

# Air Quality Monitoring and Sampling Summary Report

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

DWR Oroville Dam Recovery Operations

January 24, 2020 through January 27, 2020



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Date: February 14, 2020



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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. 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. Three (3) 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.

Most the asbestos structure counts at the perimeter remain predominantly “None Detected”:

- Total number of samples: 45
- Total number of samples that were “None Detected”: 45 (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.

An occurrence of non-asbestos structures, including a contribution from non-regulated amphiboles, was detected at the Upper zone on 1/26/2020 and noted in the sample summary and in the laboratory reports.

Damp weather continues to maintain soil moisture conditions which reduced 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.

On January 22, 2020, the Department of Water Resources (DWR) submitted A Proposal to Terminate Naturally Occurring Asbestos Air Monitoring for the Oroville Spillway Emergency Recovery Project to Butte County Air Quality Management District (BCAQMD). Based on the approval letter, dated January 27, 2020, (Appendix C) DWR directed Safety Management Systems, LLC to terminate the Air Monitoring Program as described in the September 2017 Asbestos Dust Management Plan (ADMP), decommission the air monitoring equipment and demobilize support personnel at end of shift on January 27, 2020.

## 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 near 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**

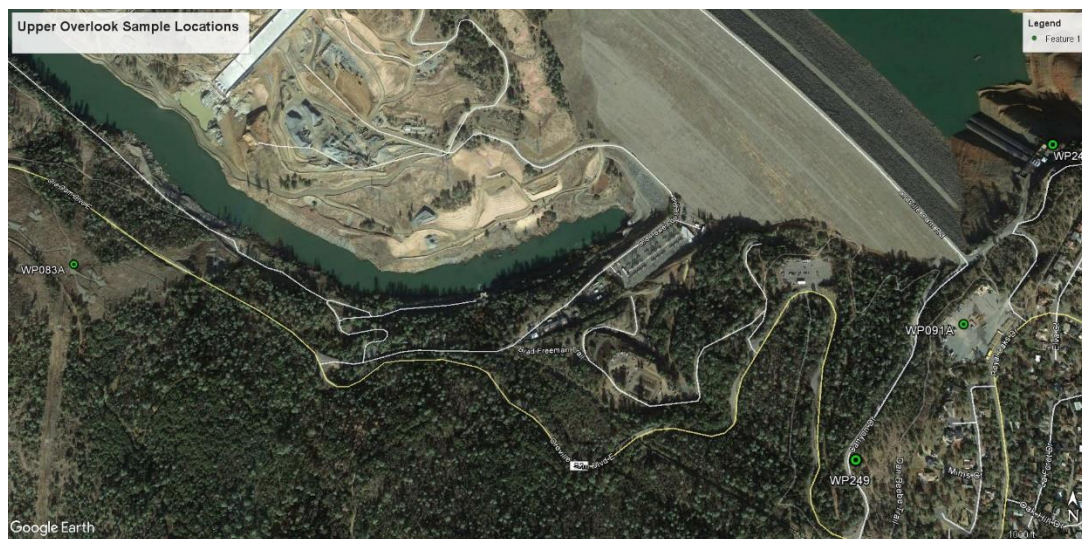




Figure 2 Burma Road Sampling Locations

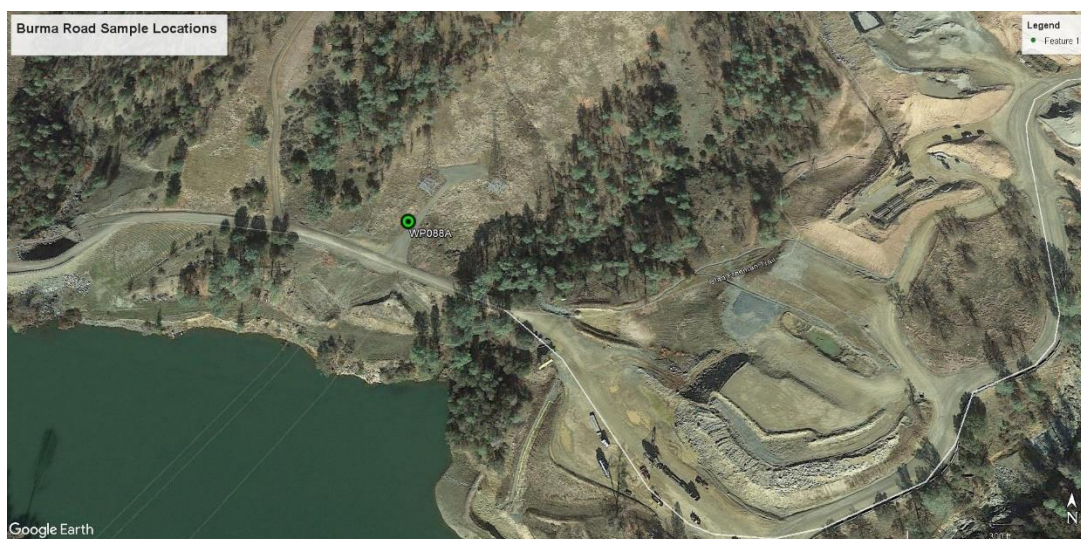


Figure 3 Launch Ramp Sampling Locations



## 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)
01/24/2020	00124-OFD-PMT-01	412000863	2.70	2.75	2.73	05:30	17:30	Day	720	1965.60
	00124-OFD-PMT-02		2.70	2.69	2.7	05:40	17:40		720	1944.00
	00124-OFD-PMT-03		2.70	2.71	2.71	05:48	17:47		719	1948.49
	00124-OFD-PMT-04		2.70	2.71	2.71	05:52	17:51		719	1948.49
	00124-OFD-PMT-05		2.70	2.68	2.69	17:30	05:30	Night	720	1936.80
	00124-OFD-PMT-06		2.70	2.68	2.69	17:40	05:40		720	1936.80
	00124-OFD-PMT-07		2.70	2.69	2.7	17:47	05:47		720	1944.00
	00124-OFD-PMT-08		2.70	2.67	2.69	17:51	05:56		725	1950.25
01/25/2020	00125-OFD-PMT-01	142000360	2.70	2.69	2.7	05:30	17:30	Day	720	1944.00
	00125-OFD-PMT-02		2.70	2.7	2.7	05:40	17:40		720	1944.00
	00125-OFD-PMT-03		2.70	2.68	2.69	05:47	17:46		719	1934.11
	00125-OFD-PMT-04		2.70	2.71	2.71	05:56	17:53		717	1943.07
	00125-OFD-PMT-05		2.70	2.7	2.7	17:30	05:30	Night	720	1944.00
	00125-OFD-PMT-06		2.70	2.7	2.7	17:40	05:41		721	1946.70
	00125-OFD-PMT-07		2.70	2.69	2.7	17:46	05:53		727	1962.90
	00125-OFD-PMT-08		2.70	2.7	2.7	17:53	06:03		730	1971.00
01/26/2020	00126-OFD-PMT-01	332001704	2.70	2.7	2.7	05:30	17:30	Day	720	1944.00
	00126-OFD-PMT-02		2.70	2.68	2.69	05:41	17:39		718	1931.42
	00126-OFD-PMT-03		2.70	2.69	2.7	05:53	17:45		712	1922.40
	00126-OFD-PMT-04		2.70	2.68	2.69	06:03	17:52		709	1907.21
	00126-OFD-PMT-05		2.70	2.64	2.67	17:30	05:25	Night	715	1909.05
	00126-OFD-PMT-06		2.70	2.69	2.7	17:39	05:38		719	1941.30
	00126-OFD-PMT-07		2.70	2.69	2.7	17:45	05:45		720	1944.00
	00126-OFD-PMT-08		2.70	2.68	2.69	17:52	05:52		720	1936.80
01/27/2020	00127-OFD-PMT-01	532000161	2.70	2.72	2.71	05:25	16:34	Day	669	1812.99
	00127-OFD-PMT-02		2.70	2.7	2.7	05:38	16:52		674	1819.80
	00127-OFD-PMT-03		2.70	2.69	2.7	05:45	16:58		673	1817.10
	00127-OFD-PMT-04		2.70	2.7	2.7	05:52	17:05		673	1817.10
			Termination of Project					Night		

**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)
01/24/2020	00124-OFD-BPT-01	412000865	2.7	2.7	2.7	05:26	17:26	Day	720	1944.00
	00124-OFD-BPT-02		2.7	2.6	2.6	17:27	05:25	Night	718	1938.60
01/25/2020	00125-OFD-BPT-01	142000361	2.7	2.72	2.71	05:26	17:25	Day	719	1948.49
	00125-OFD-BPT-02		2.7	2.7	2.7	17:26	05:25	Night	719	1941.30
01/26/2020	00126-OFD-BPT-01	332001709	2.7	2.72	2.71	05:26	17:25	Day	719	1948.49
	00126-OFD-BPT-02		2.7	2.71	2.71	17:26	05:25	Night	719	1948.49
01/27/2020	00127-OFD-BPT-01	532000162	2.7	2.7	2.7	05:26	17:00	Day	694	1873.80
	Termination of Project							Night		

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)
01/24/2020	00124-OFD-LRP-01	412000347	2.70	2.71	2.71	06:14	18:09	Day	715	1937.65
	00124-OFD-LRP-02		2.70	2.7	2.7	06:01	18:02		721	1946.70
	00124-OFD-LRP-03		2.70	2.68	2.69	18:09	06:17	Night	728	1958.32
	00124-OFD-LRP-04		2.70	2.68	2.69	18:02	06:03		721	1939.49
01/25/2020	00125-OFD-LRP-01	142000166	2.70	2.73	2.72	06:17	18:12	Day	715	1944.80
	00125-OFD-LRP-02		2.70	2.74	2.72	06:03	18:04		721	1961.12
	00125-OFD-LRP-03		2.70	2.69	2.7	18:12	06:23	Night	731	1973.70
	00125-OFD-LRP-04		2.70	2.7	2.7	18:04	06:12		728	1965.60
01/26/2020	00126-OFD-LRP-01	332000692	2.70	2.71	2.71	06:23	18:09	Day	706	1913.26
	00126-OFD-LRP-02		2.70	2.7	2.7	06:12	18:02		710	1917.00
	00126-OFD-LRP-03		2.70	2.69	2.7	18:09	06:12	Night	723	1952.10
	00126-OFD-LRP-04		2.70	2.68	2.69	18:02	06:03		721	1939.49
01/27/2020	00127-OFD-LRP-01	532000082	2.70	2.7	2.7	06:12	17:22	Day	670	1809.00
	00127-OFD-LRP-02		2.70	2.73	2.72	06:03	17:15		672	1827.84
			Termination of Project					Night		

## 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 PM<sub>2.5</sub>, PM<sub>10</sub>, 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

 <p>A photograph of an air monitoring station. The equipment is a white box with a green arrow logo, mounted on a yellow and black tripod. It is situated in an outdoor area with orange safety barriers and a white building in the background. A timestamp '01/24/2020 09:48' is visible in the bottom right corner of the photo.</p>	 <p>A photograph of an air monitoring station. The equipment is a white box with a green arrow logo, mounted on a white tripod. It is located near a paved road with trees and a stone wall in the background. A timestamp '01/24/2020 09:31' is visible in the bottom right corner of the photo.</p>
Station 1 – WP 246 Intake Yard	Station 4 – WP 249 Canyon Drive
 <p>A photograph of an air monitoring station. The equipment is a white box with a green arrow logo and the number '09', mounted on a white tripod. It is in a grassy field with some trees in the background. A timestamp '01/24/2020 13:11' is visible in the bottom right corner of the photo.</p>	 <p>A photograph of an air monitoring station. The equipment is a white box with a green arrow logo and a red and white striped hazard symbol, mounted on a white tripod. It is located near a concrete launch ramp with a gravel area in the foreground. A timestamp '01/24/2020 13:38' is visible in the bottom right corner of the photo.</p>
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



Station 25 – WP 091A Upper Overlook

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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
During the decommissioning of the Air Monitoring Program and the air monitoring station equipment, the dust data from WP088A Burma Rd. 01 station was inadvertently deleted. There is no dust data from 5:44AM on 1/24/20 to end of day shift 6:00PM on 1/27/20. However, CARB-AHERA TEM Asbestos sampling results for WP088A are available for that time period and no fiber counts of regulated or non-regulated amphiboles were detected.			

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 – 2020.01.24 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	00124-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00124-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0009	<0.0009
	00124-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
Burma Road	00124-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00124-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00124-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00124-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009
	00124-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00124-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009



Table 9 – 2020.01.25 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	00125-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00125-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0009	<0.0009
	00125-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0009	<0.0009
	00125-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0009	<0.0009
	00125-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00125-OFD-PMT-06	WP249 PM Canyon Drive	0	None Detected			0.0010	<0.0010
	00125-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0010	<0.0010
	00125-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00125-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0010	<0.0010
	00125-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00125-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00125-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00125-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00125-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010

Table 10 – 2020.01.26 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	00126-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0009	<0.0009
	00126-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00126-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00126-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
	00126-OFD-PMT-05	WP083A PM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00126-OFD-PMT-06	WP249 PM Canyon Drive	1	None Detected			0.0009	<0.0009
	Non-asbestos structures reported include a contribution from non-regulated amphiboles							
	00126-OFD-PMT-07	WP091A PM Upper Overlook	0	None Detected			0.0009	<0.0009
	00126-OFD-PMT-08	WP246 PM Intake Yard	0	None Detected			0.0009	<0.0009
Burma Road	00126-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
	00126-OFD-BPT-02	WP088A PM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00126-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00126-OFD-LRP-02	WP081A AM Launch Ramp Turnaround	0	None Detected			0.0010	<0.0010
	00126-OFD-LRP-03	WP092A PM Launch Ramp Parking	0	None Detected			0.0009	<0.0009
	00126-OFD-LRP-04	WP081A PM Launch Ramp Turnaround	0	None Detected			0.0009	<0.0009

Table 11 - 2020.01.27 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	00127-OFD-PMT-01	WP083A AM Dan Beebe Trail	0	None Detected			0.0010	<0.0010
	00127-OFD-PMT-02	WP249 AM Canyon Drive	0	None Detected			0.0010	<0.0010
	00127-OFD-PMT-03	WP091A AM Upper Overlook	0	None Detected			0.0010	<0.0010
	00127-OFD-PMT-04	WP246 AM Intake Yard	0	None Detected			0.0010	<0.0010
Burma Road	00127-OFD-BPT-01	WP088A AM Burma Road 01	0	None Detected			0.0009	<0.0009
Launch Ramp	00127-OFD-LRP-01	WP092A AM Launch Ramp Parking	0	None Detected			0.0010	<0.0010
	00127-OFD-LRP-02	WP081A AM 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<sup>3</sup>) 01/24-01/27

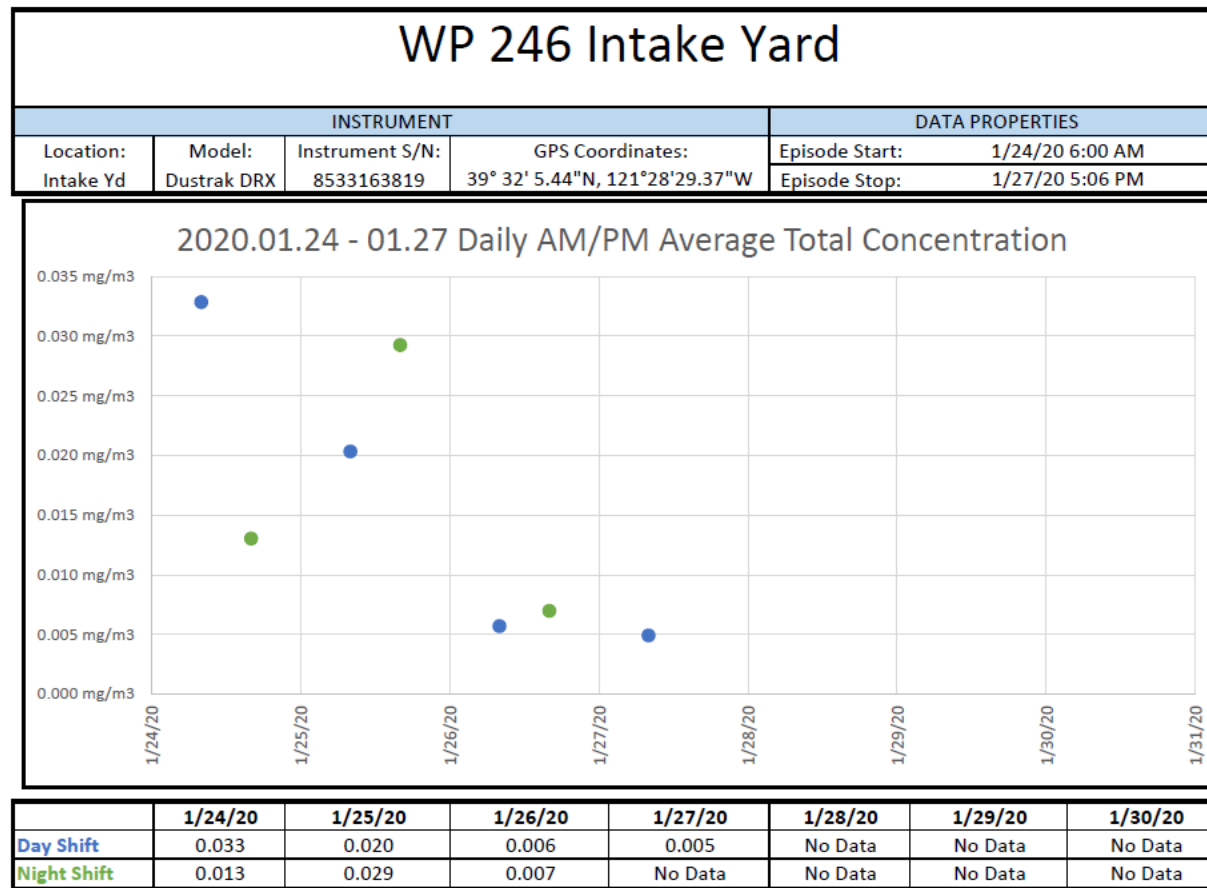


Figure 6 WP 249 Canyon Drive Dust Daily Average (mg/m3) 01/24-01/27

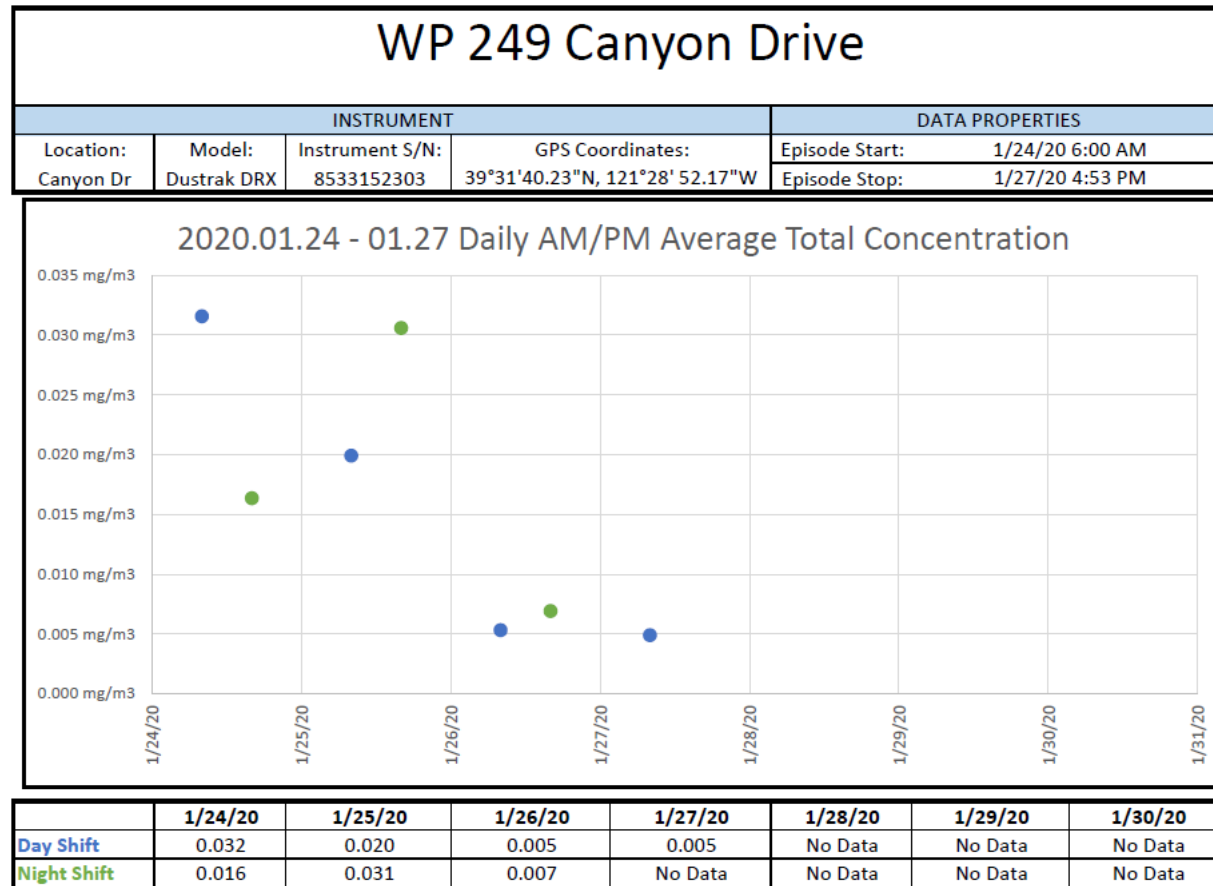




Figure 7 WP 088A Burma Road 01 Daily Dust Average (mg/m3) 01/24-01/27

No Data

Figure 8 WP 092A Launch Ramp Parking Daily Dust Average (mg/m3) 01/24-01/27

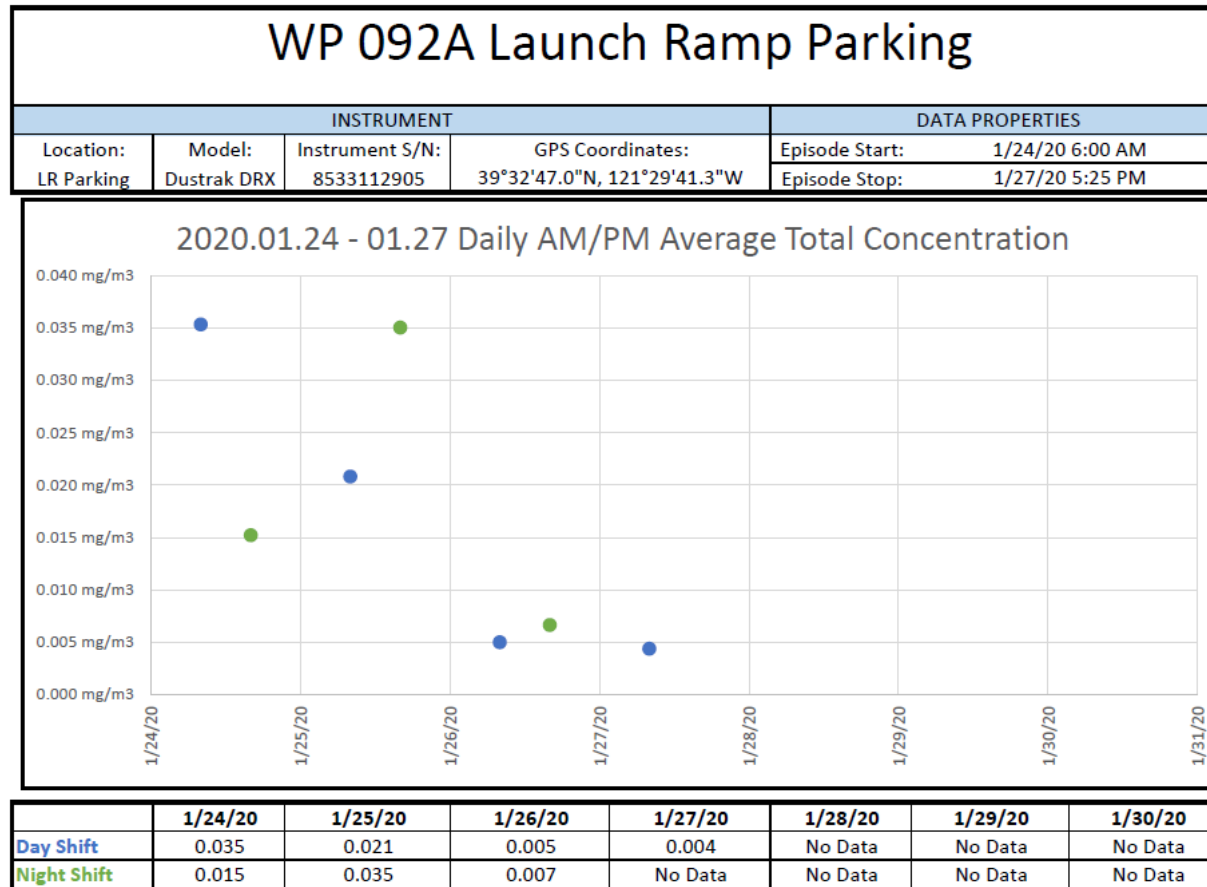


Figure 9 WP 081A Launch Ramp Turnaround Daily Dust Average (mg/m3) 01/24-01/27

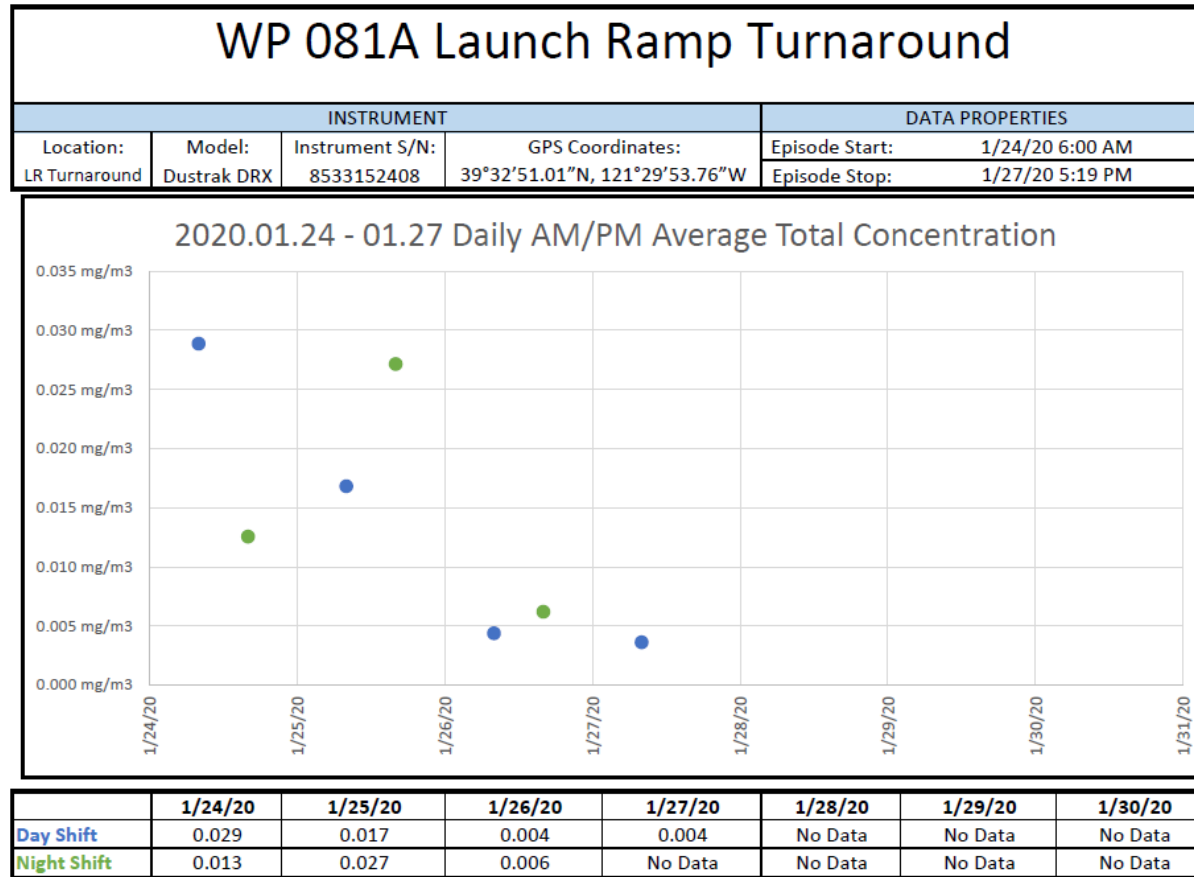


Figure 10 WP 083A Dan Beebe Trail Daily Dust Average (mg/m<sup>3</sup>) 01/24-01/27

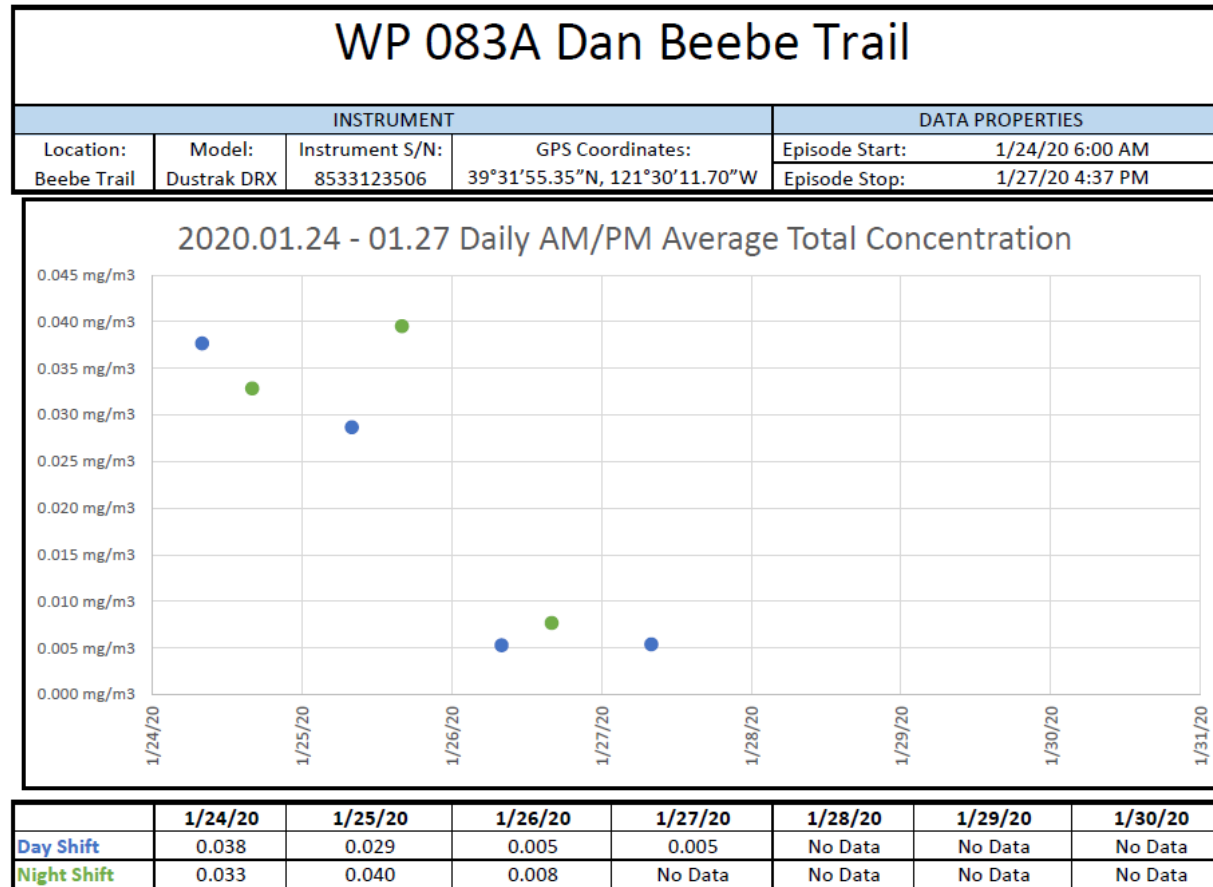
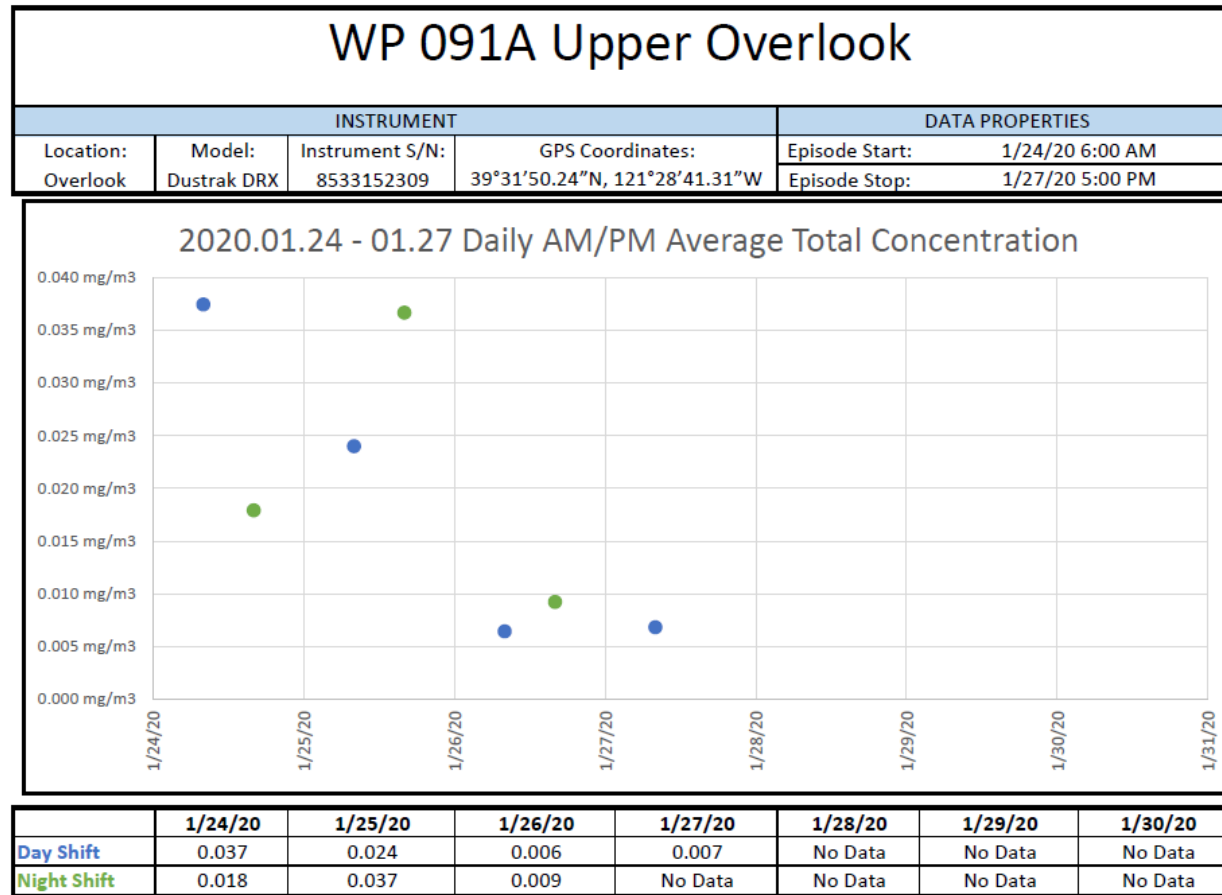


Figure 11 WP 091A Upper Overlook Daily Dust Average (mg/m<sup>3</sup>) 01/24-01/27



## 9.0 Meteorological Data & Daily Wind Rose

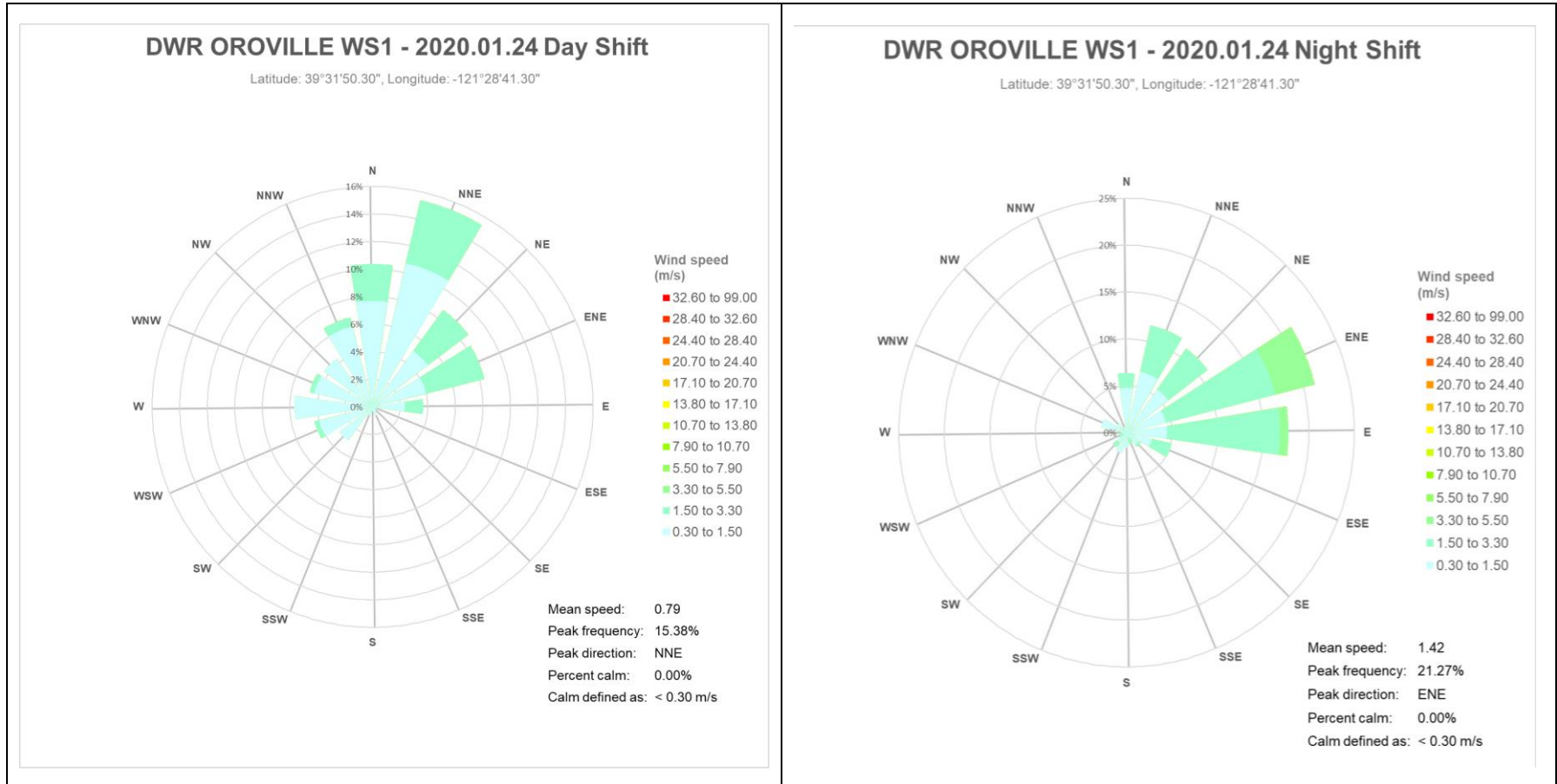
WS1 Weather Station is a Davis Instruments Vantage Pro2. This station is at WP090A 39°31'50.30"N, 121°28'41.30"W at the Upper Overlook area.

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.

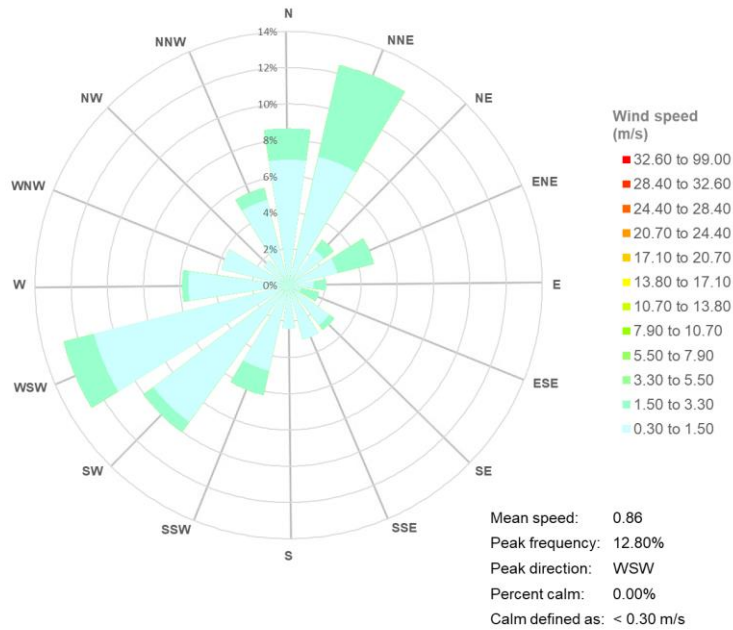


Figure 12 Wind Rose – Day & Night Shift Upper Overlook



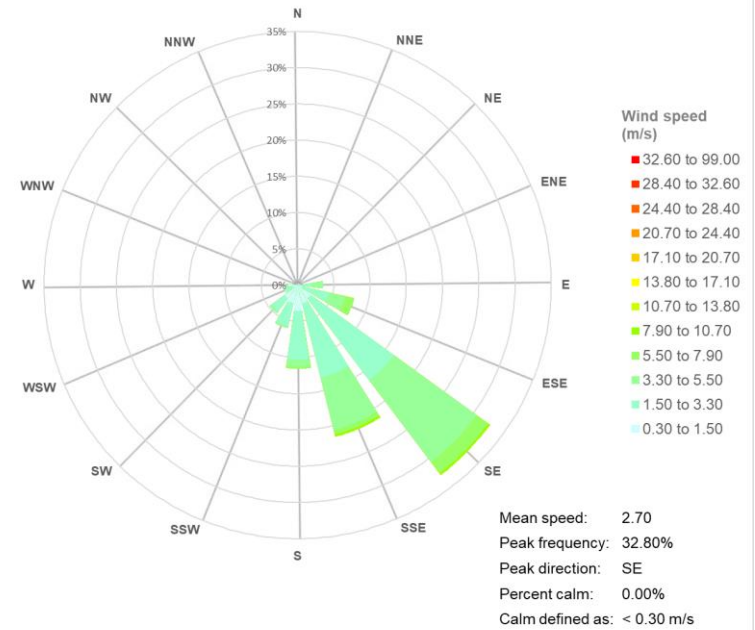
### DWR OROVILLE WS1 - 2020.01.25 Day Shift

Latitude: 39°31'50.30", Longitude: -121°28'41.30"



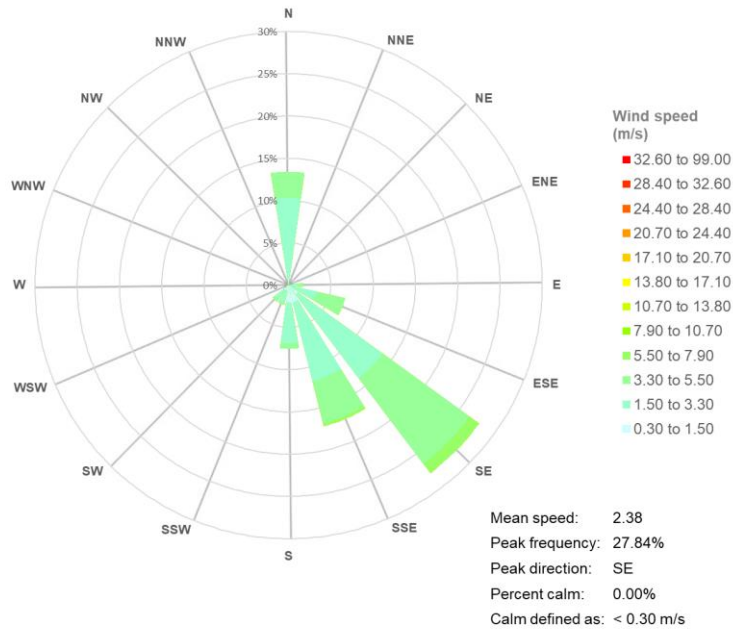
### DWR OROVILLE WS1 - 2020.01.25 Night Shift

Latitude: 39°31'50.30", Longitude: -121°28'41.30"



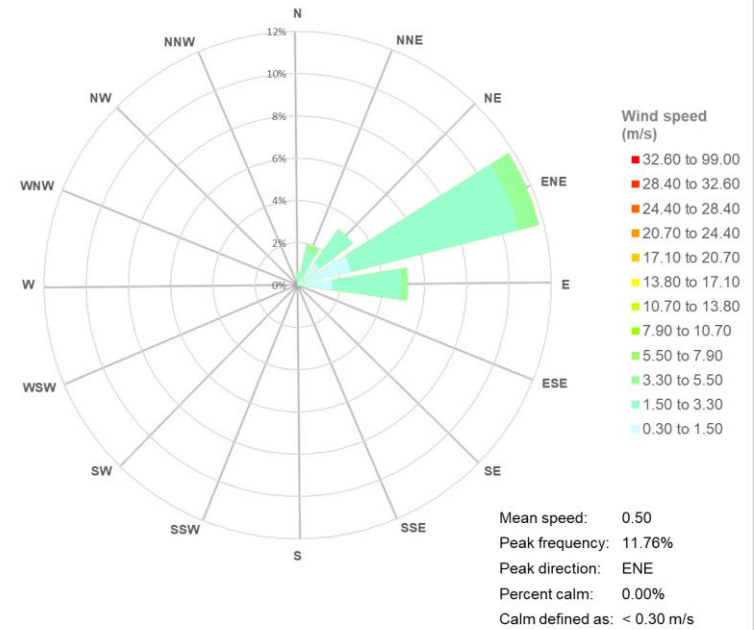
### DWR OROVILLE WS1 - 2020.01.26 Day Shift

Latitude: 39°31'50.30", Longitude: -121°28'41.30"



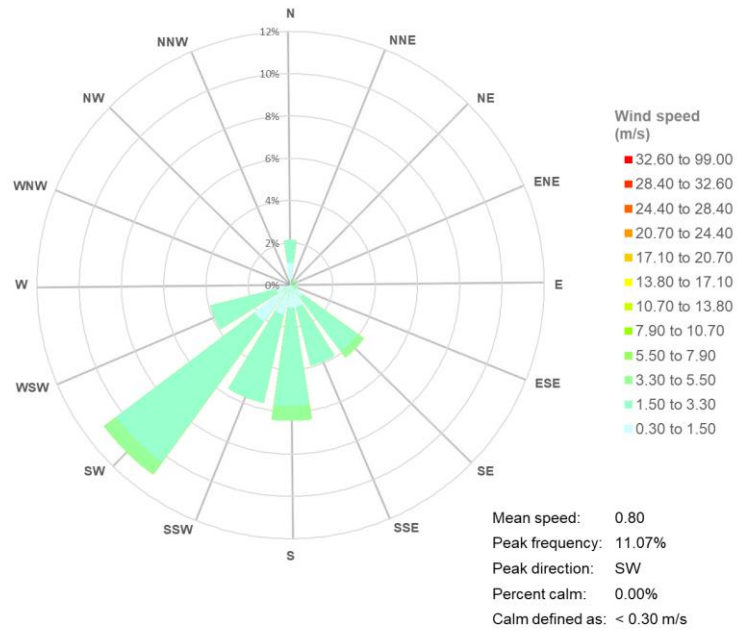
### DWR OROVILLE WS1 - 2020.01.26 Night Shift

Latitude: 39°31'50.30", Longitude: -121°28'41.30"



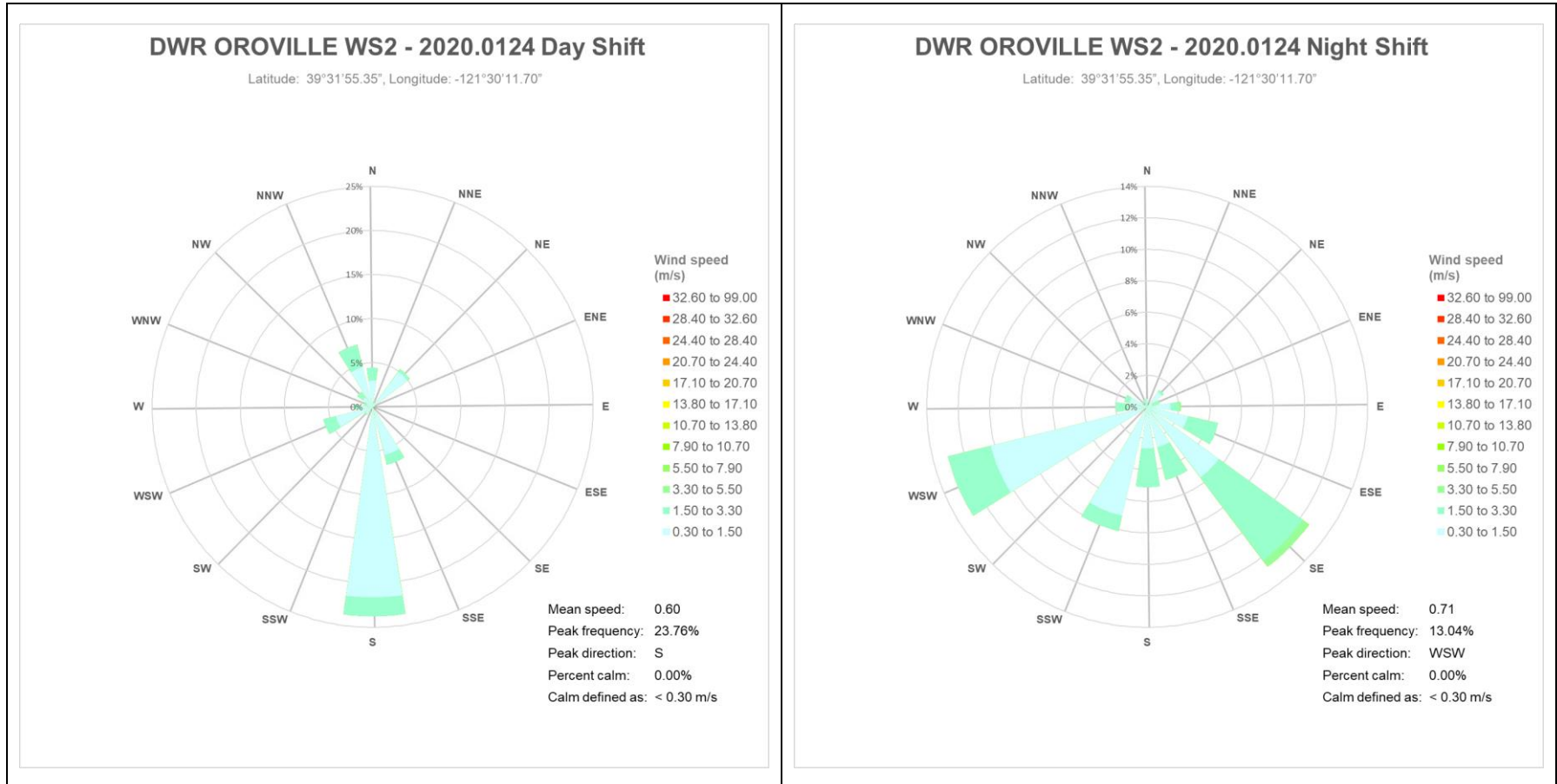
### DWR OROVILLE WS1 - 2020.01.27 Day Shift

Latitude: 39°31'50.30", Longitude: -121°28'41.30"



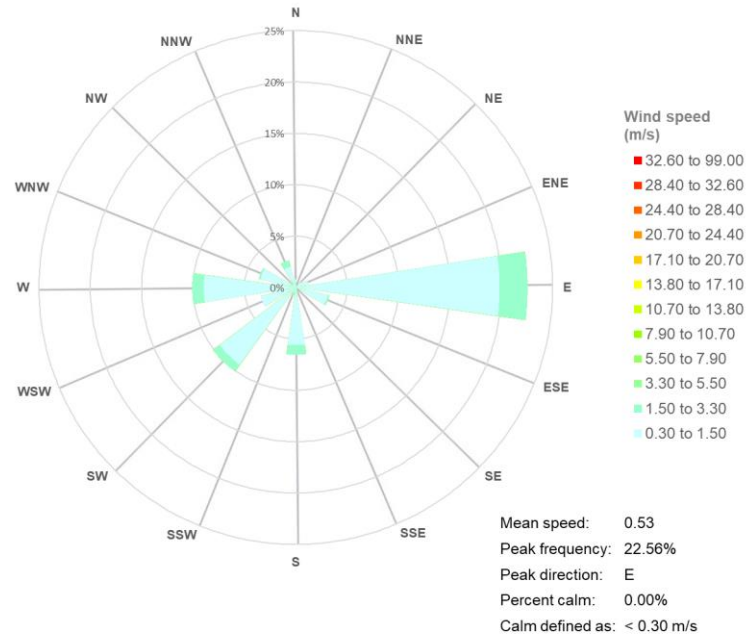
Termination of Project

Figure 13 Wind Rose – Day & Night Shift Upper Overlook



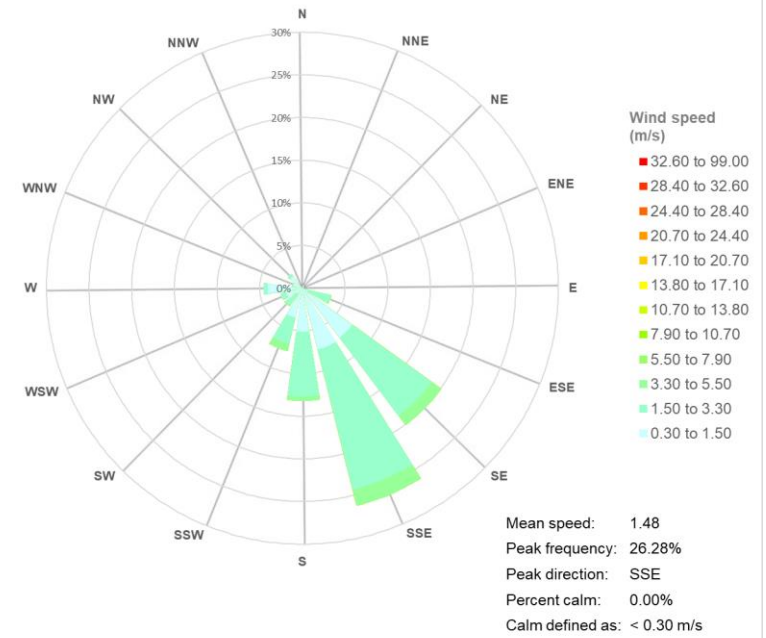
### DWR OROVILLE WS2 - 2020.0125 Day Shift

Latitude: 39°31'55.35", Longitude: -121°30'11.70"



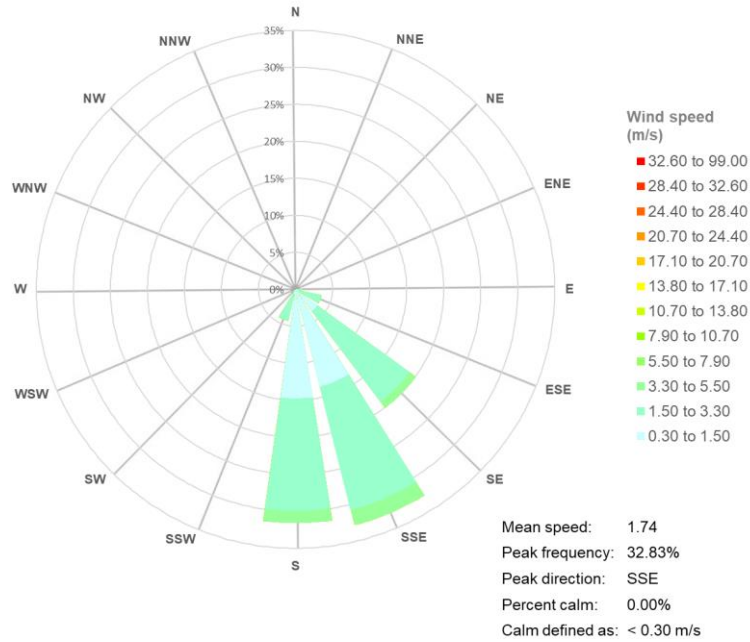
### DWR OROVILLE WS2 - 2020.0125 Night Shift

Latitude: 39°31'55.35", Longitude: -121°30'11.70"



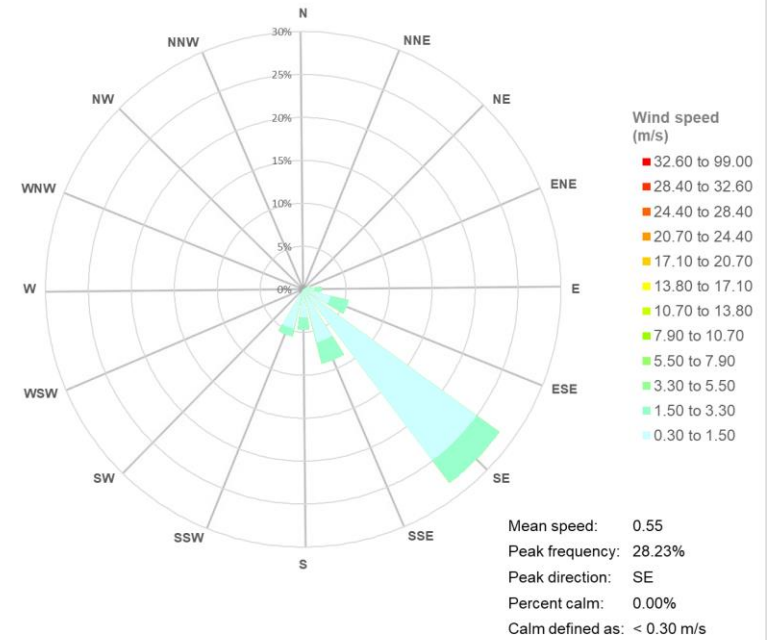
### DWR OROVILLE WS2 - 2020.0126 Day Shift

Latitude: 39°31'55.35", Longitude: -121°30'11.70"



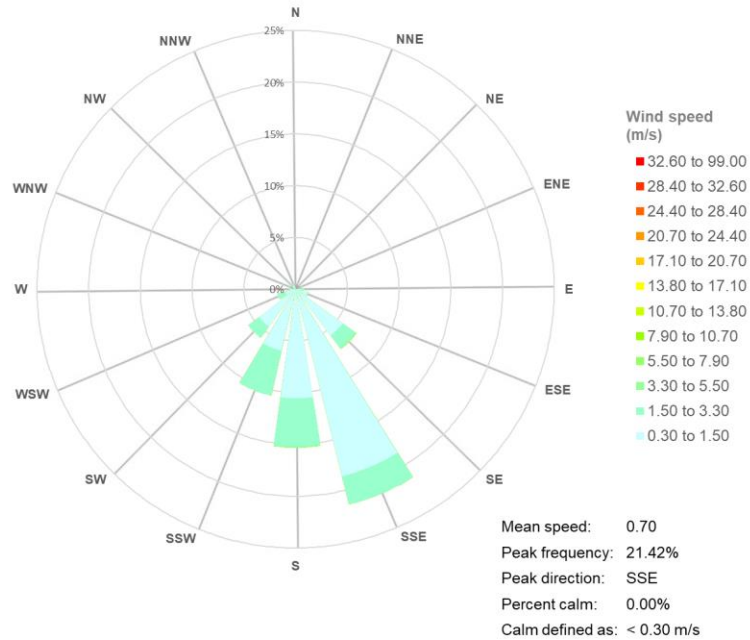
### DWR OROVILLE WS2 - 2020.0126 Night Shift

Latitude: 39°31'55.35", Longitude: -121°30'11.70"



### DWR OROVILLE WS2 - 2020.0127 Day Shift

Latitude: 39°31'55.35", Longitude: -121°30'11.70"



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## 10.0 Weather Pattern Events

Table 12 Weather Pattern Events January 24, 2020 – January 27, 2020

2020	Temp. (°F)			Dew Point (°F)			Humidity (%)			Station Bar Press. (in)			Visibility (mi)			Wind (mph)			Precipitation			Events
Jan	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Sum	Min	Type
24	55	52	48	50	48	46	94	86.3	80	30.00	29.87	29.11	6	4.0	1.75	7	2.7	0	0	0.00	0	trace rain
25	61	54.5	51	54	50.2	48	94	85.7	67	29.99	29.88	29.11	10	3.4	1	17	4.8	0	0.13	1.09	0	rain
26	65	57.5	53	54	51.8	47	94	82.1	56	30.10	29.93	29.11	10	7.0	1.75	18	12.4	0	0.13	0.50	0	rain
27	63	56	51	47	46.3	43	83	70.6	53	30.13	30.13	30.10	10	10.0	10	15	7.5	3	0	0.00	0	
Termination of Project																						

NCDC/NOAA data requests #2036205; 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 January 22, 2020, the Department of Water Resources (DWR) submitted A Proposal to Terminate Naturally Occurring Asbestos Air Monitoring for the Oroville Spillway Emergency Recovery Project to Butte County Air Quality Management District (BCAQMD).

Based on the approval letter, dated January 27, 2020, (Appendix C) DWR directed Safety Management Systems, LLC to terminate the Air Monitoring Program as described in the September 2017 Asbestos Dust Management Plan (ADMP), decommission the air monitoring equipment and demobilize support personnel at end of shift on January 27, 2020.

## Appendix A – Laboratory Reports

## Appendix B – Perimeter Dust Monitoring

## Appendix C – Termination of Project (Letter)