IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

https://en.wikipedia.org/wiki/Coyote_Mountains#/media/File:Coyote_Mountains.png

May 6, 2017
Exceptional Event Documentation
For the Imperial County PM_{10} Nonattainment Area

An exceedance of the National Ambient Air Quality Standard (NAAQS) for PM_{10} at the Brawley, Calexico, El Centro, Niland and Westmorland monitor in California on May 6, 2017

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ACRONYM	DESCRIPTIONS
AOD	Aerosol Optical Depth
AQI	Air Quality Index
AQS	Air Quality System
BACM	Best Available Control Measures
BAM 1020	Beta Attenuation Monitor Model 1020
BLM	United States Bureau of Land Management
BP	United States Border Patrol
CAA	Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice
DCP	Dust Control Plan
DPR	California Department of Parks and Recreation
EER	Exceptional Events Rule
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GOES-W/E	Geostationary Operational Environmental Satellite (West/East)
HC	Historical Concentrations
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
ICAPCD	Imperial County Air Pollution Control District
INPEE	Initial Notification of a Potential Exceptional Event
ITCZ	Inter Tropical Convergence Zone
KBLH	Blythe Airport
KCZZ	Campo Airport
KIPL	Imperial County Airport
KNJK	El Centro Naval Air Station
KNYL/MCAS	Yuma Marine Corps Air Station
KPSP	Palm Springs International Airport
KTRM	Jacqueline Cochran Regional Airport (aka Desert Resorts Rgnl Airport)
PST	Local Standard Time
MMML/MXL	Mexicali, Mexico Airport
MODIS	Moderate Resolution Imaging Spectroradiometer
MPH	Miles Per Hour
MST	Mountain Standard Time
NAAQS	National Ambient Air Quality Standard
NCAR	National Center for Atmospheric Research
NCEI	National Centers for Environmental Information
NEAP	Natural Events Action Plan
NEXRAD	Next-Generation Radar

NOAA	National Oceanic and Atmospheric Administration
nRCP	Not Reasonably Controllable or Preventable
NWS	National Weather Service
PDT	Pacific Daylight Time
PM_{10}	Particulate Matter less than 10 microns
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PST	Pacific Standard Time
QA/QC	Quality Assured and Quality Controlled
QCLCD	Quality Controlled Local Climatology Data
RACM	Reasonable Available Control Measure
RAWS	Remote Automated Weather Station
SIP	State Implementation Plan
SLAMS	State Local Ambient Air Monitoring Station
SMP	Smoke Management Plan
SSI	Size-Selective Inlet
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTC	Coordinated Universal Time
WRCC	Western Regional Climate Center

I Introduction

In 2007, the United States Environmental Protection Agency (US EPA) adopted the "Treatment of Data Influenced by Exceptional Events Rule" (EER)[1] to govern the review and handling of certain air quality monitoring data for which the normal planning and regulatory processes are not appropriate. Under the terms of the EER, the US EPA may exclude monitored exceedances of the National Ambient Air Quality Standard (NAAQS) if a State adequately demonstrates that an exceptional event caused the exceedance.

The 2016 revision to the EER added sections 40 CFR §50.1(j)-(r) [Definitions], 50.14(a)-(c) and 51.930(a)-(b) to 40 Code of Federal Regulations (CFR). These sections contain definitions, criteria for US EPA concurrence, procedural requirements and requirements for State demonstrations. The demonstration must satisfy all of the rule criteria for US EPA to concur with the requested exclusion of air quality data from regulatory decisions.

Title 40 CFR §50.14(c)(3)(iv) outlines the elements that a demonstration must include for air quality data to be excluded:

TABLE 1-1 TITLE 40 CFR §50.14(c)(3)(iv) CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})		DOCUMENT SECTION
1	A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s)	Pg. 9
2	A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation	Pg. 18
3	Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) of this section	Pg. 33
4	A demonstration that the event was both not reasonably controllable and not reasonably preventable	Pg. 44
5	A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event	Pg. 49

[1] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

Aside from the above, a State must demonstrate that it has met several procedural requirements during the demonstration process, including:

TABLE 1-2 PROCEDURAL CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})		DOCUMENT SECTION
1	**Public Notification [40 CFR §50.14(c)(1)]** – In accordance with mitigation requirement at 40 CFR 51.930(a)(1), notification to the public promptly whenever an event occurs or is reasonably anticipated to occur which may result in the exceedance of an applicable air quality standard	Pg. 3 and Appendix C
2	**Initial Notification of Potential Exceptional Event [40 CFR §50.14(c)(2)]** - Submission to the Administrator of an Initial Notification of Potential Exceptional Event and flagging of the affected data in US EPA's Air Quality System (AQS) as described in 40 CFR §50.14(c)(2)(i),	Pg. 3
3	**Public Comment Process [40 CFR §50.14(c)(3)(v)]** - Documentation of fulfillment of the public comment process described in 40 CFR §50.14(c)(3)(v), and	Pg. 4 and Appendix C
4	**Mitigation of Exceptional Events [40 CFR §51.930]** - Implementation of any applicable mitigation requirements (Mitigation Plan) as described in 40 CFR §51.930	Pg. 4

The Imperial County Air Pollution Control District (ICAPCD) has been submitting criteria pollutant data since 1986 into the US EPA's Air Quality System (AQS). In Imperial County, prior to 2017, Particulate Matter Less Than 10 Microns (PM_{10}) was measured by either Federal Reference Method (FRM) Size Selective Instruments (SSI) or Federal Equivalent Method (FEM) Beta Attenuation Monitor's, Model 1020 (BAM 1020). Effective 2017 Imperial County stopped utilizing FRM instruments relying solely on BAM 1020 monitors to measure PM_{10}. It is important to note that the use of non-regulatory data within this document, typically continuous PM_{10} data prior to 2013, measured in local conditions, does not cause or contribute to any significant differences in concentration difference or analysis.

As such, this report demonstrates that a naturally occurring event caused an exceedance observed on May 6, 2017, which elevated particulate matter within San Diego, Riverside and Imperial Counties and affected air quality. The analyses contained in this report includes regulatory and non-regulatory data that provides support for the elements listed in **Table 1-1** and **Table 1-2**. This demonstration substantiates that this event meets the definition of the US EPA Regulation for the Treatment of Data Influenced by Exceptional Events (EER)[2].

I.1 Public Notification [40 CFR §50.14(c)(1)]

The ICAPCD utilizes a web-based public notification process to alert the public of forecasted weather conditions and potential changes in ambient air concentrations that may affect the public. The ICAPCD identifies these public notifications as Advisory Events. Unfortunately, as of the writing of this documentation, due to ransomware, random archival files were deleted in order to protect the integrity of the network system. ICAPCD network files for May, June and July have been effectively deleted as infected files. In addition, all archival web-based Advisory files have been deleted. In any event because of the magnitude of the unfolding event (May 6, 2017) the ICAPCD would have posted the corresponding weather stories and synopsis from either one or both of the NWS offices days prior to Saturday, May 6, 2017. Without corroborating documentation, it is unclear which stories and information was posted. Still, email subscription notices indicated that the first Urgent Weather message was issued (May 5, 2017) by the Phoenix NWS office which included a Wind Advisory for Imperial County. More likely than not, such a notice would have been posted advising the public of the elevated winds and potential for elevated particulate matter. If available, **Appendix C** contains copies of notices pertinent to the May 6, 2017 event.

I.2 Initial Notification of Potential Exceptional Event (INPEE) [40 CFR §50.14(c)(2)]

When States intend to request the exclusion of one or more exceedances of a NAAQS as an exceptional event a notification to the Administrator is required. The notification process identified within the EER as the Initial Notification of Potential Exceptional Event (INPEE) is twofold: to determine whether identified data may affect a regulatory decision and whether a State should develop/submit an EE Demonstration.

On May 6, 2017, a naturally occurring event elevated particulate matter within San Diego, Riverside and Imperial Counties, causing an exceedance at the Calexico (06-025-0005), Brawley (06-025-0007), El Centro (06-025-1003), Niland (06-025-4004), and Westmorland (06-025-4003) air quality monitors. Subsequently, the ICAPCD made a formal written request to the California Air Resources Board (CARB) to place preliminary flags on SLAMS measured PM_{10} hourly concentrations from the Calexico, Brawley, El Centro, Niland monitor, and Westmorland monitors on May 6, 2017. After review, CARB submitted the

[2] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

INPEE, for the May 6, 2017 event in July of 2017. The submitted request included a brief description of the meteorological conditions for May 6, 2017 indicating that a potential natural event occurred. The ICAPCD has engaged in discussions with US EPA Region IX regarding the demonstration prior to formal submittal.

I.3 Public Comment Process [40 CFR §50.14(c)(3)(v)(A-C)]

(A) The CARB and USEPA have reviewed and commented on the draft version of the May 6, 2017 exceptional event prepared by the ICAPCD. After addressing all substantive and non-substantive comments by both CARB and USEPA the ICAPCD has published a notice of availability in the Imperial Valley Press announcing a 30-day public review process. The published notice invites comments by the public regarding the request, by the ICAPCD, to exclude the measured concentrations of 449 µg/m^3 measured by the Brawley monitor; 409 µg/m^3 measured by the Calexico monitor; 268 µg/m^3 measured by the El Centro monitor; 345 µg/m^3 measured by the Niland monitor and 297 µg/m^{3}measured by the Westmorland monitor on May 6, 2017.

(B) Concurrently with the Public Review period for the May 6, 2017 exceptional event, the ICAPCD is formally submitting to CARB for remittance to USEPA the Draft May 6, 2017 exceptional event.

(C) Upon the ending of the review period the ICAPCD will remit to CARB and USEPA all comments received during the Public Review period along with a formal letter addressing any comments that dispute or contradict factual evidence in the demonstration.

The ICAPCD acknowledges that with the submittal to US EPA of the 2017 exceptional events, there is supporting evidence of documented recurring seasonal events that affect air quality in Imperial County.

I.4 Mitigation of Exceptional Events [40 CFR §51.930]

According to 40 CFR §51.930(b) all States having areas with historically documented or known seasonal events, three events or event seasons of the same type and pollutant that recur in a 3-year period, are required to develop and submit a mitigation plan to the US EPA.

The ICAPCD received notice from US EPA September 15, 2016 identifying Imperial County as an area required to develop and submit a mitigation plan within two years of the effective date, September 30, 2016, of the final published notification to states with areas subject to mitigation requirements. On September 21, 2018, after notice and opportunity for public comment the ICAPCD submitted the High Wind Exceptional Event Fugitive Dust Mitigation Plan (Mitigation Plan) for review and verification. Subsequently, on November 28, 2018 CARB received verification from US EPA of its review and approval of the Mitigation Plan. For a copy of the Mitigation Plan visit the Imperial County Air Pollution Control District website at https://www.co.imperial.ca.us/AirPollution/otherpdfs/MitigationPlan.pdf. The Imperial County Mitigation Plan contains important geographical and meteorological descriptions, pages 3 through 6, of the areas within Imperial County and the surrounding areas that are sources of transported fugitive dust. **Figure 1-1** helps depict the geological aspects that are within Imperial County and outside of Imperial County that affect air quality.

Essentially, the Anza-Borrego Desert State Park, which lies in a unique geologic setting along the western margin of the Salton Trough, extends north from the Gulf of California (Baja California) to the San Gorgonio Pass and from the eastern rim of the Peninsular Ranges eastward to the San Andreas Fault zone along the far side of the Coachella Valley. These areas are sources of transported fugitive dust emissions into Imperial County when westerly winds funnel through the unique landforms causing in some cases wind tunnels that cause increase in wind speeds.

During the monsoonal season, natural open desert areas to the east, southeast, and south of Imperial County are sources of transported fugitive dust emissions when thunderstorms cause outflows to blow winds across natural opens desert areas within Arizona and Mexico.

FIGURE 1-1
IMPERIAL COUNTY

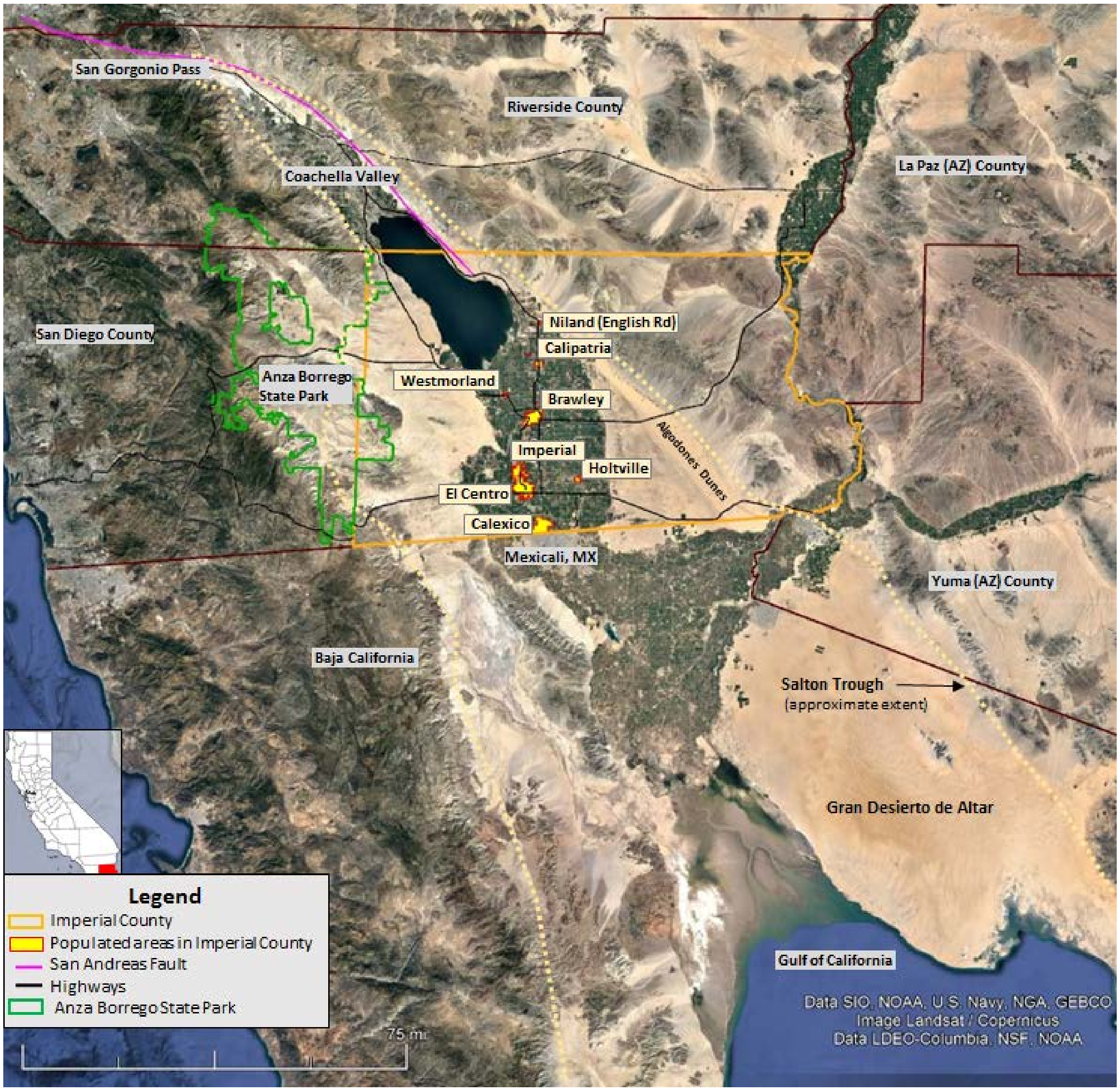

Fig 1-1: Imperial County a Southern California border region, within far southeast California bordering Arizona and Mexico has a small most economically diverse region with a population of 174,528

Likewise, the Mitigation Plan contains a high wind event meteorological analysis broken down into four types of seasonal natural occurrences that cause elevated particulate matter that affects Imperial, San Diego, Riverside and Yuma Counties. The historical analysis has defined the meteorological events that lead to high winds and elevated PM_{10} events in Imperial County, page 7, as follows:

- **Type 1:** Pacific storms and frontal passages;
- **Type 2:** Strong pressure and surface pressure gradients;
- **Type 3:** Monsoonal Gulf Surges from Mexico; thunderstorm downburst, outflow winds and gust fronts from thunderstorms
- **Type 4:** Santa Ana wind events

A complete description of these events begins on page 8 of the Mitigation Plan. While there is some overlap in discussed components between the Mitigation Plan and this demonstration such as the public notification process and the warning process, the Mitigation Plan does elaborate a little further. The Mitigation Plan discusses in detail the educational component, the notification component, the warning component and the implementation of existing mitigation measures, such as Regulation VIII.

Finally, the Mitigation Plan contains a complete description of the methods, processes and mechanisms used to minimize the public exposure, page 14, retain historical and real-time data, page 15, and the consultation process with other air quality managers to abate and minimize air impacts within Imperial County, page 16.

In all, the Mitigation Plan helps explain the recurring events, by type and influence upon Imperial County and provides supporting justification of a natural event.[3]

[3] Title 40 Code of Federal Regulations §50.1 (k) defines a Natural Event as meaning an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.

FIGURE 1-2
MONITORING SITES IN AND AROUND IMPERIAL COUNTY

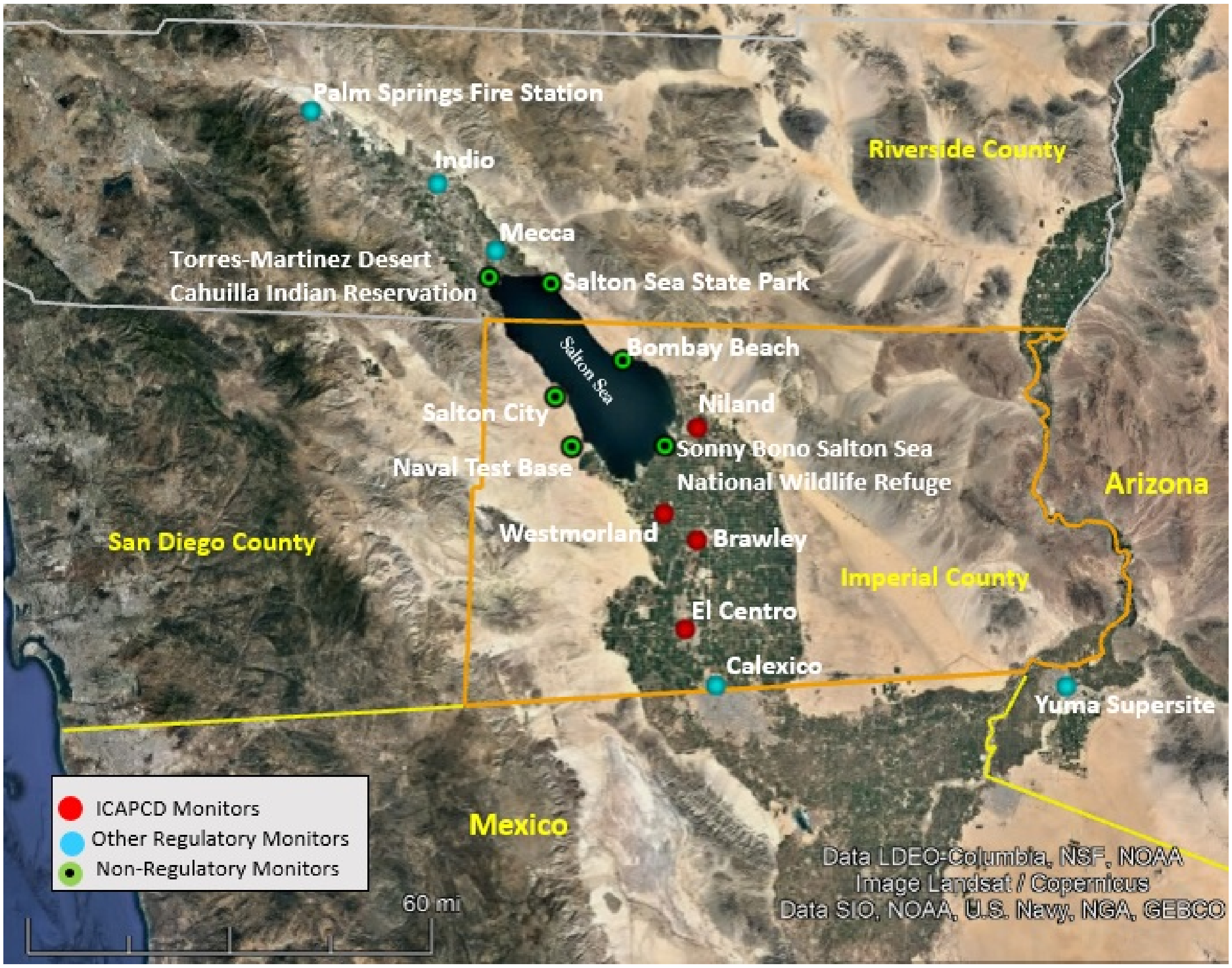

Fig 1-2: Depicts a select group of PM_{10} monitoring sites in Imperial County, eastern Riverside County, and southwestern Arizona (Yuma County). Generated through Google Earth

II Conceptual Model – A narrative that describes the event causing the exceedance and a discussion of how emissions from the event led to the exceedance at the affected monitor

II.1 Description of the event causing the exceedance

The best description of the event was provided by the Phoenix NWS office in its evening (910 pm MST) area forecast discussion for May 6, 2017.

> "During the afternoon and early evening hours, a deep and cold upper level closed low continued to drop south along the central CA coast as it developed, putting a strong southerly flow aloft ahead of it and into far SE CA and southern AZ.....Very strong south to southwest winds developed area-wide this afternoon ahead of the low with many locations reporting peak gusts over 40 mph for much of the afternoon into the evening hours. Favored locations in Imperial County, such as Imperial and El Centro reported sustained winds over 40 mph with peak gusts to about 60 mph and a High Wind Warning was issued at 545 pm for the Imperial Valley. A Wind Advisory and Blowing Dust Advisory were also in effect for much of the southwest and south-central AZ as well as Imperial County...."[4]

The approaching late season cold Pacific low-pressure system was discussed by both the San Diego and Phoenix National Weather Service (NWS) offices as early as Wednesday, May 3, 2017. Forecast discussions on May 4, 2017 and May 5, 2017 included a consensus that a big low pressure trough in the Gulf of Alaska would progress into the northwestern United States and spawn a cutoff low that would move due south into California on Saturday.[5] This would result in strong gusty west winds affecting San Diego, Riverside, Imperial and Yuma counties.

In response to the approaching strong gusty winds both NWS offices began issuing Urgent Weather messages. The first Wind Advisory for the San Diego Mountains, San Diego deserts, and Imperial County were issued as early as Friday, May 5, 2017 by both the San Diego and Phoenix NWS offices. In all, 17 Urgent Weather messages where issued advising of strong gusty westerly winds in excess of 25mph and reduced visibility due to blowing sand and dust. The NWS, similarly, issued Weather Stories on May 5, 2017 that conceptualized the gusty winds associated with the cold front (**Appendix C**). **Appendix A** contains all pertinent NWS notices.

[4] National Weather Service, Area Forecast Discussion, 910pm MST, Phoenix office
[5] National Weather Service, Area Forecast Discussion, 305am PDT, San Diego office

II.2 How emissions from the event led to an exceedance

On May 6, 2017, the air monitors in Imperial, Riverside and Yuma counties measured elevated concentrations of particulate matter when a late season cold Pacific low-pressure system resulted in strong gusty westerly winds across Baja California, southern California and western Arizona. Theses strong gusty westerly winds blew over and across the mountains located within Mexico and within San Diego County, generating and transporting dust, down the wind prone slopes onto the natural open desert floor of Imperial County and onto the farmlands and urban areas of Imperial County affecting air quality and causing an exceedance at the air quality monitors in Brawley, Calexico, El Centro, Niland, and Westmorland (**Table 2-1**).

FIGURE 2-1
MONITORING AND METEOROLOGICAL SITES

Fig 2-1: Includes a general location of the sites used in this analysis. The site furthest south is in Mexicali, Mexico and the site furthest north is the Palm Springs Fire Station. Yellow line denotes the international border

TABLE 2-1
HOURLY CONCENTRATIONS OF PARTICULATE MATTER

SITE	DATE	000	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Hrly MAX	24-Hr AVERAGE
YUMA SUPERSITE (MST)	20170505	42	27	20	38	33	101	85	31	42	31	35	28	31	31	72	24	17	27	28	63	27	29	45	19	101	38
	20170506	25	27	24	24	36	51	40	50	78	66	51	53	138	110	90	70	428	1681	1002	566	343	508	1328	467	**1681**	**302**
	20170507	287	97	39	28	19	13	12	11	12	11	8	14	38	17	13	18	20	23	17	85	127	36	12	12	287	40
YUMA SUPERSITE (PST)	20170505	27	20	38	33	101	85	31	42	31	35	28	31	31	72	24	17	27	28	63	27	29	45	19	25	101	37
	20170506	27	24	24	36	51	40	50	78	66	51	53	138	110	90	70	428	1681	1002	566	343	508	1328	467	287	**1681**	**313**
	20170507	97	39	28	19	13	12	11	12	11	8	14	38	17	13	18	20	23	17	85	127	36	12	12	7	127	28
BRAWLEY	20170505	11	21	22	33	34	37	69	59	49	38	48	45	32	31	29	29	42	47	59	47	31	35	27	24	69	37
	20170506	398	287	26	12	8	26	91	57	69	72	27	153	995	805	995	995	995	995	995					995	**995**	**449**
	20170507	995	556	104	16	21	22	16	13	17	35	19	35	12	10	19	33	67	25	6	7	3	-1	1	1	995	84
CALEXICO	20170505	30	29	22	27	29	75	125	85	72	44	54	59	44	32	42	47	52	67	35	32	51	36	22	27	125	47
	20170506	31	43	42	17	17	186	144	41	47	35	17	27	708	985	844	985	985	985	286	985	985	712	590	125	**985**	**409**
	20170507	34	14	9	8	5	9	10	8	8	12	9	12	10	5	2	6	9	9	14	13	10	5	2	8	34	9
EL CENTRO	20170505	34	20	19	27	22	45	64	105	74	49	43	69	52	43	33	48	67	78	46	98	58	44	27	44	105	50
	20170506	96	66	33	19	14	15	17	37	22	53	40	86	230	221	995	940	625	312	66	733	704	759	300	63	**995**	**268**
	20170507	48	21	10	6	6	5	4	6	10	9	7	12	10	7	10	24	9	12	23	5	3	2	6	7	48	10
NILAND	20170505	27	36	22	44	61	49	56	62	59	19	23	14	12	175	19	22	43	45	80	157	56	55	38	32	175	50
	20170506	32	33	75	93	70	42	25	20	57	62	79	28	712	675	709	261	853	995	605	995	995	548	158	178	**995**	**345**
	20170507	91	35	20	7	5	4	2	4	9	9	11	12	11	9	8	6	8	5	1	0	3	2	0	-1	91	10
WESTMORLAND	20170505	15	25	17	24	37	59	65	76	53	41	44	50	49	47	50	67	50	40	66	37	34	45	28	30	76	43
	20170506	72	47	32	35	29	18	31	42	150	90	25	278	883	995					995		995			332	**995**	**297**
	20170507	167	56	12	12	15	12	7	8	11	23	22	32	9	22	38	70	26	5	8	6	3	3	2	1	167	23
TORRES-MARTINEZ TRIBAL	20170505	38	42	42	27	41	86	60	49	65	48	43	22	59	56	189	44	69	175	76	157	131	63	76	60	189	71
	20170506	132	228	184	158	101	66	59	91	98	80	53	75	200	119				1201	404	85	732	299	100	47	**1201**	**214**
	20170507	22	38	22	10	12	7	2	1	2	4	4	27	3	3	6	3									38	10
MECCA	20170505	48	35	38	36	54	46	72	60	13	44	29	17	24	19	27	18	44	138	88	80	79	52	33	30	138	46
	20170506	38	116	164	104	40	34	34	60	98	58	46	59	123	87	436	476	282	776	51	464	318	298	151	63	**776**	**182**
	20170507	50	46	18	15	9	9	5	8	15	6	5	8	9	12	13	7	6	9	20	30	20	30	5	3	50	14
INDIO	20170505	41	35	32	37	34	37	41	29	24	28	39	32	27	21	29	53	101	70	38	43	46	48	41	45	101	40
	20170506	109	73	37	19	28	21	68	70	55	26	38	104	53	46	523	119	702	49	53	126	533	35	42	30	**702**	123
	20170507	92	10	14	5	6	7	7	3	3	6	6	8	0	8	7	5	6	7	6	5	10	8	8	6	92	10
PALM SPRINGS FIRE STATION	20170505	28	30	24	24	30	26	29	27	23	19	18	37	47	40	39	38	42	40	45	58	46	33	32	42	58	34
	20170506	51	32	17	15	13	11	16	21	12	15	44	50	24	16	15	20	19	14	27	13	25	18	18	16	**51**	21
	20170507	14	12	7	5	5	6	6	4	4	3	4	7	2	3	1	3	4	4	3	4	10	11	12	7	14	5

Color coding information – **Red bold** highlighted sites indicate sites that exceeded the NAAQS. **Bold Blue** dates indicate date of Exceptional Event. **Red fill and Red bold** hourly concentrations represent concentrations above 100 µg/m^3. Pink squares around concentrations identify peak hourly concentrations.

FIGURE 2-2
CONCENTRATIONS FOR ALL SITES LISTED IN TABLE 2-1

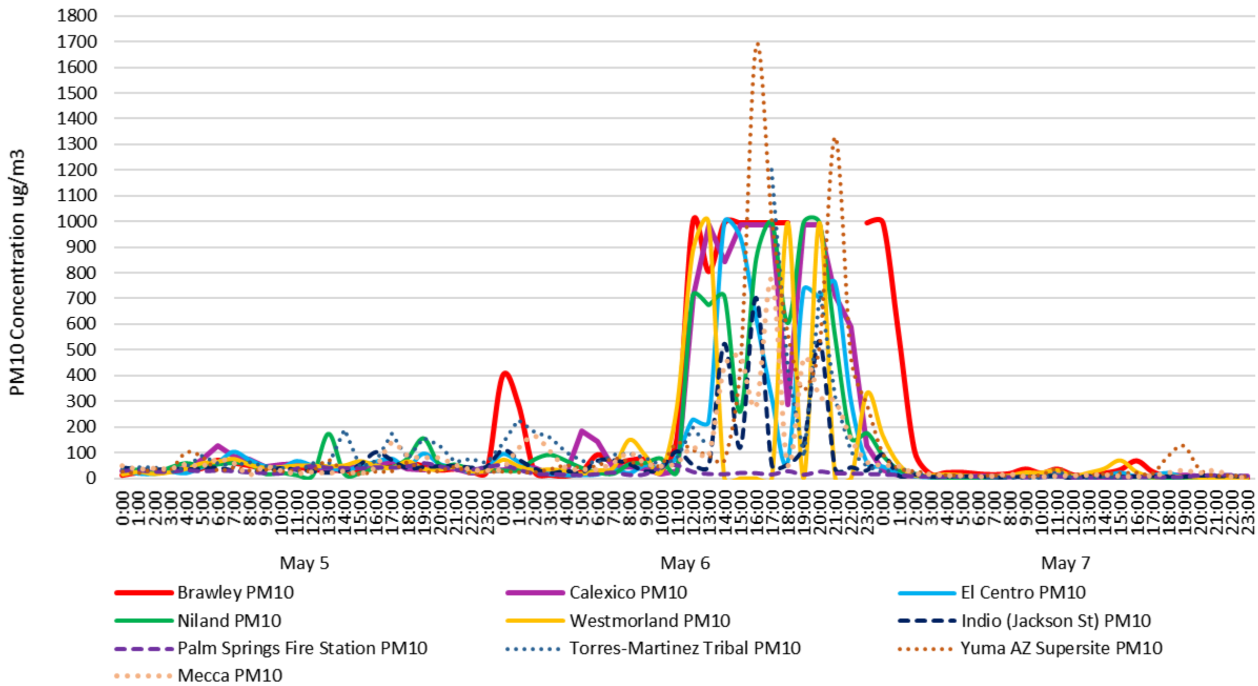

Fig 2-2: is a three-day graphical representation of the PM_{10} concentrations measured at the sites identified in **Table 2-1**. Note the cluster of elevated concentrations of particulates is somewhat uniform among all monitors

Wind speed, wind direction and the airflow patterns combined all help explain how windblown emissions resulting from the strong gusty westerly winds associated with the passing of the late season Pacific low-pressure system affected the Brawley, Calexico, El Centro, Niland, and Westmorland monitors on Saturday, May 6, 2017.

As mentioned above, the early weather forecast notices issued by both the San Diego and Phoenix NWS offices indicated that a moving cold Pacific low-pressure system would approach the area on May 6, 2017, resulting in windy conditions. The May 6, 2017 evening area forecast discussions issued by both the San Diego and Phoenix NWS offices confirmed the effect of the strong gusty westerly winds associated with the late season cold Pacific low-pressure system. The San Diego NWS office (946 pm PDT) identified the system that was lingering over southern California and northern Baja Mexico as bringing a multitude of weather impacts to the region, including snow, showers and gusty south to southwest winds over the mountains and deserts. The Phoenix NWS office reported similarly strong south to southwest winds within its 910 pm MST area forecast discussion (see quote above). **Appendix A** contains all pertinent NWS notices for the May 6, 2017 exceptional event.

Figures 2-3 and 2-4 depict the compiled wind data for regional and neighboring airports and upstream sites. Airports within Mexico, Imperial, San Diego, Riverside and Yuma counties all measured wind speeds at or above 25 mph or measured wind gusts at or above 25 mph. The strongest measured wind speeds are coincident with measured elevated concentrations.

FIGURE 2-3
LOCAL AND VICINITY AIRPORT WIND SPEEDS AND GUST

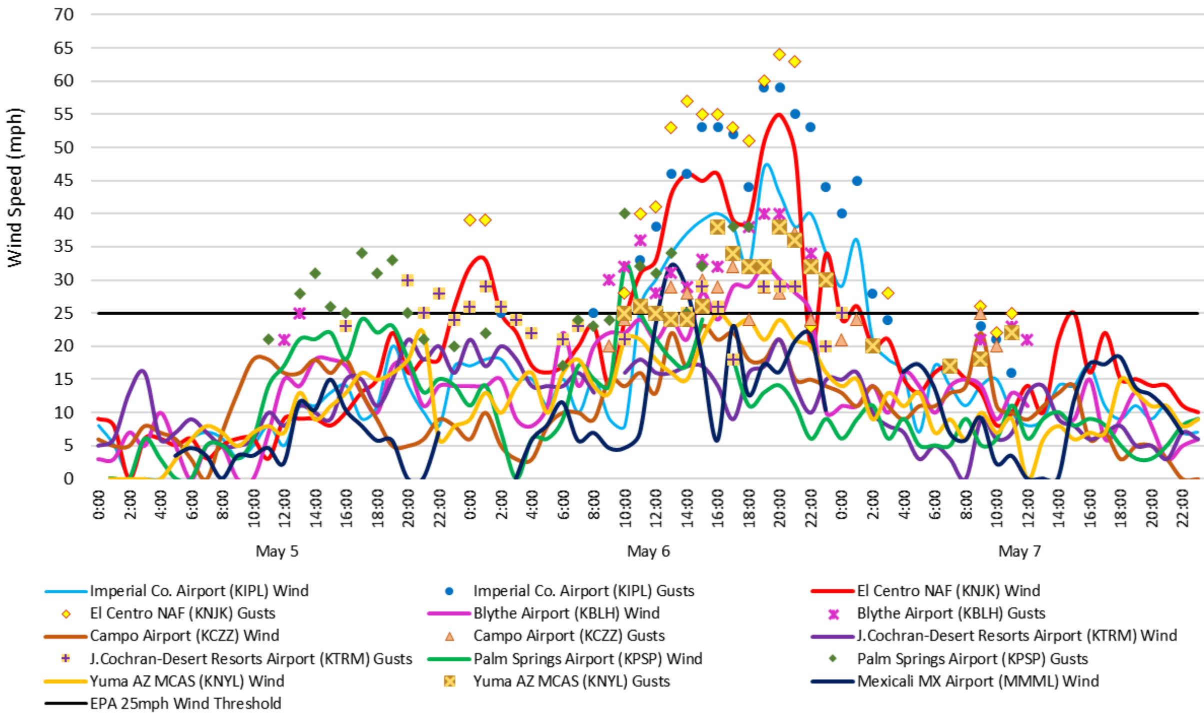

Fig 2-3: is a three-day graphical representation of the measured wind speed and wind gust (if available) from local and neighboring airports. Note the elevated wind speeds are consistent for sites with minor variations. All data derived from the Local Climatological Data Hourly Observations (LCDHO) reports released by the NOAA https://www.ncdc.noaa.gov/

FIGURE 2-4
WIND SPEEDS AND GUST UPSTREAM SITES

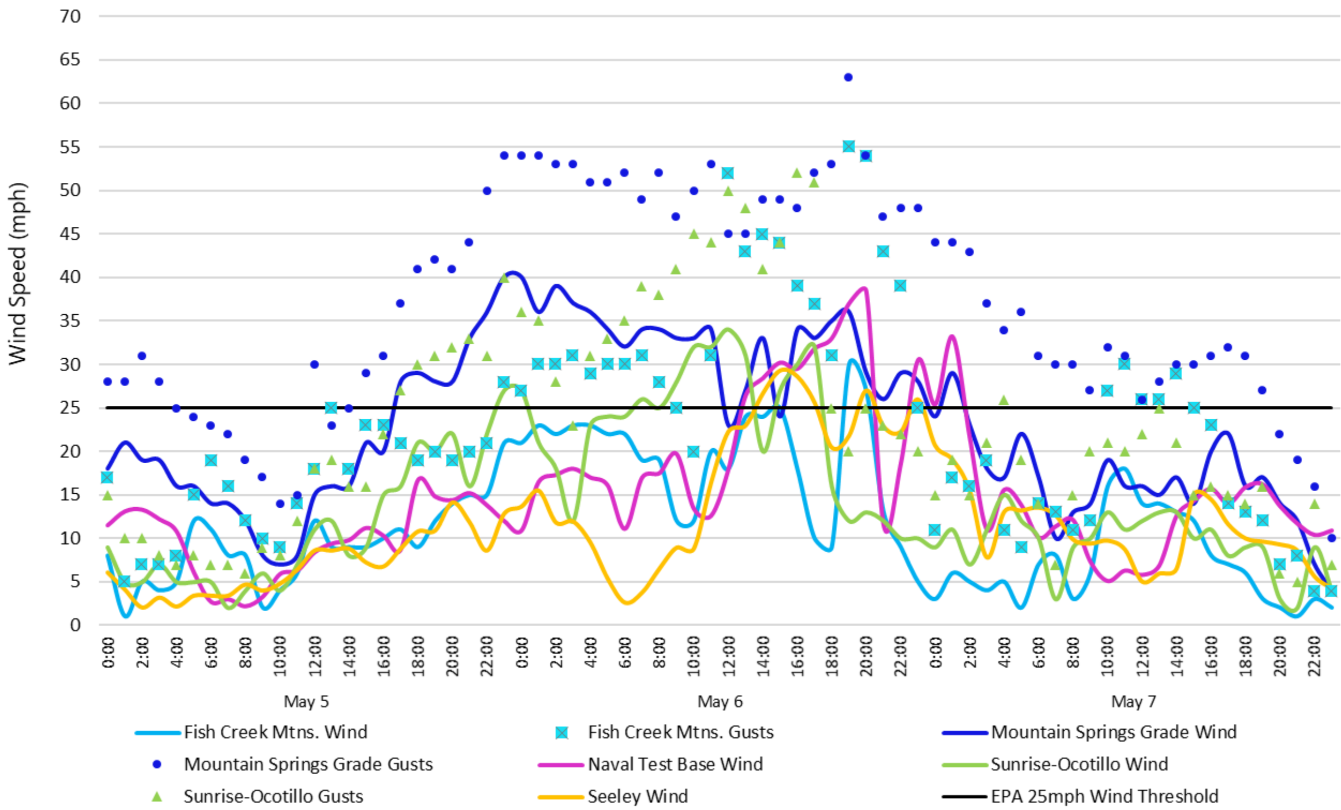

Fig 2-4: is a three-day graphical representation of the measured wind speed and wind gust (if available) from sites located upstream from the Brawley, Calexico, El Centro, Niland, and Westmorland monitors. The wind pattern coincides with the forecasted discussions from the NWS offices. All data derived from the University of Utah's Meso West https://mesowest.utah.edu/index.html

The National Oceanic and Atmospheric Administration (NOAA) Laboratory HYSPLIT back-trajectory models[6] provide supporting evidence of the southwest to westerly airflow within Imperial County on May 6, 2017. **Figures 2-5 and 2-6**, provide a graphical representation of the airflow at the air monitoring stations, identified in **Table 2-1**. **Figure 2-5** represents a 6-hour back trajectory ending at 1200 PST, coincident with the earliest hour of elevated concentrations of particulates above 100 μg/m^3 at most air quality monitors. **Figure 2-6** represents a 12-hour back-trajectory ending at 1700 PST, coincident with hourly peak concentrations at most air quality monitors. As the cold Pacific system moved inland winds during the early afternoon flowed in a westerly direction. As the

[6] The Hybrid Single Particle Lagrangian Integrated Trajectory Model (**HYSPLIT**) is a computer model that is a complete system for computing simple air parcel trajectories to complex dispersion and deposition simulations. Used, currently, to compute air parcel trajectories and dispersion or deposition of atmospheric pollutants. One popular use of HYSPLIT is to establish whether high levels of air pollution at one location are caused by transport of air contaminants from another location. HYSPLIT's back trajectories, combined with satellite images (for example, from NASA's MODIS satellites), can provide insight into whether high air pollution levels are caused by local air pollution sources or whether an air pollution problem was blown in on the wind The initial development was a result of a joint effort between NOAA and Australia's Bureau of Meteorology. Source: NOAA/Air Resources Laboratory, 2011.

system moved towards Arizona, the air flow took a slight southwesterly direction before reaching the mountain tops then once over the mountain tops the airflow took a direct westerly direction. These HYSPLIT's lend support to the NWS forecasts of west to southwest winds during the afternoon to evening hours of May 6, 2017.

FIGURE 2-5
HYSPLIT MODEL All SITES MAY 6, 2017 ENDING 1200 PST

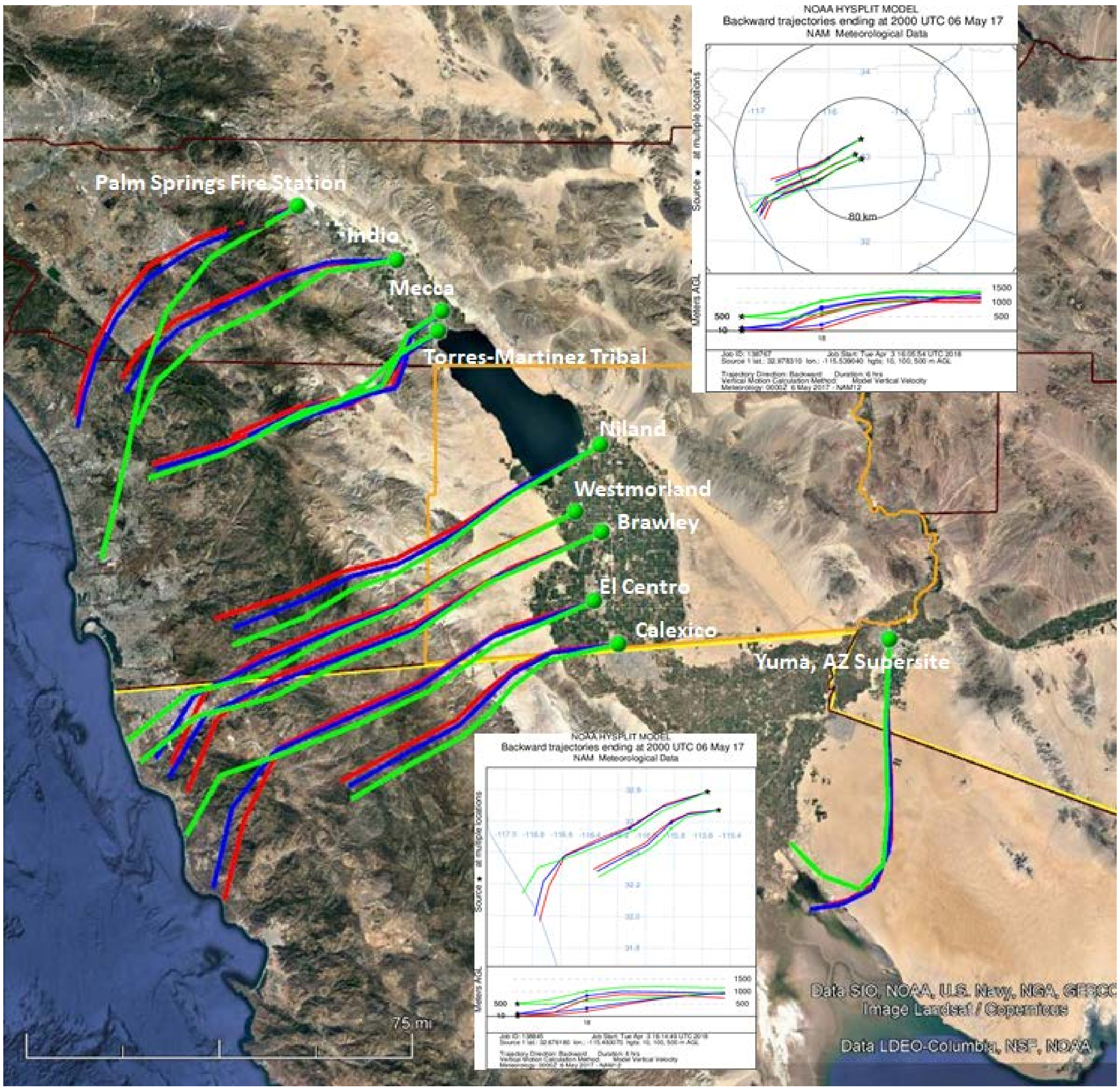

Fig 2-5: A 6-hour back-trajectory ending at 1200 PST for all sites identified in **Table 2-1**. Note the airflow at the Yuma site prior to the early evening hours of May 6, 2017. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-6
HYSPLIT MODEL ALL SITES MAY 6, 2017 ENDING 1700 PST

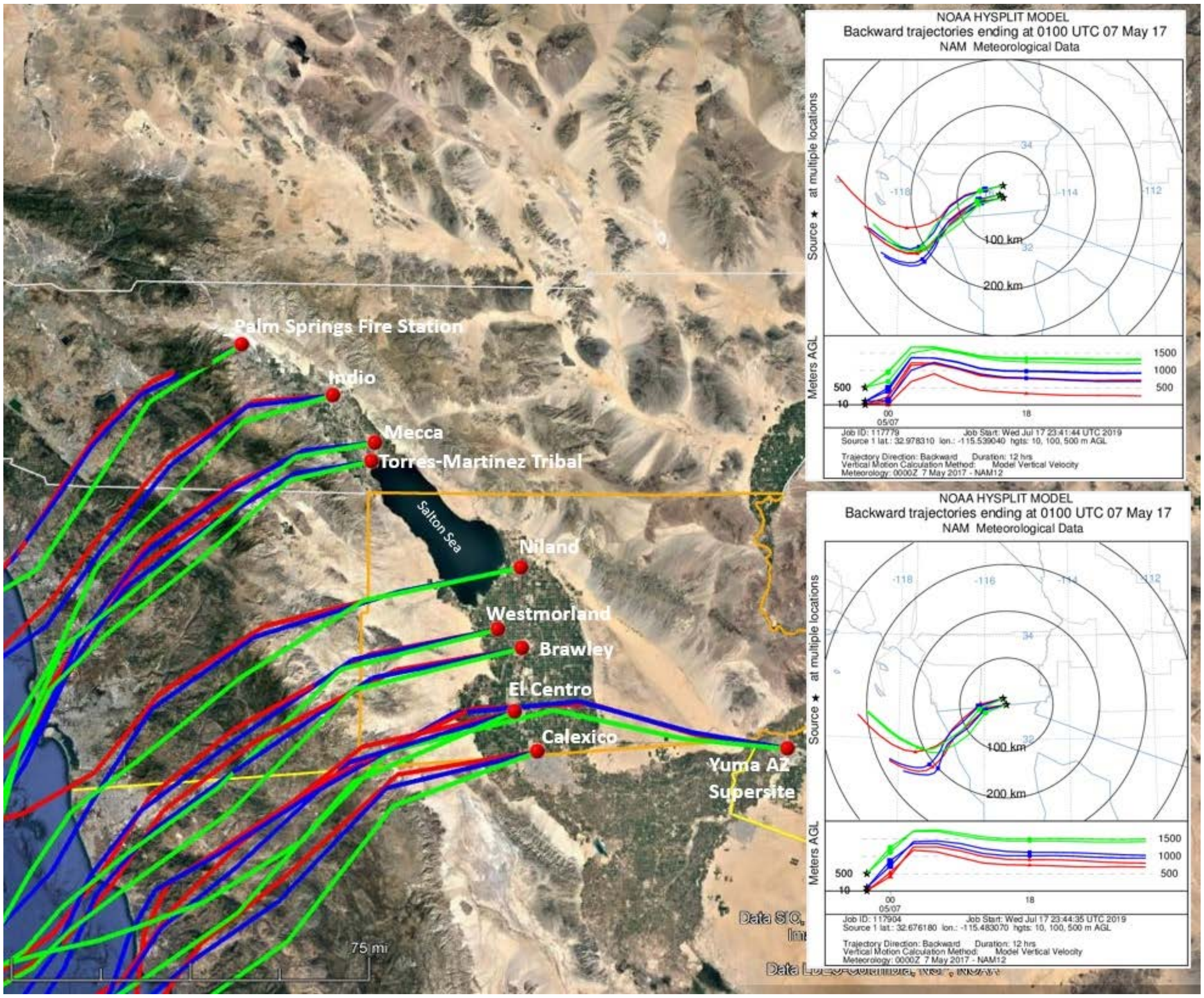

Fig 2-6: A 12-hour back-trajectory ending at 1700 PST for all sites. By the early evening hours of May 6, 2017, all air monitors demonstrate a westerly airflow. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

As strong gusty westerly winds blew over and through the mountain ranges located within Mexico and San Diego County, windblown dust traveled over the open natural desert areas west and southwest of Imperial County, affecting air quality within the region. As winds and gusts increased so too did concentrations of PM_{10} at all air quality monitors in Imperial County. The Imperial County airport (KIPL) measured 13 consecutive hours of winds above 25 mph. Top winds were 47 mph with a peak gust of 59 mph. The El Centro Naval Air Facility (KNJK) measured 15 hours of winds at or above 25 mph. Peak winds reached 55 mph with a maximum gust of 64 mph.

III Clear Causal Relationship – A demonstration that the event affected air quality illustrating the relationship between the event and the monitored exceedance

While elevated wind speeds play a significant and important role in the transportation of dust, gust plays an equally significant role in the deposition of particulates onto a monitor and the overall affect onto ambient air.[7]

As mentioned above, strong gusty westerly winds that accompanied a late season Pacific low-pressure system affected Southern California and Arizona. To reiterate, the 0230 MST area forecast discussion issued by the Phoenix NWS office described a frontal boundary surging across the southern CA Mountains and into the lower Colorado River Valley. While the weather effects would yield locally strong winds Saturday afternoon into the early evening, the mountain "rotors" through southeast California would yield the strongest winds gusts and extensive blowing dust.[8] Attesting to the severity of the winds, 17 urgent weather messages containing wind advisories and blowing dust advisories were issued by either the San Diego NWS office or the Phoenix NWS office (**Appendix A**).

Although the system brought snow, showers and very strong gusty south-southwest winds over the mountains and deserts within the San Diego region, significant levels of moisture did not reach Imperial or Yuma Counties on May 6, 2017.

Overall, the event was a regionally impacting event as evidenced by the issued "Descriptive Text Narrative for Smoke/Dust observed in Satellite Imagery…" issued by NOAA's Satellite Services Division. The narrative described areas of significant blowing dust, with a moderate to dense area of dust moving eastward across southern California into Arizona (**Appendix C**).

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7 Gust is a rapid fluctuation of wind speed with variations of 10 knots or more between peaks and lulls; National Weather Service Glossary https://w1.weather.gov/glossary/index.php?letter=g

8 National Weather Service, Area Forecast Discussion, 0230 MST, Phoenix Office

Figure 3-1 is a satellite image that captured a dust plume blowing across the populated area in Imperial County.

FIGURE 3-1
MODIS SATELLITE IMAGE MAY 6, 2017

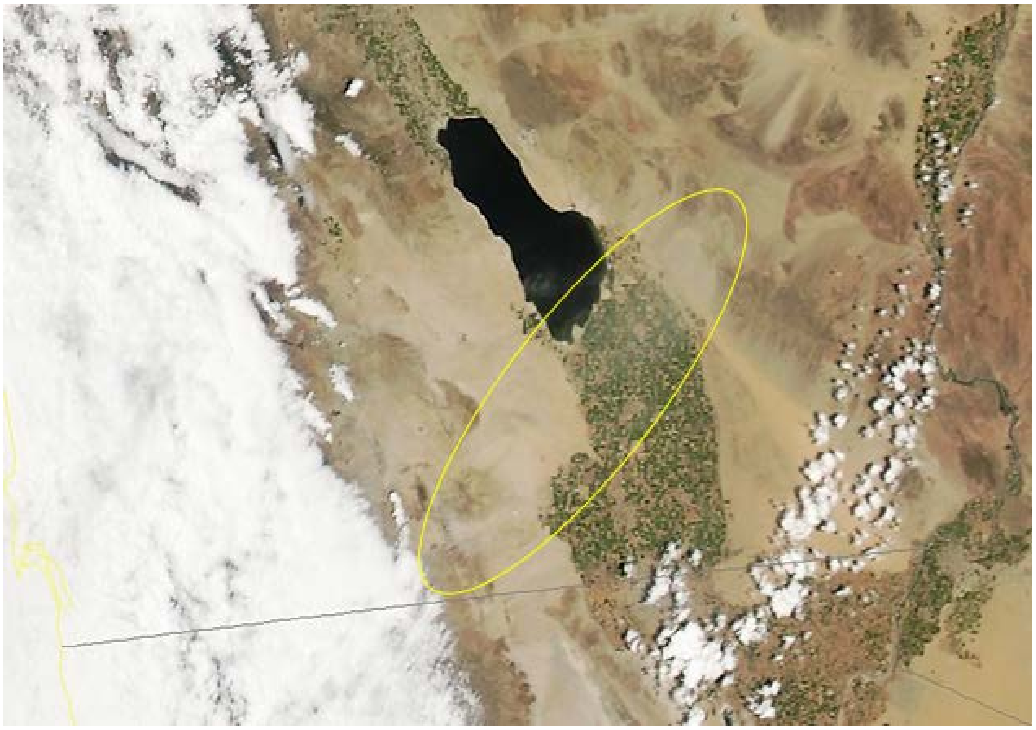


Fig 3-1: The MODIS instrument onboard the Aqua satellite captured transported windblown dust across Imperial County at ~1330 PST on May 6, 2017

Figure 3-2 provides an illustration of some of the meteorological conditions, as described above, on May 6, 2017, which affected air quality in Imperial County causing an exceedance at all Imperial County monitors. The May 6, 2017 event was a regional high wind event that affected air quality within the San Diego, Riverside, Imperial and Yuma counties.

FIGURE 3-2
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR MAY 6, 2017

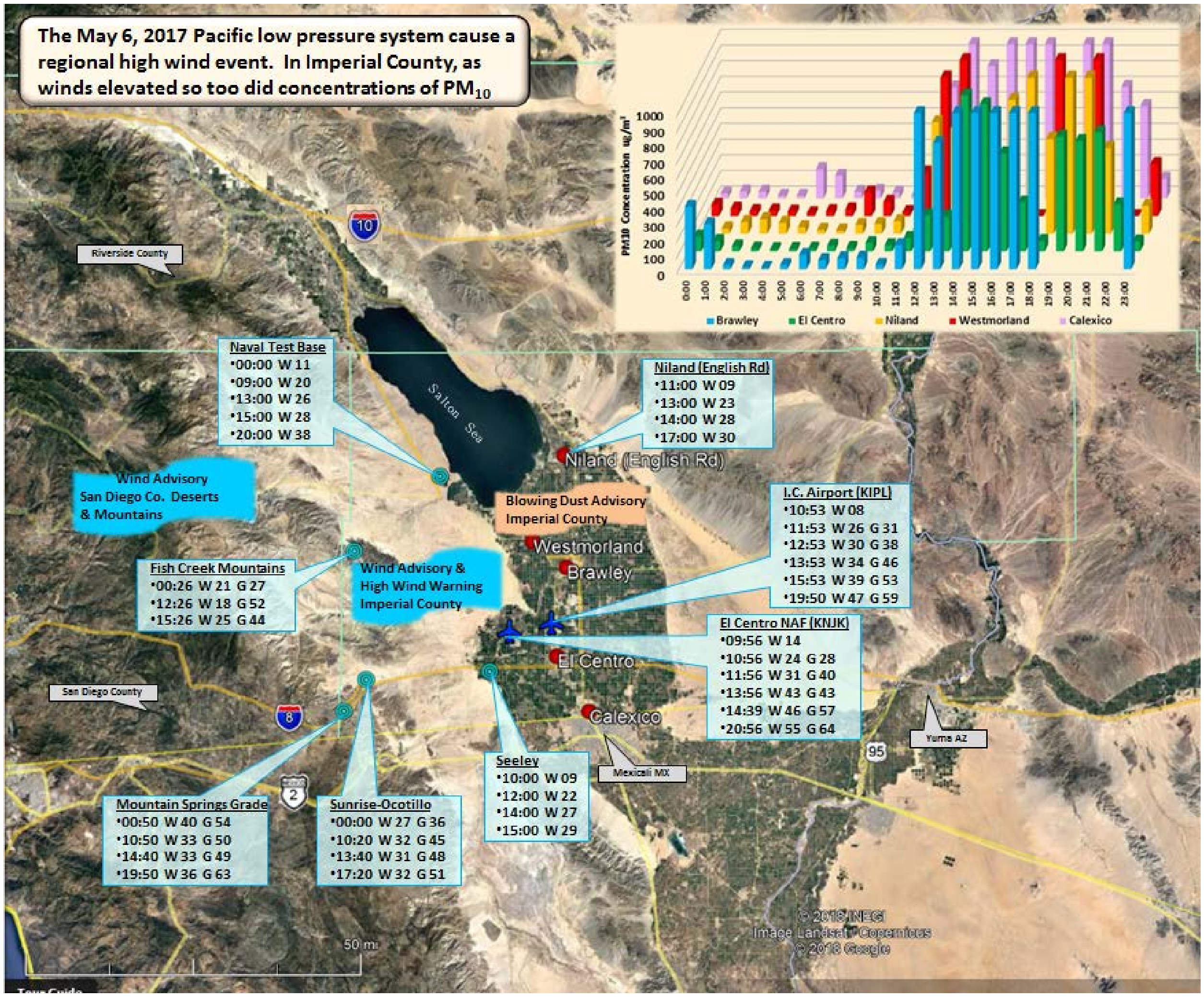


Fig 3-2: The illustration depicts some the meteorological conditions that existed on May 6, 2017. Strong gusty westerly winds transported windblown dust from areas as far as Mexico and the San Diego mountains into Imperial County affecting air quality

An indicator of the affect to air quality can be discerned from the level of visibility at any given time and day. While the ICAPCD air monitoring stations do not measure levels of visibility the local and surrounding airports do.[9]

The Imperial County Airport (KIPL) and the El Centro Naval Air Facility (KNJK) both reported reduced visibility coincident with elevated wind speeds, wind gusts and hourly concentrations of particulates. **Figure 3-3** and **Tables 3-1 through 3-6** provide information regarding the reduced visibility in Imperial County and the relation to hourly concentrations at local air monitors.

While **Figure 3-3** is a graphical representation of the reduced visibility within Imperial County. **Tables 3-1 through 3-6** provide a temporal relationship of wind speeds, wind direction, wind gusts (if available), and PM_{10} concentrations at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors. Together, the data provides the supporting relationship between the elevated winds, blowing dust and reduced visibility.

FIGURE 3-3
72-HOUR TIME SERIES PM_{10} CONCENTRATIONS AND VISIBILITY

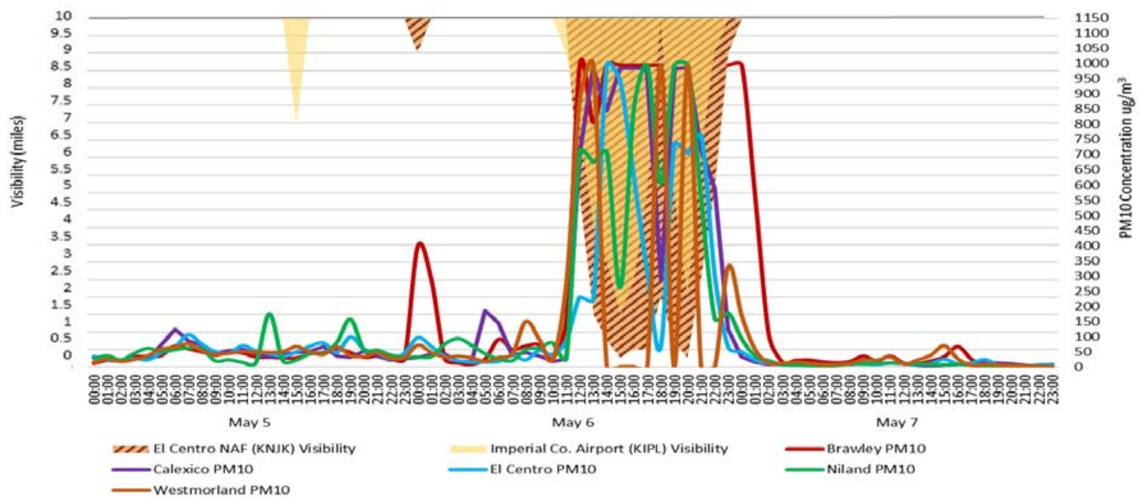


Fig 3-3: is a graphical representation of the compiled data from the Imperial County Airport (KIPL) and the El Centro NAF (KNJK). Reported reduced visibility is coincident with elevated winds and hourly levels of concentrations either just prior to peak concentrations or after. Visibility data from the NCEI's QCLCD data bank

[9] According to the NWS there is a difference between human visibility and the visibility measured by an Automated Surface Observing System (ASOS) or an Automated Weather Observing System (AWOS). The automated sensors measure clarity of the air vs. how far one can "see". The more moisture, dust, snow, rain, or particles in the light beam the more light scattered. The sensor measures the return every 30 seconds. The visibility value transmitted is the average 1-minute value from the past 10 minutes. The sensor samples only a small segment of the atmosphere, 0.75 feet. Therefore, a representative visibility utilizes an algorithm. Siting of the visibility sensor is critical and large areas should provide multiple sensors to provide a representative observation; http://www.nws.noaa.gov/asos/vsby.htm

Because the EPA accepts a high wind threshold for sustained winds of 25 mph in California and 12 other states[10] the **Tables 3-1 through 3-6** are provided in support of the relationship between the elevated winds and elevated concentrations. In each table the measured elevated concentrations of PM_{10} either follow or occur during periods of elevated winds or gusts. Each table has a select group of meteorological sites that compare the hourly winds with the closest measured hourly concentration at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors with a final table comparing select meteorological sites with all monitors.

[10] "Treatment of Data Influenced by Exceptional Events; Final Guidance", FR Vol. 81, No. 191, 68279, October 3, 2016

TABLE 3-1
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR BRAWLEY MAY 6, 2017

MOUNTAIN SPRINGS GRADE (TNSC1)				IMPERIAL COUNTY AIRPORT (KIPL)				EL CENTRO NAF (KNJK)					FISH CREEK MTNS. (FHCC1)				BRAWLEY	
HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	Obs.	HR	W/S	W/G	W/D	HR	PM_{10} (µg/m³)
0:50	40	54	205	0:53	17		260	0:56	32	39	260		0:26	21	27	204	00:00	398
1:50	36	54	208	1:53	18		260	1:56	33	39	250		1:26	23	30	204	01:00	287
2:50	39	53	203	2:53	18	25	260	2:56	25		260		2:26	22	30	210	02:00	26
3:50	37	53	208	3:53	15		270	3:56	22		260		3:26	23	31	207	03:00	12
4:50	36	51	210	4:53	15		260	4:56	17		260		4:26	23	29	207	04:00	8
5:50	34	51	215	5:53	11		280	5:56	16		260		5:26	22	30	208	05:00	26
6:50	32	52	215	6:53	15		270	6:56	17		260		6:26	22	30	206	06:00	91
7:50	34	49	216	7:53	10		260	7:56	20		260		7:26	19	31	206	07:00	57
8:50	34	52	208	8:53	15	25	280	8:56	23		260		8:26	19	28	201	08:00	69
9:50	33	47	209	9:53	9		250	9:56	14		280		9:26	12	25	184	09:00	72
10:50	33	50	212	10:53	8		VRB	10:56	24	28	270		10:26	12	20	209	10:00	27
11:50	34	53	220	11:53	26	33	260	11:56	31	40	270		11:26	20	31	209	11:00	153
12:50	23	45	219	12:53	30	38	270	12:56	33	41	250	DU	12:26	18	52	271	12:00	995
13:50	27	45	210	13:53	34	46	270	13:56	43	53	270	DU	13:26	24	43	217	13:00	805
14:50	33	49	207	14:53	37	46	260	14:39	46	57	250		14:26	24	45	222	14:00	995
15:50	24	49	216	15:53	39	53	270	15:56	45	55	260		15:26	25	44	221	15:00	995
16:50	34	48	245	16:25	40	53	260	16:40	46	55	270		16:26	18	39	224	16:00	995
17:50	33	52	224	17:15	38	52	270	17:56	39	53	250		17:26	10	37	274	17:00	995
18:50	35	53	242	18:53	32	44	260	18:51	39	51	250		18:26	9	31	349	18:00	995
19:50	36	63	243	19:50	47	59	250	19:15	51	60	260		19:26	30	55	272	19:00	
20:50	29	54	231	20:36	43	59	260	20:56	55	64	250		20:26	27	54	272	20:00	
21:50	26	47	242	21:53	38	55	260	21:23	49	63	250		21:26	13	43	277	21:00	
22:50	29	48	240	22:53	40	53	260	22:56	20	23	320		22:26	9	39	274	22:00	
23:50	28	48	240	23:53	34	44	250	23:56	34		250		23:26	5	25	208	23:00	995

Wind data for KIPL and, KNJK from the NCEI's QCLCD system. Wind data for TNSC1 and FHCC1 from the University of Utah's MesoWest system. Wind speeds = mph; Direction = degrees. DU = widespread dust. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-2
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR CALEXICO MAY 6, 2017

MOUNTAIN SPRINGS GRADE (TNSC1)				SUNRISE-OCOTILLO (IMPSD)				SEELEY (CI068)				CALEXICO				CALEXICO	
HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	HR	PM_{10} (µg/m³)
0:50	40	54	205	0:00	27	36	219	0:00	16		291	0:00	14		293	00:00	31
1:50	36	54	208	1:00	21	35	240	1:00	12		294	1:00	16		291	01:00	43
2:50	39	53	203	2:00	18	28	286	2:00	12		293	2:00	12		294	02:00	42
3:50	37	53	208	3:00	12	23	263	3:00	10		284	3:00	12		293	03:00	17
4:50	36	51	210	4:00	23	31	243	4:00	5		273	4:00	10		284	04:00	17
5:50	34	51	215	5:00	24	33	238	5:00	3		232	5:00	5		273	05:00	186
6:50	32	52	215	6:00	24	35	237	6:00	4		357	6:00	3		232	06:00	144
7:50	34	49	216	7:00	26	39	238	7:00	7		258	7:00	4		357	07:00	41
8:50	34	52	208	8:00	25	38	240	8:00	9		248	8:00	7		258	08:00	47
9:50	33	47	209	9:00	28	41	238	9:00	9		313	9:00	9		248	09:00	35
10:50	33	50	212	10:20	32	45	233	10:00	16		260	10:00	9		313	10:00	17
11:50	34	53	220	11:10	32	44	236	11:00	22		256	11:00	16		260	11:00	27
12:50	23	45	219	12:20	34	50	237	12:00	23		272	12:00	22		256	12:00	708
13:50	27	45	210	13:40	31	48	244	13:00	27		272	13:00	23		272	13:00	985
14:50	33	49	207	14:10	20	41	260	14:00	29		260	14:00	27		272	14:00	844
15:50	24	49	216	15:00	27	44	248	15:00	29		276	15:00	29		260	15:00	985
16:50	34	48	245	16:10	30	52	252	16:00	26		284	16:00	29		276	16:00	985
17:50	33	52	224	17:20	32	51	255	17:00	20		267	17:00	26		284	17:00	985
18:50	35	53	242	18:10	16	25	295	18:00	22		277	18:00	20		267	18:00	286
19:50	36	63	243	19:00	12	20	312	19:00	27		280	19:00	22		277	19:00	985
20:50	29	54	231	20:00	13	25	305	20:00	23		269	20:00	27		280	20:00	985
21:50	26	47	242	21:00	12	23	309	21:00	22		268	21:00	23		269	21:00	712
22:50	29	48	240	22:00	10	22	292	22:00	26		272	22:00	22		268	22:00	590
23:50	28	48	240	23:00	10	20	304	23:00	16		291	23:00	26		272	23:00	125

Wind data for TNSC1, IMPSD, and CI068 from the University of Utah's MesoWest system. Calexico wind data from the AQS data bank. The Calexico station does not measure wind gusts. Wind speeds = mph; Direction = degrees. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-3
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR EL CENTRO MAY 6, 2017

MOUNTAIN SPRINGS GRADE (TNSC1)				SUNRISE-OCOTILLO (IMPSD)				EL CENTRO NAF (KNJK)					EL CENTRO			
HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	Obs.	HR	W/S	W/D	PM_{10} (µg/m³)
0:50	40	54	205	0:00	27	36	219	0:56	32	39	260		00:00	9	264	96
1:50	36	54	208	1:00	21	35	240	1:56	33	39	250		01:00	11	260	66
2:50	39	53	203	2:00	18	28	286	2:56	25		260		02:00	9	266	33
3:50	37	53	208	3:00	12	23	263	3:56	22		260		03:00	8	265	19
4:50	36	51	210	4:00	23	31	243	4:56	17		260		04:00	9	267	14
5:50	34	51	215	5:00	24	33	238	5:56	16		260		05:00	8	271	15
6:50	32	52	215	6:00	24	35	237	6:56	17		260		06:00	7	249	17
7:50	34	49	216	7:00	26	39	238	7:56	20		260		07:00	6	228	37
8:50	34	52	208	8:00	25	38	240	8:56	23		260		08:00	5	243	22
9:50	33	47	209	9:00	28	41	238	9:56	14		280		09:00	4	257	53
10:50	33	50	212	10:20	32	45	233	10:56	24	28	270		10:00	2	248	40
11:50	34	53	220	11:10	32	44	236	11:56	31	40	270		11:00	8	290	86
12:50	23	45	219	12:20	34	50	237	12:56	33	41	250	DU	12:00	14	263	230
13:50	27	45	210	13:40	31	48	244	13:56	43	53	270	DU	13:00	18	264	221
14:50	33	49	207	14:10	20	41	260	14:39	46	57	250		14:00	21	275	995
15:50	24	49	216	15:00	27	44	248	15:56	45	55	260		15:00	22	279	940
16:50	34	48	245	16:10	30	52	252	16:40	46	55	270		16:00	23	263	625
17:50	33	52	224	17:20	32	51	255	17:56	39	53	250		17:00	23	266	312
18:50	35	53	242	18:10	16	25	295	18:51	39	51	250		18:00	16	261	66
19:50	36	63	243	19:00	12	20	312	19:15	51	60	260		19:00	22	260	733
20:50	29	54	231	20:00	13	25	305	20:56	55	64	250		20:00	26	261	704
21:50	26	47	242	21:00	12	23	309	21:23	49	63	250		21:00	16	249	759
22:50	29	48	240	22:00	10	22	292	22:56	20	23	320		22:00	19	268	300
23:50	28	48	240	23:00	10	20	304	23:56	34		250		23:00	19	262	63

Wind data for TNSC1 and IMPSD from the University of Utah's MesoWest system. KNJK wind data from the NCEI's QCLCD system. El Centro wind data from the AQS data bank. Wind speeds = mph; Direction = degrees. El Centro station does not measure wind gusts. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-4
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR NILAND MAY 6, 2017

MOUNTAIN SPRINGS GRADE (TNSC1)				EL CENTRO NAF (KNJK)					NAVAL TEST BASE				NILAND			
HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	Obs.	HR	W/S	W/G	W/D	HR	W/S	W/D	PM_{10} (µg/m^3)
0:50	40	54	205	0:56	32	39	260		0:00	11		289	00:00	7	134	32
1:50	36	54	208	1:56	33	39	250		1:00	17		258	01:00	8	130	33
2:50	39	53	203	2:56	25		260		2:00	17		264	02:00	8	115	75
3:50	37	53	208	3:56	22		260		3:00	18		273	03:00	8	119	93
4:50	36	51	210	4:56	17		260		4:00	17		278	04:00	8	122	70
5:50	34	51	215	5:56	16		260		5:00	16		281	05:00	8	124	42
6:50	32	52	215	6:56	17		260		6:00	11		279	06:00	6	143	25
7:50	34	49	216	7:56	20		260		7:00	17		287	07:00	5	231	20
8:50	34	52	208	8:56	23		260		8:00	18		267	08:00	4	227	57
9:50	33	47	209	9:56	14		280		9:00	20		266	09:00	8	241	62
10:50	33	50	212	10:56	24	28	270		10:00	13		251	10:00	8	196	79
11:50	34	53	220	11:56	31	40	270		11:00	13		264	11:00	9	213	28
12:50	23	45	219	12:56	33	41	250	DU	12:00	18		273	12:00	17	228	712
13:50	27	45	210	13:56	43	53	270	DU	13:00	26		277	13:00	23	256	675
14:50	33	49	207	14:39	46	57	250		14:00	28		266	14:00	28	259	709
15:50	24	49	216	15:56	45	55	260		15:00	30		269	15:00	24	247	261
16:50	34	48	245	16:40	46	55	270		16:00	30		267	16:00	28	250	853
17:50	33	52	224	17:56	39	53	250		17:00	32		266	17:00	30	262	995
18:50	35	53	242	18:51	39	51	250		18:00	33		269	18:00	25	262	605
19:50	36	63	243	19:15	51	60	260		19:00	37		261	19:00	29	265	995
20:50	29	54	231	20:56	55	64	250		20:00	38		261	20:00	28	247	995
21:50	26	47	242	21:23	49	63	250		21:00	12		284	21:00	23	245	548
22:50	29	48	240	22:56	20	23	320		22:00	19		260	22:00	20	248	158
23:50	28	48	240	23:56	34		250		23:00	31		257	23:00	24	251	178

Wind data for KNJK from the NCEI's QCLCD system. Wind data for TNSC1 and Naval Test Base from the University of Utah's MesoWest system. Niland wind data from the EPA's data bank. Niland does not measure wind gusts. Wind speeds = mph; Direction = degrees. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-5
WIND SPEEDS AND PM_{10} CONCENTRATIONS FOR WESTMORLAND MAY 6, 2017

MOUNTAIN SPRINGS GRADE (TNSC1)				EL CENTRO NAF (KNJK)					FISH CREEK MTNS. (FHCC1)				WESTMORLAND			
HR	W/S	W/G	W/D	HR	W/S	W/G	W/D	Obs.	HR	W/S	W/G	W/D	HR	W/S	W/D	PM_{10} (µg/m^3)
0:50	40	54	205	0:56	32	39	260		0:26	21	27	204	00:00	4	226	72
1:50	36	54	208	1:56	33	39	250		1:26	23	30	204	01:00	5	228	47
2:50	39	53	203	2:56	25		260		2:26	22	30	210	02:00	4	239	32
3:50	37	53	208	3:56	22		260		3:26	23	31	207	03:00	3	242	35
4:50	36	51	210	4:56	17		260		4:26	23	29	207	04:00	2	222	29
5:50	34	51	215	5:56	16		260		5:26	22	30	208	05:00	3	209	18
6:50	32	52	215	6:56	17		260		6:26	22	30	206	06:00	3	243	31
7:50	34	49	216	7:56	20		260		7:26	19	31	206	07:00	5	238	42
8:50	34	52	208	8:56	23		260		8:26	19	28	201	08:00	8	240	150
9:50	33	47	209	9:56	14		280		9:26	12	25	184	09:00	8	237	90
10:50	33	50	212	10:56	24	28	270		10:26	12	20	209	10:00	8	216	25
11:50	34	53	220	11:56	31	40	270		11:26	20	31	209	11:00	11	229	278
12:50	23	45	219	12:56	33	41	250	DU	12:26	18	52	271	12:00	13	241	883
13:50	27	45	210	13:56	43	53	270	DU	13:26	24	43	217	13:00	14	244	995
14:50	33	49	207	14:39	46	57	250		14:26	24	45	222	14:00	15	245	0
15:50	24	49	216	15:56	45	55	260		15:26	25	44	221	15:00	14	248	0
16:50	34	48	245	16:40	46	55	270		16:26	18	39	224	16:00	12	251	0
17:50	33	52	224	17:56	39	53	250		17:26	10	37	274	17:00	16	244	0
18:50	35	53	242	18:51	39	51	250		18:26	9	31	349	18:00	15	244	995
19:50	36	63	243	19:15	51	60	260		19:26	30	55	272	19:00	15	241	0
20:50	29	54	231	20:56	55	64	250		20:26	27	54	272	20:00	10	258	995
21:50	26	47	242	21:23	49	63	250		21:26	13	43	277	21:00	13	247	0
22:50	29	48	240	22:56	20	23	320		22:26	9	39	274	22:00	8	249	0
23:50	28	48	240	23:56	34		250		23:26	5	25	208	23:00	8	247	332

Wind data for KNJK from the NCEI's QCLCD system. Wind data for TNSC1 and FHCC1 from the University of Utah's MesoWest system. Westmorland wind data from the EPA's data bank. Westmorland does not measure wind gusts. Wind speeds = mph; Direction = degrees. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-6
WIND SPEEDS AND PM_{10} CONCENTRATIONS ALL MONITORS MAY 6, 2017

5/6/2017	MOUNTAIN SPRINGS GRADE (TNSC1)			EL CENTRO NAF (KNJK)			IMPERIAL COUNTY AIRPORT (KIPL)			NAVAL TEST BASE			BRLY	CX	EC	NLND	WSTMLD
HOUR	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	PM_{10} (µg/m³)	PM_{10} (µg/m³)	PM_{10} (µg/m³)	PM_{10} (µg/m³)	PM_{10} (µg/m³)
0:00	40	54	205	32	39	260	17		260	11		289	398	31	96	32	72
1:00	36	54	208	33	39	250	18		260	17		258	287	43	66	33	47
2:00	39	53	203	25		260	18	25	260	17		264	26	42	33	75	32
3:00	37	53	208	22		260	15		270	18		273	12	17	19	93	35
4:00	36	51	210	17		260	15		260	17		278	8	17	14	70	29
5:00	34	51	215	16		260	11		280	16		281	26	186	15	42	18
6:00	32	52	215	17		260	15		270	11		279	91	144	17	25	31
7:00	34	49	216	20		260	10		260	17		287	57	41	37	20	42
8:00	34	52	208	23		260	15	25	280	18		267	69	47	22	57	150
9:00	33	47	209	14		280	9		250	20		266	72	35	53	62	90
10:00	33	50	212	24	28	270	8		VRB	13		251	27	17	40	79	25
11:00	34	53	220	31	40	270	26	33	260	13		264	153	27	86	28	278
12:00	23	45	219	33	41	250	30	38	270	18		273	995	708	230	712	883
13:00	27	45	210	43	53	270	34	46	270	26		277	805	985	221	675	995
14:00	33	49	207	46	57	250	37	46	260	28		266	995	844	995	709	
15:00	24	49	216	45	55	260	39	53	270	30		269	995	985	940	261	
16:00	34	48	245	46	55	270	40	53	260	30		267	995	985	625	853	
17:00	33	52	224	39	53	250	38	52	270	32		266	995	985	312	995	
18:00	35	53	242	39	51	250	32	44	260	33		269	995	286	66	605	995
19:00	36	63	243	51	60	260	47	59	250	37		261		985	733	995	
20:00	29	54	231	55	64	250	43	59	260	38		261		985	704	995	995
21:00	26	47	242	49	63	250	38	55	260	12		284		712	759	548	
22:00	29	48	240	20	23	320	40	53	260	19		260		590	300	158	
23:00	28	48	240	34		250	34	44	250	31		257	995	125	63	178	332

Wind data for KNJK and KIPL from the NCEI's QCLCD system. Wind data for TNSC1 and the Naval Test Base from the University of Utah's MesoWest system. Air quality data from the EPA's AQS data bank. Wind speeds = mph; Direction = degrees. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

As mentioned above 17 Urgent Weather Messages containing a Wind Advisory or a Blowing Dust Advisory described the strong gusty westerly winds affecting San Diego County, including the mountains and Valleys, Riverside County, Imperial County and Yuma

County. As the late season cold Pacific low-pressure system moved through the region, the strong gusty westerly winds affected different regional air monitors in Riverside, Imperial and Yuma counties (**Table 2-1**).

The ICAPCD monitors air quality for each of its stations and issues web-based Air Quality Indices in response to changes in air quality.[11] As discussed above, on May 6, 2017, very strong gusty westerly winds affected air quality in Imperial County when a late season Pacific low pressure system moved eastward toward Arizona transporting windblown dust along the way. Correspondingly, as windblown dust elevated within Imperial County air quality degraded to hazardous levels. From a "Good" or green level to a Maroon or Hazardous level.

FIGURE 3-4
IMPERIAL VALLEY AIR QUALITY INDEX FOR BRAWLEY
MAY 6, 2017

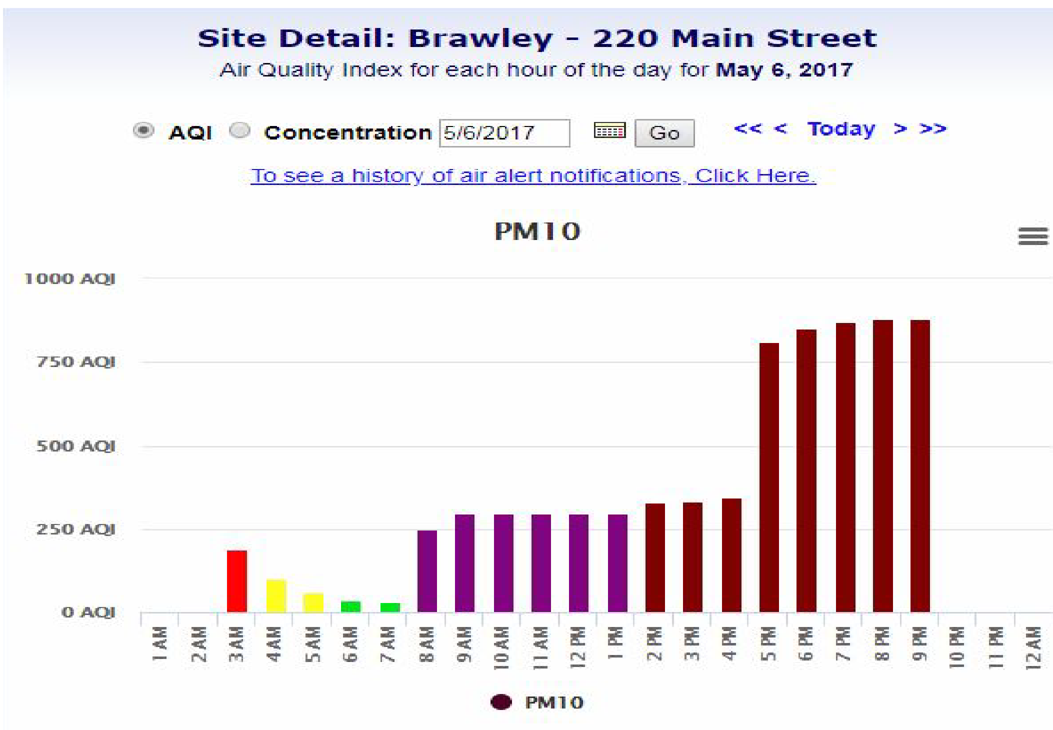


Fig 3-4: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Green" or Good level to a "Maroon" or Hazardous level

[11] The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health affects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country. Source: https://airnow.gov/index.cfm?action=aqibasics.aqi

FIGURE 3-5
IMPERIAL VALLEY AIR QUALITY INDEX FOR CALEXICO
MAY 6, 2017

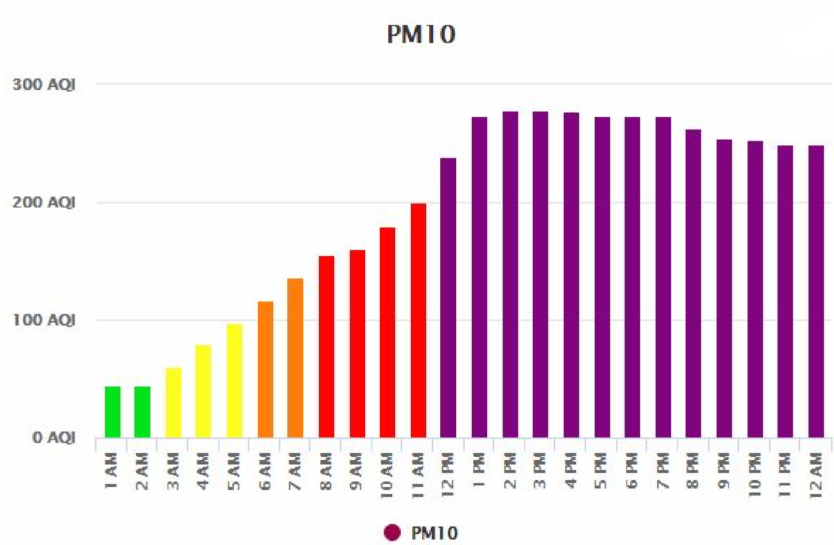


Fig 3-5: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Green" or Good level to a "Purple" or Very Unhealthy level

FIGURE 3-6
IMPERIAL VALLEY AIR QUALITY INDEX FOR EL CENTRO
MAY 6, 2017

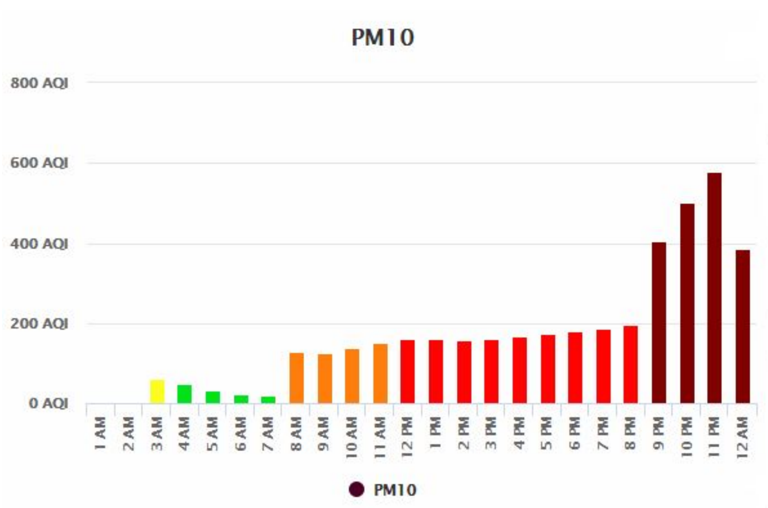


Fig 3-6: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Green" or Good level to a "Maroon" or Hazardous level

FIGURE 3-7
IMPERIAL VALLEY AIR QUALITY INDEX FOR NILAND
MAY 6, 2017

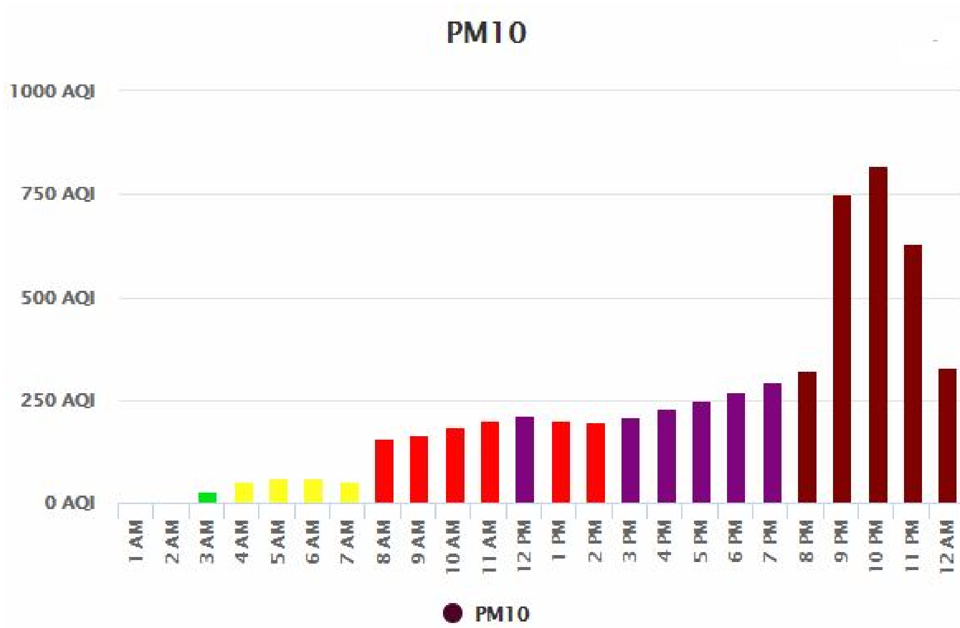


Fig 3-7: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Green" or Good level to a "Maroon" or Hazardous level

FIGURE 3-8
IMPERIAL VALLEY AIR QUALITY INDEX FOR WESTMORLAND
MAY 6, 2017

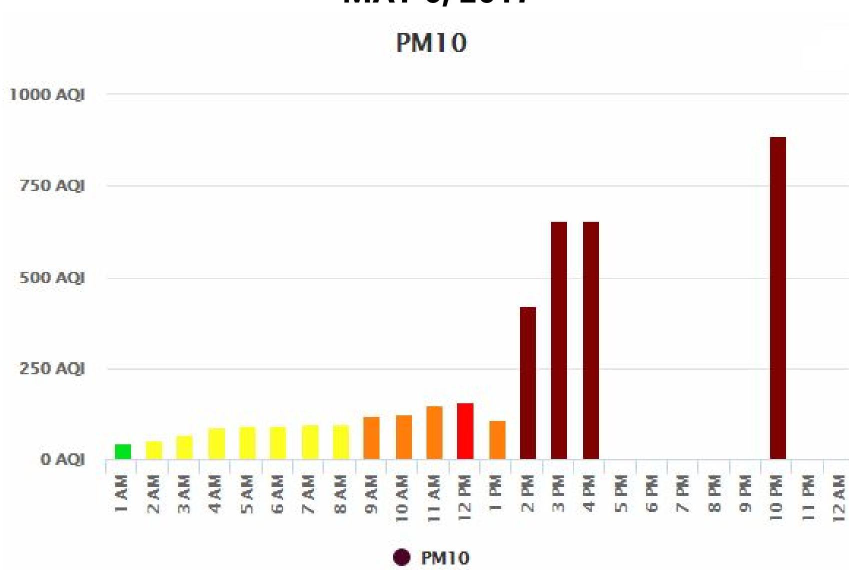


Fig 3-8: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Green" or Good level to a "Maroon" or Hazardous level

III.1 Summary of Forecasts and Warnings

As early as Wednesday, May 3, 2017 the National Weather Service (NWS) discussed the approaching late season Pacific low-pressure system and its potential effects upon Southern California. As the days progressed, model interpretations by both the Phoenix and San Diego NWS offices, seemed to come to a consensus that a big low-pressure trough in the Gulf of Alaska would progress into the northwestern United States and spawn a cutoff low that would move due south into California by Saturday, May 6, 2017. The resulting effect would be strong gusty westerly winds along San Diego, Riverside, Imperial and Yuma counties.

In response to the approaching strong gusty winds the NWS issued 17 Urgent Weather messages advising of strong gusty westerly winds in excess of 25mph and reduced visibility due to blowing sand and dust. The issued Weather Stories on May 5, 2017 conceptualized the gusty winds associated with the cold front (**Appendix C**). **Appendix A** contains all pertinent NWS notices.

III.2 Summary of Wind Observations

As demonstrated above wind data during the event were available from airports in eastern Riverside County, southeastern San Diego County, southwestern Yuma County (Arizona), northern Mexico, and Imperial County as well as from other automated meteorological instruments upstream from the Imperial County monitors. Data analysis indicates that on May 6, 2017 different sites measured wind speeds at or significantly above 25 mph.

IV Concentration to Concentration Analysis – An analyses comparing the event-influenced concentrations to concentrations at the same monitoring site at other times

While naturally occurring high wind events may recur seasonally and at times frequently and qualify for exclusion under the EER, historical comparisons of the particulate concentrations and associated winds provide insight into the frequency of events within an identified area.

Figures 4-1 through 4-10 show the time series of available FRM and BAM 24-hr PM_{10} concentrations measured at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors for the period of January 1, 2010 through May 6, 2017. The compiled data set below includes non-regulatory data prior to 2013. As a consequence, continuous monitoring data (hourly concentrations) prior to 2013 were not reported into the US EPA Air Quality System (AQS).[12] The difference between the standard and local condition concentrations is not significant enough to change the outcome of the analysis.

Compiled and plotted 24-hour averaged PM_{10} concentrations, between January 1, 2010 and May 6, 2017, as measured by the Brawley, Calexico, El Centro, Niland, and Westmorland monitors, were used to establish the historical and seasonal variability over time.[13] All figures illustrate that the exceedance, which occurred on May 6, 2017, were outside the normal historical concentrations when compared to event and non-event days. Air quality data for all graphs obtained through the EPA's AQS data bank.

[12] Pollutant concentration data contained in EPA's Air Quality System (AQS) are required to be reported in units corrected to standard temperature and pressure (25 C, 760 mm Hg). Because the PM_{10} concentrations prior to 2013 were not reported into the AQS database all BAM (FEM) data prior to 2013 within this report are expressed as micrograms per cubic meter (mg/m^3) at local temperature and pressure (LTP) as opposed to standard temperature and pressure (STP, 760 torr and 25 C). The difference in concentration measurements between standard conditions and local conditions is insignificant and does not alter or cause any significant changes in conclusions to comparisons of PM_{10} concentrations to PM_{10} concentrations with in this demonstration.

[13] FRM sampling ended December 2016.

FIGURE 4-1
BRAWLEY HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 6, 2017

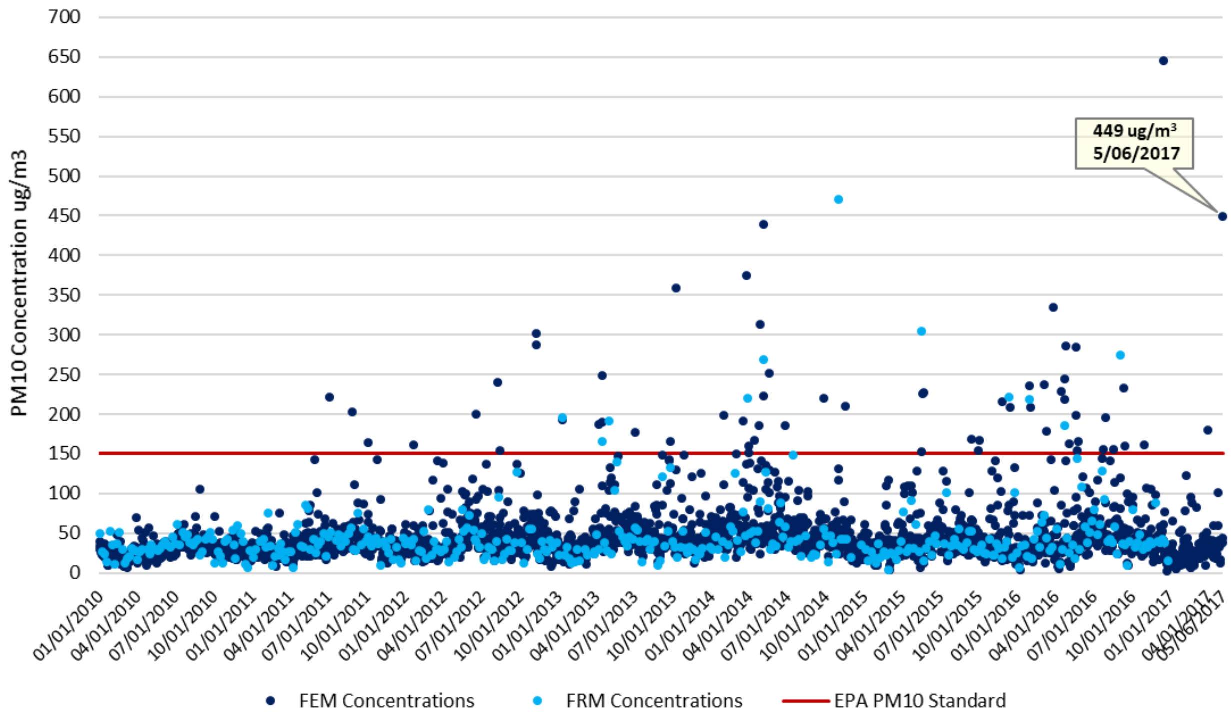


Fig 4-1: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 449 µg/m³ on May 6, 2017 by the Brawley monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-1,** for Brawley included 2,683 sampling days (January 1, 2010 through May 6, 2017). Of the 2,683 sampling days the Brawley monitor measured 61 exceedance days which translates into an occurrence rate less than 2.5%. Historically, there were twelve (12) exceedance days measured during the first quarter, twenty-five (25) exceedance days measured during the second quarter, thirteen (13) exceedance days measured during the third quarter; and eleven (11) exceedance days measured during the fourth quarter.

FIGURE 4-2
CALEXICO HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 6, 2017

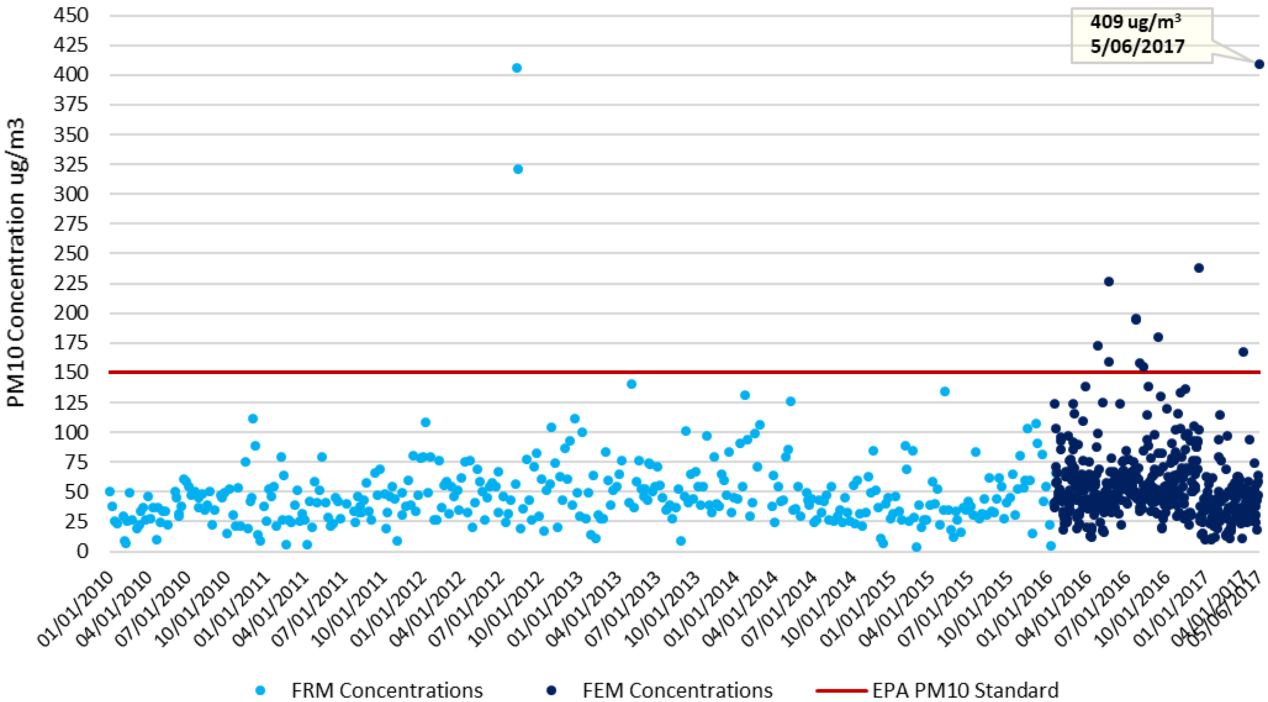


Fig 4-2: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 409 µg/m³ on May 6, 2017 by the Calexico monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-2,** for Calexico included 892 sampling days (January 1, 2010 through May 6, 2017). Of the 892 sampling days the Calexico monitor measured 13 exceedance days which translates into an occurrence rate less than 2%. Historically, there was one (1) exceedance day measured during the first quarter, four (4) exceedance days measured during the second quarter, seven (7) exceedance days measured during the third quarter, and one (1) exceedance day measured during the fourth quarter.

FIGURE 4-3
EL CENTRO HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 6, 2017

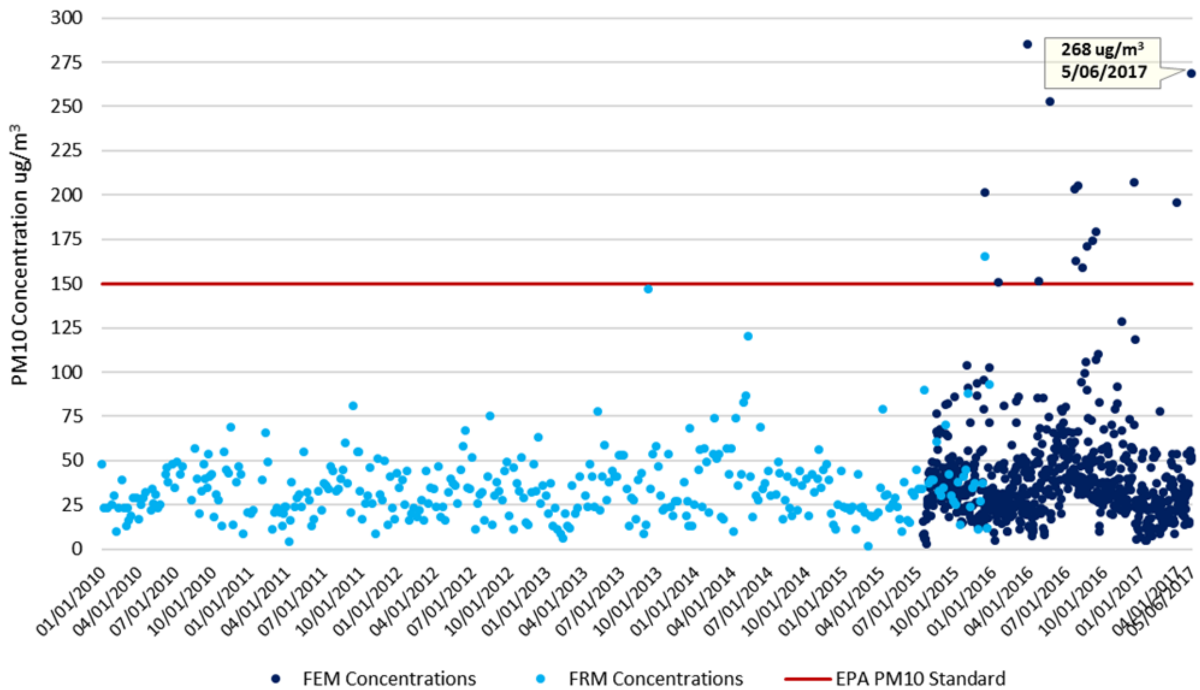


Fig 4-3: A comparison of PM_{10} historical concentrations demonstrates that the measured concentration of 268 μg/m³ on May 6, 2017 by the El Centro monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-3,** for El Centro included 1,020 sampling days (January 1, 2010 through May 6, 2017). Of the 1,020 sampling days the El Centro monitor measured 13 exceedance days which translates into an occurrence rate less than 2%. Historically, there were two (2) exceedance days measured during the first quarter, two (2) exceedance days measured during the second quarter, seven (7) exceedance days measured during the third quarter, and two (2) exceedance days measured during the fourth quarter.

FIGURE 4-4
NILAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 6, 2017

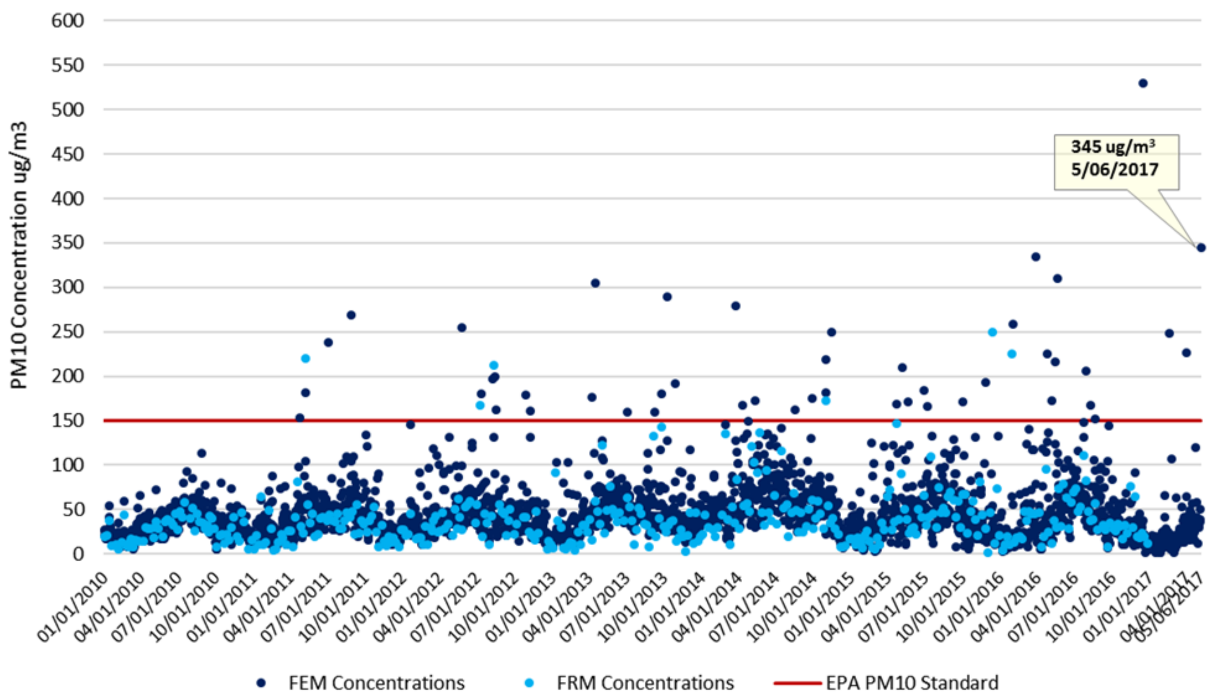


Fig 4-4: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 345 µg/m³ on May 6, 2017 by the Niland monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-4,** for Niland included 2,683 sampling days (January 1, 2010 through May 6, 2017). Of the 2,683 sampling days the Niland monitor measured 49 exceedance days which translates into an occurrence rate less than 2%. Historically, there were five (5) exceedance days measured during the first quarter, eighteen (18) exceedance days measured during the second quarter, fifteen (15) exceedance days measured during the third quarter; and eleven (11) exceedance days measured during the fourth quarter.

FIGURE 4-5
WESTMORLAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 6, 2017

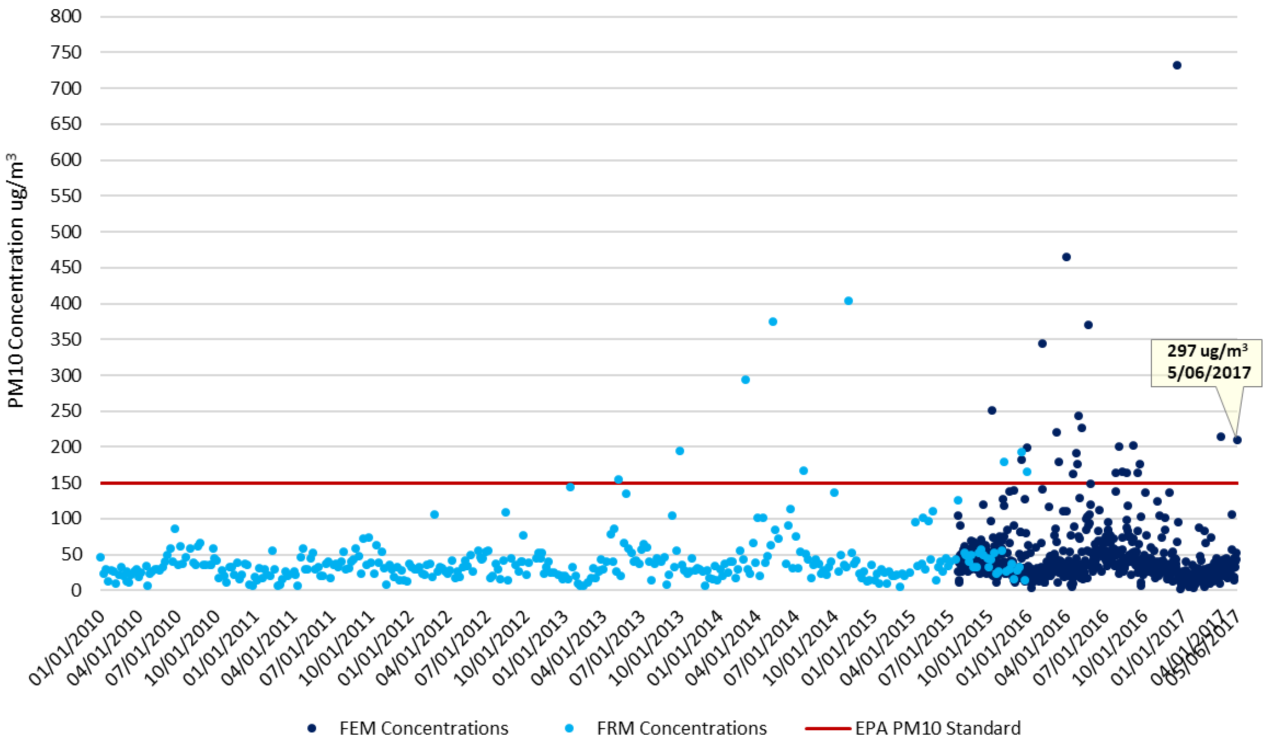
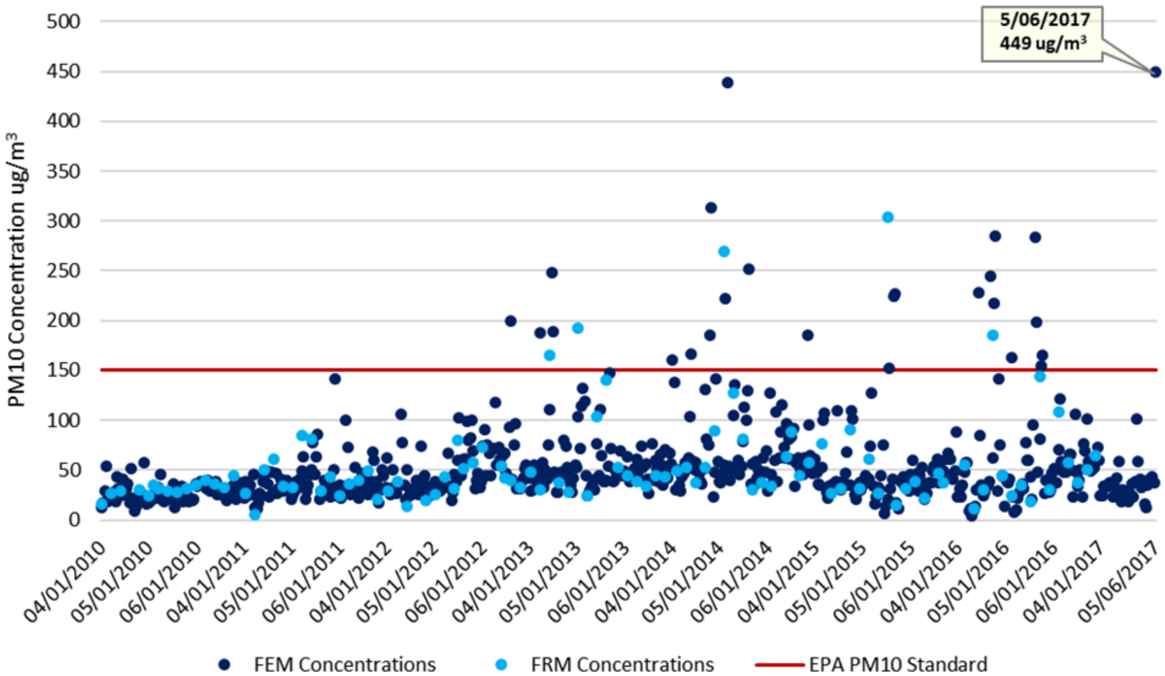


Fig 4-5: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 297 µg/m³ on May 6, 2017 by the Westmorland monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-5,** for Westmorland included 1,011 sampling days (January 1, 2010 through May 6, 2017). Of the 1,011 sampling days the Westmorland monitor measured 30 exceedance days which translates into an occurrence rate less than 20%. Historically, there were six (6) exceedance days measured during the first quarter, nine (9) exceedance days measured during the second quarter, nine (9) exceedance days measured during the third quarter, and six (6) exceedance days measured during the fourth quarter.

FIGURE 4-6
BRAWLEY SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 6, 2017**

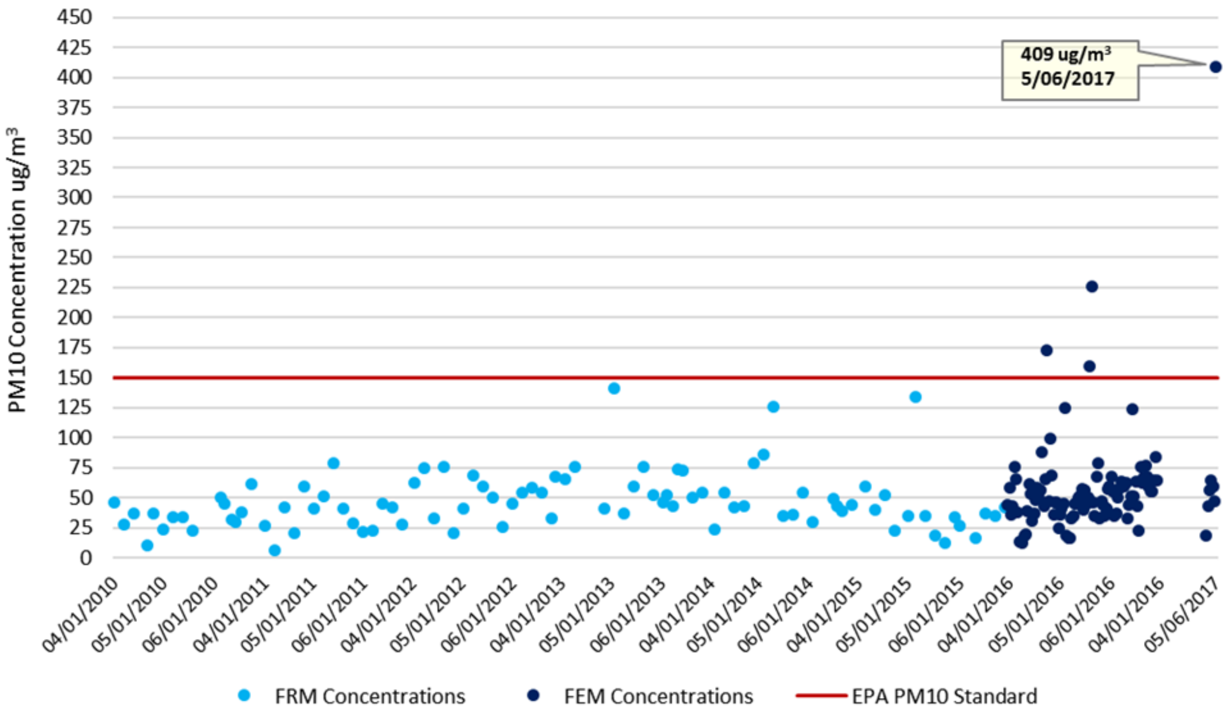


***Quarterly: April 1, 2010 to June 30, 2016 and April 1, 2017 to May 6, 2017**

Fig 4-6: A comparison of PM_{10} seasonal concentrations demonstrates that the measured concentration of 449 µg/m^3 by the Brawley monitor on May 6, 2017 was outside the normal seasonal concentrations when compared to similar event days and non-event days

Figure 4-6 illustrates the seasonal fluctuations over a period of 673 sampling days, 776 credible samples and twenty-five (25) exceedance days. This translates to less than a 4% seasonal exceedance occurrence rate.

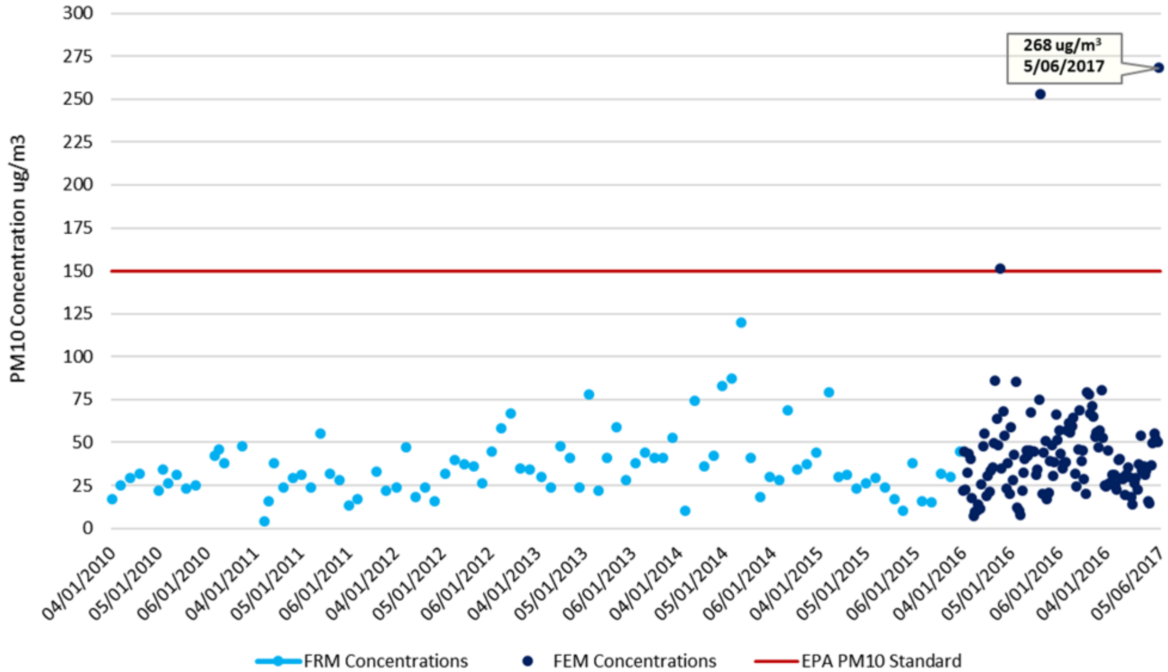
FIGURE 4-7
CALEXICO SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 6, 2017**



***Quarterly: April 1, 2010 to June 30, 2016 and April 1, 2017 to May 6, 2017**
Fig 4-7: A comparison of PM_{10} seasonal concentrations demonstrates that the measured concentration of 409 µg/m³ by the Calexico monitor on May 6, 2017 was outside the normal seasonal concentrations when compared to similar event days and non-event days

Figure 4-7 illustrates the seasonal fluctuations over a period of 229 sampling days, 216 credible samples and four (4) exceedance days. This translates to less than a 2% seasonal exceedance occurrence rate.

FIGURE 4-8
EL CENTRO SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 6, 2017**

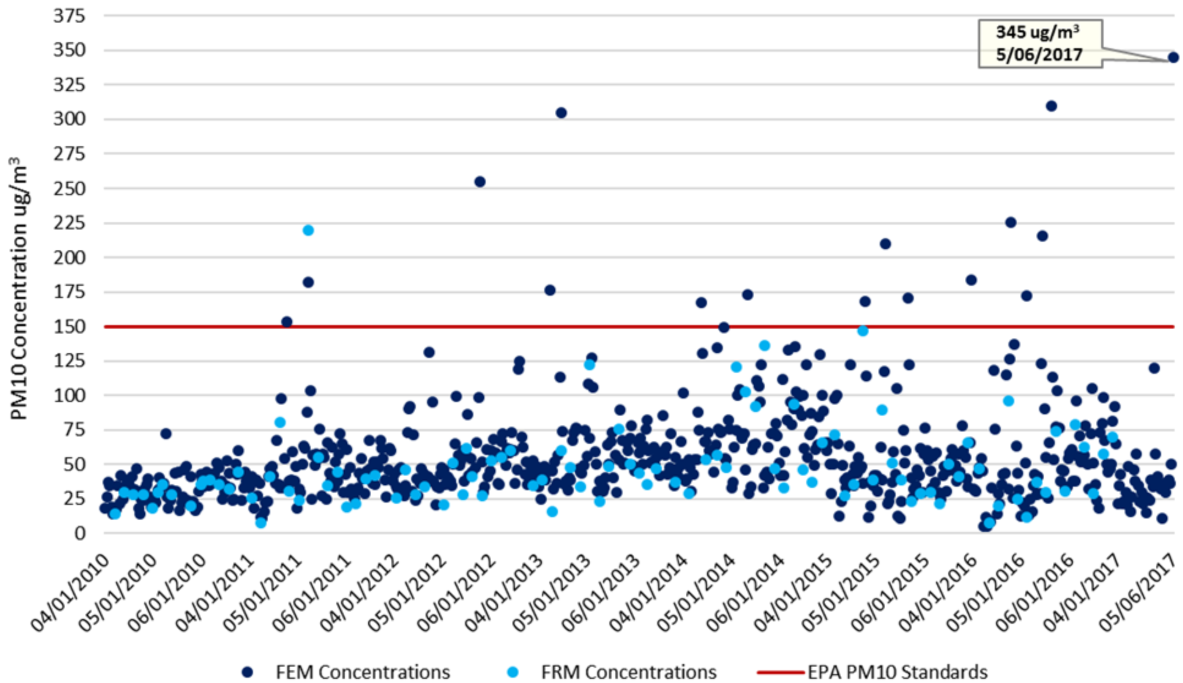


***Quarterly: April 1, 2010 to June 30, 2016 and April 1, 2017 to May 6, 2017**

Fig 4-8: A comparison of PM_{10} seasonal concentrations demonstrates that the measured concentration of 268 µg/m³ by the El Centro monitor on May 6, 2017 was outside the normal seasonal concentrations when compared to similar event days and non-event days

Figure 4-8 illustrates the seasonal fluctuations over a period of 220 sampling days, 215 credible samples and two (2) exceedance days. This translates to less than a 1% seasonal exceedance occurrence rate.

FIGURE 4-9
NILAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 6, 2017**

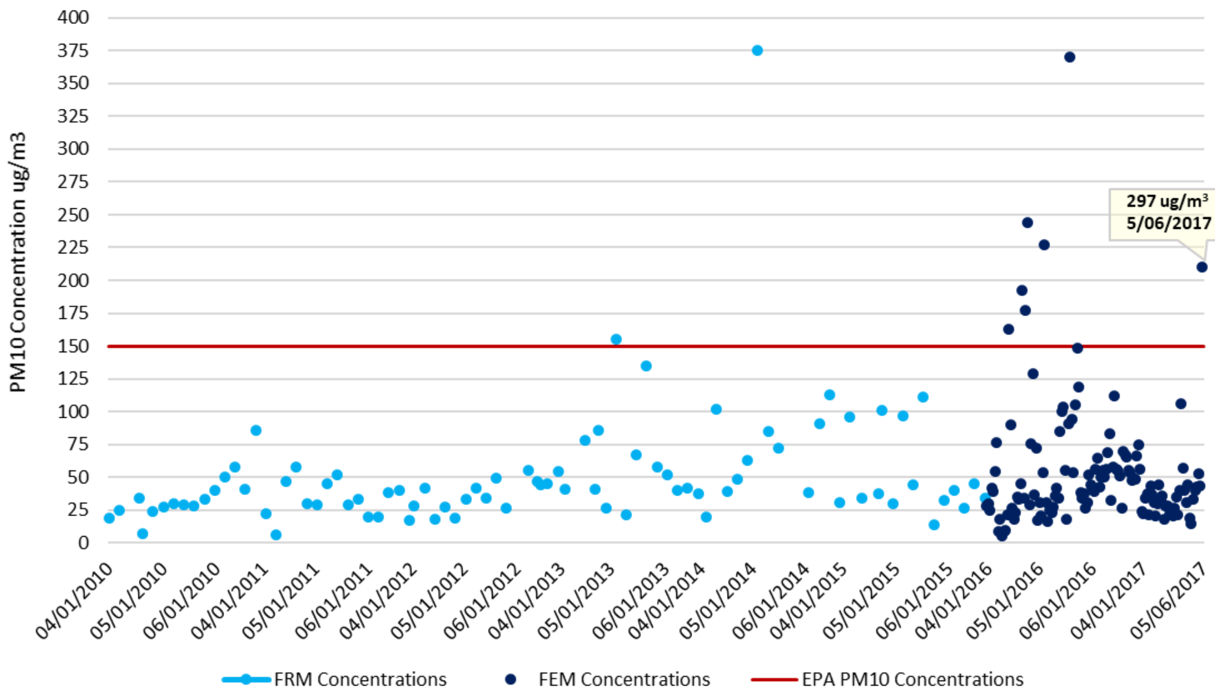


***Quarterly: April 1, 2010 to June 30, 2016 and April 1, 2017 to May 6, 2017**

Fig 4-9: A comparison of PM_{10} seasonal concentrations demonstrates that the measured concentration of 345 µg/m³ by the Niland monitor on May 6, 2017 was outside the normal seasonal concentrations when compared to similar event days and non-event days

Figure 4-9 illustrates the seasonal fluctuations over a period of 673 sampling days, 773 credible samples and eighteen (18) exceedance days. This translates to less than a 3% seasonal exceedance occurrence rate.

FIGURE 4-10
WESTMORLAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 6, 2017**



***Quarterly: April 1, 2010 to June 30, 2016 and April 1, 2017 to May 6, 2017**
Fig 4-10: A comparison of PM_{10} seasonal concentrations demonstrates that the measured concentration of 297 µg/m³ by the Westmorland monitor on May 6, 2017 was outside the normal seasonal concentrations when compared to similar event days and non-event days

Figure 4-10 illustrates the seasonal fluctuations over a period of 222 sampling days, 215 credible samples and nine (9) exceedance days. This translates to less than a 4.5% seasonal exceedance occurrence rate.

Examining the historical and seasonal time series concentrations as they relate to the May 6, 2017 measured exceedance, the exceedance measured on May 6, 2017 is clearly outside the normal concentration levels when comparing to similar event days and non-event days.

V Both Not Reasonably Controllable and Not Reasonably Preventable – A demonstration that the event was both not reasonably controllable and not reasonably preventable

The analysis above, under the Clear Causal Relationship, indicates that the primary sources affecting air quality in Imperial County originated in mountain areas within Mexico and San Diego County. Since Imperial County does not have jurisdiction over emissions emanating from Mexico or San Diego County, it is not reasonably controllable or preventable by Imperial County.

As mentioned above in section I.4, Mitigation of Exceptional Events contains significant information regarding the application of Best Available Control Measures that are used as measures to abate or minimize contributing controllable sources of identified pollutants (**Page 12, sub-section II.2 of the High Wind Mitigation Plan**). In addition, the mitigation plan explains the methods utilized to minimize public exposure to high concentrations of identified pollutants, the process utilized to collect and maintain data pertinent to any identified event, and the mechanisms utilized to consult with other air quality managers within the affected area regarding the appropriate responses to abate and minimize affects.

Inhalable particulate matter (PM_{10}) contributes to effects that are harmful to human health and the environment, including premature mortality, aggravation of respiratory and cardiovascular disease, decreased lung function, visibility impairment, and damage to vegetation and ecosystems. Upon enactment of the 1990 Clean Air Act (CAA) amendments, Imperial County was classified as moderate nonattainment for the PM_{10} NAAQS under CAA sections 107(d)(4)(B) and 188(a). By November 15, 1991, such areas were required to develop and submit State Implementation Plan (SIP) revisions providing for, among other things, implementation of reasonably available control measures (RACM).

Partly to address the RACM requirement, ICAPCD adopted local Regulation VIII rules to control PM_{10} from sources of fugitive dust on October 10, 1994, and revised them on November 25, 1996. USEPA did not act on these versions of the rules with respect to the federally enforceable SIP.

On August 11, 2004, USEPA reclassified Imperial County as a serious nonattainment area for PM_{10}. As a result, CAA section 189(b)(1)(B) required all BACM to be implemented in the area within four years of the effective date of the reclassification, i.e., by September 10, 2008.

On November 8, 2005, partly to address the BACM requirement, ICAPCD revised the Regulation VIII rules to strengthen fugitive dust requirements. On July 8, 2010, USEPA finalized a limited approval of the 2005 version of Regulation VIII, finding that the seven Regulation VIII rules largely fulfilled the relevant CAA requirements. Simultaneously, USEPA also finalized a limited disapproval of several of the rules, identifying specific deficiencies that needed to be addressed to fully demonstrate compliance with CAA requirements regarding BACM and enforceability.

In September 2010, ICAPCD and the California Department of Parks and Recreation (DPR) filed petitions with the Ninth Circuit Federal Court of Appeals for review of USEPA's limited disapproval of the rules. After hearing oral argument on February 15, 2012, the Ninth Circuit directed the parties to consider mediation before rendering a decision on the litigation. On July 27, 2012, ICAPCD, DPR and USEPA reached agreement on a resolution to the dispute, which included a set of specific revisions to Regulation VIII. The October 16, 2012 adopted revision reflects the specific revisions to Regulation VIII, which USEPA approved on April 22, 2013. Since 2006, ICAPCD had implemented regulatory measures to control emissions from fugitive dust sources and open burning in Imperial County.

FIGURE 5-1
REGULATION VIII GRAPHIC TIMELINE DEVELOPMENT

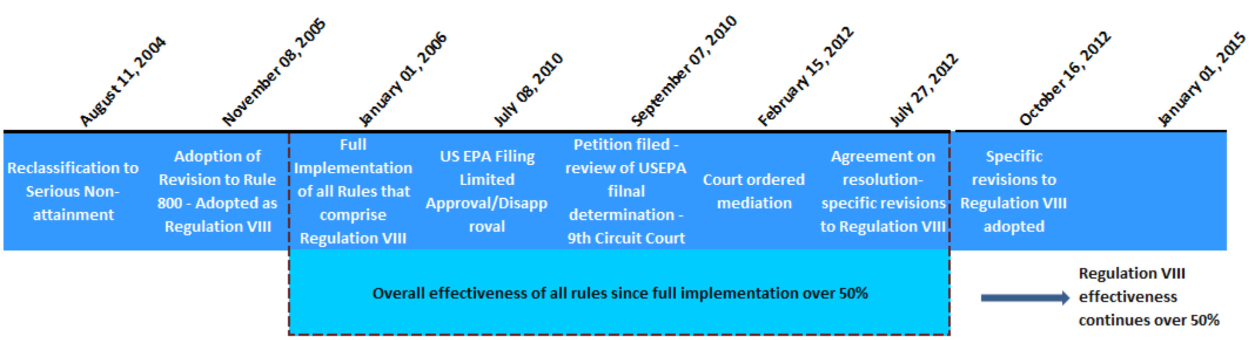


Fig 5-1: Regulation VIII Graphic Timeline

V.1 Wind Observations

As previously discussed, wind data analysis indicates that on May 6, 2017 different sites measured wind speeds at or above 25mph, and in many cases significantly above 25 mph. Wind speeds of 25 mph are normally sufficient to overcome most PM_{10} control measures. During the May 6, 2017 event, wind speeds were above the 25 mph threshold, overcoming the BACM in place.

V.2 Review of Source Permitted Inspections and Public Complaints

A query of the ICAPCD permit database was compiled and reviewed for active permitted sources throughout Imperial County and specifically around the air quality monitors during the May 6, 2017 PM_{10} exceedance. Both permitted and non-permitted sources are required to comply with Regulation VIII requirements that address fugitive dust emissions. The identified permitted sources are Aggregate Products, Inc., US Gypsum Quarry, Imperial Aggregates (Val-Rock, Inc., and Granite Construction), US Gypsum Plaster City, Clean Harbors (Laidlaw Environmental Services), Bullfrog Farms (Dairy), Burrtec Waste Industries, Border Patrol Inspection station, Centinela State Prison, various communications towers not listed and various agricultural operations. Non-permitted sources include the wind farm known as Ocotillo Express, and a solar facility known as CSolar IV West. Finally, the desert regions are under the jurisdiction of the Bureau of Land Management and the California Department of Parks (Including Anza Borrego State Park and Ocotillo Wells).

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM_{10} emissions. There were no complaints filed on May 6, 2017, officially declared as No Burn days, related to agricultural burning, waste burning or dust.

FIGURE 5-2
PERMITTED SOURCES

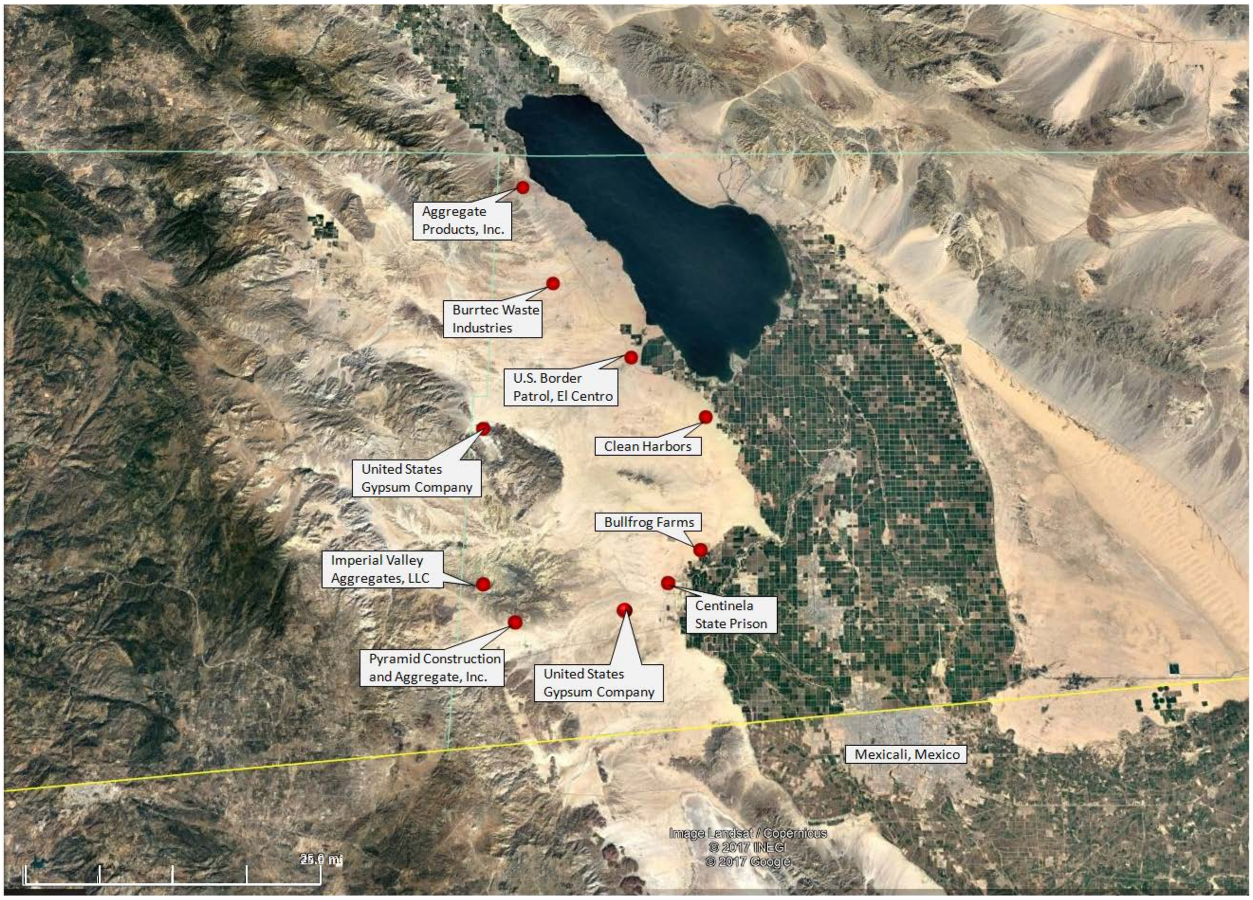


Fig 5-2: The above map identifies those permitted sources located west, northwest and southwest of the air quality monitors in Imperial County. The green line to the north denotes the political division between Imperial and Riverside counties. The yellow line below denotes the international border between the United States and Mexico. The green checker-boarded areas are a mixed use of agricultural and community parcels. In addition, either the Bureau of Land Management or the California Department of Parks manages the desert areas. Base map from Google Earth

FIGURE 5-3
NON-PERMITTED SOURCES

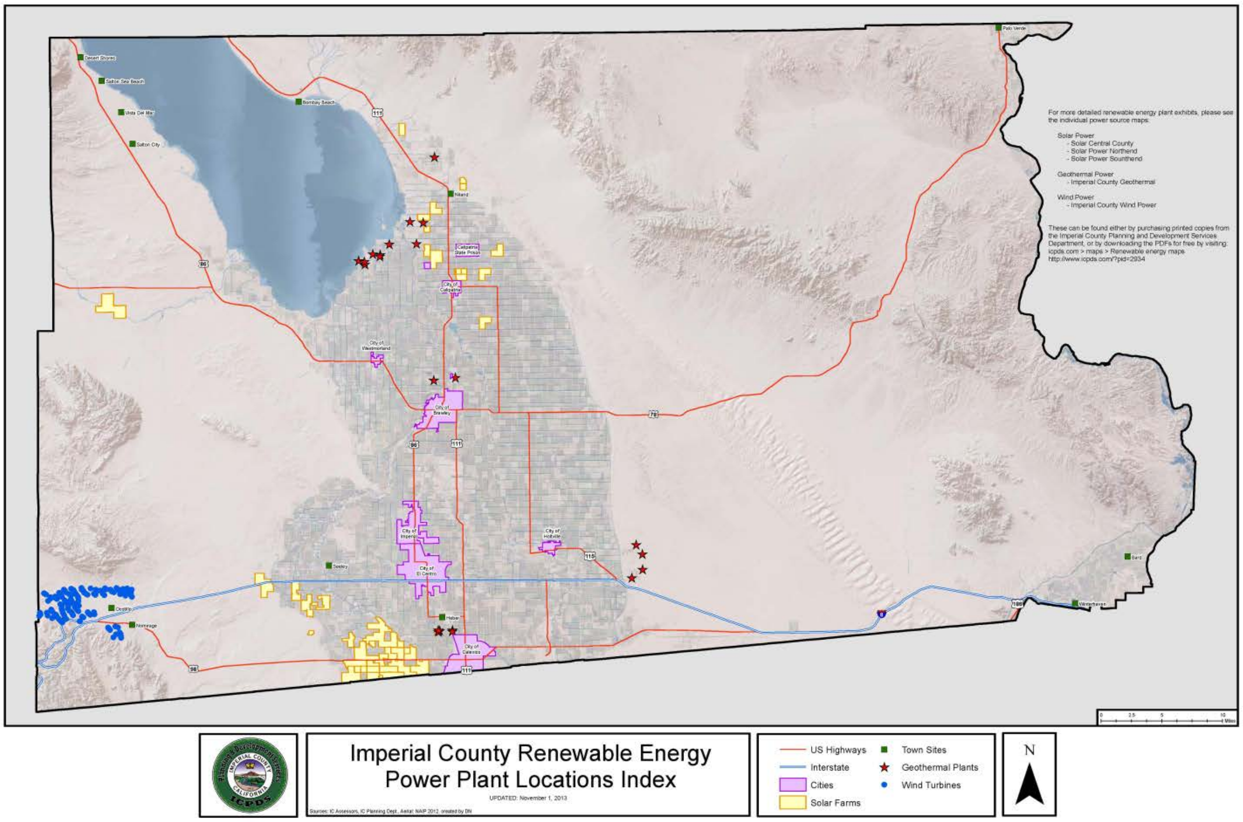


Fig 5-3: The above map identifies those power sources located west, northwest and southwest of the air quality monitors in Imperial County. Blue indicate the Wind Turbines, Yellow are the solar farms and stars are geothermal plants

VI A Natural Event – A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.

Typically, Pacific weather disturbances, even late season systems will bring westerly winds to the region affecting Southern California. The May 6, 2017 event, a regional event, was no different. As the weather system made landfall and moved inland in an eastward direction, strong gusty west-southwest winds blew across the mountain tops and slopes within the mountain ranges located in Mexico and San Diego County suspending and transporting dust into the natural open desert floor of Imperial County. The winds, measured over 25mph for several hours blew the windblown dust from the mountains, and open natural deserts over farmland and urbanized areas not only affecting air quality in Imperial County but causing an exceedance of the PM_{10} NAAQS. For trajectory information regarding airflow please, see **Figures 2-5 and 2-6**.

VI.1 Affects Air Quality

The preamble to the revised EER states that an event is considered to have affected air quality if it can be demonstrated that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation. Given the information presented in this demonstration, particularly Section III, we can reasonably conclude that there exists a clear causal relationship between the monitored exceedance and the May 6, 2017 event, which changed or affected air quality in Imperial County.

VI.2 Not Reasonably Controllable or Preventable

In order for an event to be defined as an exceptional event under section 50.1(j) of 40 CFR Part 50 an event must be "not reasonably controllable or preventable." The revised preamble explains that the nRCP has two prongs, not reasonably preventable and not reasonably controllable. The nRCP is met for natural events where high wind events entrain dust from desert areas, whose sources are controlled by BACM, where human activity played little or no direct causal role. This demonstration provides evidence that the primary source areas of windblown dust transported into Imperial County came from as far as the mountain ranges located within Mexico and San Diego County where Imperial County has no jurisdiction and from natural open desert areas within Imperial County. In any event, despite BACM in place within Imperial County, high winds overwhelmed all BACM controls where human activity played little to no direct causal role. The PM_{10} exceedance measured at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors were caused by naturally occurring strong gusty westerly winds that transported windblown dust into Imperial County and other parts of southern California from areas located within the Sonoran Desert regions to the southwest and west of Imperial County. These facts provide strong evidence that the PM_{10} exceedance at Brawley, Calexico, El Centro, Niland, and Westmorland on May 6, 2017, was not reasonably controllable or preventable.

VI.3 Natural Event

The revised preamble to the EER clarifies that a "Natural Event" (50.1(k) of 40 CFR Part 50) is an event with its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. Anthropogenic sources that are reasonably controlled are considered not to play a direct role in causing emissions. As discussed within this demonstration, the PM_{10} exceedance that occurred at Brawley, Calexico, El Centro, Niland, and Westmorland on May 6, 2017, was caused by windblown dust that was transported and suspend in Imperial County by strong gusty west-southwest winds from areas as far as the mountain ranges within Mexico and San Diego County. At the time of the event, anthropogenic sources, within Imperial County were reasonably controlled with BACM. The event therefore qualifies as a natural event.

VI.4 Clear Causal Relationship

The comparative analysis of different meteorological sites to PM_{10} concentrations measured at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors in Imperial County demonstrates a consistency of elevated gusty westerly winds with elevated concentrations of PM_{10} on May 6, 2017. In addition, temporal analysis indicates that the elevated PM_{10} concentrations and the gusty westerly winds were an event that was widespread, regional and not preventable. While the day immediately preceding and the day immediately after the event measured moderate winds the highest and strongest winds were measured on May 6, 2017. Snow, and rain immediately preceding the event allowed for PM_{10} concentrations to measure well below the NAAQS. Overall, the demonstration provides evidence of the strong correlation between the natural event and the transported windblown dust to the exceedance on May 6, 2017.

VI.5 Concentration to Concentration Analysis

The historical annual and seasonal 24-hr average PM_{10} measured concentrations at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors was outside the normal historical concentrations when compared to event and non-event days.

VI.6 Conclusion

The preceding discussion, graphs, figures, and tables provide wind direction, speed and concentration data illustrating the spatial and temporal effects of the strong gusty westerly winds associated with the low-pressure system as it passed through the southern region of California. The information provides a clear causal relationship between the entrained windblown dust and the PM_{10} exceedance measured at the Brawley, Calexico, El Centro, Niland, and Westmorland monitors on May 6, 2017.

In particular, the clear causal relationship and the not reasonably controllable or preventable sections provide evidence that high winds associated with the May 6, 2017 high wind dust event generated emissions from as far as the mountain ranges within Mexico and San Diego County, and the natural open desert of Imperial County (all part of the Sonoran Desert). In addition, during the May 6, 2017 event, anthropogenic sources within upwind areas were reasonably controlled at the time of the event thus the May 6, 2017 event meets the definition of a Natural Event.[14]

[14] Title 40 Code of Federal Regulations part 50: §50.1(k) Natural event means an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.