	Day	737	2019.38
	00102-OFD-LRP-02		2.70	2.77	2.74	05:53	18:10		737	2019.38
	00102-OFD-LRP-03		2.70	2.68	2.69	18:17	06:18	Night	721	1939.49
	00102-OFD-LRP-04		2.70	2.68	2.69	18:10	06:10		720	1936.80
01/03/2020	00103-OFD-LRP-01	532000035	2.70	2.78	2.74	06:18	18:17	Day	719	1970.06
	00103-OFD-LRP-02		2.70	2.78	2.74	06:10	18:08		718	1967.32
	00103-OFD-LRP-03		2.70	2.69	2.70	18:18	06:16	Night	718	1938.60
	00103-OFD-LRP-04		2.70	2.69	2.70	18:09	06:06		717	1935.90
01/04/2020	00104-OFD-LRP-01	312000024	2.70	2.74	2.72	06:16	18:17	Day	721	1961.12
	00104-OFD-LRP-02		2.70	2.77	2.74	06:06	18:08		722	1978.28
	00104-OFD-LRP-03		2.70	2.71	2.71	18:17	06:20	Night	723	1959.33
	00104-OFD-LRP-04		2.70	2.71	2.71	18:08	06:12		724	1962.04
01/05/2020	00105-OFD-LRP-01	162000247	2.71	2.70	2.71	06:20	17:52	Day	692	1875.32
	00105-OFD-LRP-02		2.71	2.72	2.72	06:12	17:44		692	1882.24
	00105-OFD-LRP-03		2.70	2.70	2.70	18:02	06:11	Night	729	1968.30
	00105-OFD-LRP-04		2.63	2.63	2.63	17:47	21:16		209	549.67
	00105-OFD-LRP-04		2.70	2.75	2.73	23:25	06:20		415	1132.95
01/06/2020	00106-OFD-LRP-01	532000046	2.70	2.73	2.72	06:11	17:58	Day	707	1923.04
	00106-OFD-LRP-02		2.70	2.73	2.72	06:20	17:51		691	1879.52
	00106-OFD-LRP-03		2.70	2.68	2.69	17:59	06:28	Night	749	2014.81
	00106-OFD-LRP-04		2.70	2.69	2.70	17:52	06:20		748	2019.60
01/07/2020	00107-OFD-LRP-01	412000246	2.70	2.76	2.73	06:29	18:18	Day	709	1935.57
	00107-OFD-LRP-02		2.70	2.74	2.72	06:20	18:11		711	1933.92
	00107-OFD-LRP-03		2.70	2.72	2.71	18:18	06:19	Night	721	1953.91
	00107-OFD-LRP-04		2.70	2.70	2.70	18:11	06:11		720	1944.00

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)
01/08/2020	00108-OFD-LRP-01	162000546	2.70	2.71	2.71	06:19	18:18	Day	719	1948.49
	00108-OFD-LRP-02		2.70	2.73	2.72	06:11	18:08		717	1950.24
	00108-OFD-LRP-03		2.70	2.71	2.71	18:18	06:29	Night	731	1981.01
	00108-OFD-LRP-04		2.70	2.69	2.70	18:08	06:19		731	1973.70
01/09/2020	00109-OFD-LRP-01	322000708	2.70	2.73	2.72	06:29	18:18	Day	709	1928.48
	00109-OFD-LRP-02		2.70	2.75	2.73	06:19	18:12		713	1946.49
	00109-OFD-LRP-03		2.70	2.73	2.72	18:18	06:15	Night	717	1950.24
	00109-OFD-LRP-04		2.70	2.72	2.71	18:12	06:09		717	1943.07

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:

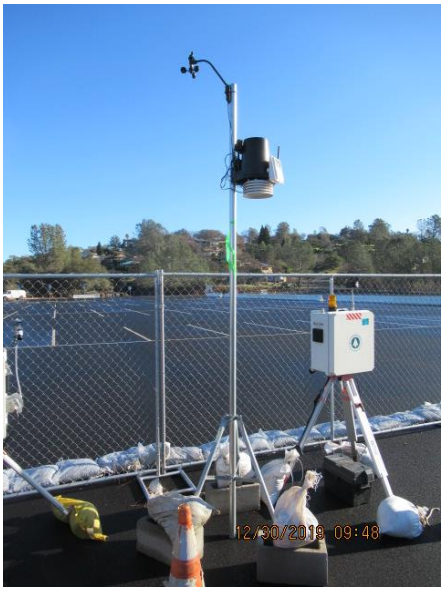
- 0.45 µm pore size, Mixed Cellulose Esther (MCE) Filter Material
- 5.0 µm Filter is placed under the 0.45 µm filter as a diffuser
- 2" Static Conductive Extension Cowl
- Meets AHERA Requirements Asbestos TEM 25 mm 0.45 µm Cassette-Individual

4.0 Photo Documentation

Table 5 Photo Documentation of Air Monitoring Stations and Weather Stations – Current Condition

	
Station 1 – WP 246 Intake Yard	Station 4 – WP 249 Canyon Drive
	
Station 9 – WP 088A Burma Road 01	Station 11 – WP 092A Launch Ramp Parking

	
Station 12 – WP 081A Launch Ramp Turnaround	Station 24 – WP 083A Dan Beebe Trail
	Intentionally Left Blank
Station 25 – WP 091A Upper Overlook	Intentionally Left Blank

	
Weather Station #1 – WP 090A	Weather Station #2 – WP 085A

5.0 Air Sampling Equipment Malfunctions & Corrective Actions

Table 6 – Equipment Failures

Equipment	Date/Time	Exception	Remedy
DM11	2019.12.31 03:23	WP092A Launch Ramp Parking – DustTrak was not collecting data.	The DustTrak was restarted. The issue was resolved at 06:22 on 12/31/2019.
DM11	2020.01.03 02:45	WP091A Upper Overlook - DustTrak was not collecting data.	The DustTrak was restarted. The issue was resolved at 04:34 on 01/03/2020.
DM25	2020.01.06 03:37	WP092A Launch Ramp Parking - DustTrak was not operating correctly.	A zero calibration was performed. The issue was resolved at 04:53 on 01/06/2020.
DM11	2020.01.05 20:44	WP092A Launch Ramp Parking - DustTrak was not operating correctly.	A zero calibration was performed. The issue was resolved at 23:43 on 01/05/2020.

Table 7 – Sample Failure

Date	Sample ID	Discussion
No apparent sample failures during this time period.		

6.0 Exceedances & Corrective Actions

Figure 4 - Exceedance Chart

No exceedances during this time period.

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 8 – 2019.12.27 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	No samples taken due to holiday shutdown							
Burma Road	No samples taken due to holiday shutdown							
Launch Ramp	No samples taken due to holiday shutdown							

Table 9 – 2019.12.28 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	No samples taken due to holiday shutdown							
Burma Road	No samples taken due to holiday shutdown							
Launch Ramp	No samples taken due to holiday shutdown							

Table 10 – 2019.12.29 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	No samples taken due to holiday shutdown							
Burma Road	No samples taken due to holiday shutdown							
Launch Ramp	No samples taken due to holiday shutdown							

Table 11 - 2019.12.30 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	91230-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	91230-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	91230-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	91230-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	91230-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	91230-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	91230-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	91230-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	91230-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 12 - 2019.12.31 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	91231-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	91231-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	91231-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	91231-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	91231-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	91231-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	91231-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 13 – 2020.01.01 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	No samples taken due to holiday shutdown							
Burma Road	No samples taken due to holiday shutdown							
Launch Ramp	No samples taken due to holiday shutdown							

Table 14 - 2020.01.02 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	00102-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0009
	00102-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00102-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00102-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00102-OFD-BPT-02	WP088A PM Burma Road 01	1	None Detected			0.0010	<0.0010
Launch Ramp	00102-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00102-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00102-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00102-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 15 – 2020.01.03 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	00103-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00103-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0009
	00103-OFD-PMT-03	WP091A AM Upper Overlook	1	None Detected			0.0009	<0.0009
	00103-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0009	<0.0009
	00103-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00103-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00103-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00103-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00103-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00103-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	00103-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00103-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009
	00103-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00103-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 16 – 2020.01.04 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	00104-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00104-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00104-OFD-PMT-08	WP246 PM Intake Yard	1	None Detected			0.0010	<0.0010
Burma Road	00104-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	00104-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	00104-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00104-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00104-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00104-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 17 – 2020.01.05 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	00105-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00105-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00105-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00105-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	00105-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00105-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00105-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00105-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 18 – 2020.01.06 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	00106-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0009
	00106-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00106-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
Burma Road	00106-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00106-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	00106-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00106-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00106-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00106-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009

Table 19 – 2020.01.07 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	00107-OFD-PMT-01	WP083A AM Dan Beebe Trail	1	None Detected			0.0010	<0.0010
	00107-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00107-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00107-OFD-PMT-04	WP246 AM Intake Yard	1	None Detected			0.0010	<0.0010
			Non-asbestos structures reported includes a contribution from non-regulated amphiboles.					
	00107-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00107-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0009
	00107-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0009	<0.0009
	00107-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
Burma Road	00107-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00107-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00107-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00107-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00107-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00107-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009

Table 20 – 2020.01.08 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	00108-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00108-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0009	<0.0009
	00108-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00108-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00108-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00108-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00108-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009
	00108-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00108-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 21 – 2020.01.09 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	00109-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00109-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00109-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	00109-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0010	<0.0010
Launch Ramp	00109-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00109-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00109-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00109-OFD-LRP-04	WP081A 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.

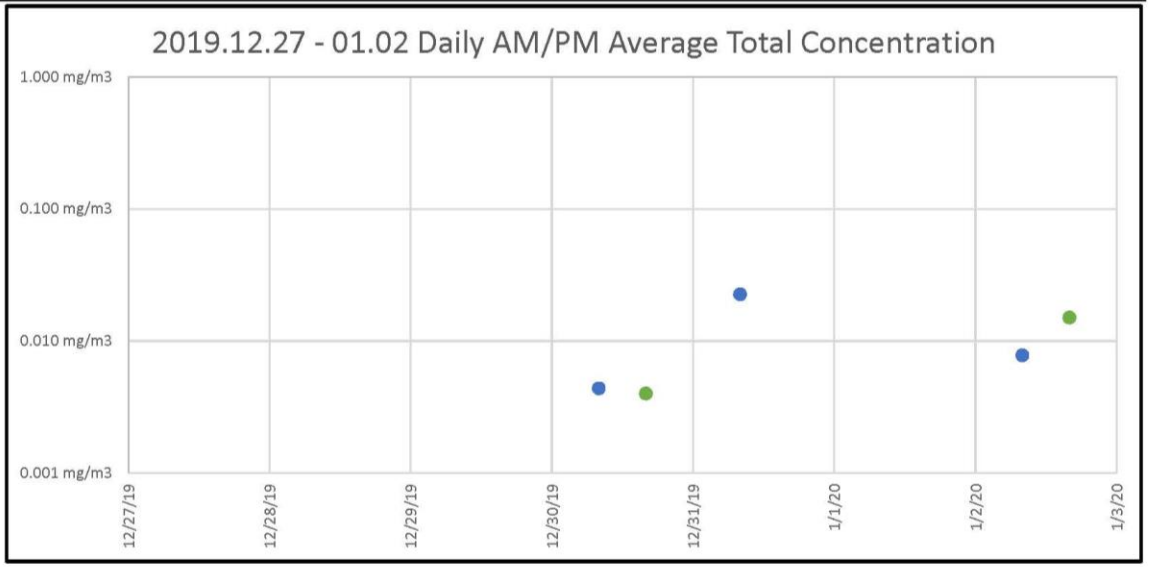
Perimeter dust levels for this time period were unremarkable, with intermittent spikes due to wind gust. There were no citable episodes of “visible emissions” at the work zone perimeter.

Dust results are presented in Appendix B.

Figure 5 WP 246 Intake Yard Dust Daily Average (mg/m^3) 12/27-01/02

WP 246 Intake Yard

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 6:00 AM
Intake Yd	Dustrak DRX	8533163819	39° 32' 5.44"N, 121°28'29.37"W	Episode Stop:	1/3/20 5:59 AM



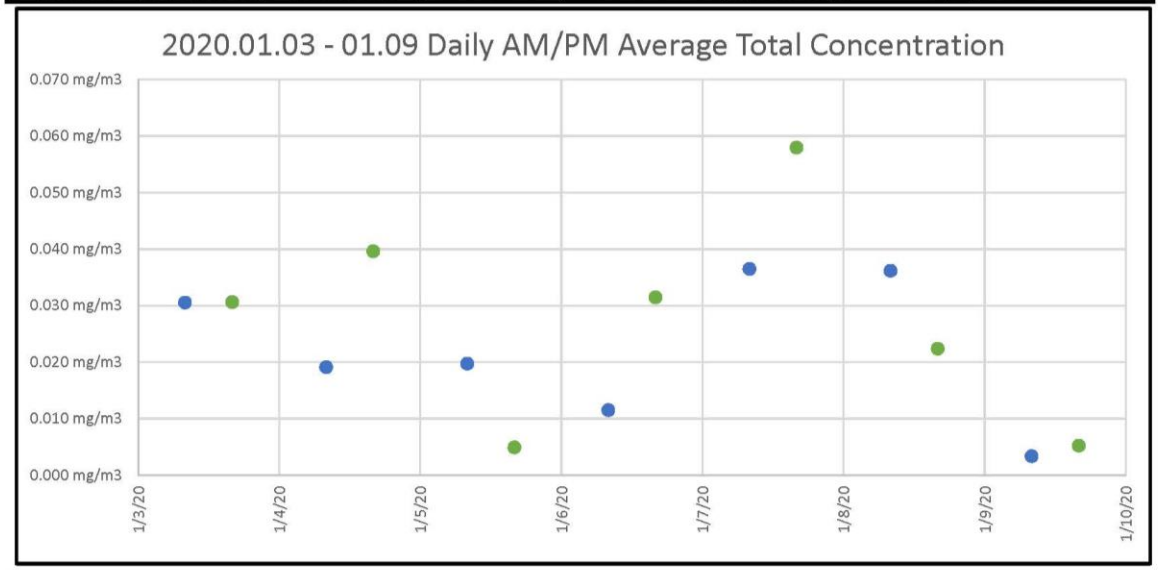
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.004	0.023	No Data	0.008
Night Shift	No Data	No Data	No Data	0.004	No Data	No Data	0.015

Note: This graph has been placed on a LOG scale.

Figure 6 WP 246 Intake Yard Dust Daily Average (mg/m^3) 01/03-01/09

WP 246 Intake Yard

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:00 AM
Intake Yd	Dustrak DRX	8533163819	39° 32' 5.44"N, 121°28'29.37"W	Episode Stop:	1/10/20 5:59 AM

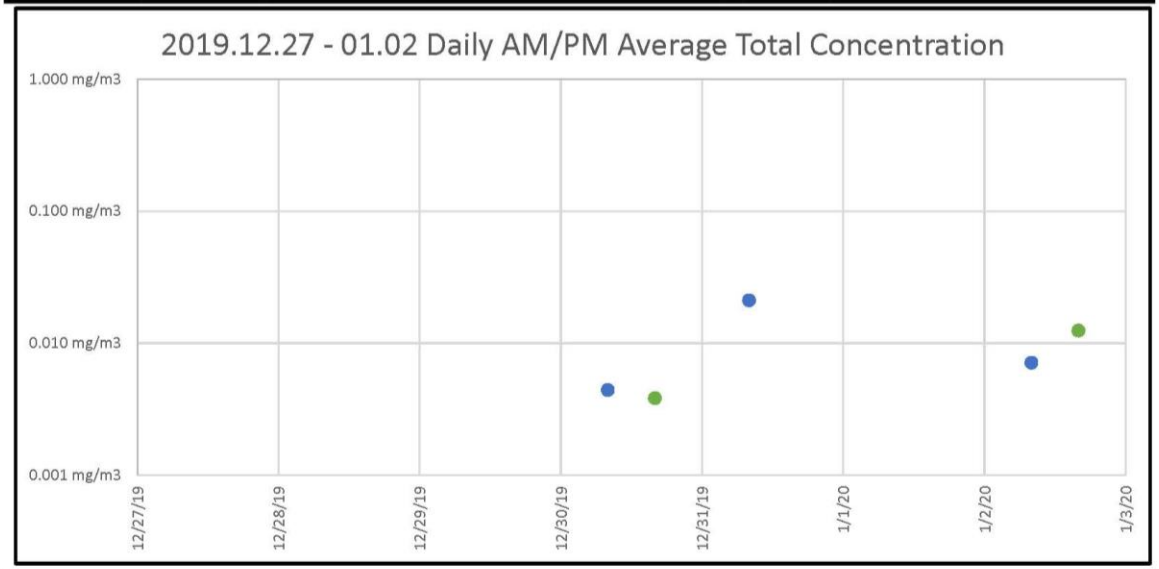


	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.031	0.019	0.020	0.012	0.037	0.036	0.003
Night Shift	0.031	0.040	0.005	0.031	0.058	0.022	0.005

Figure 7 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 12/27-01/02

WP 249 Canyon Drive

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 6:00 AM
Canyon Dr	Dustrak DRX	8533152303	39°31'40.23"N, 121°28' 52.17"W	Episode Stop:	1/3/20 5:59 AM



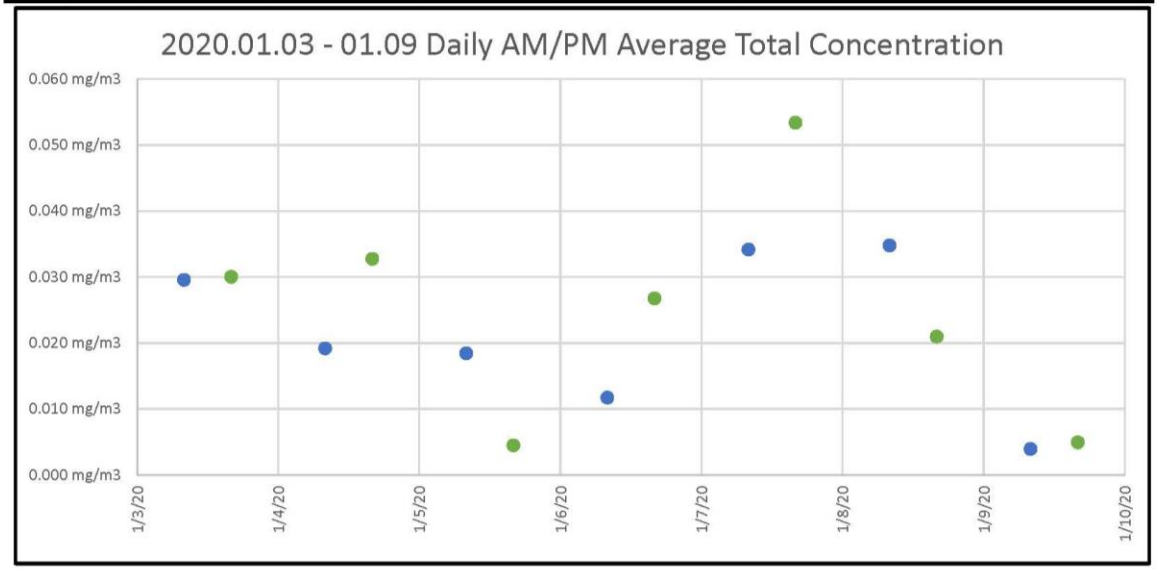
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.004	0.021	No Data	0.007
Night Shift	No Data	No Data	No Data	0.004	No Data	No Data	0.012

Note: This graph has been placed on a LOG scale.

Figure 8 WP 249 Canyon Drive Dust Daily Average (mg/m^3) 01/03-01/09

WP 249 Canyon Drive

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:00 AM
Canyon Dr	Dustrak DRX	8533152303	39°31'40.23"N, 121°28' 52.17"W	Episode Stop:	1/10/20 5:59 AM



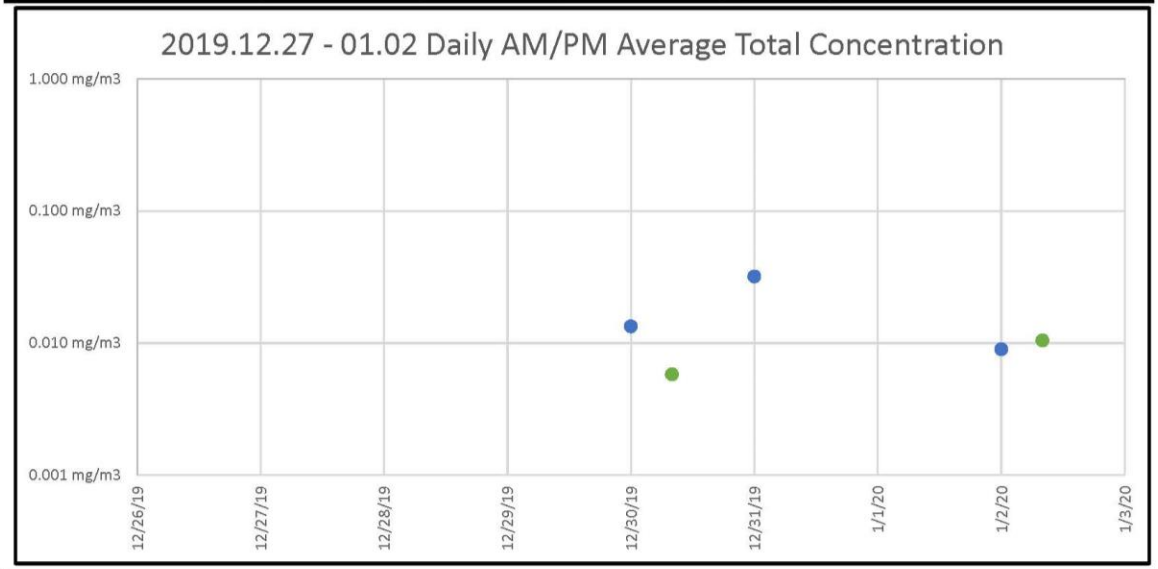
	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.030	0.019	0.018	0.012	0.034	0.035	0.004
Night Shift	0.030	0.033	0.004	0.027	0.053	0.021	0.005

Figure 9 WP 088A Burma Road 01 Daily Dust Average (mg/m^3) 12/27-01/02

WP 088A Burma Road 01

DustTrak s/n 8533141004 was replaced with s/n 8533173903 at the start of the 12/30/19 AM Shift.

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 5:58 AM
Burma Rd 01	Dustrak DRX	8533173903	39°32'26.4"N, 121°30'24.7"W	Episode Stop:	1/3/20 5:51 AM



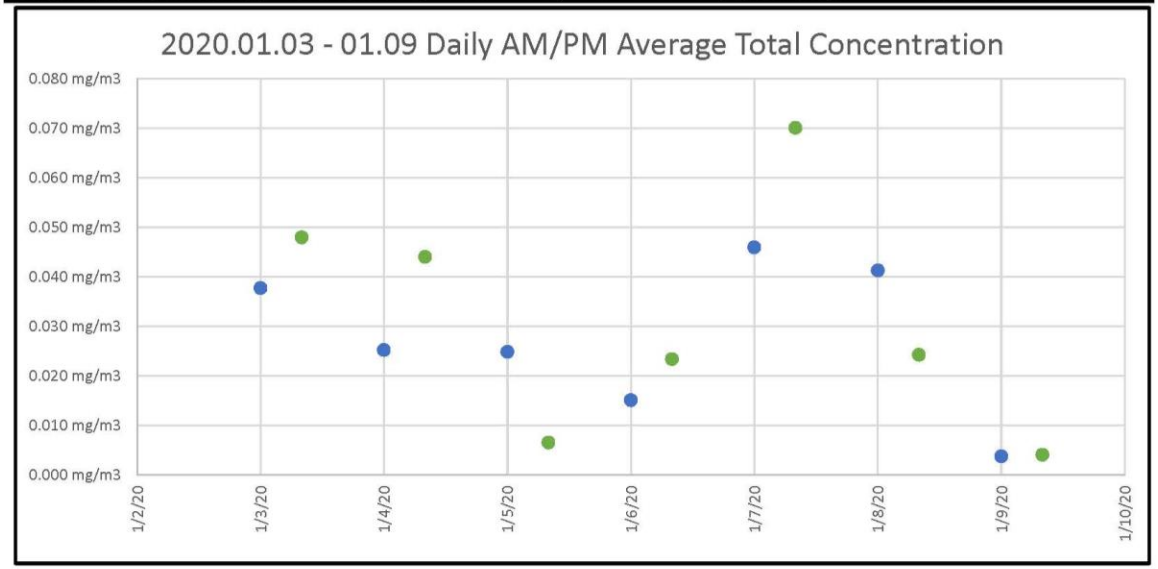
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.013	0.032	No Data	0.009
Night Shift	No Data	No Data	No Data	0.006	No Data	No Data	0.010

Note: This graph has been placed on a LOG scale.

Figure 10 WP 088A Burma Road 01 Daily Dust Average (mg/m^3) 01/03-01/09

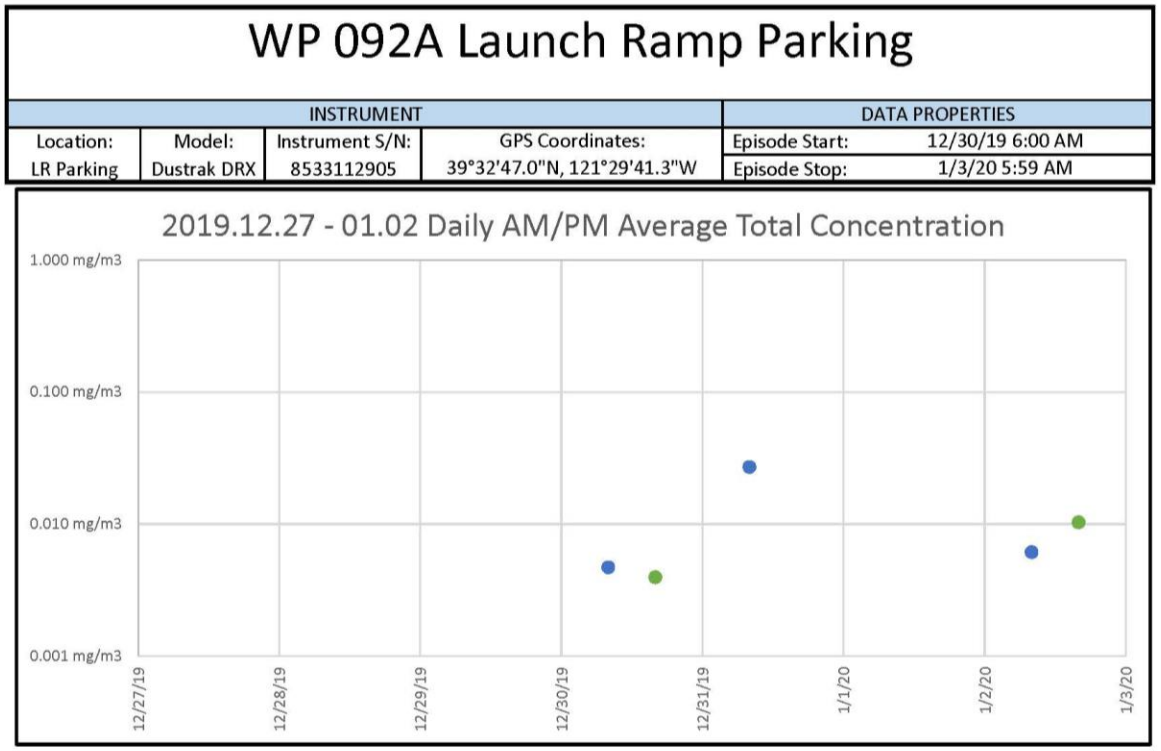
WP 088A Burma Road 01

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:21 AM
Burma Rd 01	Dustrak DRX	8533173903	39°32'26.4"N, 121°30'24.7"W	Episode Stop:	1/10/20 5:50 AM



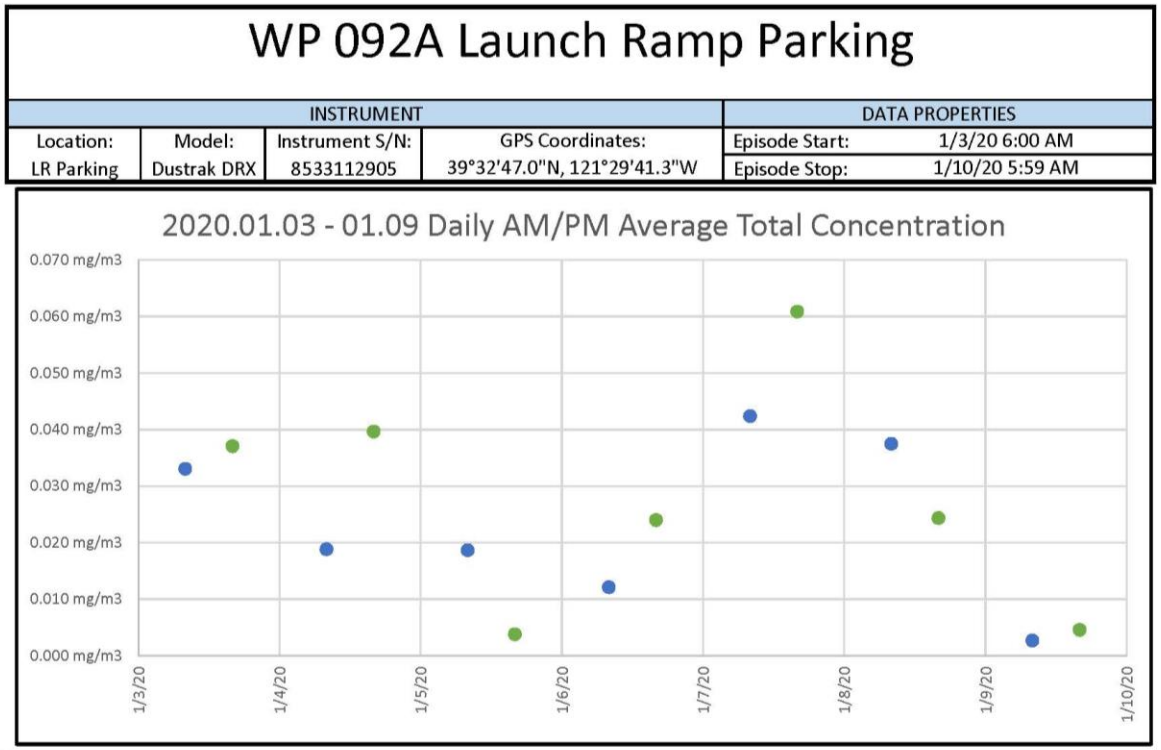
	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.038	0.025	0.025	0.015	0.046	0.041	0.004
Night Shift	0.048	0.044	0.007	0.023	0.070	0.024	0.004

Figure 11 WP 092A Launch Ramp Parking Daily Dust Average (mg/m^3) 12/27-01/02



	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.005	0.027	No Data	0.006
Night Shift	No Data	No Data	No Data	0.004	No Data	No Data	0.010

Figure 12 WP 092A Launch Ramp Parking Daily Dust Average (mg/m^3) 01/03-01/09

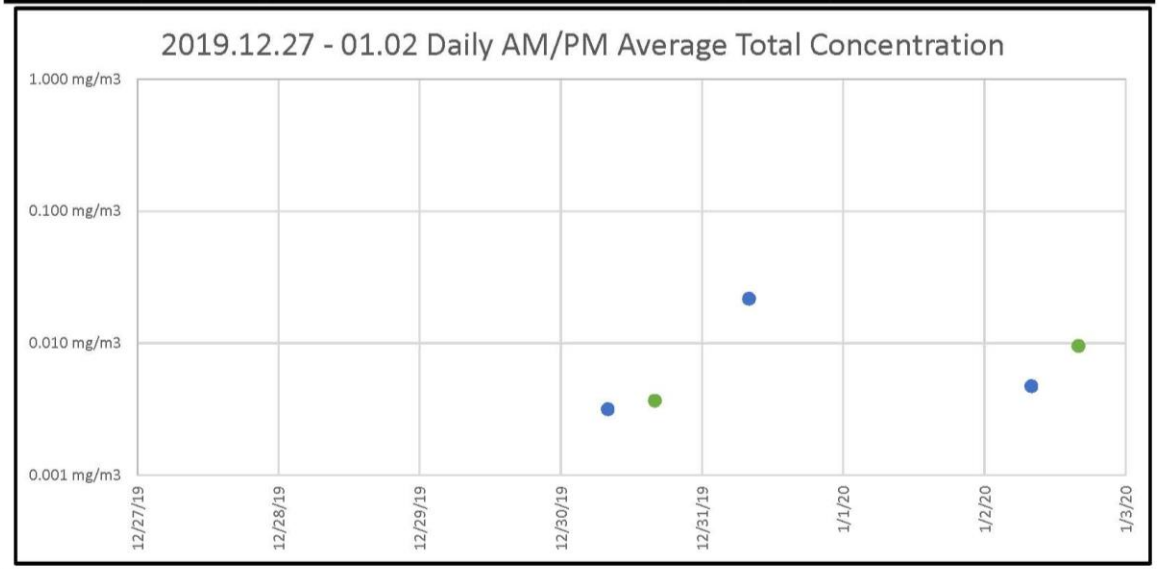


	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.033	0.019	0.019	0.012	0.042	0.038	0.003
Night Shift	0.037	0.040	0.004	0.024	0.061	0.024	0.005

Figure 13 WP 081A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 12/27-01/02

WP 081A Launch Ramp Turnaround

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 6:00 AM
LR Turnaround	Dustrak DRX	8533152408	39°32'51.01"N, 121°29'53.76"W	Episode Stop:	1/3/20 5:59 AM



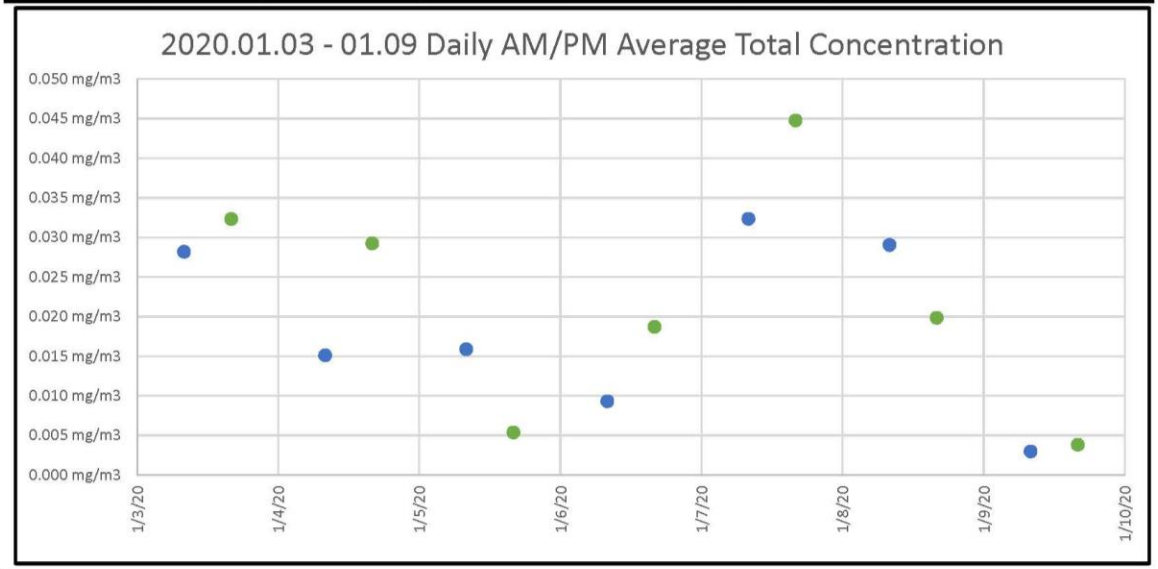
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.003	0.022	No Data	0.005
Night Shift	No Data	No Data	No Data	0.004	No Data	No Data	0.010

Note: This graph has been placed on a LOG scale.

Figure 14 WP 081A Launch Ramp Turnaround Daily Dust Average (mg/m^3) 01/03-01/09

WP 081A Launch Ramp Turnaround

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:00 AM
LR Turnaround	Dustrak DRX	8533152408	39°32'51.01"N, 121°29'53.76"W	Episode Stop:	1/10/20 5:59 AM

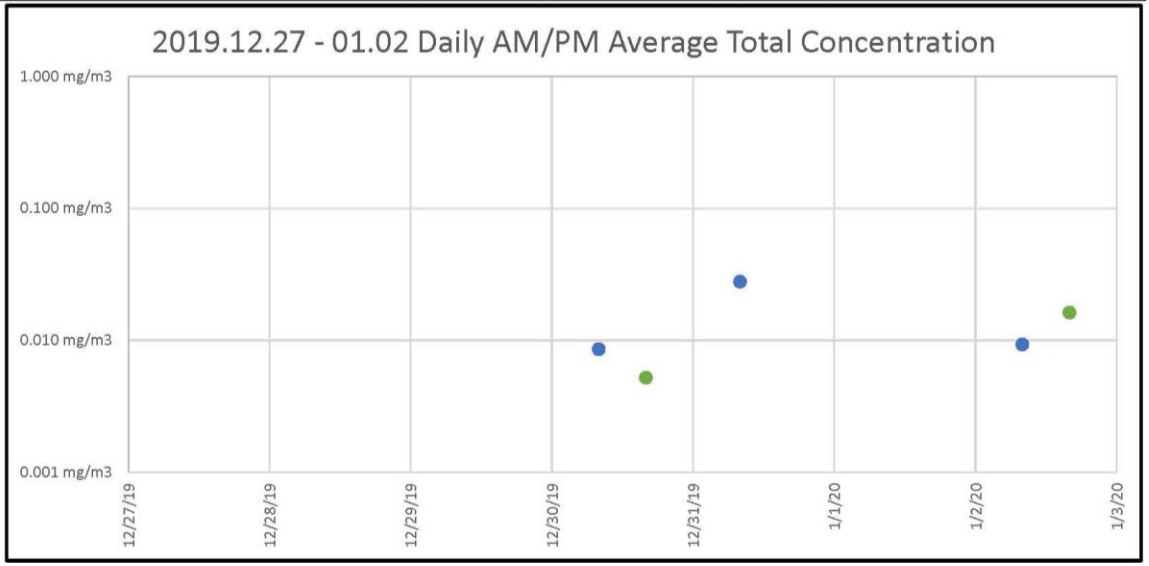


	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.028	0.015	0.016	0.009	0.032	0.029	0.003
Night Shift	0.032	0.029	0.005	0.019	0.045	0.020	0.004

Figure 15 WP 083A Dan Beebe Trail Daily Dust Average (mg/m^3) 12/27-01/02

WP 083A Dan Beebe Trail

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 6:00 AM
Beebe Trail	Dustrak DRX	8533123506	39°31'55.35"N, 121°30'11.70"W	Episode Stop:	1/3/20 5:59 AM



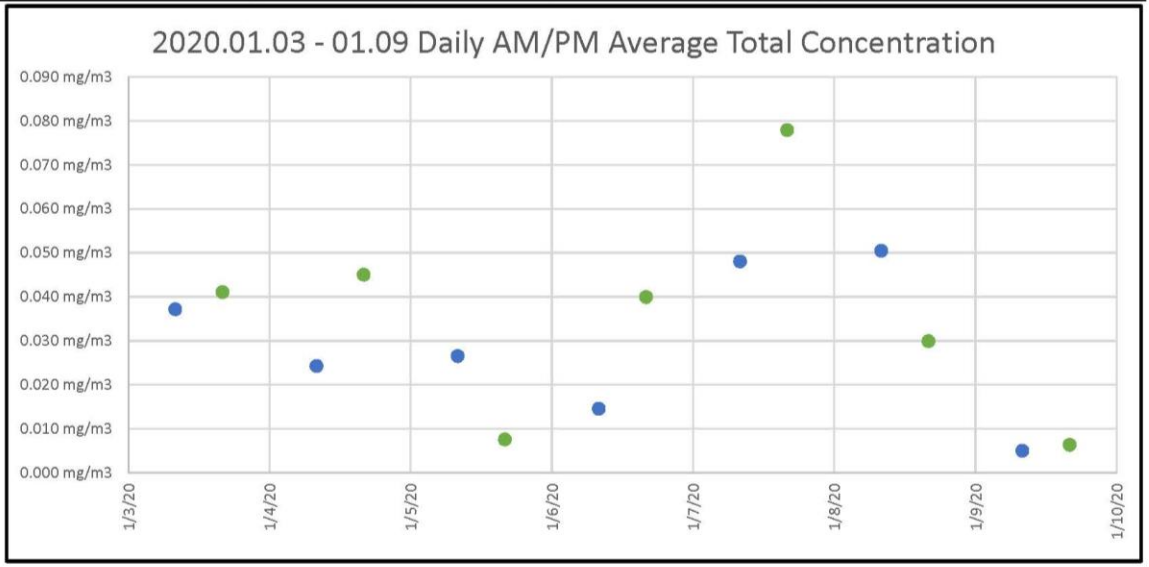
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.009	0.028	No Data	0.009
Night Shift	No Data	No Data	No Data	0.005	No Data	No Data	0.016

Note: This graph has been placed on a LOG scale.

Figure 16 WP 083A Dan Beebe Trail Daily Dust Average (mg/m^3) 01/03-01/09

WP 083A Dan Beebe Trail

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:00 AM
Beebe Trail	Dustrak DRX	8533123506	39°31'55.35"N, 121°30'11.70"W	Episode Stop:	1/10/20 5:59 AM

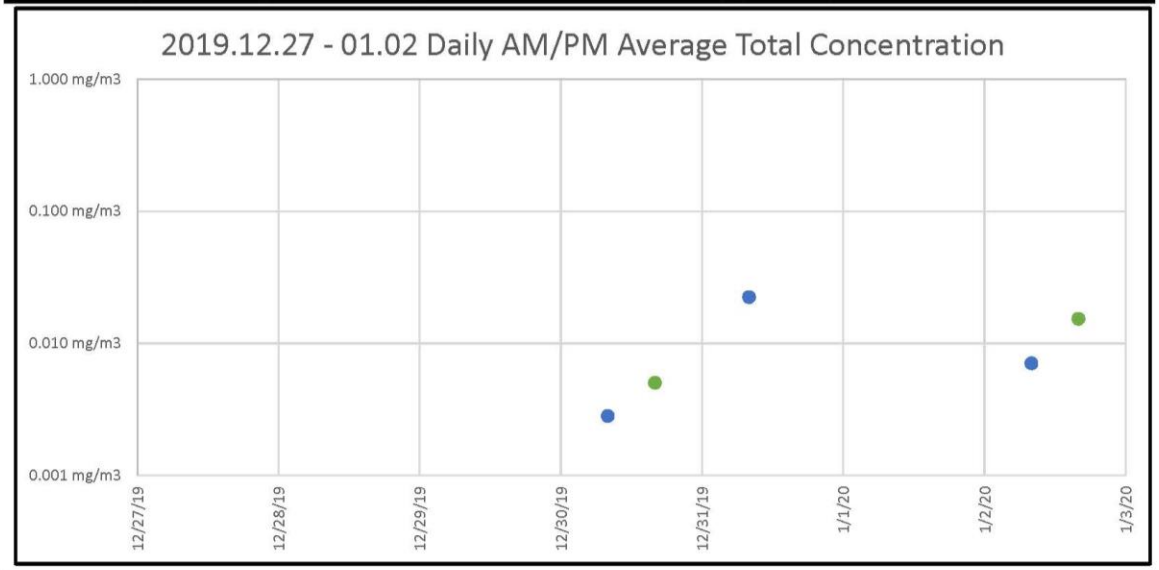


	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.037	0.024	0.027	0.015	0.048	0.050	0.005
Night Shift	0.041	0.045	0.008	0.040	0.078	0.030	0.006

Figure 17 WP 091A Upper Overlook Daily Dust Average (mg/m^3) 12/27-01/02

WP 091A Upper Overlook

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	12/30/19 6:00 AM
Overlook	Dustrak DRX	8533102802	39°31'50.24"N, 121°28'41.31"W	Episode Stop:	1/3/20 5:59 AM



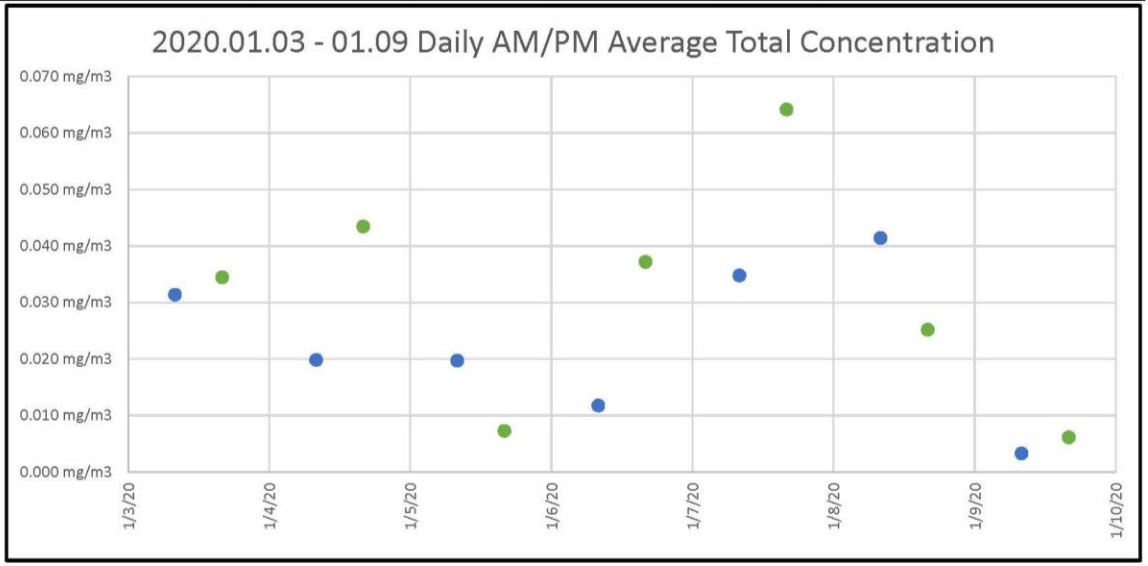
	12/27/19	12/28/19	12/29/19	12/30/19	12/31/19	1/1/20	1/2/20
Day Shift	No Data	No Data	No Data	0.003	0.022	No Data	0.007
Night Shift	No Data	No Data	No Data	0.005	No Data	No Data	0.015

Note: This graph has been placed on a LOG scale.

Figure 18 WP 091A Upper Overlook Daily Dust Average (mg/m^3) 01/03-01/09

WP 091A Upper Overlook

INSTRUMENT				DATA PROPERTIES	
Location:	Model:	Instrument S/N:	GPS Coordinates:	Episode Start:	1/3/20 6:00 AM
Overlook	Dustrak DRX	8533102802	39°31'50.24"N, 121°28'41.31"W	Episode Stop:	1/10/20 5:59 AM



	1/3/20	1/4/20	1/5/20	1/6/20	1/7/20	1/8/20	1/9/20
Day Shift	0.031	0.020	0.020	0.012	0.035	0.041	0.003
Night Shift	0.034	0.043	0.007	0.037	0.064	0.025	0.006

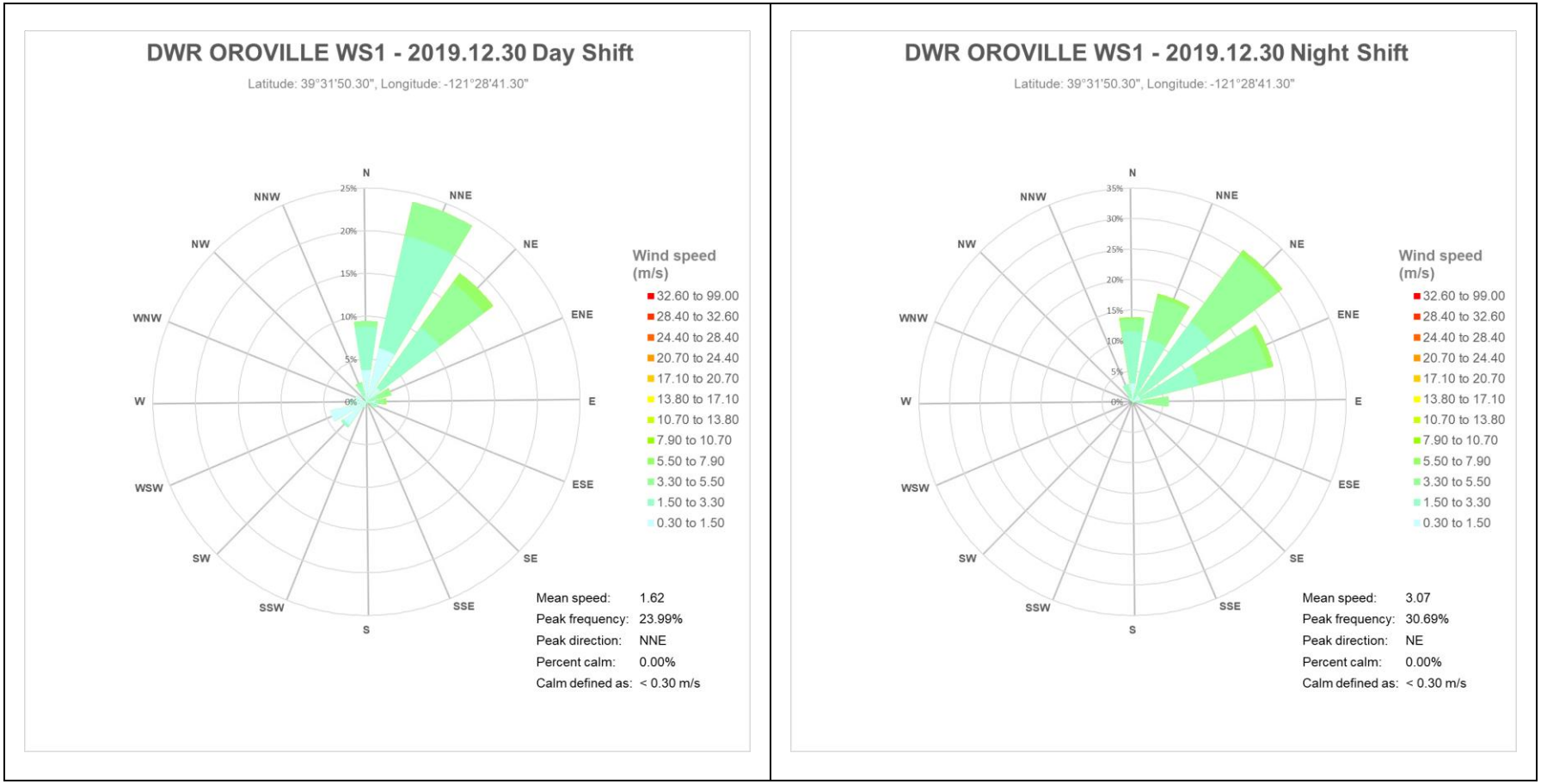
9.0 Meteorological Data & Daily Wind Rose

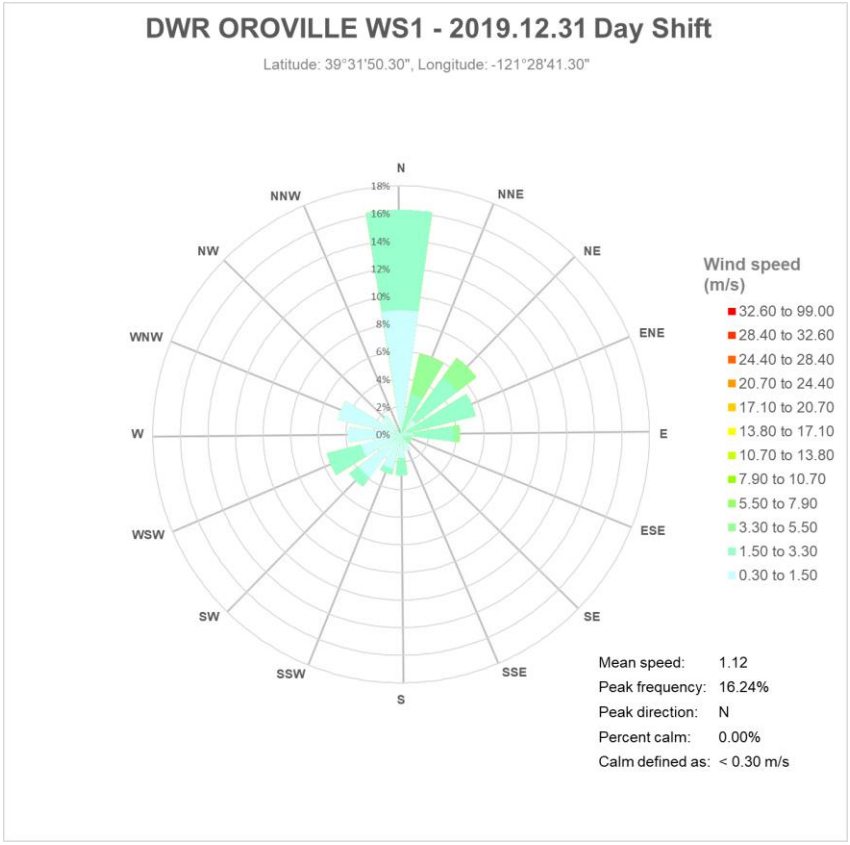
WS1 Weather Station is a Davis Instruments Vantage Pro2. This station is at WP090A 39°31'50.30"N, 121°28'41.30"W at the Upper Overlook area.

WS2 Weather Station is a Davis Instruments Vantage Pro2. This station was located at WP085A 39°31’55.35” N, 121°30’11.70” W Dan Beebe Trail.

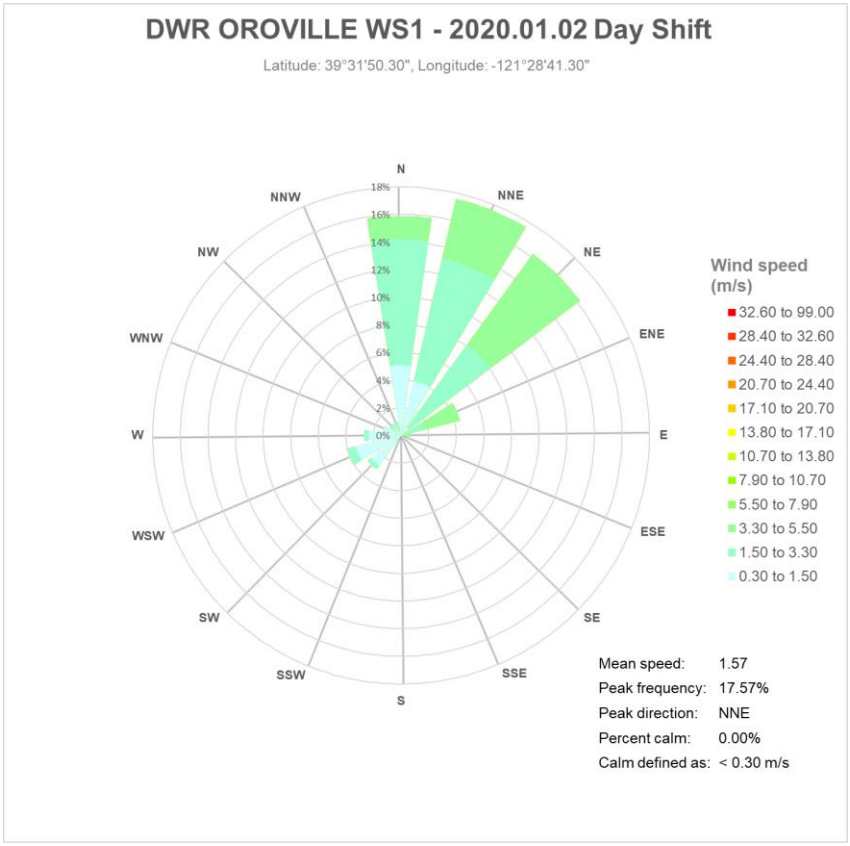
The standard Vantage Pro 2 station consists of three main components: the indoor console on which all the weather readings are displayed; the anemometer for measuring wind speed and direction; and an assembly known as the Integrated Sensor Suite (ISS for short) that contains all the other outside sensors,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

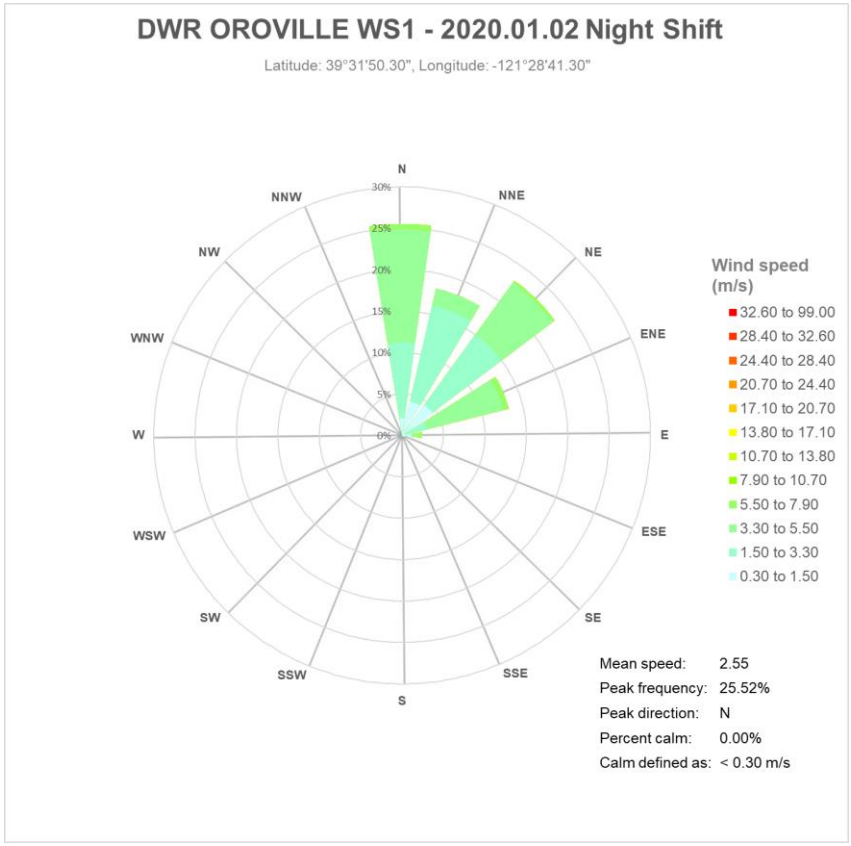
Figure 19 Wind Rose – Day & Night Shift Upper Overlook

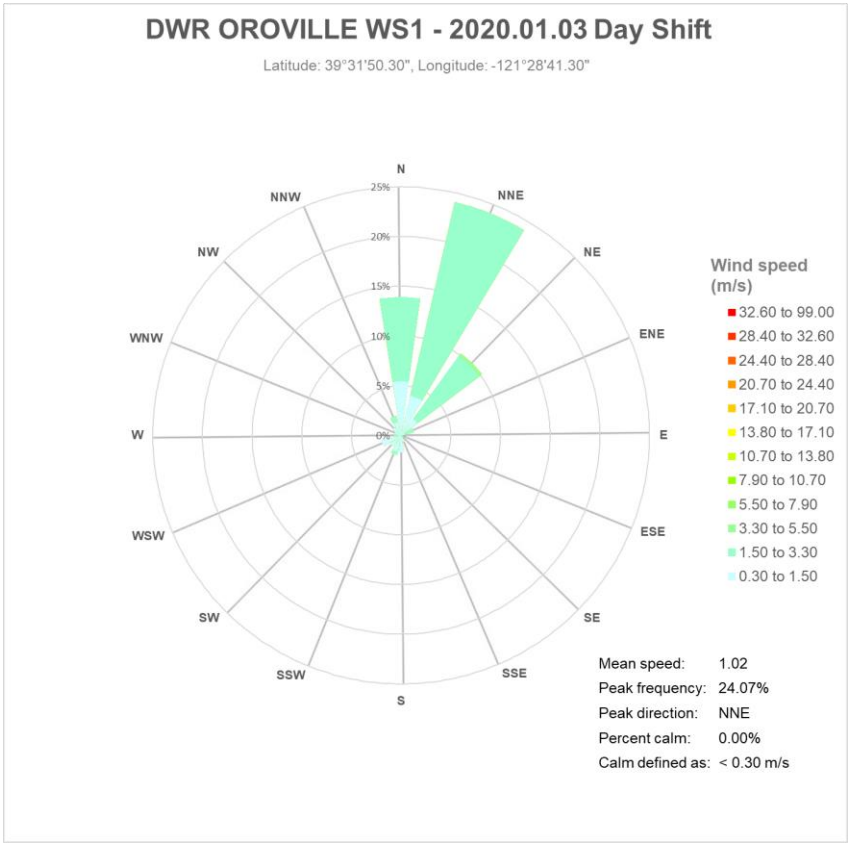


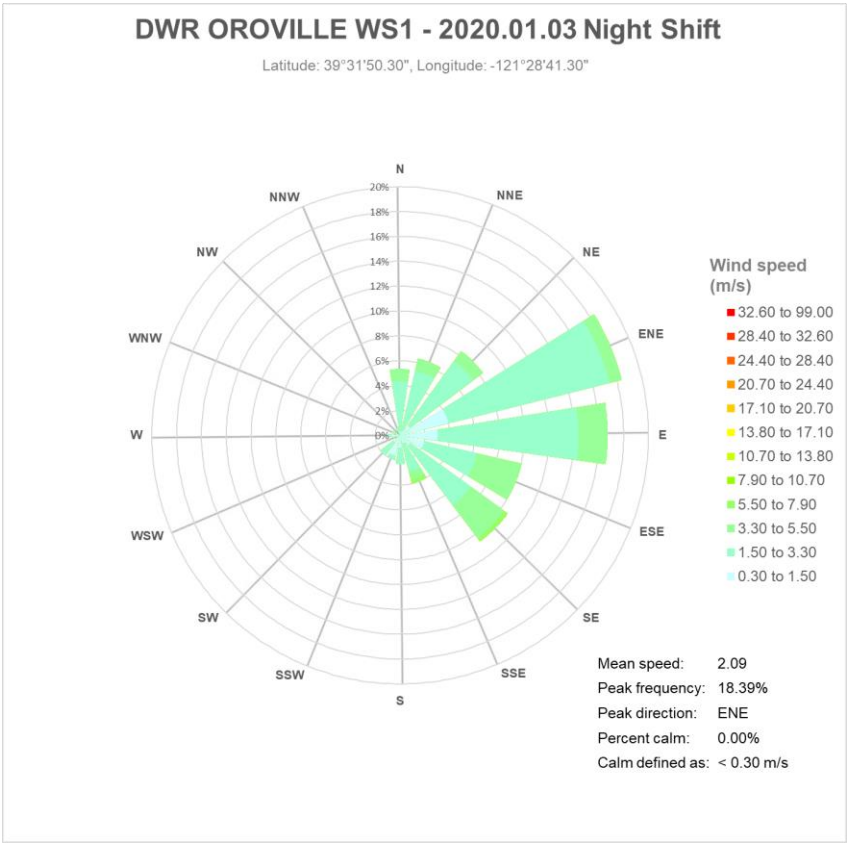


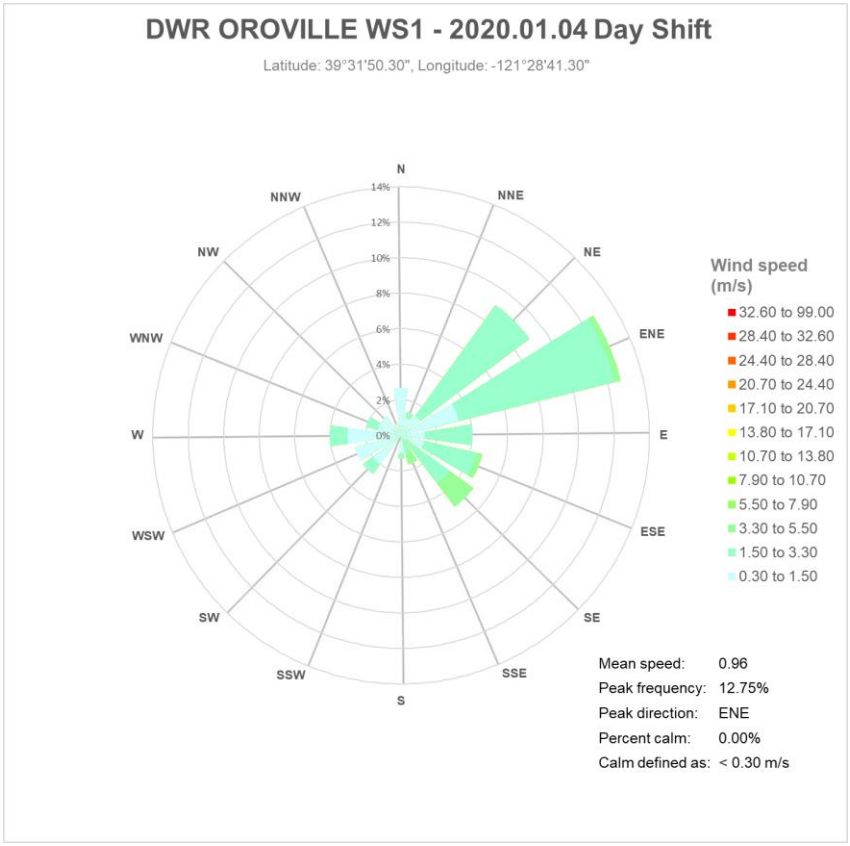
Intentionally Left Blank

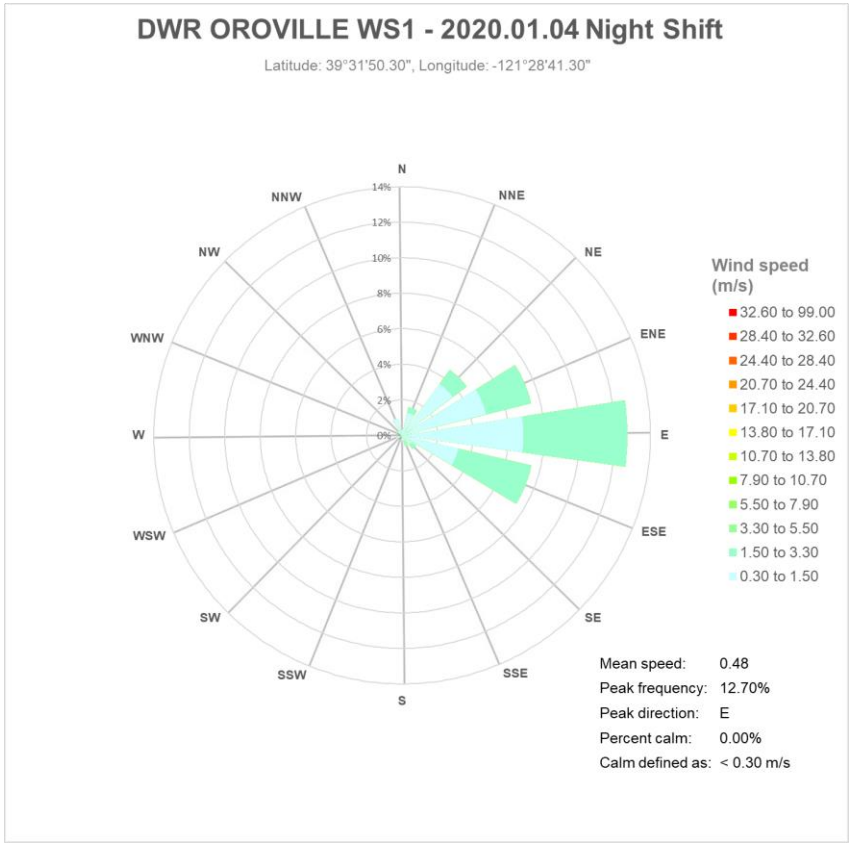

DWR OROVILLE WS1 - 2020.01.02 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 1.57
Peak frequency: 17.57%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

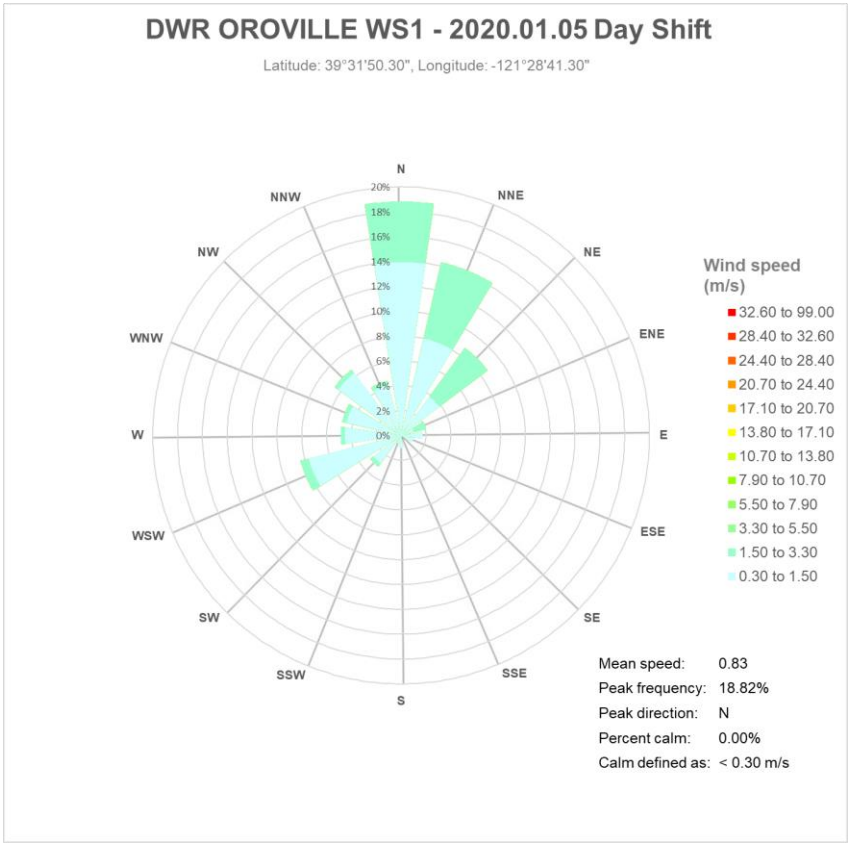

DWR OROVILLE WS1 - 2020.01.02 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 2.55
Peak frequency: 25.52%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

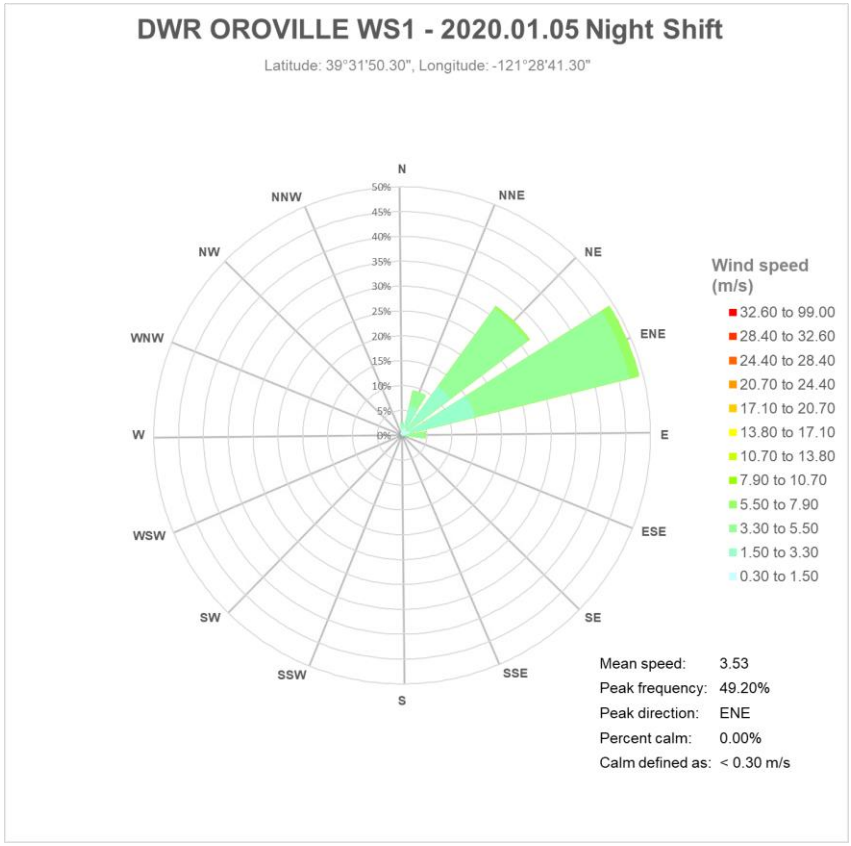

DWR OROVILLE WS1 - 2020.01.03 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.02
Peak frequency: 24.07%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

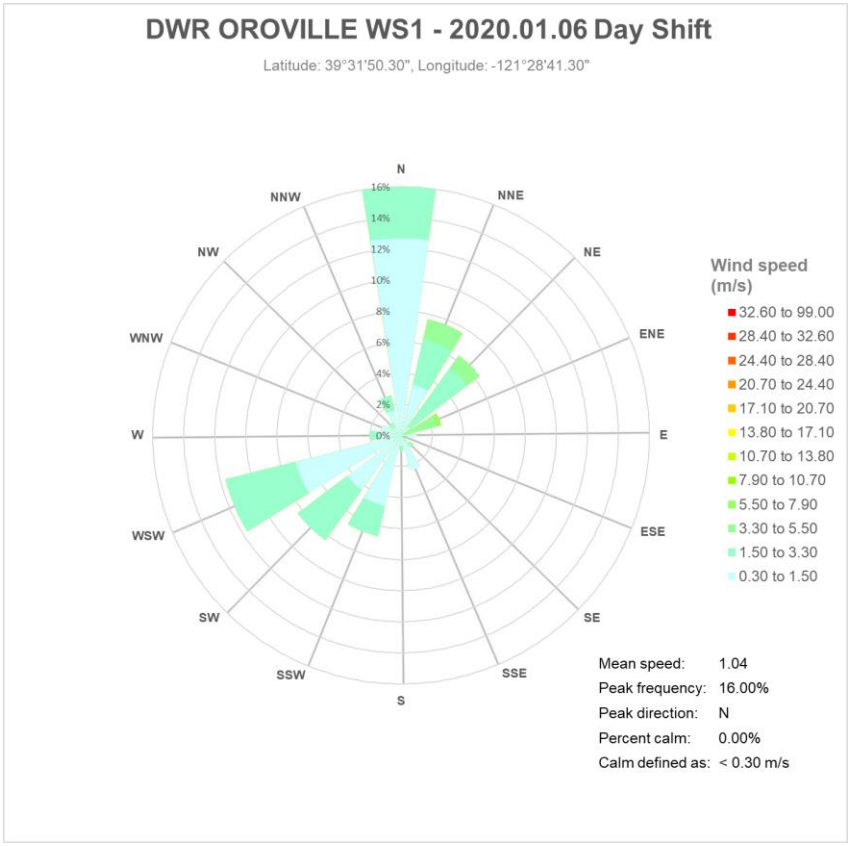

DWR OROVILLE WS1 - 2020.01.03 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
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: 2.09
Peak frequency: 18.39%
Peak direction: ENE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

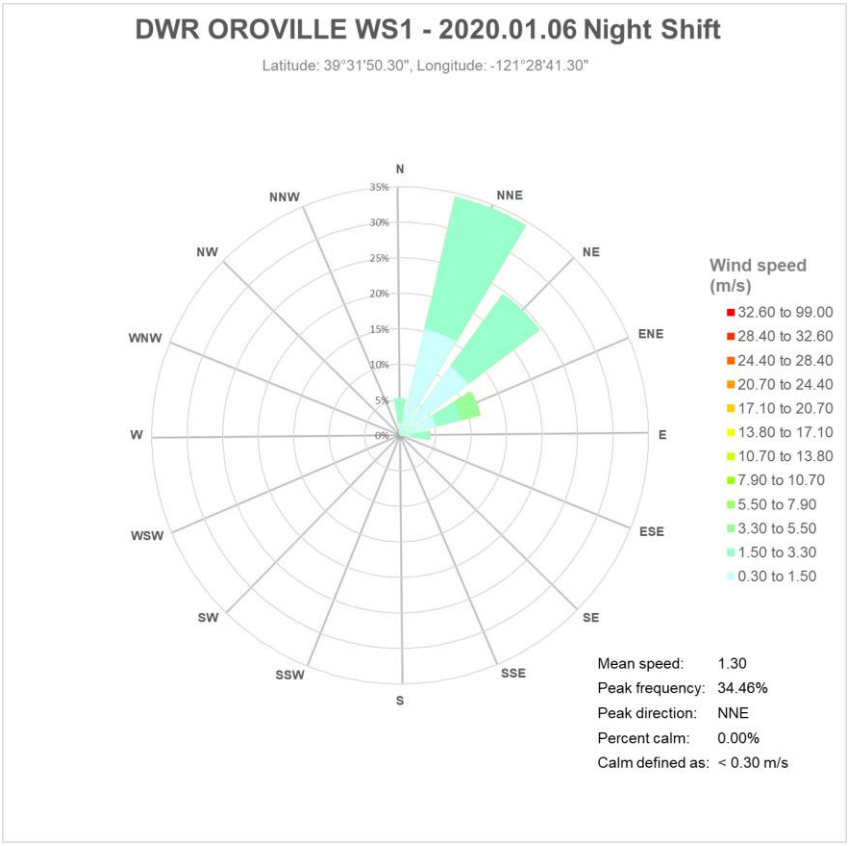

DWR OROVILLE WS1 - 2020.01.04 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.96
Peak frequency: 12.75%
Peak direction: ENE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

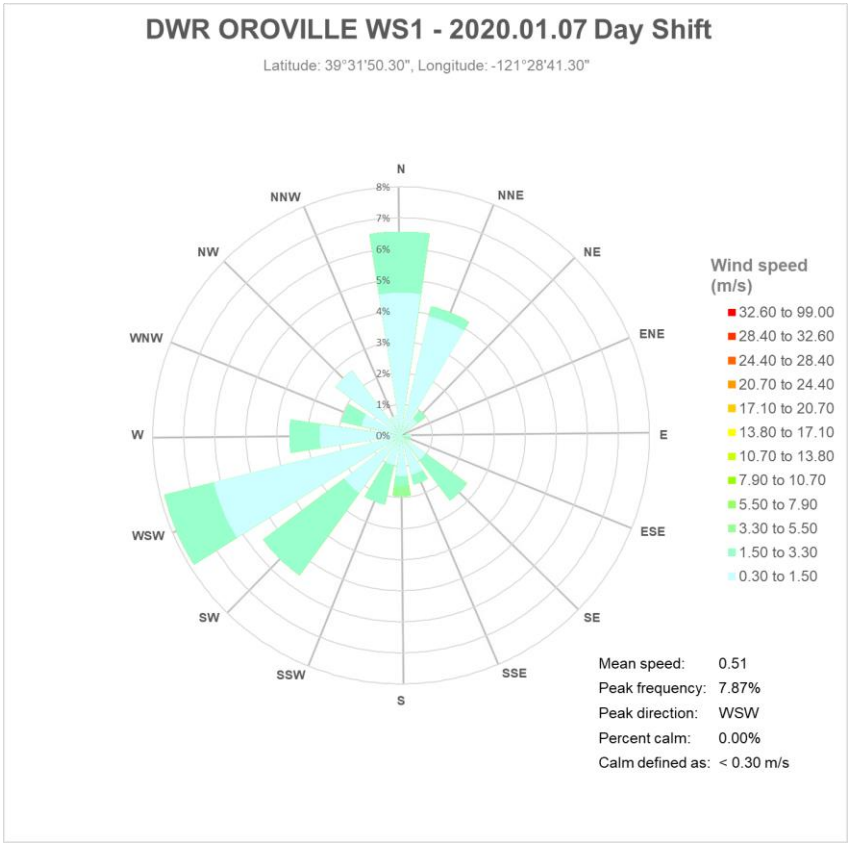

DWR OROVILLE WS1 - 2020.01.04 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.48
Peak frequency: 12.70%
Peak direction: E
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

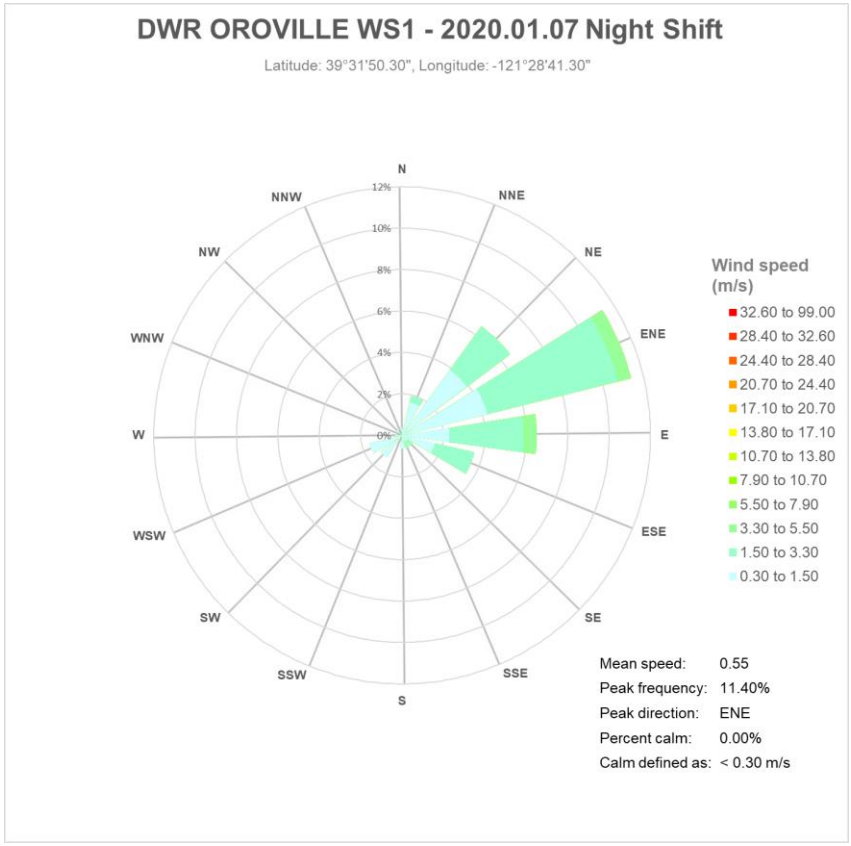

DWR OROVILLE WS1 - 2020.01.05 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
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: 0.83
Peak frequency: 18.82%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

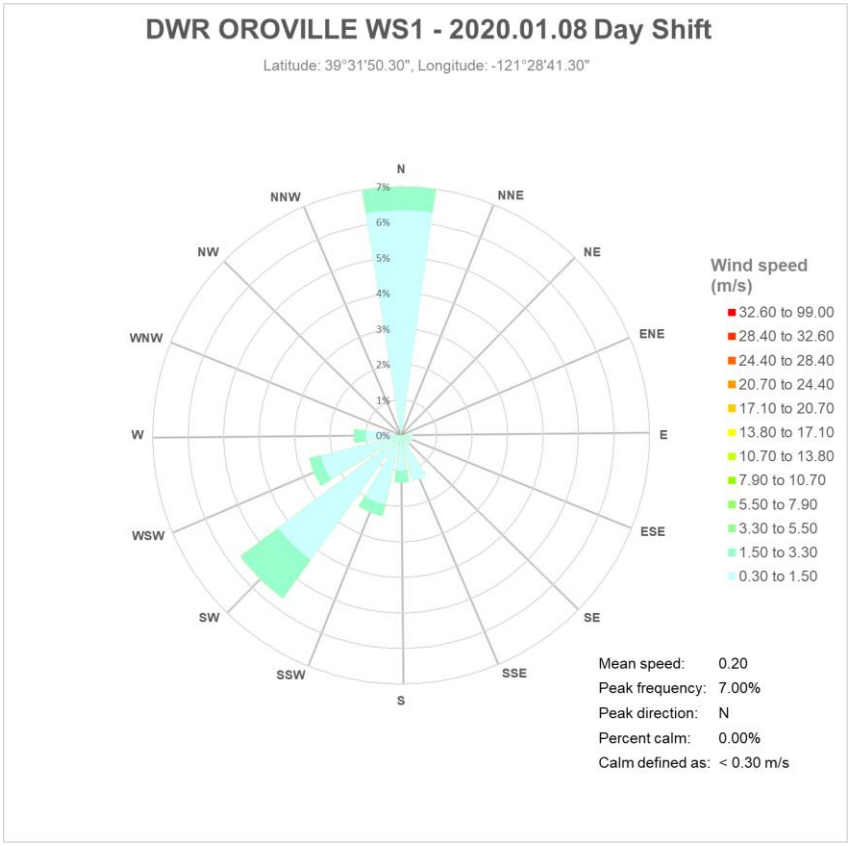

DWR OROVILLE WS1 - 2020.01.05 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 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: 3.53
Peak frequency: 49.20%
Peak direction: ENE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

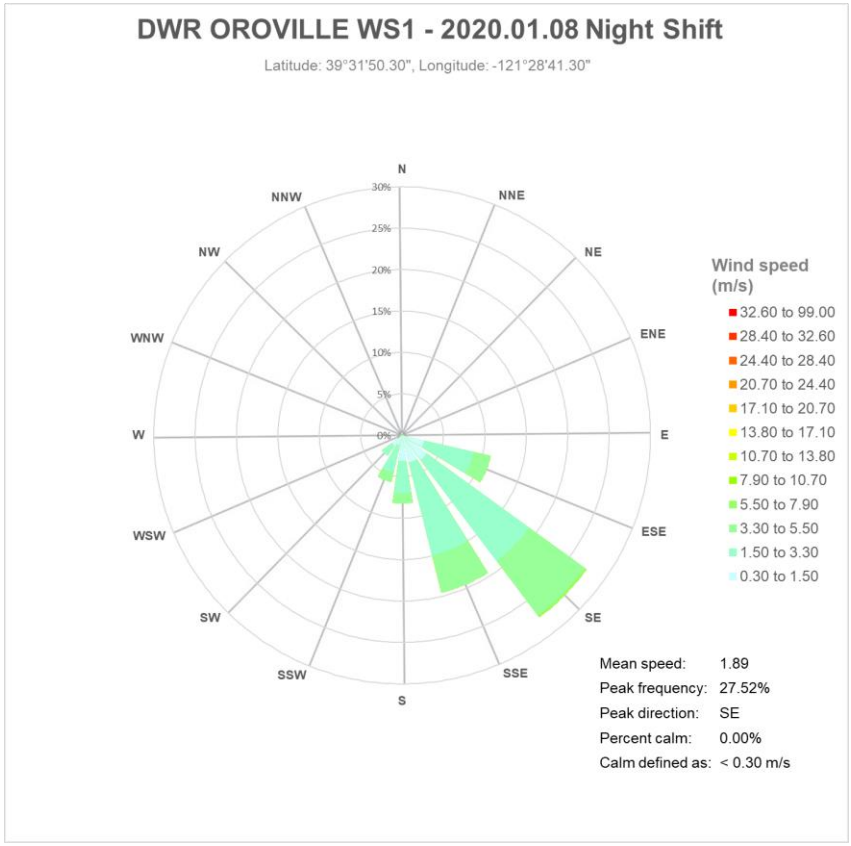

DWR OROVILLE WS1 - 2020.01.06 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 1.04
Peak frequency: 16.00%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

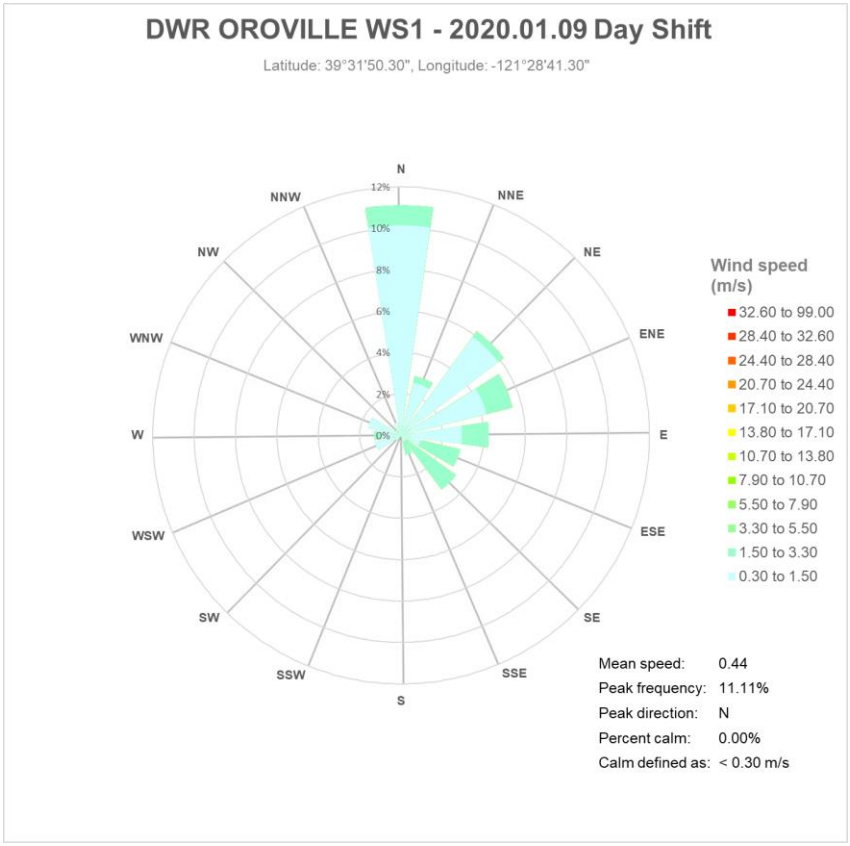

DWR OROVILLE WS1 - 2020.01.06 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
35%
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 1.30
Peak frequency: 34.46%
Peak direction: NNE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2020.01.07 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.51
Peak frequency: 7.87%
Peak direction: WSW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2020.01.07 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.55
Peak frequency: 11.40%
Peak direction: ENE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2020.01.08 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.20
Peak frequency: 7.00%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2020.01.08 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
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: 1.89
Peak frequency: 27.52%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS1 - 2020.01.09 Day Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.44
Peak frequency: 11.11%
Peak direction: N
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

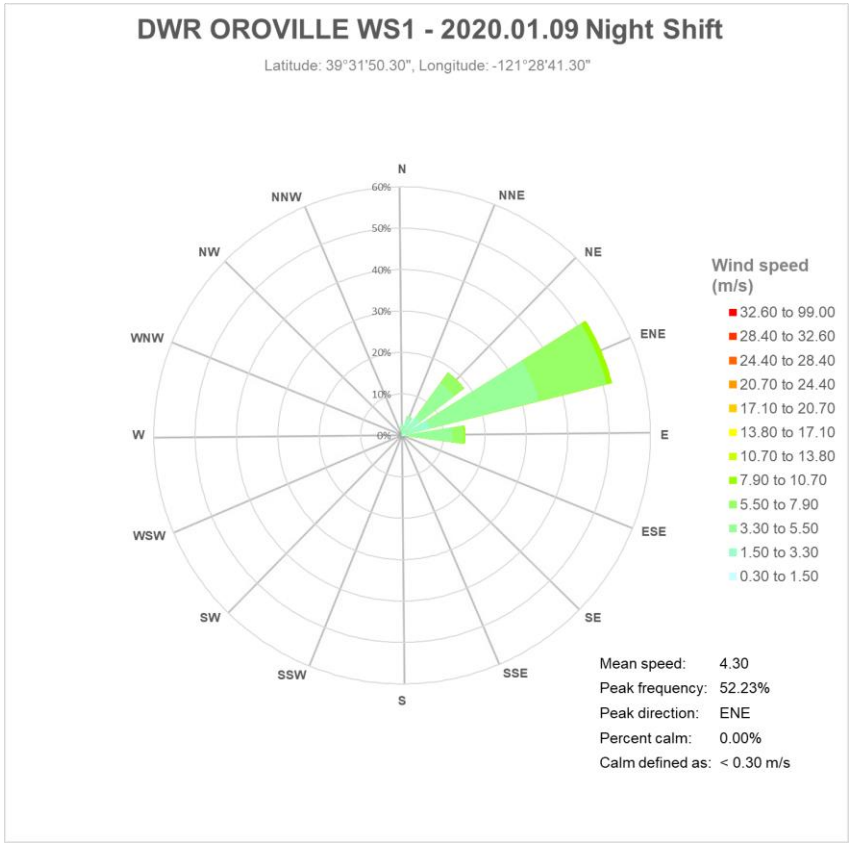
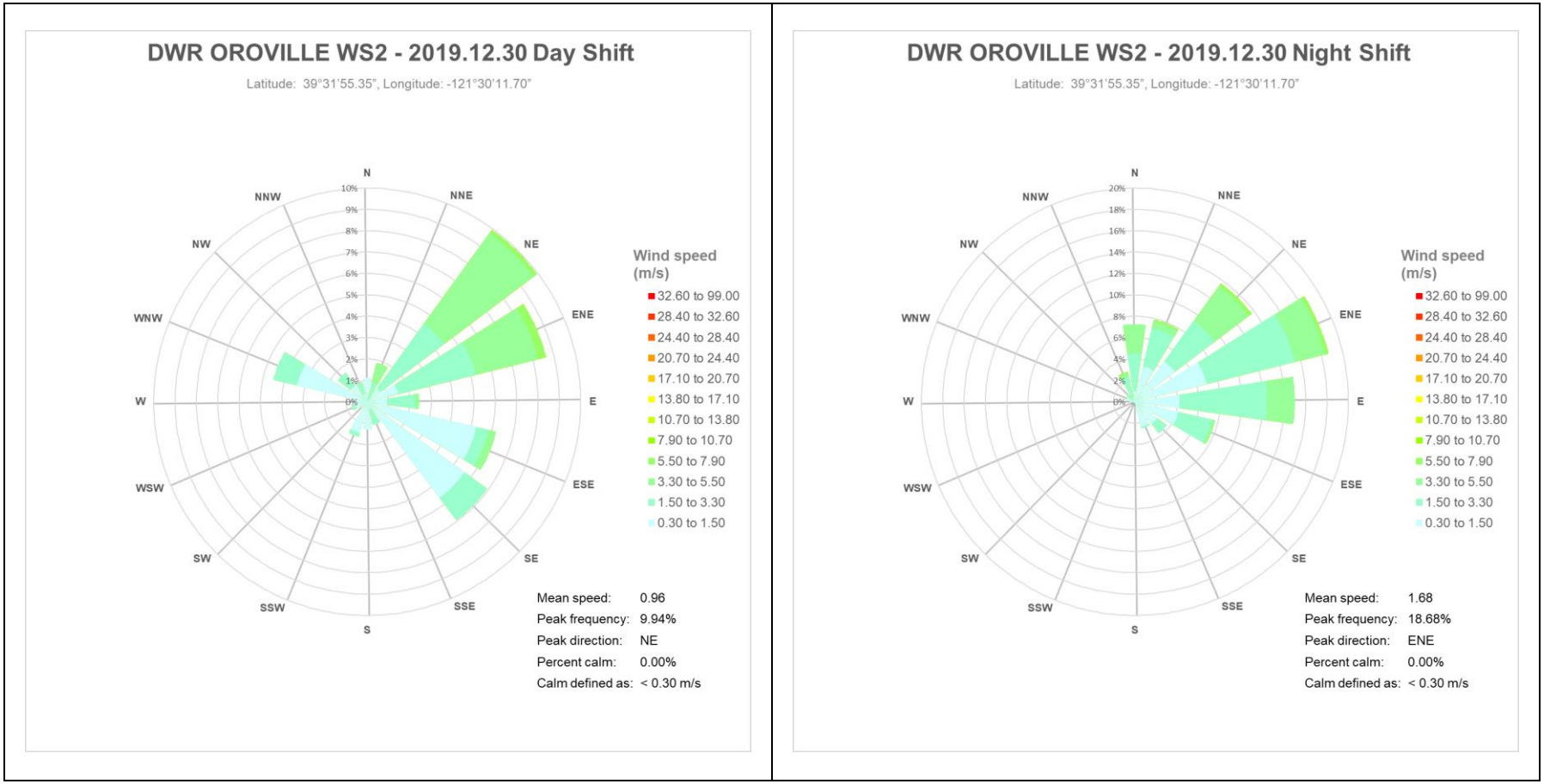
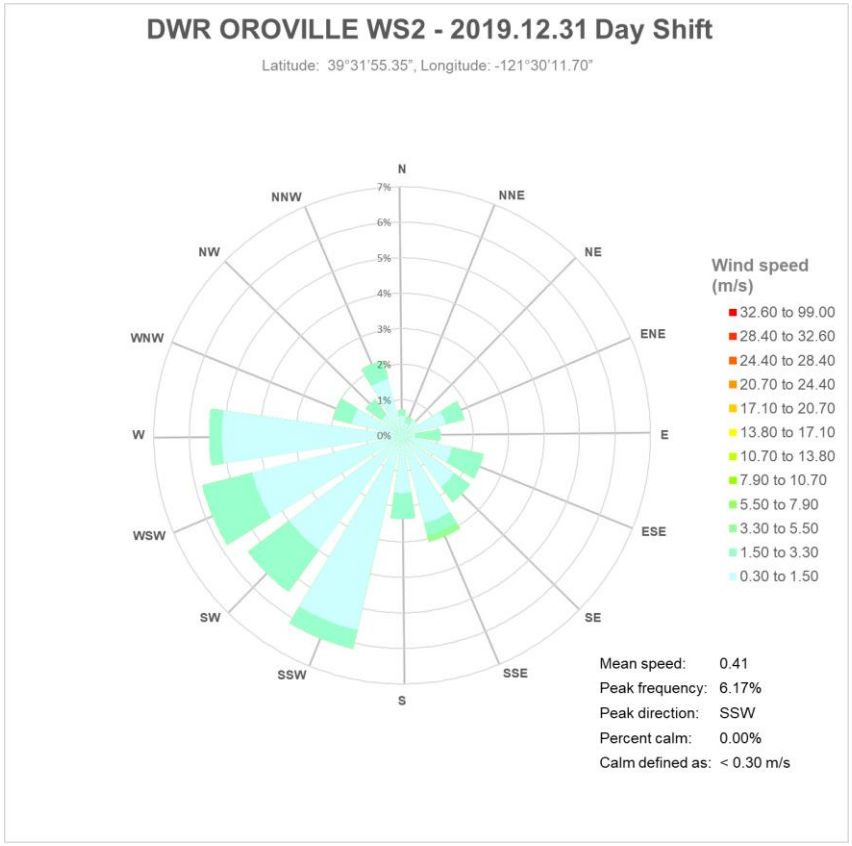
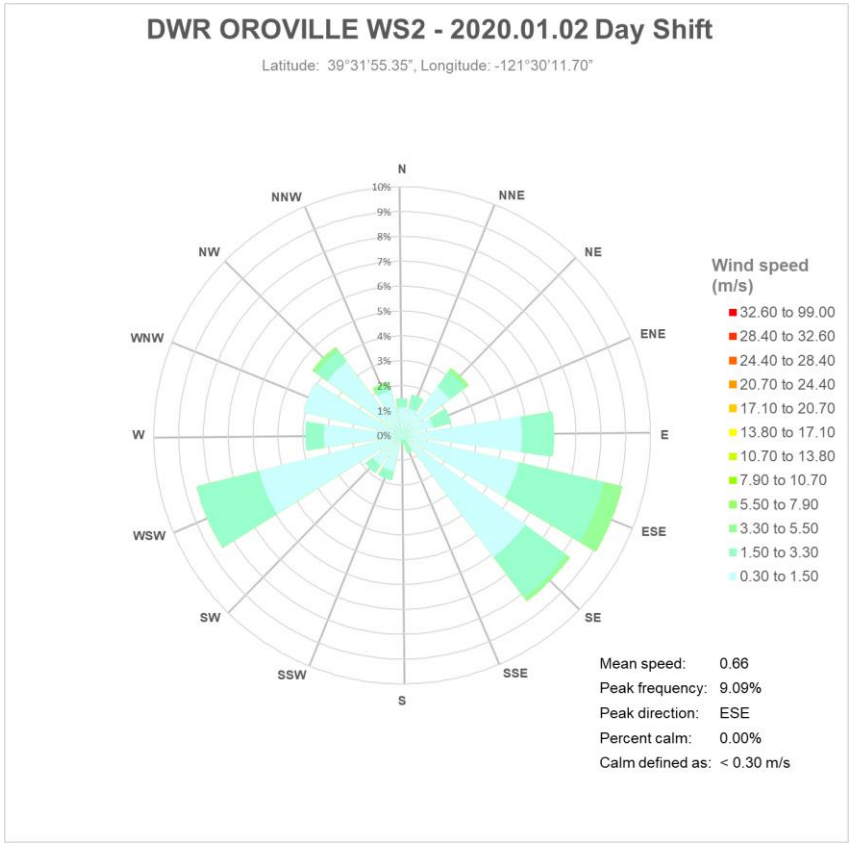

DWR OROVILLE WS1 - 2020.01.09 Night Shift
Latitude: 39°31'50.30", Longitude: -121°28'41.30"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
60%
50%
40%
30%
20%
10%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 4.30
Peak frequency: 52.23%
Peak direction: ENE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

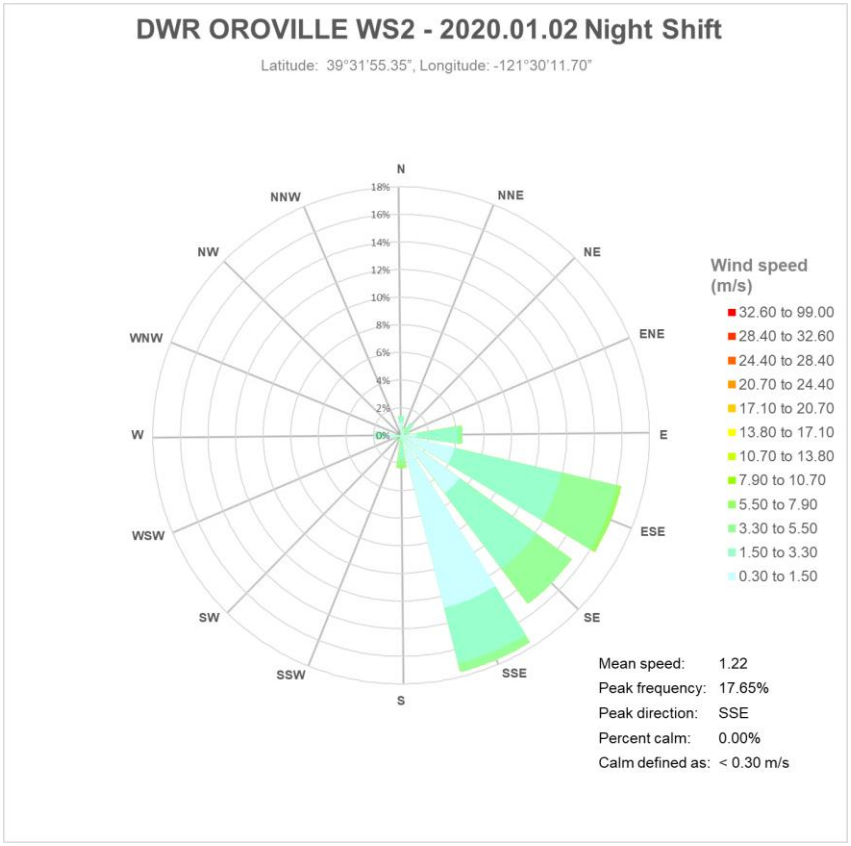
Figure 20 Wind Rose – Day & Night Shift Dan Beebe Trail

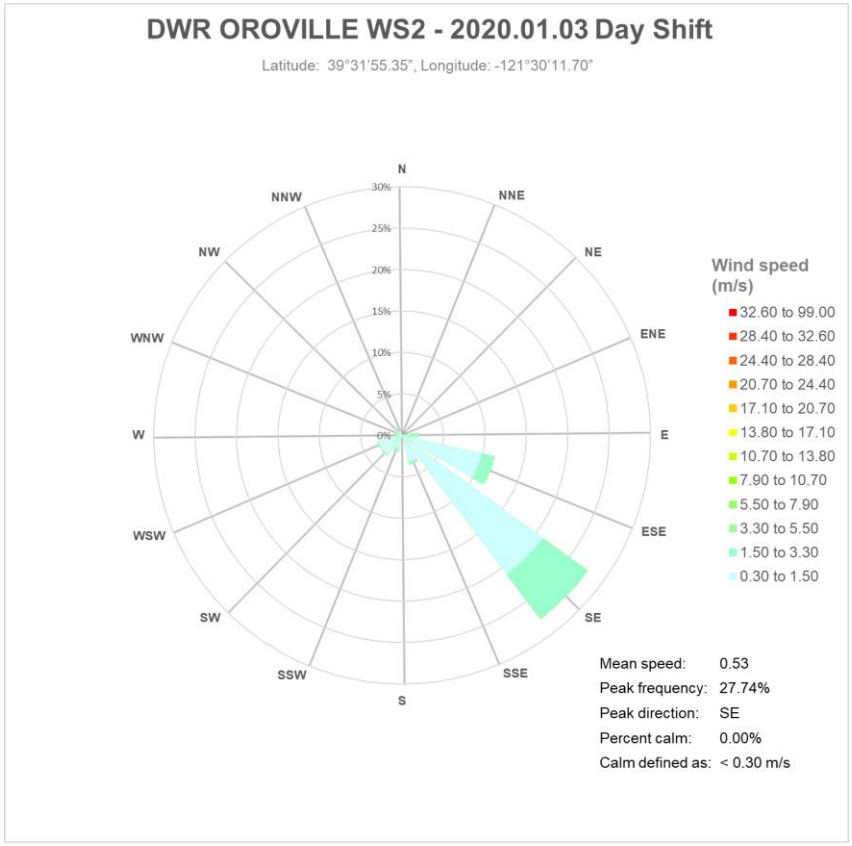


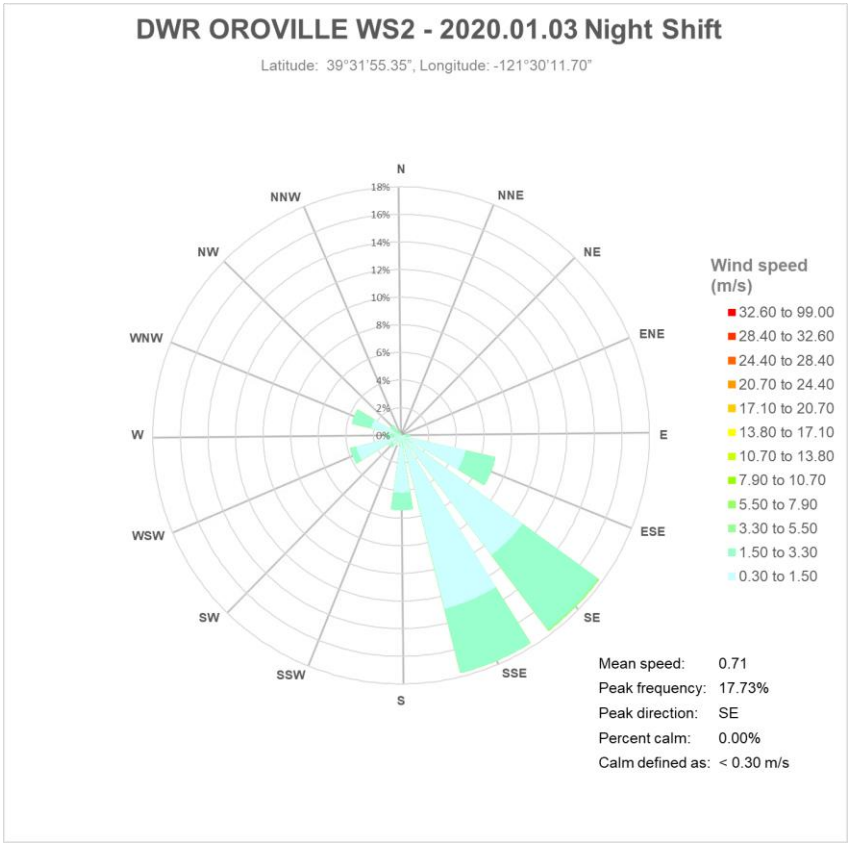


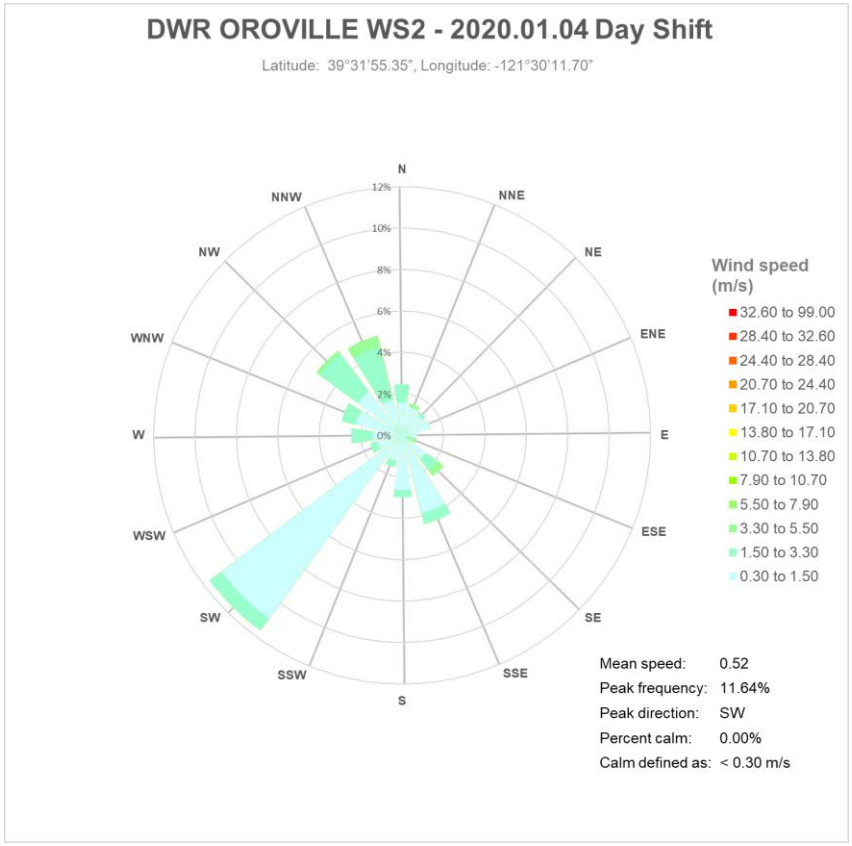
Intentionally Left Blank

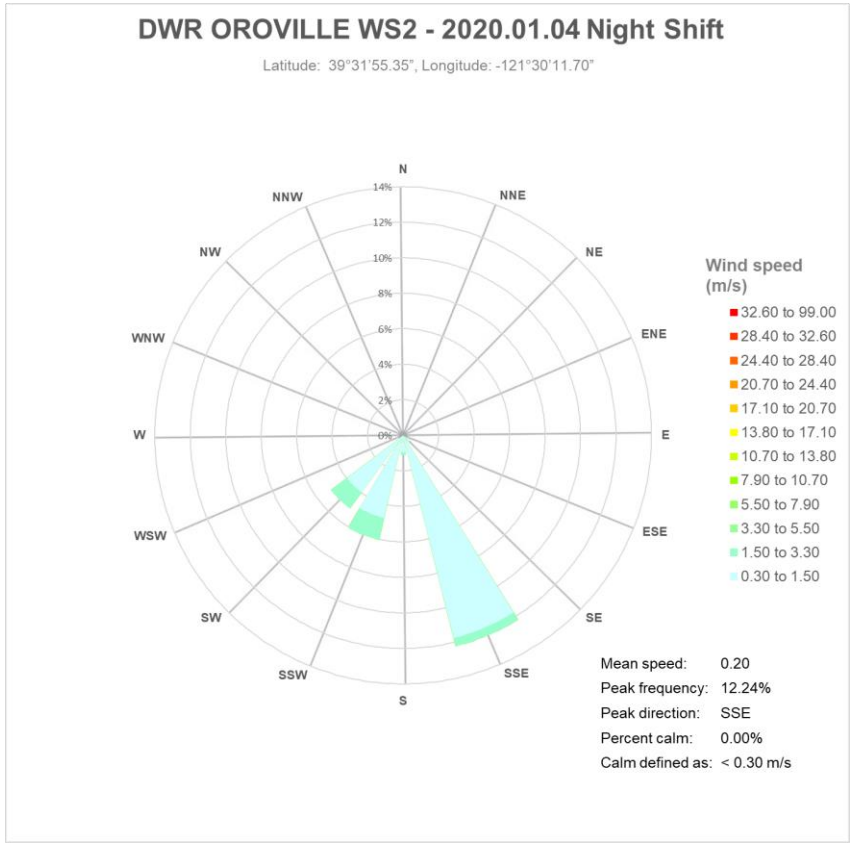

DWR OROVILLE WS2 - 2020.01.02 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 0.66
Peak frequency: 9.09%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

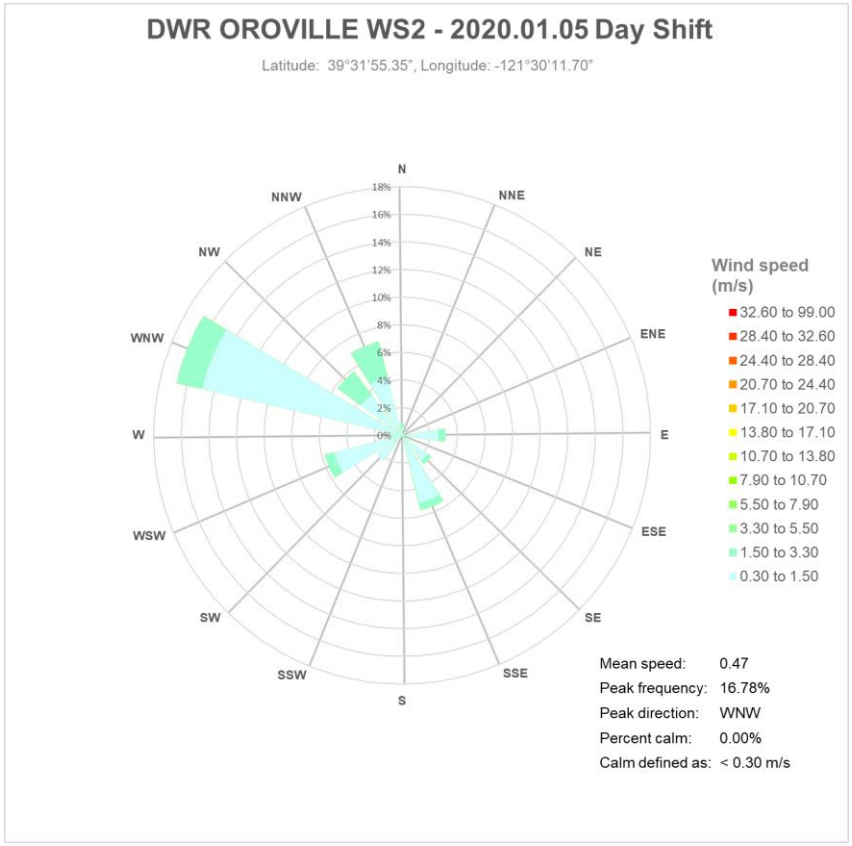

DWR OROVILLE WS2 - 2020.01.02 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
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: 1.22
Peak frequency: 17.65%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

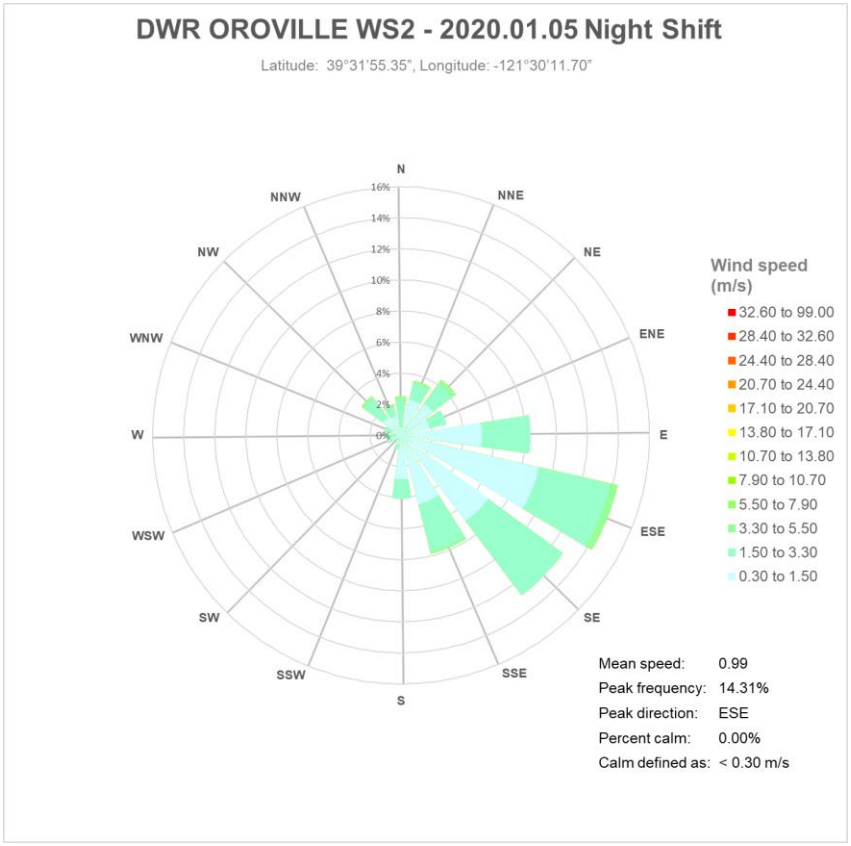

DWR OROVILLE WS2 - 2020.01.03 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.53
Peak frequency: 27.74%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

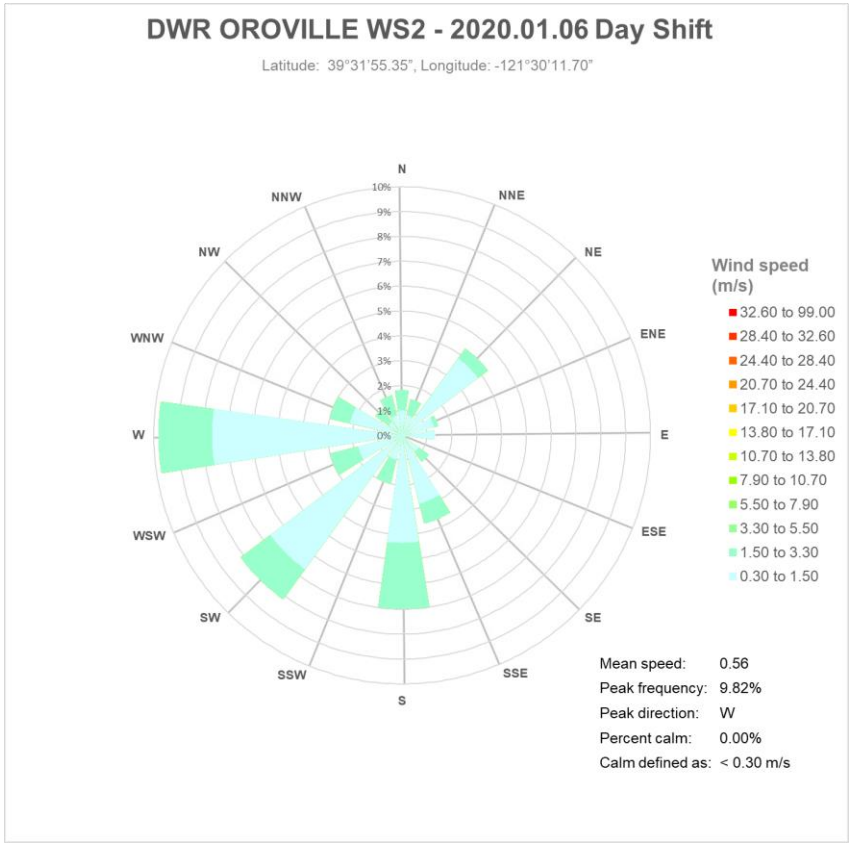

DWR OROVILLE WS2 - 2020.01.03 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
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: 0.71
Peak frequency: 17.73%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

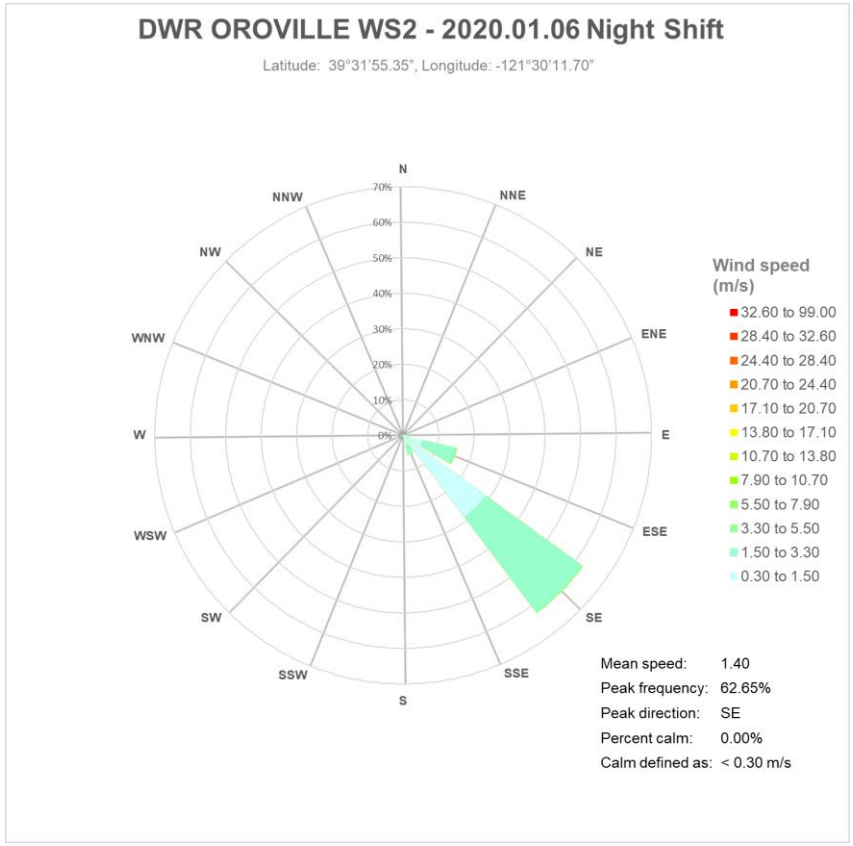

DWR OROVILLE WS2 - 2020.01.04 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.52
Peak frequency: 11.64%
Peak direction: SW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

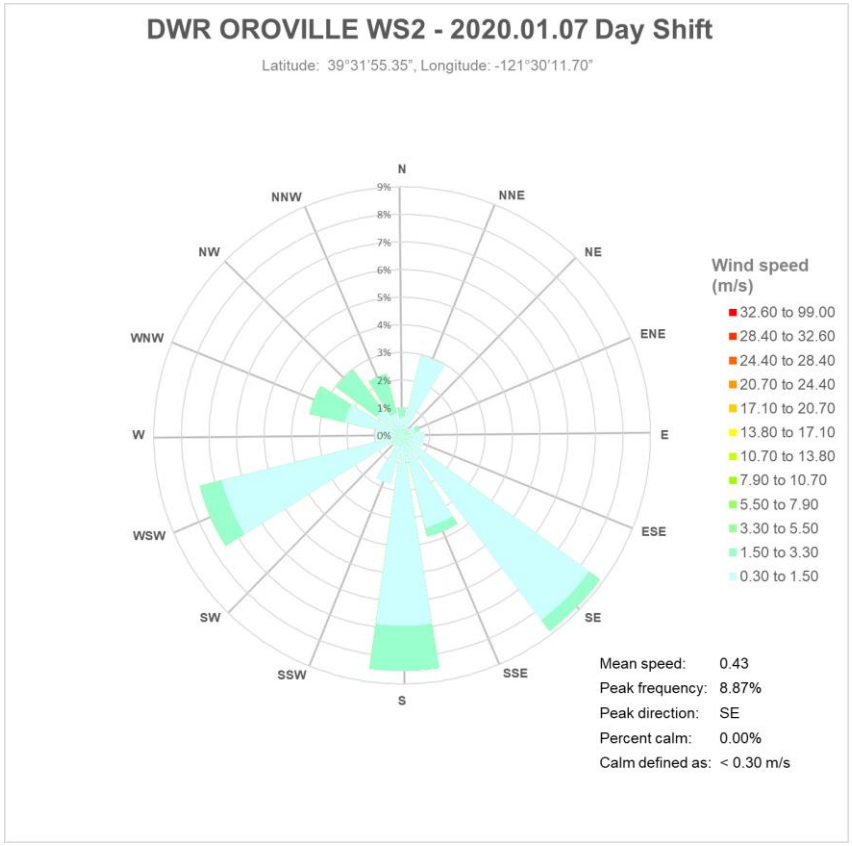

DWR OROVILLE WS2 - 2020.01.04 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.20
Peak frequency: 12.24%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

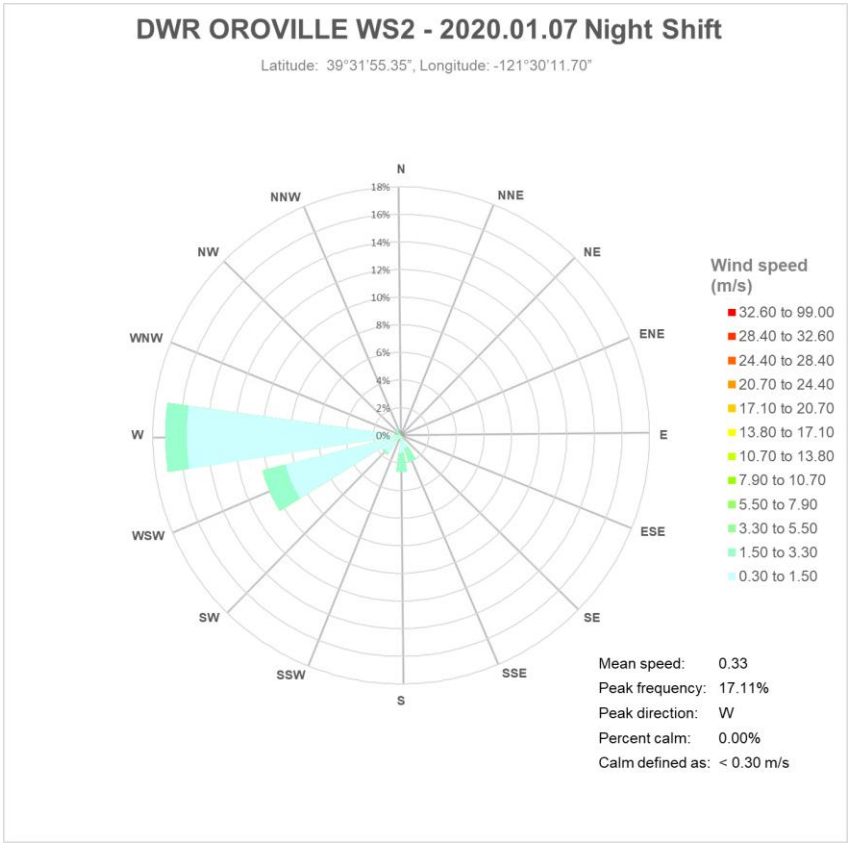

DWR OROVILLE WS2 - 2020.01.05 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 0.47
Peak frequency: 16.78%
Peak direction: WNW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

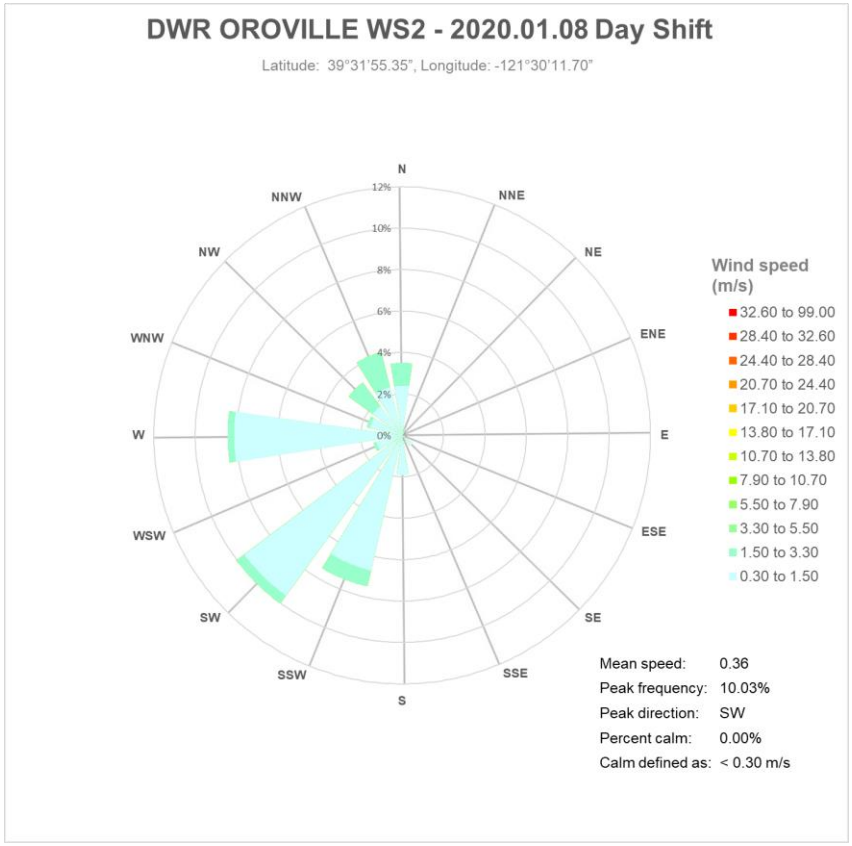

DWR OROVILLE WS2 - 2020.01.05 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
16%
14%
12%
10%
8%
6%
4%
2%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 0.99
Peak frequency: 14.31%
Peak direction: ESE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

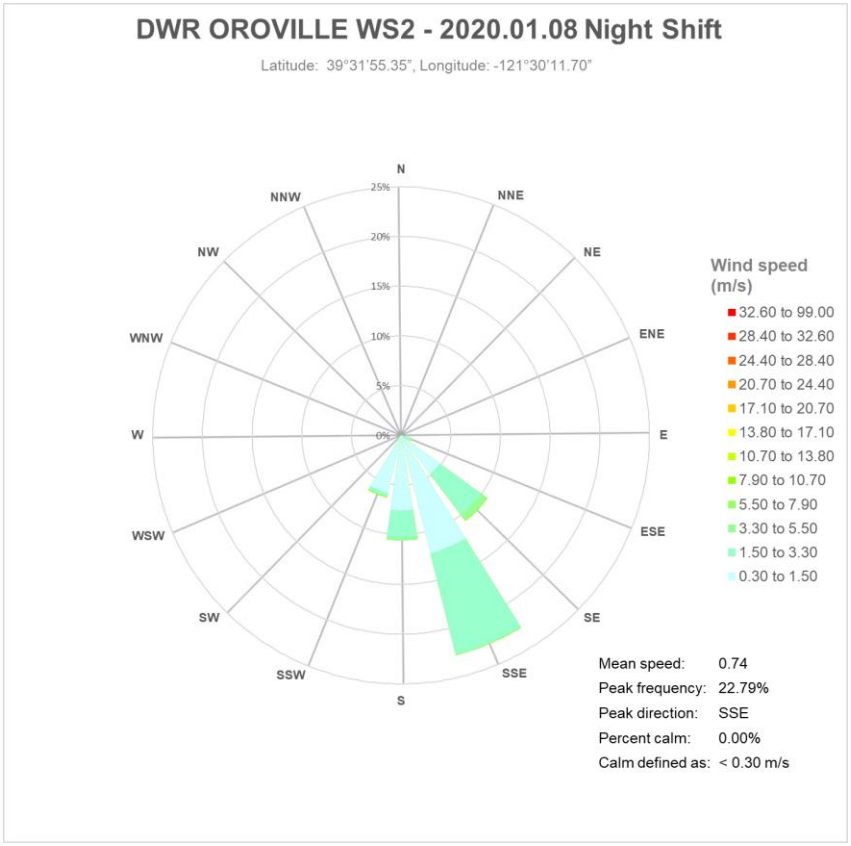

DWR OROVILLE WS2 - 2020.01.06 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 0.56
Peak frequency: 9.82%
Peak direction: W
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

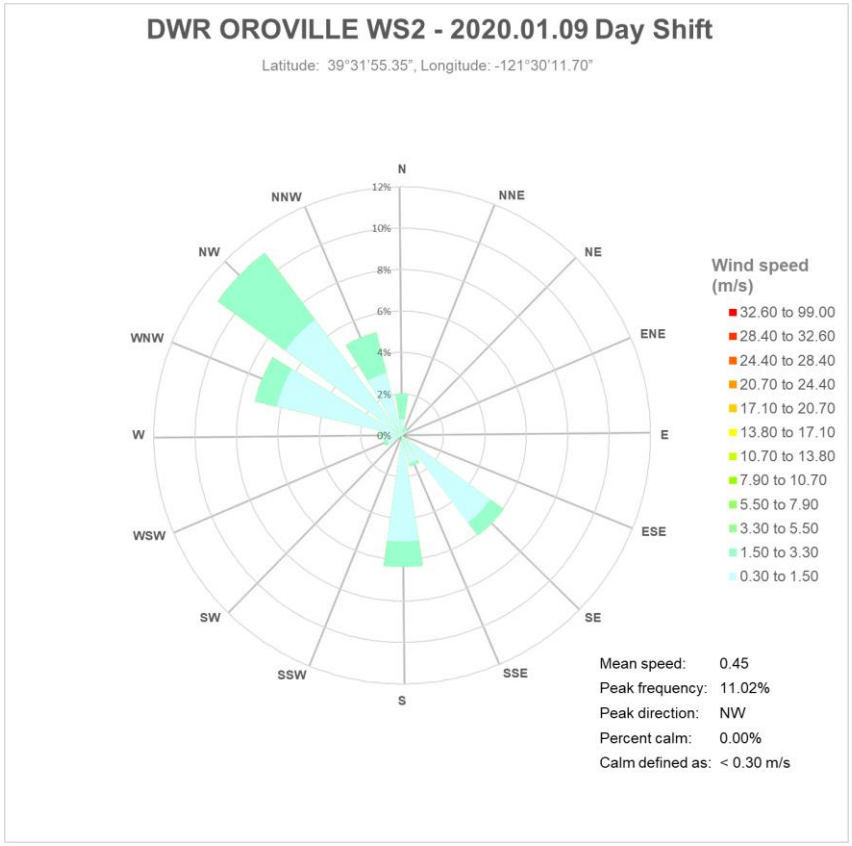

DWR OROVILLE WS2 - 2020.01.06 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
70%
60%
50%
40%
30%
20%
10%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 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: 1.40
Peak frequency: 62.65%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

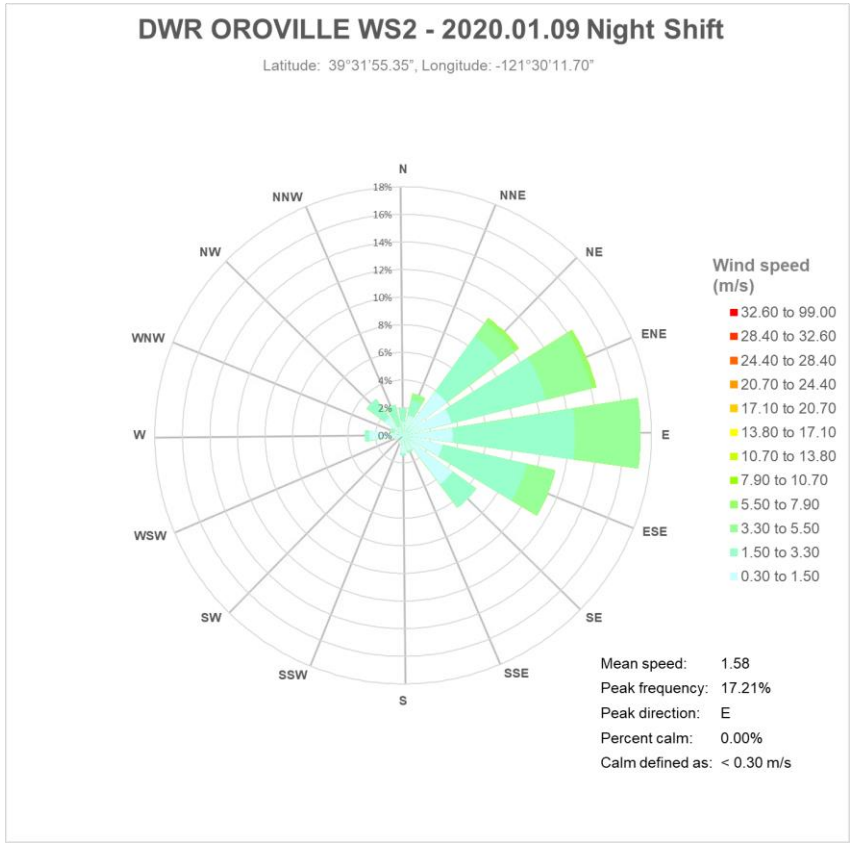

DWR OROVILLE WS2 - 2020.01.07 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Wind speed (m/s)
32.60 to 99.00
28.40 to 32.60
24.40 to 28.40
20.70 to 24.40
17.10 to 20.70
13.80 to 17.10
10.70 to 13.80
7.90 to 10.70
5.50 to 7.90
3.30 to 5.50
1.50 to 3.30
0.30 to 1.50
Mean speed: 0.43
Peak frequency: 8.87%
Peak direction: SE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2020.01.07 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
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: 0.33
Peak frequency: 17.11%
Peak direction: W
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2020.01.08 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.36
Peak frequency: 10.03%
Peak direction: SW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2020.01.08 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
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: 0.74
Peak frequency: 22.79%
Peak direction: SSE
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2020.01.09 Day Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
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: 0.45
Peak frequency: 11.02%
Peak direction: NW
Percent calm: 0.00%
Calm defined as: < 0.30 m/s


DWR OROVILLE WS2 - 2020.01.09 Night Shift
Latitude: 39°31'55.35", Longitude: -121°30'11.70"
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: 1.58
Peak frequency: 17.21%
Peak direction: E
Percent calm: 0.00%
Calm defined as: < 0.30 m/s

10.0 Weather Patterns and Events

Table 22 Weather Pattern Events December 27, 2019 – January 09, 2020

2019	Temp. (°F)			Dew Point (°F)			Humidity (%)			Station Bar Press. (in)			Visibility (mi)			Wind (mph)			Precipitation			Events
Dec	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Sum	Min	Type
27	Temporary Holiday Shutdown																					
28																						
29																						
30	63	49.5	38	43	39.1	32	93	71.1	32	29.96	29.91	29.85	10	6.1	0.25	13	5.7	0	0	0.0	0	Fog
31	57	50.7	46	44	40.1	33	83	68.0	49	29.99	29.95	29.92	10	8.9	6	9	5.8	0	0	0.0	0	haze
Jan																						
01	Temporary Holiday Shutdown																					
02	62	48.9	38	45	39.2	35	89	70.8	44	29.98	29.93	29.90	10	8.5	3	7	3.0	0	0	0.0	0	
03	60	49.4	42	47	41.3	37	83	74.4	58	30.09	30.03	29.98	10	7.5	2	8	3.8	0	0	0.0	0	smoke/haze
04	58	50.9	46	48	44.9	40	86	80.3	67	30.25	30.16	30.04	10	7.0	2	17	7.1	0	0.05	0.14	0	rain
05	58	46.0	40	46	41.3	34	93	84.2	60	30.37	30.30	30.21	10	4.5	0	6	2.2	0	0	0.0	0	fog/mist
06	54	44.6	36	39	35.6	31	82	71.7	51	30.32	30.25	30.15	10	9.9	9	13	4.5	0	0	0.0	0	
07	51	41.2	34	43	37.5	31	93	86.8	69	30.14	29.99	29.87	9	2.4	0	11	3.0	0	0.01	0.04	0	mist/Lt rain
08	52	47.5	45	44	42.8	42	93	83.9	72	29.96	29.91	29.83	10	4.7	1.25	10	3.3	0	0	0.0	0	mist
09	54	48.0	41	45	42.8	33	93	82.5	67	30.01	29.86	29.76	10	6.9	1.5	14	5.7	0	0.15	0.93	0	rain

NCDC/NOAA data requests #2002456; Location - Oroville, CA Municipal Airport Weather Station, 93210

11.0 Potential Offsite Air Contaminant Events

No potential offsite air contaminant events during this time period.

12.0 Changes to Proposed Sampling Locations or Methodology

On 12/20/2019, all stations were temporarily taken out of service at the close of the AM shift for the Christmas Holiday. The stations were restarted at the start of the 12/30/2019 AM Shift.

On 12/31/2019, all stations were temporarily taken out of service at the close of the AM shift for the New Year Holiday. The stations were restarted at the start of the 01/02/2019 AM Shift.

Appendix A – Laboratory Reports

Appendix B – Perimeter Dust Monitoring