



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1201 ELM STREET, SUITE 500  
DALLAS, TEXAS 75270

Office of the Regional Administrator

May 24, 2022

Mr. James C. Kenney  
Cabinet Secretary  
New Mexico Environment Department  
1190 Saint Francis Drive  
Santa Fe, New Mexico 87502

Dear Mr. Kenney:

This letter responds to the New Mexico Environment Department Exceptional Events Demonstrations, dated November 16, 2021. The demonstrations submitted to U.S. Environmental Protection Agency requested to exclude particulate matter less than or equal to 10 micrometers in diameter (PM<sub>10</sub>) data associated with exceptional event claims on various dates during 2020. The NMED determined that high wind dust events caused exceedances of the PM<sub>10</sub> National Ambient Air Quality Standard level of 150 µg/m<sup>3</sup> at the monitors and on the dates listed in the enclosure.

In 2016, the EPA revised the Exceptional Events Rule found in sections 40 CFR 50.14 and 40 CFR 51.930. See, "Treatment of Data Influenced by Exceptional Events," 81 FR 68216 (October 3, 2016). After careful consideration of the evidence provided, the EPA concurs that NMED has met the applicable exceptional event demonstration requirements in 40 CFR 50.14(a)(2) and (b)(5). In addition, the NMED has met the schedule and procedural requirements set forth in section 50.14(c). The EPA has reviewed the documents provided to demonstrate the exceedances at the subject monitors during 2020 meet the criteria for an exceptional event under the EER. The basis for our concurrence is set forth in the enclosed technical support document. My staff will enter "concurrence flags" for these data into the EPA's Air Quality System data repository.

The EPA concurrence is a preliminary step in the regulatory process for actions that may rely on the dataset containing the event-influenced data and does not constitute final agency action. If the EPA takes a regulatory action that is affected by exclusion of the subject data, the EPA will publish notice of its proposed action in the *Federal Register*. The EPA's concurrence letter and accompanying technical support document will be included in the record as part of the technical basis for that proposal.

If EPA were to issue a final regulatory action excluding the emissions data, the final action would be subject to judicial review including the exclusion of the emissions data. If you have any questions or wish to discuss this matter further, please have your staff contact Ms. Frances Verhalen, Chief, Air Monitoring/Grants Section at (214) 665-2172.

Sincerely,

A handwritten signature in blue ink, appearing to read "Earthea Nance". The signature is fluid and cursive, with the first name "Earthea" written in a larger, more prominent script than the last name "Nance".

Earthea Nance, PhD, PE  
Regional Administrator

Enclosure

cc: Michael Baca, NMED

*Technical Review of 2020 PM<sub>10</sub> Exceptional Event Demonstrations, dated November 16, 2021*

**Introduction**

The U.S. Environmental Protection Agency (EPA) promulgated the original Exceptional Events Rule (EER) in 2007, hereafter referred to as “2007 EER,” pursuant to the 2005 amendment of the Clean Air Act Section (CAA) 319. The 2007 EER was in effect until September 30, 2016, when a revised EER was promulgated by the EPA (See, 81 FR 68216, October 3, 2016) hereafter referred to as “2016 EER.” The subject Exceptional Event Demonstration hereafter referred to as “demonstrations,” was submitted in accordance with the 2016 EER. The Exceptional Event federal regulations are found at 40 CFR 50.14.

In the demonstrations, the New Mexico Environment Department (NMED) requests the EPA concur that the subject measurements of particulate matter of less than or equal to 10 micrometers in diameter (PM<sub>10</sub>) which exceeds the National Ambient Air Quality Standard (NAAQS) be excluded from the data set used for certain regulatory decisions, as outlined in the 2016 EER. After considering the information provided and using a weight of evidence analysis as provided in the demonstrations, the EPA shall concur or non-concur with the Air Quality System (AQS) database flagging of each exceedance of the NAAQS and the state’s demonstrations. For the purposes of this document, there is a “demonstration” for each exceedance day or wind event.

**Procedural Requirements**

The 2016 EER includes certain scheduling and procedural requirements as specified in 40 CFR 50.14(c) that an air agency must follow: 1. Public Notification; 2. Initial Notification of the Potential EE; and 3. Submission of the demonstration. For example, data claimed to be caused by an exceptional event must be flagged in the AQS database by the air agency. The air agency is also to provide the EPA with an initial notification for the potential exceptional event and conduct a 30-day public comment period for the demonstration. Failure to meet the procedural requirements results in the EPA non-concurrence with the AQS flagging of the exceedances.

In accordance with 40 CFR 50.14(c), the NMED flagged the subject exceedances in AQS as “High Winds” events, i.e., the “RJ” qualifier flags. The NMED submitted an initial notification to the EPA on November 2, 2020. The NMED solicited public input on the draft demonstrations from September 22, 2021, through October 25, 2021. The NMED met the scheduling and procedural regulatory provisions of the 2016 EER for the demonstrations.

**Required Demonstration Content**

In accordance with 40 CFR §50.14(c)(3), a demonstration to justify data exclusion must address the criteria discussed below.

- 1) A narrative conceptual model.
  - a) Pursuant to 40 CFR §50.14(c)(3)(iv)(A), the demonstration shall provide a narrative conceptual model that describes the event(s) and how emissions from the event(s) led to the exceedance or violation at the affected monitor. The demonstration includes a narrative conceptual model for each exceedance.
- 2) Evidence there was a clear causal relationship between exceedance and event.
  - a) Pursuant to 40 CFR §50.14(c)(3)(iv)(B), the demonstration shall provide evidence that there was a clear causal relationship between the measurement under consideration and the event claimed

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to have affected the air quality in the area. The clear causal criterion is addressed below for each exceedance.

- 3) Analyses comparing event influenced concentrations to other concentrations at the monitors.
  - a) Pursuant to 40 CFR §50.14(c)(3)(iv)(C), the demonstration shall provide an analysis of the exceedance compared to measurements at the same monitor at other times. The historical data comparison criterion is addressed below for each exceedance.
- 4) Evidence event was not reasonably controllable or preventable.
  - a) Pursuant to 40 CFR §50.14(c)(3)(iv)(D), the demonstration shall provide evidence the event was both not reasonably controllable and not reasonably preventable.
    - i) Not Reasonably Preventable - In accordance with 40 CFR §50.14(b)(5)(iv), the air agency will not be required to provide a case-specific justification that the event was not reasonably preventable for a high wind dust event. As discussed in more detail below for the clear causal criterion that includes the not reasonably preventable criterion, the NMED showed that a high wind dust event caused each exceedance. Therefore, the NMED was not required to provide a case-specific justification for the not reasonably preventable criterion.
    - ii) Not Reasonably Controllable, Undisturbed Land Sources - A high wind threshold is defined by 40 CFR §50.1(q) as the minimum wind speed capable of causing particulate matter emissions from natural undisturbed lands in the area affected by a high wind dust event. The NMED showed wind speeds were sustained above the high wind threshold for each exceedance. Therefore, emissions from upwind undeveloped lands met the not reasonably controllable criterion and could not have been reasonably controlled.
    - iii) Not Reasonably Controllable, Anthropogenic Sources – This criterion is addressed below for each day of exceedance.
- 5) Evidence the event was caused by human activity unlikely to recur or was a natural event
  - a) According to 40 CFR §50.14(c)(3)(iv)(E), the demonstration must provide evidence that the event was a human activity unlikely to recur or was a natural event. In accordance with 40 CFR §50.14(b)(5)(ii) and (b)(8), a high wind dust event is considered a natural event if the demonstration shows all anthropogenic sources are reasonably controlled.
  - b) As discussed below for the clear causal criterion, the NMED showed that a high wind dust event caused each exceedance. Also as discussed below for the reasonable control of anthropogenic sources criterion, the NMED showed that the anthropogenic sources were reasonably controlled for each exceedance. Therefore, the high wind dust event that caused each exceedance is a natural event.
- 6) Records of a 30-day public comment period with copies of and responses to comments
  - a) Pursuant to 40 CFR §50.14(c)(3)(v)(A), the demonstration shall provide evidence the air agency conducted a 30-day comment period. The demonstration must include records of the 30-day public comment period conducted for the demonstration. The NMED did not receive comments during the public comment period. The NMED provided records of the 30-day public comment period conducted for the demonstration.

### **Summary**

The NMED asserts that 8 wind events in calendar year 2020 caused 13 exceedances of the NAAQS level for PM<sub>10</sub> from 6 monitors on 6 sites in Luna and Dona Ana Counties, New Mexico. The

2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM

measurements exceeded the NAAQS level of 150\* micrograms per cubic meter (µg/m<sup>3</sup>) for PM<sub>10</sub> using 24-hours averaging time.

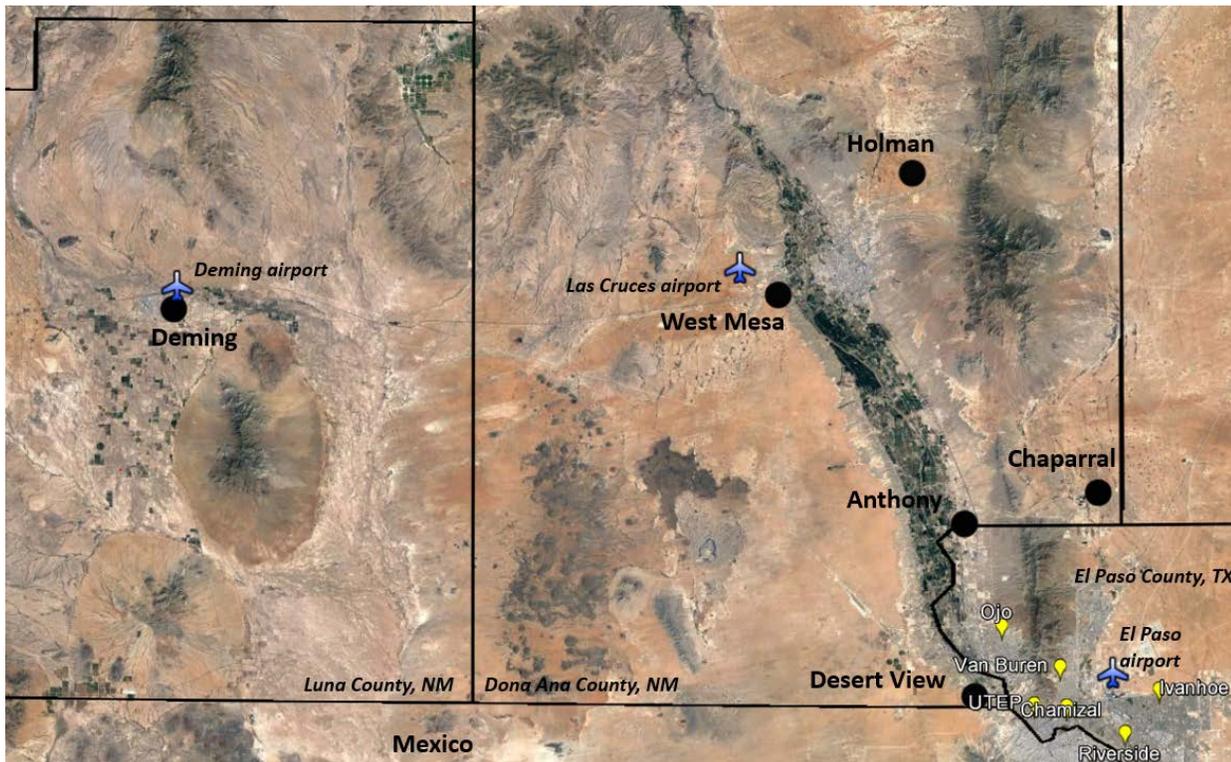
Exceedance Day	Anthony 35-013-0016 POC 2	Chaparral 35-013-0020 POC 2	Desert View 35-013-0021 POC 2	Holman 35-013-0019 POC 2	West Mesa (35-013-0024) POC 2	Deming 35-029-0003 POC 2
March 27	237	161	367	55	31	34
May 7	51	167	38	48	26	38
May 8	186	145	99	74	82	85
June 11	157	88	108	152	55	472
July 7	141	31	215	32	71	99
Sept. 28	461	167	198	-	118	105
Oct. 26	-	76	504	101	104	126
Nov. 24	64	270	67	125	32	36

**Table of 2020 PM<sub>10</sub> Exceedances (µg/m<sup>3</sup>) in Demonstrations**

\*Values below 155 µg/m<sup>3</sup> are rounded down to 150 and are not exceedances of the NAAQS.

The NMED operates 5 monitor sites in Dona Ana County (Chaparral, West Mesa, Anthony, Desert View, Holman) and 1 site in Luna County (Deming) which report PM<sub>10</sub> NAAQS comparable data. NMED operates a Manual (35-013-0016-81102-1, POC 1) and Continuous (35-013-0016-81102-2, POC 2) PM<sub>10</sub> monitor at the Anthony site.

TCEQ operates 5 sites in adjacent El Paso County. Four report PM<sub>10</sub> NAAQS comparable data (Ojo 48-141-1021, Ivanhoe 48-141-0029, Riverside 48-141-0038, Van Buren 48-141-0693). One site reports non-NAAQS comparable data (Chamizal 48-141-0044).



## Map of area, PM<sub>10</sub> monitor sites, and local airports

### General Background on EPA Review

The NMED claims the exceedances were caused by high wind dust events. A high wind dust event is defined by 40 CFR §50.1(p) as an event that includes the high-speed wind and the dust the wind entrains and transports to a monitor site. On April 4, 2019, the EPA released guidance for the preparation of demonstrations for high wind dust events (*Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Influenced by high wind dust events Under the 2016 Exceptional Event Rule*, EPA-457/B-19-001, April 2019) (hereinafter “Guidance”).

A high wind threshold is defined by 40 CFR §50.1(q) as the minimum wind speed capable of causing particulate matter emissions from natural undisturbed lands in the area affected by a high wind dust event. As specified 40 CFR §50.14(b)(5)(iii), the EPA will accept a high wind threshold for New Mexico of a sustained wind of 25 miles per hour (mph). As stated in the preamble to the 2016 EER (81 FR 68257-68258), the high wind threshold clarified the “level of evidence needed to demonstrate not reasonably controllable” and “should be representative of conditions that are capable of overwhelming reasonable controls...on anthropogenic sources and/or causing emissions from natural undisturbed areas.”

Per the April 2019 Guidance, “[w]hen evaluating measured sustained wind speeds, EPA will generally accept that the sustained wind was at or above the area-specific high wind threshold in cases where there was at least one full hour in which the hourly average wind speed was at or above the area specific high wind threshold. EPA will consider a sustained wind speed based on shorter averaging times (e.g., 1 to 5 minutes) on a case-by-case basis. EPA may also consider multiple occurrences of high wind measured at shorter averaging times as part of the weight-of-evidence demonstration, even if the hourly average was not above the threshold.” [pg. 13]

“Meteorological events involving high temperatures or lack of precipitation (*i.e.*, ... drought) also do not directly cause pollutant emissions and are not considered exceptional events. However, [these] conditions ...may promote occurrences of...high wind dust events, which do directly cause emissions.” [pg. 4]

“Cases where dust was entrained by sustained winds at or above the high wind threshold upwind of the monitor and ...transported at lower wind speeds to the monitor could still qualify for the basic controls analysis category, but in such cases, the state should show that sustained winds were at or above the... threshold in the expected source area. Cases of long-range transport (*e.g.*, >50 miles) could still qualify for a basic controls analysis but air agencies may need to include supplementary analyses such as a trajectory analysis...or satellite plume imagery...” [pg 16, footnote 28]

Per the April 2019 Guidance, the EPA intends to use a tiered approach for evaluating whether a demonstration shows that a high wind dust event and its emissions were not reasonably controllable. Large-scale and high-energy high wind dust events are Tier 1. Tier 2 events have sustained wind speeds at or above the high wind threshold. Tier 3 are all other events. None of the subject events qualify as a Tier 1 event. [See pgs. 14-16]

Per the concurrence prohibition of 40 CFR 50.14(b)(9), the EPA cannot concur on AQS flagged exceedances unless the Mitigation Plan requirement has been met. Air agencies are required to submit

Mitigation Plans for areas with known, recurring events (See 40 CFR 51.930). The 2016 EER promulgation notified air agencies with areas initially subject to the Mitigation Plan requirements.

With the 2016 EER promulgation, the EPA notified NMED that Dona Ana and Luna Counties are subject to the Mitigation Plan requirement for PM<sub>10</sub> data influenced by high wind dust events. The required NMED Mitigation Plan was submitted on September 25, 2018, and on October 29, 2018, the EPA deemed the plan complete. The NMED met its Mitigation Plan obligations. Therefore, the concurrence prohibition of 40 CFR 50.14(b)(9) does not preclude the EPA from concurring with the subject exceedances.

### **Other Information**

In this document, use of “page x” or “figure x” is a reference to a page or figure in the demonstrations. The NMED uses meteorological data from the La Union (35-013-0008) site as a proxy for the Anthony site (page 5). The La Union site is approximately 5 miles south southwest of the Anthony site. In the demonstration, the terms “Wind Gust” and “Wind Max” reflect instantaneous wind data.

The high wind threshold is expressed in miles per hour (mph). The NMED uses meter per second (m/s) for wind speed in the demonstration. Meteorological data in AQS expresses wind speed in knots. In this document, wind speed data has been converted to mph.

NOAA provides airport meteorological data ([www.ncdc.noaa.gov/cdo-web/datatools/lcd](http://www.ncdc.noaa.gov/cdo-web/datatools/lcd)) and reported storm events information ([www.ncdc.noaa.gov/stormevents/](http://www.ncdc.noaa.gov/stormevents/)). NOAA HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) modeling using archived weather data is available at ([ready.arl.noaa.gov/HYSPLIT\\_traj.php](http://ready.arl.noaa.gov/HYSPLIT_traj.php)). For this application the HYSPLIT model is used to establish back trajectories for wind-blown dust and to establish source-receptor relationships. HYSPLIT has evolved over more than 30 years and continues to be one of the most extensively used atmospheric transport and dispersion models in the atmospheric sciences community.

**MARCH 27, 2020**

The exceedance occurred on March 27, 2020, hereafter referred to as the “exceedance day”, at a monitor site in Dona Ana County. The monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102	237 µg/m <sup>3</sup>
Chaparral	35-013-0020-81102	161 µg/m <sup>3</sup>
Desert View	35-013-0021-81102	367 µg/m <sup>3</sup>

**MARCH 27, 2020, EXCEEDANCE DAY, clear causal relationship.**

In the demonstration, NMED states “As the event unfolded, the wind blew from the west southwest throughout the border region.”

Table 3-2 on page 9 shows hourly wind data from the Anthony, Chaparral, and Desert View monitor sites for certain hours on the exceedance day. Hourly wind speeds at the Anthony, Chaparral and Desert View monitoring sites exceed 25 mph for at least one hour on the exceedance day.

Figures 3-7 through 3-9 on pages 13 and 14 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at Anthony, Chaparral, and Desert View for the hours when PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The figures show most of the winds were from the southwest.

Figure 3-4 on page 10 shows hourly wind speed data at the Anthony, West Mesa, Chaparral, Holman, Desert View, La Union, Santa Teresa, and Deming monitor sites on the exceedance day. The winds exceeded 25 mph for at least one hour at all applicable monitoring sites listed in the figure.

On the exceedance day, AQS data shows the hourly wind speeds at the La Union (AQS ID 35-013-0008), Chaparral (AQS ID 35-013-0020), and Desert View (AQS ID 35-013-0021) monitoring sites reached 25 mph and over from 3:00 pm till almost 4:00 pm.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day, winds at the airport were reported at over 25 mph for multiple hours. During this period, the winds were from the west southwest. Gusts reached 49 mph. The overall weather type for the exceedance day was clear (Weather Type CLR).

The El Paso airport is about 16 miles southeast of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours with gusts at 61 mph. From about 10:51 am to 5:00 pm, the weather type was shown to be “blowing dust and/or sand” (BL:5|DU:5). Overall weather type for the day was scattered clouds (Weather Type SCT).

The narrative on page 12 and Figure 3-3 on page 9 discusses the National Weather Service (NWS) wind advisory forecast for the southwestern New Mexico and west Texas area on the exceedance day. The narrative reads: “Wind Advisory from noon today to midnight MDT...winds at least 25 to 35 mph...patchy blowing dust possible which could briefly reduce visibility...”.

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Figure 3-5 on page 12 shows an image of the event captured on the Suomi NPP satellite VIIRS RGB with dust plumes originating upwind of the NMED monitoring sites near Ascension and Janos, Chihuahua. The dust plumes appear to be limited to Mexico and traveling toward El Paso and NMED's monitoring sites.

Figure 3-17 on page 18 shows the 24-hours PM<sub>10</sub> measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. While Anthony, Chaparral, and Desert View measured exceedances, the other site measurements were above the monitor averages: West Mesa 31  $\mu\text{g}/\text{m}^3$  (average 16  $\mu\text{g}/\text{m}^3$ ), Holman 66  $\mu\text{g}/\text{m}^3$  (average 26  $\mu\text{g}/\text{m}^3$ ), and Deming 34  $\mu\text{g}/\text{m}^3$  (average 23  $\mu\text{g}/\text{m}^3$ ).

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day.

The Chamizal site in El Paso County reports PM<sub>10</sub> non-NAAQS comparable measurements. On the exceedance day, Chamizal 24-hours measurement of 148  $\mu\text{g}/\text{m}^3$  is above the site average of 25  $\mu\text{g}/\text{m}^3$ . Chamizal is about 8 miles east of Desert View.

Figures 3-11 through 3-13 on pages 15 and 16 show the hourly wind speeds, wind max, and PM<sub>10</sub> data at Anthony, Chaparral, and Desert View on the exceedance day. The elevated hourly PM<sub>10</sub> measurements correlate with elevated wind speeds.

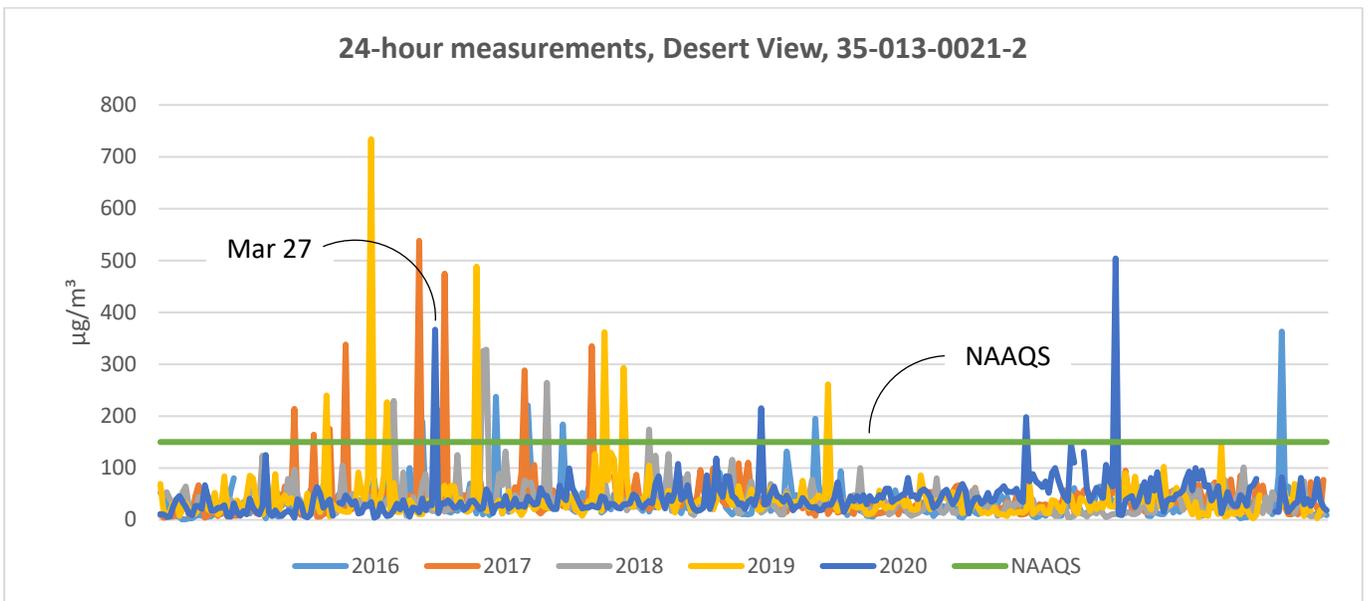
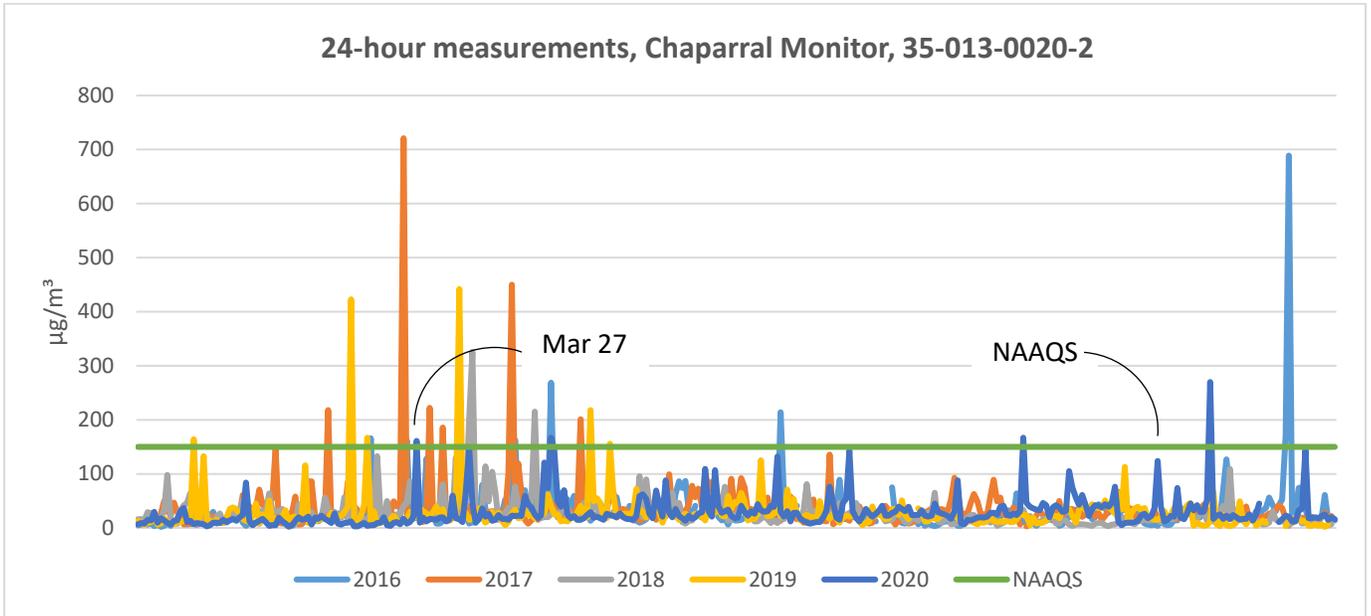
Figure 3-10 on page 15 shows the hourly PM<sub>10</sub> data at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated PM<sub>10</sub> data correlate with elevated hourly wind speeds shown in Figure 3-4 on page 10.

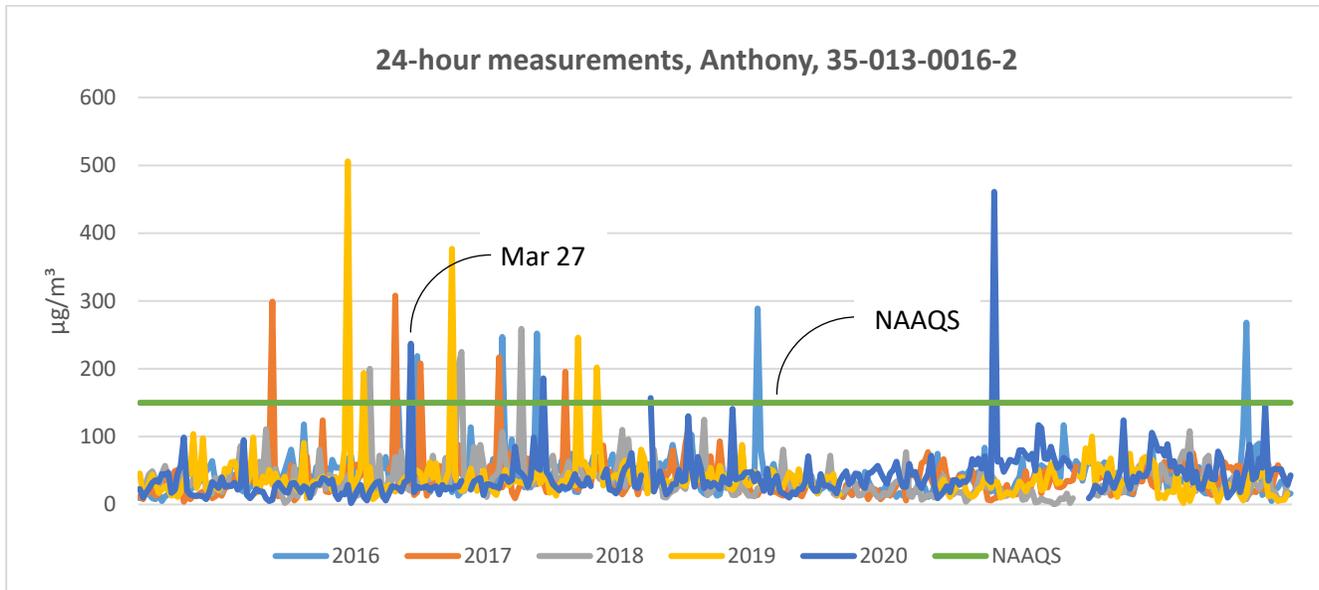
There are independent weather reports, evidence of blowing dust, and wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion and using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedance at the monitors on the exceedance day.

### **MARCH 27, 2020, EXCEEDANCE DAY, analyses comparing event concentrations to other concentrations at the monitor.**

The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Anthony, Chaparral, and Desert View sites. The sites measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above or near the 99<sup>th</sup> percentile of historical site data.

2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM





Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at the monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedances and the wind incident on the exceedance day.

**MARCH 27, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** - The 25 mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Anthony, Chaparral, and Desert View exceeded the threshold on the exceedance day. The elevated winds were primarily from the west-southwest.

Anthony, New Mexico is a small city in Dona Ana County with a population of about 9,300. A portion of the city of Anthony is currently in non-Attainment for PM<sub>10</sub>. The Anthony monitor site is in the non-attainment area about 700 feet north of the Texas border. To the west of the city is mostly undeveloped lands all the way to the Arizona border. To the southeast of the monitor are lands in Texas. The developed land of the city extends about one mile to the east of the Anthony monitor site. Further to the east, there is the Chaparral community in Dona Ana County, and the active Permian basin oil field close to the Texas border. Generally, most of the land to the east is arid and undeveloped.

Chaparral, New Mexico is a remote unincorporated community in Dona Ana County with about 15,000 residents on about 59.2 square miles. The population density is about 250 residents per square mile. In comparison, Albuquerque and El Paso have populations densities of 3,000 and 2,500 residents per square mile, respectively. Vegetation is sparse in the Chaparral community residential areas. Most of the roads in the community are unpaved. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential

anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south, there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions, such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

The Desert View monitor site is in the city of Sunland Park, New Mexico. The city has a population of about 15,000. The Desert View site is located on the western city limits. Beyond the city to the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. On the exceedance day, there could have been upwind anthropogenic sources in about 1 mile of lands in the city of Sunland Park before reaching the Texas border. The demonstration does not discuss any specific sources in the city of Sunland Park nor controls for the sources. The city of El Paso, Texas, extends to about 18 miles east of Desert View. Beyond the city of El Paso to the east is mostly undeveloped Texas lands for hundreds of miles.

The NMED indicates anthropogenic sources near the monitor sites include disturbed surface areas, residential properties, vacant lots, dirt roads, and materials handling and transportation. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

The NMED indicates that natural areas of the Chihuahua Desert in Dona Ana, Luna, and Hidalgo Counties are the most likely sources, under NMED's jurisdiction, contributing to the high wind blowing dust event. Other natural sources located in Texas and Chihuahua, MX likely also contributed to the exceedances on this day.

Portions of the city of Anthony were upwind of the Chaparral site on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 6 years before the exceedance day; however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of Dona Ana County were upwind of the Chaparral and Desert View monitor sites on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance in

appendix D. The ordinance requires a plan for dust controls on disturbed sites. The controls required by the ordinance would have applied to any upwind disturbed sites in the county. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Chaparral and Desert View sites.

Figure 3-6 on page 11 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the “start” of the exceedance day wind event, at the Desert View monitor site location. The results show that the winds originated in Mexico, Arizona, and west New Mexico prior to reaching the Anthony, Chaparral, and Desert View sites. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

**MAY 7, 2020**

The exceedance occurred on May 7, 2020, hereafter referred to as the “exceedance day”, at a monitor site located in Dona Ana County. The monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Chaparral	35-013-0020-81102-2	167 µg/m <sup>3</sup>

**MAY 7, 2020, EXCEEDANCE DAY, clear causal relationship.**

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from the southwest throughout the border region.”

Table 4-2 on page 22 shows hourly wind data from the Holman, Chaparral, and West Mesa monitor sites for certain hours on the exceedance day. The maximum hourly wind speed at Chaparral was 20 mph, with gust as high as 35 mph during the 2-4 pm timeframe. The maximum hourly wind speeds for West Mesa and Holman were 25 and 22 mph, respectively.

Figure 4-5 on page 25, shows the frequency distribution of wind speed correlated with PM<sub>10</sub> data at Chaparral for the hours when PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The figure shows the winds were from the southwest.

Figure 4-3 on page 23 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming monitor sites on the exceedance day. The winds at most of the sites started to elevate sharply at about 10:00 am to 6:00 pm on the exceedance day. While the winds at Chaparral approached the threshold, only the winds at West Mesa exceeded 25 mph.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa monitor site reached a peak of 23 mph at 3 pm. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Van Buren and Chamizal monitor sites in El Paso County were elevated, reaching 16 mph, during the exceedance timeframe but did not exceed 25 mph.

On the exceedance day, The National Weather Service issued a Wind Advisory for this date. “Wind Advisory from 4:00 am to 12:00 pm... winds gusting around 30-40 mph”.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day the winds at the airport exceeded 25 mph from 12:30 pm through 5:30 pm. The winds were from the southwest, and gusts reached 40 mph. The overall weather type for the high wind timeframe was clear. (Weather Type CLR).

The El Paso airport is about 15 miles south of the Chaparral site. On the exceedance day the winds at the airport exceeded 25 mph from 2:50 pm through 3:50pm. The winds were from the west southwest, and gusts reached 34 mph. The overall weather type for the day was few clouds (FEW:02).

The Deming airport is about 77 miles northwest of Chaparral. On the exceedance day winds at the airport were 24 mph from 12:50 pm through 1:30pm and wind gusts reached 37 mph. The winds were from the west southwest. The weather was clear (Weather Type CLR).

Figure 4-9 on page 28 shows the 24-hours PM<sub>10</sub> measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The 24-hours PM<sub>10</sub> measurement at the Chaparral, site was above the NAAQS level of 150 µg/m<sup>3</sup> at 167 µg/m<sup>3</sup>. Other monitors in the area were above their averages: Anthony 52 µg/m<sup>3</sup> (average 38 µg/m<sup>3</sup>), Desert View 38 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>), West Mesa 26 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>), Holman 48 µg/m<sup>3</sup> (average 38 µg/m<sup>3</sup>), and Deming 38 µg/m<sup>3</sup> (average 23 µg/m<sup>3</sup>).

Samples were not collected on the exceedance day from the El Paso County PM<sub>10</sub> NAAQS comparable monitors.

The Chamizal site in El Paso County reports PM<sub>10</sub> non-NAAQS comparable measurements. On the exceedance day, Chamizal recorded an average of 24 µg/m<sup>3</sup>. Chamizal is about 20 miles south of Chaparral.

Figure 4-6 on page 26 shows hourly PM<sub>10</sub> measurements Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. There were several spikes between 12:00 pm to 4:00pm at the Chaparral monitoring site as well as values nearing the NAAQS at the Holman monitoring site. The elevated PM<sub>10</sub> measurements correlate with elevated wind speeds shown on Figure 4-3 on page 23.

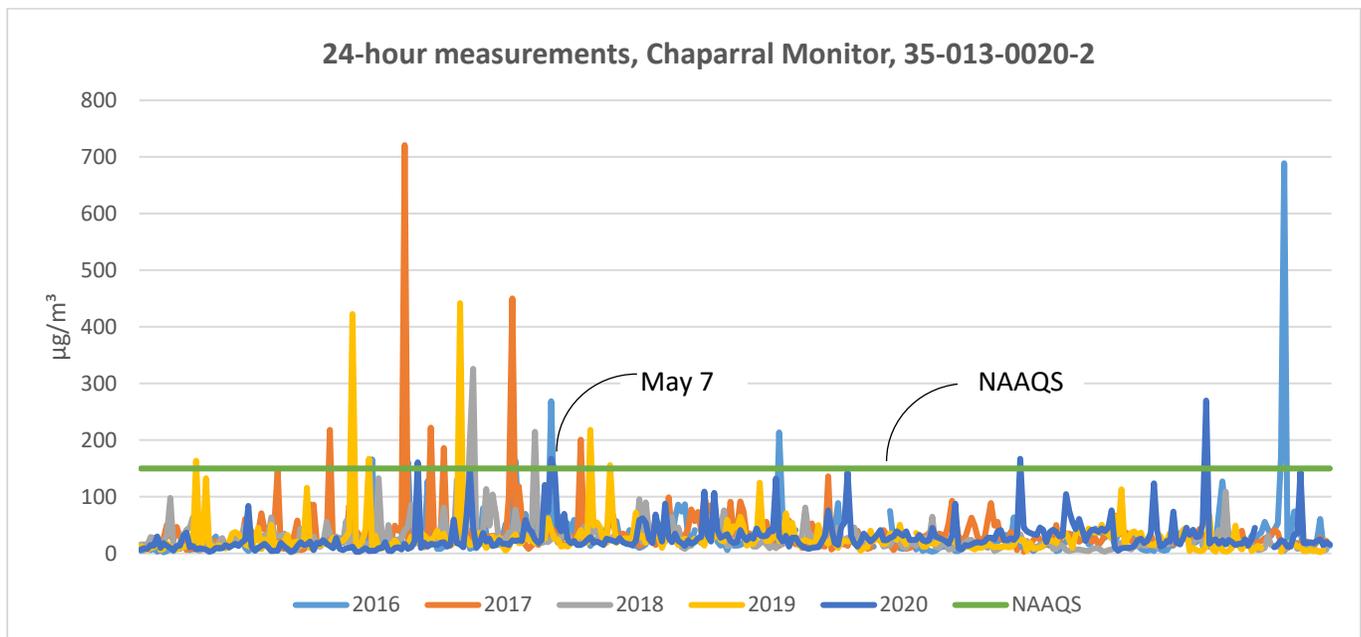
Figures 4-7 on page 27 shows the hourly wind speed and PM<sub>10</sub> data at Chaparral on the exceedance day. The elevated PM<sub>10</sub> measurement correlates with the elevated wind speed.

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There are independent weather reports and wind data which showed that on the exceedance day the area experienced a widespread wind incident that could have contained entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedances at the monitor on the exceedance day.

### **MAY 7, 2020, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.**

The graph below reflects the 24-hour monitor data from 2016 to 2020 for the Chaparral site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is near the 99<sup>th</sup> percentile of historical site data.



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at this monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedance and the wind incident on the exceedance day.

### **MAY 7, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Holman, and

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Chaparral approached the 25 mph threshold and gusts above 30 mph were measured during the timeframe of elevated PM<sub>10</sub>. West Mesa exceeded the 25-mph high wind threshold. While the hourly wind speeds at Chaparral did not reach the threshold, the wind gusts exceeded 25 mph and reached 35 mph multiple times from 11:45 am through 5:10 pm during the elevated dust event.

See discussion about the March 27, 2020, exceedance for information about the location of the Chaparral site. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

The NMED indicates anthropogenic sources near the monitor site includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of Dona Ana County were upwind of the Chaparral monitor site on the exceedance day. The demonstration provides information on Las Cruces, Dona Ana, and Luna counties dust ordinances. The ordinances require a plan for dust controls on disturbed sites. The controls would have applied to any upwind disturbed sites in the cities, counties, and the Chaparral community on the day of the exceedance. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject localized high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Chaparral.

Mexico was upwind of Chaparral on the exceedance day. Figure 4-4 on page 25 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event, at the Chaparral monitor site location. The results show that the winds originated in Chihuahua, Mexico prior to reaching the monitoring sites. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the nature of the weather event, and the likelihood that emissions from

high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

**MAY 8, 2020**

The exceedance occurred on May 8, 2020, hereafter referred to as the “exceedance day,” at monitor site located in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-2	186 µg/m <sup>3</sup>

**MAY 8, 2020, EXCEEDANCE DAY, Clear Causal Relationship**

In the demonstration, NMED states “[a]s the event unfolded, the wind blew from the east-northeast throughout the border region.”

Table 5-2 on page 31 provides hourly wind speed measurements from the Anthony, Chaparral, and Deming monitor sites for certain hours on the exceedance day. Winds at the Anthony monitoring site began to elevate at 4:00 am and exceeded 25 mph beginning at 6:00 am and lasting till at least 7:00 am. Wind gust during this time frame reached 45 mph. Winds at Chaparral hit 23 mph at 8:00 am with gusts exceeding 25 mph beginning at 3:00 am and continuing throughout the day. Winds at Holman, Desert View, and West Mesa increased beginning at 3:00 am and reached speeds of 20 mph throughout the day.

Figure 5-5 on page 35 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data of the even at Anthony for the hours (4:00am -8 am) when PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The figure shows the winds were from the east northeast.

Figure 5-3 on page 33 shows hourly winds at Anthony, West Mesa, Chaparral, Holman, Desert View, La Union, Santa Teresa, and Deming, on the exceedance day. Anthony exceeded 25 mph for at least one hour. All other monitoring locations listed approached the threshold and had elevated winds throughout the day.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, UTEP, Van Buren, and Skyline monitor sites in El Paso County exceeded had elevated wind speeds for multiple hours.

The Las Cruces airport is about 26 miles northwest of Anthony. On the exceedance day, winds at the airport approached 25 mph for multiple hours. During this time, the winds were from the east southeast, and gusts reached 30 mph. Winds were elevated throughout the day. The overall weather for the day was listed as clear (Weather Type CLR).

The El Paso airport is about 19 miles southeast of the Anthony monitoring site. On the exceedance day, winds at the airport approached 25 mph during the timeframe of elevated PM<sub>10</sub> readings at the NMED monitor. During this period, the winds were from the northeast, gusts reached 30 mph, and weather was few to broken clouds (Weather Type FEW/BKN).

The Deming airport is about 68 miles northwest of Anthony. On the exceedance day, winds at the airport were recorded at 20 mph from 6:53 am till 7:53 am. During this period, the winds were from the northeast, gusts reached 29 mph. The overall weather type for the exceedance day was clear (Weather Type CLR).

The narrative on page 34 discusses the NWS Wind Advisory and a Blowing Dust Advisory forecast on the exceedance day. Strong winds and reduced visibility were predicted for southwestern New Mexico and west Texas with wind gusts up to 45 mph. High winds were expected on the exceedance day until 4:00 pm.

Figure 5-9 on page 38 shows the 24-hour PM<sub>10</sub> measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. Anthony was above the NAAQS level of 150 µg/m<sup>3</sup>. Measurements were above monitor averages at the other monitoring sites also: West Mesa 82 µg/m<sup>3</sup>, (average 16 µg/m<sup>3</sup>), Deming 85 µg/m<sup>3</sup>, (average 23 µg/m<sup>3</sup>), Desert View 99 µg/m<sup>3</sup>, (average 16 µg/m<sup>3</sup>), Chaparral 145µg/m<sup>3</sup>, (average 27 µg/m<sup>3</sup>), and Holman 74 µg/m<sup>3</sup>, (average 26 µg/m<sup>3</sup>).

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day. The PM<sub>10</sub> continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal monitoring data shows elevated hourly PM<sub>10</sub> measurements during the timeframe of excessive wind speeds. The 24-hour reading of 70 µg/m<sup>3</sup> was above the average (average 26 µg/m<sup>3</sup>). Chamizal is about 19 miles southeast of Anthony.

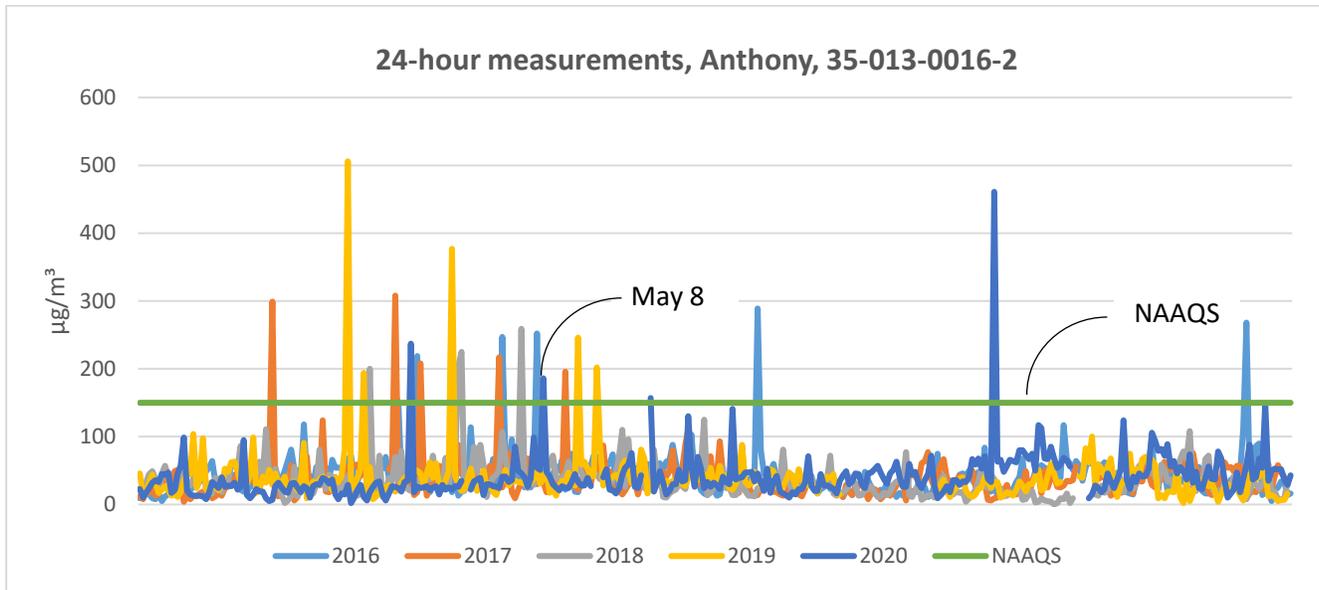
Figure 5-6 on page 36 shows hourly PM<sub>10</sub> measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The elevated PM<sub>10</sub> measurements correlate with the elevated wind speeds shown on Figure 5-3.

Figure 5-7 on page 36 shows wind speed and PM<sub>10</sub> measurements at Anthony on the exceedance day. The elevated PM<sub>10</sub> measurements correlate with elevated wind speeds.

There are independent weather reports, evidence of blowing dust, and wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitor correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedance at the monitor on the exceedance day.

#### **MAY 8, 2020, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitors.**

The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Anthony site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is near the 99<sup>th</sup> percentile of historical site data.



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at the monitor indicates a deviation from normal concentrations occurred and supports the clear causal relationship between the monitored exceedance and the wind incident on the exceedance day.

**MAY 8, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Anthony exceeded the threshold on the exceedance day. In addition, wind speeds measured at Chaparral, and Desert View were elevated during the event period. These elevated winds were from the east northeast.

Anthony, New Mexico is a small city in Dona Ana County with a population of about 9,300. A portion of the city of Anthony is currently in non-Attainment for PM<sub>10</sub>. The Anthony monitor site is in the non-attainment area about 700 feet north of the Texas border. To the west of the city is mostly undeveloped lands all the way to the Arizona border. To the southeast of the monitor are lands in Texas. The developed land of the city extends about one mile to the east of the Anthony monitor site. Further to the east there is the Chaparral community in Dona Ana County, and the active Permian basin oil field close to the Texas border. Generally, most of the land to the east is arid and undeveloped.

The NMED indicates in the demonstration that anthropogenic sources near the monitor site include disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED’s Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The demonstration does not specifically identify any potential upwind anthropogenic sources or controls on

the sources, on the exceedance day. The demonstration has information about controls for potential upwind anthropogenic sources.

Portions of the Dona Ana County were upwind of Anthony on the exceedance day. The demonstration provides information the Dona Ana County Dust ordinance. The ordinance requires a plan for dust controls on disturbed sites. The controls would have applied to any upwind disturbed sites in the city and county on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony.

Portions of the city of Anthony were upwind of the Anthony monitor site on the exceedance day. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day; however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Figure 5-4 on page 35 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the “start” of the exceedance day wind event, at the Anthony monitor site location. The results show that the winds originated in eastern New Mexico and Texas prior to reaching New Mexico and El Paso monitoring locations. Any upwind anthropogenic sources in Texas are outside the state of New Mexico’s jurisdiction. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

### **JUNE 11, 2020**

The exceedance occurred on June 11, 2020, hereafter referred to as the “exceedance day,” at the monitor sites located in Dona Ana and Luna Counties. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-1	157 µg/m <sup>3</sup>
Deming	35-029-0003-81102-2	472 µg/m <sup>3</sup>

**JUNE 11, 2020, EXCEEDANCE DAY, clear causal relationship.**

In the demonstration, the NMED indicates “[a]s the event unfolded, the wind blew from the east northeast throughout the border region.”

Table 6-2 on page 42 shows hourly wind data from the Deming, Holman, and Anthony monitor sites, for certain hours on the exceedance day. Winds at the Deming and Holman sites exceeded 25 mph for multiple hours. While winds at the Anthony site did not reach the 25 mph threshold, wind gusts exceeded 25 mph for multiple hours.

Figures 6-7 and 6-8 on pages 46 and 47 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at Anthony and Deming for the hours when PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The winds were multi-directional from the east northeast 65%-85% of the time and from the south southeast 15%-35% of the time. This coincided with the peak PM<sub>10</sub> concentrations.

Figure 6-4 on page 43 shows hourly wind data at West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming, on the exceedance day. Both Deming and Holman exceeded the 25 mph threshold.

On the exceedance day, AQS data shows the hourly wind speeds at the La Union site approached 25 mph for multiple hours. La Union is about 5 miles south southwest of the Anthony site.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, Socorro and Ivanhoe monitor sites in El Paso County approached 25 mph for multiple hours with wind speeds hitting 20 mph.

The Las Cruces airport is about 26 miles northwest of Anthony and 47 miles east of Deming. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds blew from the north northeast, with gusts reaching 46 mph. The weather type was vicinity thunderstorm during this time (Weather Type VCTS:7). The overall weather type for the exceedance day was Clear (Weather Type CLR).

The El Paso airport is about 18 miles southeast of the Anthony site. On the exceedance day winds at the airport were between 17-23 mph from 3:51 pm to 6:51 pm. During this period, the winds varied from east southeast, gusts reached 53 mph, and weather type was light rain (Weather Type -RA:02|RA|RA) from 5:51 pm to 6:50 pm. The overall weather type for the exceedance day was “Scattered clouds” (Weather Type SCT).

The Deming airport is the monitoring location and is 68 miles northwest of Anthony. On the exceedance day winds at the airport exceeded 25 mph for multiple hours during the day. During this period, the winds blew predominately from the northeast, with gusts reaching 59 mph, and weather type was “Haze and smoke” (Weather Type HZ:7|FU|HZ). This period lasted from around 6:00 pm to 7:00 pm. Overall weather type for the exceedance day was clear (Weather Type CLR).

Figure 6-19 on page 61 shows the 24-hours PM<sub>10</sub> measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. Anthony and Deming 24-hour measurements exceeded the NAAQS level of 150 µg/m<sup>3</sup>. Other sites measurements were elevated: West Mesa had a measurement of 55 µg/m<sup>3</sup> which is above the monitor average of 16 µg/m<sup>3</sup>, Chaparral had a

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measurement of 88  $\mu\text{g}/\text{m}^3$  which is above the monitoring average of 23  $\mu\text{g}/\text{m}^3$ , Holman 152  $\mu\text{g}/\text{m}^3$  (average 27  $\mu\text{g}/\text{m}^3$ ), and Desert View 108  $\mu\text{g}/\text{m}^3$  (average 16  $\mu\text{g}/\text{m}^3$ ).

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day. The 24-hour measurement from the PM<sub>10</sub> continuous Chamizal monitor in El Paso County on the exceedance day was 58  $\mu\text{g}/\text{m}^3$  (average 28  $\mu\text{g}/\text{m}^3$ ).

Figure 6-5 on page 45 and the narrative on page 45 provide information and imagery showing the National Weather Service's Convective Outlook product for the date. The product was used to warn the public in southwestern New Mexico and west Texas of high winds.

Figure 6-9 on page 47 shows hourly PM<sub>10</sub> measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated PM<sub>10</sub> measurements correlate with elevated wind speeds shown on Figure 6-4.

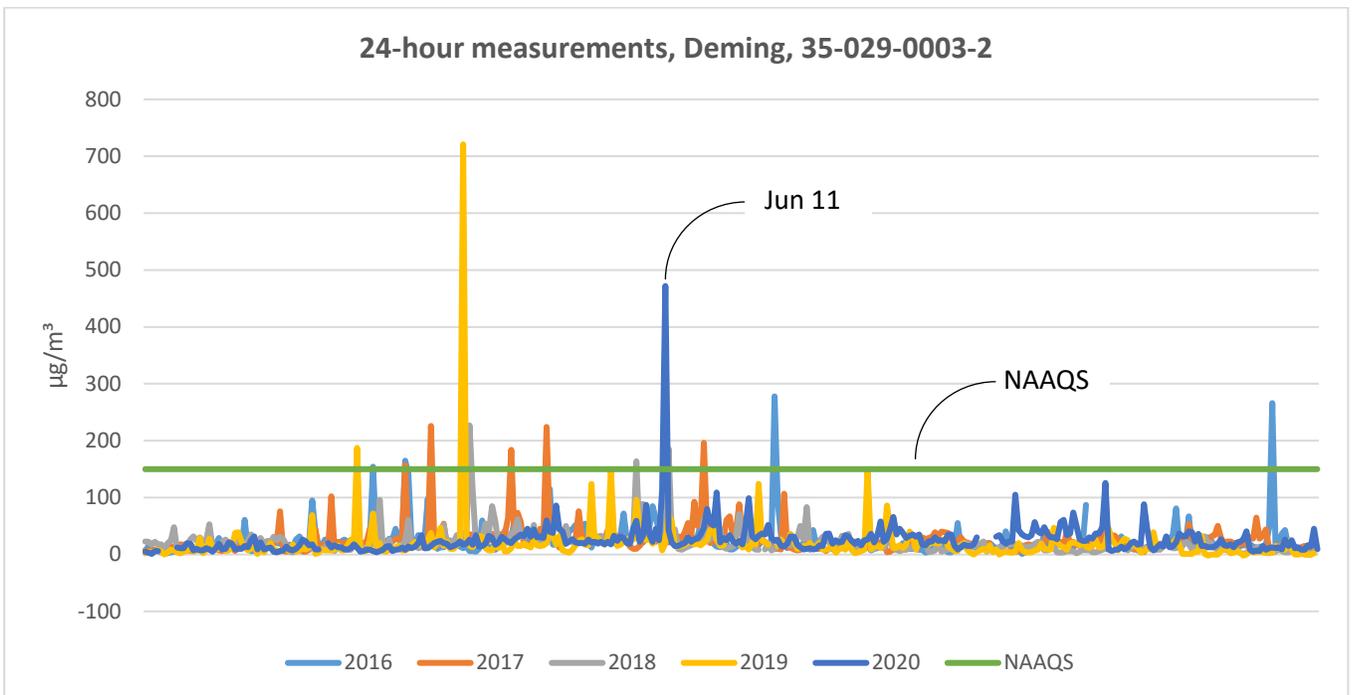
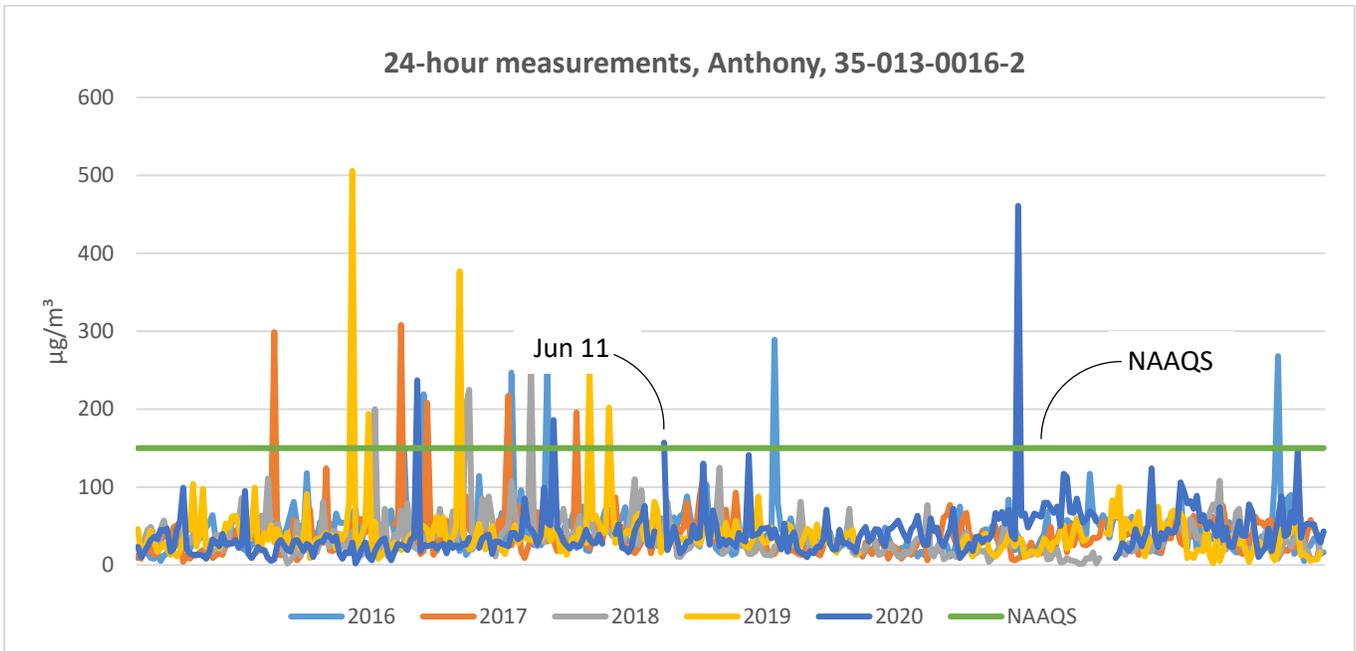
Figures 6-10 and 6-11 on pages 48 and 49 show both hourly wind speeds and PM<sub>10</sub> measurements at the Anthony and Deming sites on the exceedance day. The elevated PM<sub>10</sub> measurements at the sites correlate with elevated wind speeds.

There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedance at the monitors on the exceedance day.

### **JUNE 11, 2020, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.**

The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above the 95<sup>th</sup> and 99<sup>th</sup> percentile of historical site data for Anthony and Deming. The graphs below reflect the 24-hour monitor data from 2016 to 2020 for the Anthony and Deming sites.

2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at these monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedances and the wind incident on the exceedance day.

**JUNE 11, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at the Deming site exceeded the threshold on the exceedance day. Wind speed measured at Anthony did not exceed the threshold, but wind gusts were above 25 mph for multiple hours. The winds were from the north and northeast.

See discussion about the May 8, 2020, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the east northeast. The Anthony city limits are about 1 mile northeast of the Anthony monitor site. Beyond the city to the west undeveloped lands exist to the Arizona border. To the northeast and east beyond the Anthony city limits, there is the Chaparral community and then undisturbed arid lands to the Texas border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

The city of Deming with a population of about 15,000, is the only city in Luna County, New Mexico. The city is located 33 miles north of the Mexico border. Except for the city of Deming, a village close to the Mexico border and some agricultural fields, the land in the county is undeveloped. The Deming monitor site is at the airport within the city limits. During the hours of highest impact on the monitor, the winds were from the north northeast. To the west and northwest of the monitor are about 3 miles of developed and undeveloped lands within the city. Beyond the city limits to the north are undeveloped lands and to the east about 56 miles is the city of Las Cruces and undeveloped lands.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony site on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the

demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Anthony and Deming on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony and Deming.

Portions of the city of Deming were upwind of the Deming monitor sites on the exceedance day. The demonstration provides information on Deming, and Luna County dust ordinances. The ordinances require a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the city, counties, or the unincorporated Chaparral community on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Deming monitor site.

Figure 6-6 on page 46 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the “start” of the exceedance day wind event, at the Anthony monitor site location. The results show that the winds originated in Chihuahua, Mexico and west Texas prior to reaching Anthony and El Paso, TX. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

**JULY 7, 2020**

The exceedance occurred on July 7, 2020, hereafter referred to as the “exceedance day,” at a monitor site in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Desert View	35-013-0021-81102-2	215 µg/m <sup>3</sup>

**July 7, 2020, EXCEEDANCE DAY, clear causal relationship.**

In the demonstration, the NMED indicates “[a]s the event unfolded, the wind blew from the southwest throughout the border region.” On April 18, 2022, NMED submitted an addendum to their 2020

exceptional event demonstration for the July 7, 2020, event. In the addendum, the NMED indicates that the event was exacerbated by sources of wildfire smoke and agricultural fires located in northern Chihuahua Mexico.

Table 7-2 on page 55 shows hourly wind speeds at the Desert View, Anthony, and West Mesa monitor sites for certain hours on the exceedance day. The winds did not exceed 25 mph at Desert View, West Mesa or Anthony. No wind gusts exceeded or approached the threshold on the event day.

Figures 7-7 on page 59 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at Desert View monitor site, for the hours when PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The winds at the monitoring site were multi-directional from the southern areas respectively and outlier directions ranging from east to northwest.

Figure 7-3 on page 56 shows hourly wind speeds at Chaparral, Anthony, Desert View, Deming, Santa Teresa, La Union, and West Mesa on the exceedance day. The winds were the highest during the hours of 4:00 pm to 11:00 pm with a maximum wind speed approaching 16 mph at West Mesa and Santa Teresa. Wind speeds at La Union, Deming, and Desert View approached 15 mph during this time frame.

The Las Cruces airport is about 39 miles north of Desert View. On the exceedance day winds at the airport were low (less than 10 mph). During this period, the winds were from the north northwest. From 6:15 am till 9:15 am the weather type was hazy with smoke (HZ:7|FU|HZ), with the evening weather type as clear. This correlates with the highest PM<sub>10</sub> readings at the monitors. The overall weather type was clear (Weather Type CLR/HZ).

The El Paso airport is about 12 miles east of the Desert View site. On the exceedance day, winds at the airport were low (less than 10 mph). During this period, the wind direction was variable with winds blowing from the east, southeast, and southwest. From 8:51 am to 9:51 am the weather type was hazy with smoke (HZ:7|FU|HZ). The overall weather type for the exceedance day was few clouds, (Weather Type FEW). Additionally on July 6, 2020, the winds blew up to 29 mph incrementally from 4:51 pm thru 8:00 pm with gusts up to 39 mph. Strong thunderstorms and blowing dust was also recorded during this time period (TS:7|TS TS| and TS:7 VCBL:5 DU:5 |TS TS|). Winds during this period shifted from the south to the east.

Figures 12-1 thru 12-3 on pages 170-172 of the addendum, provides information and fire maps of the Polles fire and Bighorn wildfire in Arizona and a description of the Cub fire in the Gila National Forest in New Mexico.

Figure 12-4 on page 173 shows satellite imagery products from the GOES-16 Aerosol Optical Depth Product which provides evidence of dense smoke and dust over southwestern New Mexico, Southeastern Arizona, and Western Texas. The time stamp of the image is for 6:11 am, which correlates with the spike in PM<sub>10</sub> seen on figure 7-8 on page 60.

Figure 12-5 on page 174 shows the GOES-16 Smoke and Dust Mask product showing smoke over the Desert View monitoring site at 7:01 am on July 7, 2020.

Figures 12-6 and 12-7 on pages 175 and 176 shows images from the Suomi NPP/VIIRS satellite Deep Blue Aerosol Angstrom Exponent Product. The images show smoke as blue areas and dust as green

areas, while a bluish green color represents a mixture of smoke and dust. Figure 12-6 was taken at 11:30 pm on July 6, 2020 and shows a mixture of smoke and dust near the Desert View monitor location as well as agricultural fire source locations in Mexico. Figure 12-7 was taken at 10:35 am on July 7, 2020 and shows a mixture of smoke and dust near the Desert View Monitor as well as other areas in Mexico and New Mexico.

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport were low (less than 10 mph). During this period, the winds were from the north northwest. From 7:55 am through 8:55 am smoke and haze were reported (Weather Type - HZ:7||HZ). The overall weather type for the exceedance day was clear (Weather Type CLR).

Figure 7-11 on page 61 shows the 24-hour PM<sub>10</sub> measurements from Chaparral, Anthony, Desert View, Deming, Holman, and West Mesa on the exceedance day. All monitoring sites recorded various levels of elevated PM<sub>10</sub> levels above their averages, with Desert View being the only exceedance.

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day. The PM<sub>10</sub> continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hour measurement was 34 µg/m<sup>3</sup>. This is above the site average of 25 µg/m<sup>3</sup>. Chamizal is about 8 miles east of Desert View.

The narrative on page 57 and 58 discusses the NWS advisory issued for portions of southwestern New Mexico and west Texas on the exceedance day describe the possibility for isolated thunderstorms in the afternoon. The NWS hazardous Weather Outlook excerpt states “Isolated thunderstorms will again develop during the afternoon hours...storms may produce strong wind gusts of 40 to 50 miles per hour”. The local El Paso News outlet described hazy conditions with dust along the borderland on that Tuesday because of very calm and stagnate air trapped under a ridge aloft. This caused the dust from the previous day’s microburst thunderstorms and smoke from agricultural burning in Mexico to become trapped lower in the air column. (Figure 7-5).

Additional information from the historical National Weather Service meteorological skewed t-chart soundings provided by Wyoming State University for July 6&7, 2020 showed an inversion at 1506 meters AGL (Height Above Ground Level) and 1517 AGL which allowed for more pollutants to be contained near ground level. Upper-level air columns predominated from the west-northwest direction which provided the route for northwest wildfire smoke sources to be transported to the region. The unstable atmospheric conditions on July 6, 2020 caused by an accumulation of increased humidity below a dry layer in the upper air columns allowed for entrainment into the lower air columns through evaporative cooling, thereby increasing the negative buoyancy.

Figures 12-14 and 12-15 on pages 183&184 shows radar images of the late evening dry microburst outflow thunderstorm activity on July 6, 2020. These thunderstorms provided the energy necessary to loft dust into the air at the source areas of Northern Mexico and West Texas. The July 7, 2020 low morning wind speeds and stable atmospheric conditions allowed for pollutants to settle and become trapped and transported within the inversion layer from the south-southeast. Afternoon warming allowed for the inversion to break up, facilitating PM<sub>10</sub> levels to decrease as dust settled and smoke cleared.

Figure 7-9 on page 61 shows the hourly wind speeds and PM<sub>10</sub> measurements at Desert View on the exceedance day. The elevated PM<sub>10</sub> measurements did not correlate with the elevated wind speeds.

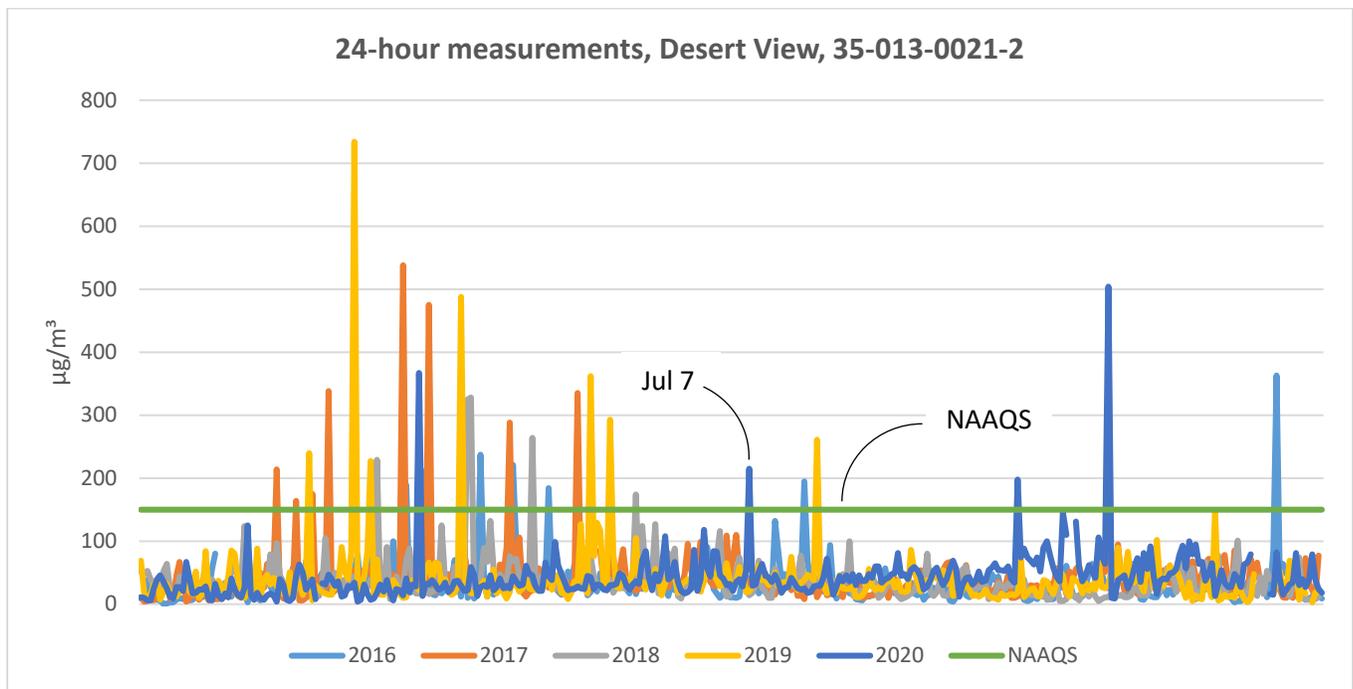
## 2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM

However, the elevated PM<sub>10</sub> measurements did correlate with known dust reports from weather monitoring stations in the area.

There are independent weather reports and evidence of hazy skies with entrained particulate matter and smoke. The demonstration did show that elevated hourly PM<sub>10</sub> measurements at the monitor correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED has shown that a high wind dust event due to a dry thunderstorm the previous evening, as well as agricultural burning in Northern Mexico and wildfires in Arizona and New Mexico clearly caused the PM<sub>10</sub> exceedances at the monitors on the exceedance day.

### **JULY 7, 2020, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.**

The graph below reflects the 24-hour monitor data from 2016 to 2020 for the Desert View site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is near the 99<sup>th</sup> percentile of historical.



Based on the analyses and statistics, the comparison of the exceedance to the historical concentrations of PM<sub>10</sub> at the monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedance and the incident on the exceedance day.

**JULY 7, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Desert View did not exceed the threshold. However, the phenomenon of virtually no wind, stagnate air under a ridge aloft, and smoke assisted the trapped dust in the area from the previous day’s evening thunderstorm activity in which high winds and blowing dust were recorded in the El Paso region.

See discussion about the March 27, 2020, exceedance for information about the location of the Desert View site in the city of Sunland Park. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, 3/4 of a mile to the south of Desert View, respectively. To the southwest of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

The NMED indicates anthropogenic sources near the monitor site includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED’s Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state’s jurisdiction.

Portions of the city of Anthony were upwind of the Anthony, Holman, and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of Dona Ana County were upwind of the Desert View monitor site on the exceedance day. The demonstration provides information on the Dona Ana County dust ordinance. The ordinance requires a plan for dust controls on disturbed sites. The controls would have applied to any upwind disturbed sites in the cities, counties, and the Chaparral community on the day of the exceedance. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls

were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View.

Figure 7-6 on page 59 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the “start” of the wind event, at the Desert View site. The results show the winds originated in southwestern Chihuahua, MX and El Paso, TX and travelled into the southern New Mexico area. Figure 12-13 on page 182 shows the results of another NOAA HYSPLIT back-trajectory model with results showing air parcels predominated from elevations below 1500 meters AGL from the direction of regional dust and smoke sources located in Northern Mexico and West Texas for the six hours leading up to the PM<sub>10</sub> exceedances. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on several factors, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day. These factors include the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds in the area from the previous day on extensive upwind undeveloped arid lands. Additionally, smoke from fires in Arizona, western New Mexico, and agricultural burning in Mexico and low wind trapped upwind emissions contributed significantly to the impacts.

**SEPTEMBER 28, 2020**

The exceedances occurred on September 28, 2020; hereafter referred to as the “exceedance day” at monitor sites in Dona Ana County. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-2	461 µg/m <sup>3</sup>
Desert View	35-013-0021-81102-2	167 µg/m <sup>3</sup>
Chaparral	35-013-0021-81102-2	198 µg/m <sup>3</sup>

**September 28, 2020, EXCEEDANCE DAY, Clear Causal Relationship.**

In the demonstration, the NMED indicates “[a]s the event unfolded, the wind blew from the east throughout the border region.”

Table 8-2 on page 66 shows hourly wind speed data from the Anthony, Desert View, and Chaparral monitor sites for certain hours on the exceedance day. Wind speeds at the Anthony site exceeded 25 mph for multiple hours. Wind speeds at Desert View and Chaparral approached the 25 mph threshold, with wind gusts exceeding 25 mph throughout the day.

Figure 8-4 on page 67 shows hourly wind speeds at Chaparral, Anthony, Desert View, Deming, La Union, Santa Teresa, and West Mesa on the exceedance day. Wind speeds at the Anthony site exceeded the threshold for multiple hours. Desert View and Chaparral sites approached the threshold throughout the early morning hours of the day.

## 2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM

Figures 8-7 through 8-9 on pages 70 and 71 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at the Anthony, Chaparral, and Desert View monitor sites when the PM<sub>10</sub> measurements exceeded 150 µg/m<sup>3</sup> on the exceedance day. The winds were from the northeast predominately at the Anthony and Chaparral sites and east southeast at the Desert View monitoring site.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa site approached 25 mph for multiple hours with a measurement of 20 mph recorded. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Ojo De Agua monitor site in El Paso County exceeded 25 mph for multiple hours. Ojo De Agua is approximately 10 miles southeast from the Anthony monitoring site and 9.5 miles northeast of the Desert View monitoring site.

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport reached 22 mph for at least one hour. During this period, the winds were from the northeast, gusts reached 32 mph, and weather type was clear (Weather Type (CLR)).

The Las Cruces airport is about 27 miles northwest of Anthony and 40 miles north of Desert View. On the exceedance day, winds at the airport were low (between 7-11 mph). During this period, the winds were from the east and gusts reached 22 mph. During the period of 01:55 – 02:15 the weather type was “Haze and smoke” (Weather Type HZ:7|FU|HZ). The overall weather type for the exceedance day was clear (Weather Type CLR).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day winds at the airport were between 7 and 18 mph throughout the early morning hours. During the period of 12:43 am-5:00 am, the winds were from the north northeast, gusts reached 37 mph, and weather type included “blowing” and “widespread dust” with haze (Weather Type HZ:7 BL:5, DU:5|FU|HZ). The overall weather type for the exceedance day was clear (Weather Type CLR).

Figure 8-17 on page 76 shows the 24-hour PM<sub>10</sub> measurements from the Anthony, West Mesa, Chaparral, Desert View, and Deming monitor sites on the exceedance day. The measurements at Desert View, Anthony, and Chaparral exceeded the NAAQS level of 150 µg/m<sup>3</sup>. West Mesa and Deming measurements were above average levels: West Mesa 118 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>) µg/m<sup>3</sup> and Deming 105 µg/m<sup>3</sup> (average 23 µg/m<sup>3</sup>).

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day. The PM<sub>10</sub> continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hours measurement of 129 µg/m<sup>3</sup> is above the site average of 25 µg/m<sup>3</sup>. Chamizal is about 8 miles east of Desert View.

Figure 8-5 on page 69 shows a satellite image captured with the VIIRS sensor on the Suomi NPP NOAA-20 weather satellite. The image shows some dust plumes originating in northern Chihuahua, MX and some in El Paso TX.

The narrative on page 69 discusses that the NWS issued a Wind Advisory and a Blowing Dust Advisory for parts of southwestern New Mexico and West Texas on the exceedance day until 10:00 am.

## 2020 PM<sub>10</sub> Exceptional Event Demonstration, Dona Ana and Luna counties, NM

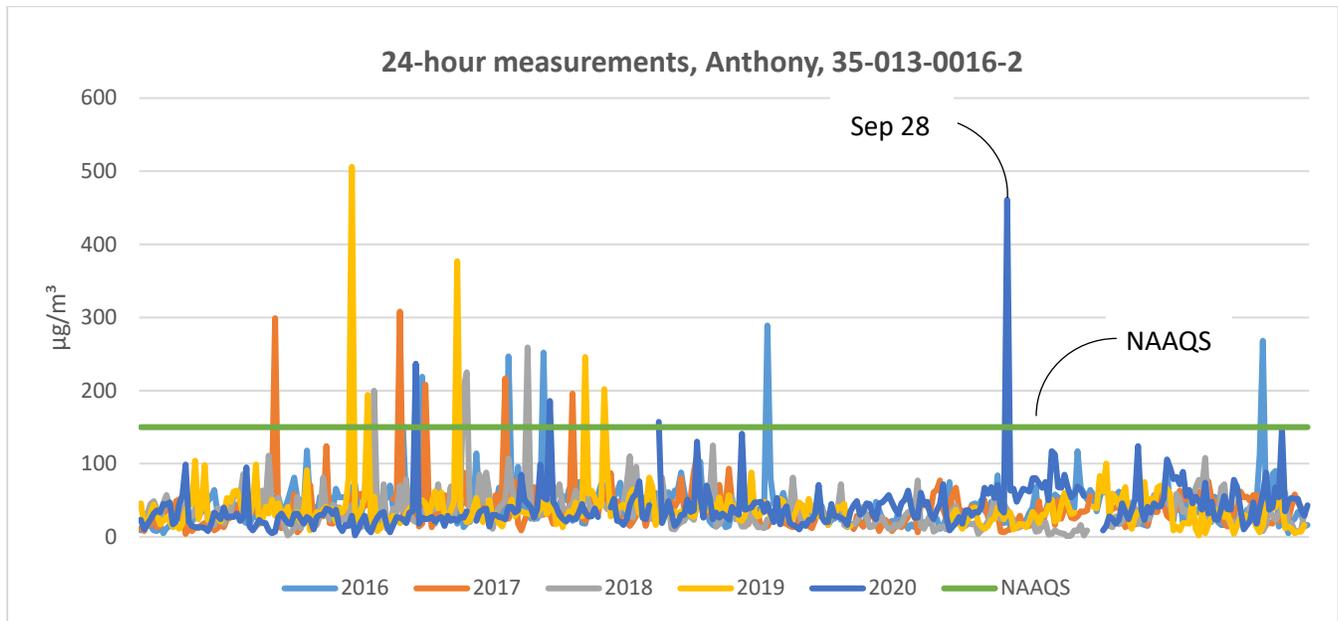
Figure 8-10 on page 72 shows the hourly PM<sub>10</sub> measurements from Chaparral, Anthony, Desert View, Deming, and West Mesa on the exceedance day. The elevated PM<sub>10</sub> measurements at the sites correlate with elevated wind speeds shown in Figure 8-3.

Figures 8-11 through 8-13 on pages 73 and 74 show hourly wind speed and PM<sub>10</sub> measurements at the Anthony, Chaparral, and Desert View monitor sites on the exceedance day. The elevated PM<sub>10</sub> measurements at the sites correlate with the elevated wind speeds.

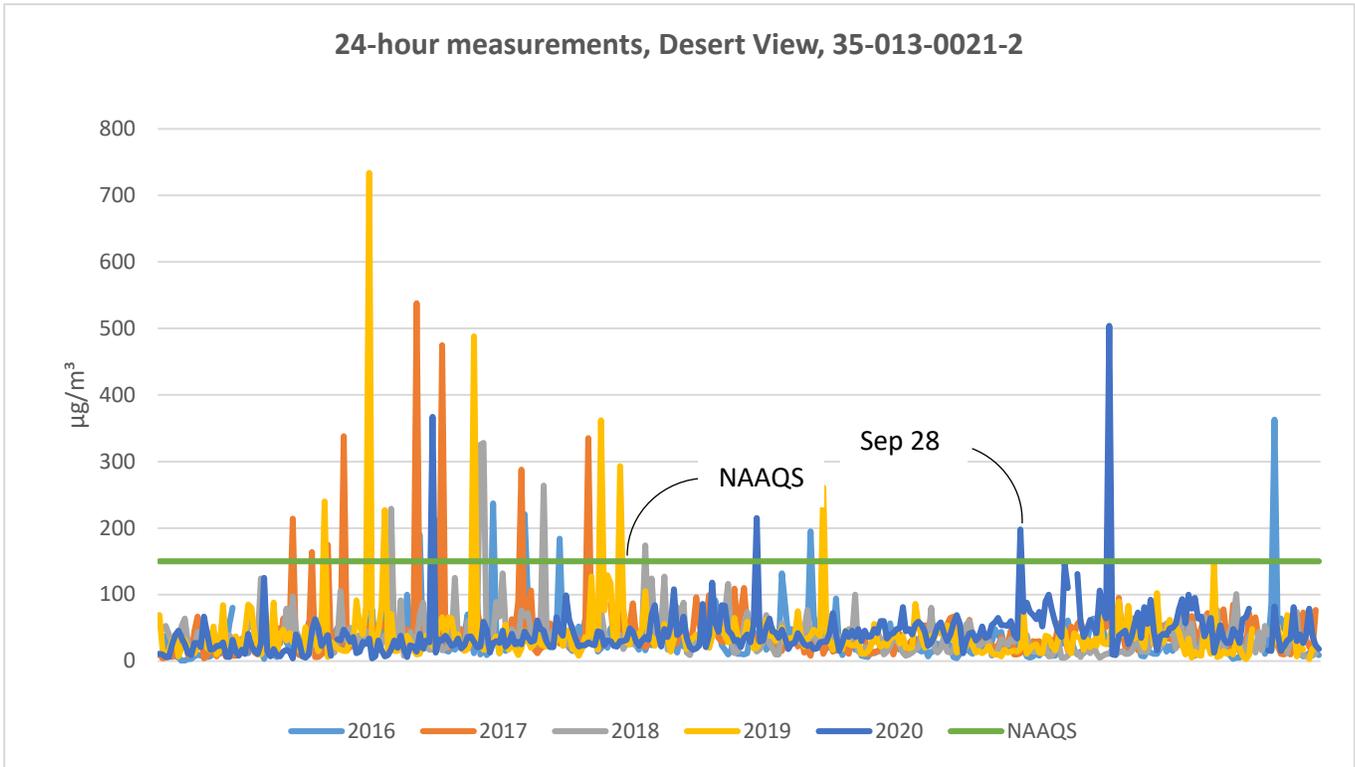
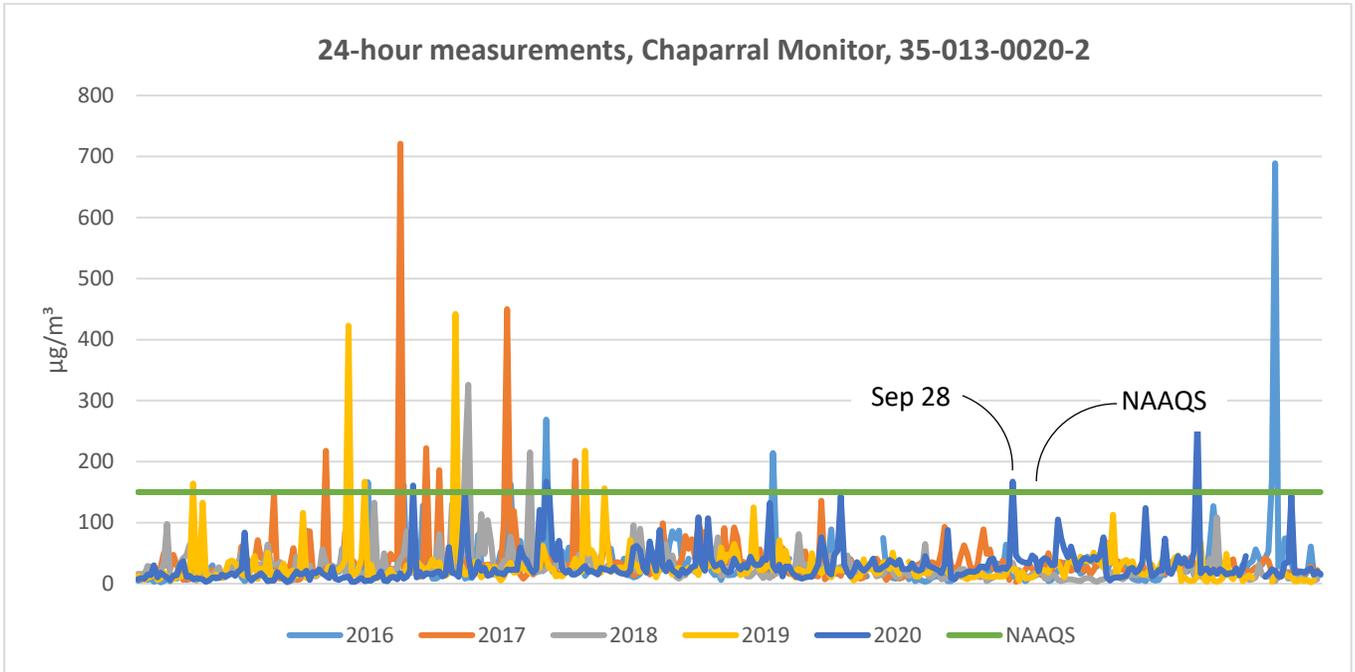
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area of southern Dona Ana County experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedance at the monitors on the exceedance day.

### **SEPTEMBER 28, 2020, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.**

The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Anthony, Chaparral, and Desert View sites. The sites measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above and near the 99<sup>th</sup> percentile of historical site data.



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Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at these monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedances and the wind incident on the exceedance day.

**SEPTEMBER 28, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** - The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at the Anthony site exceeded the threshold on the exceedance day. Desert View and Chaparral monitor sites approached the threshold and had wind gusts that exceeded 25 mph for multiple hours.

See discussion about the March 27, 2020, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the hours of highest impact on the monitor, the winds were from the east southeast. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. To the east is the city of El Paso, TX.

See discussion about the March 27, 2020, exceedance for information about the location of the Chaparral site. During the hours of highest impact on the monitor, the winds were from the north northeast. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. To the north and east are the undeveloped lands of the Brokeoff Mountains and other undeveloped lands. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

See discussion about the March 27, 2020, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the east northeast. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. To the east are the Brokeoff Mountains and undeveloped lands. Beyond the city to the west undeveloped lands exist to the Arizona border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads, and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development

greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Anthony, Desert View, and Chaparral on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony, Desert View, and Chaparral.

Desert View is located about 3/4 of a mile north of the Mexico border. The Mexico border is about 24 miles southwest of Chaparral. Portions of Mexico was upwind of Anthony, Desert View, and Chaparral on the exceedance day. Figure 8-5 on page 88 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event, at the Desert View monitor site location. The results show that the winds originated in Chihuahua, Mexico and El Paso, TX prior to reaching downwind monitoring sites in southern New Mexico. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

**OCTOBER 26, 2020**

The exceedances occurred on October 26, 2020; hereafter referred to as the “exceedance day” at a monitor site in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Desert View	35-013-0021-81102-2	504 µg/m <sup>3</sup>

**OCTOBER 26, 2020, EXCEEDANCE DAY, Clear Causal Relationship.**

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from the southwest and the southeast throughout the border region.”

Table 9-2 on page 80 shows hourly wind speed measurements from the Desert View, Deming, and West Mesa monitor sites for certain hours on the exceedance day. The table shows hourly wind speeds exceeded 25 mph for several hours at Desert View. Both Deming and West Mesa exceeded the 25 mph max at various times throughout the day. Maximum wind gusts of 45, 44 and 37 mph were measured at the Desert View, Deming, and West Mesa sites, respectively.

Figure 9-5 on page 83 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at Desert View site when PM<sub>10</sub> concentrations exceeded 150 µg/m<sup>3</sup> on the exceedance day. During the event, winds were from the east southeast.

Figure 9-3 on page 81 shows hourly wind speeds at Deming, Anthony, Desert View, Chaparral, La Union, Santa Teresa, and West Mesa on the exceedance day. The winds at West Mesa, Santa Teresa, and Desert View exceeded 25 mph for at least one hour. The winds at Anthony and La Union approached but did not reach 25 mph. Deming briefly hit 25 mph late in the afternoon after 7:00 pm.

On the exceedance day, AQS data shows the hourly wind speeds at the Desert View, Santa Teresa and West Mesa sites exceeded 25 mph for multiple hours. Santa Teresa is approximately 6 miles west from the Desert View monitoring site, West Mesa is approximately 37 miles to the north of the Desert View monitoring site.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal and Ojo De Agua monitor sites in El Paso County had elevated wind speeds approaching 21 mph for multiple hours.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day winds at the airport hit 24 mph for multiple hours. During this period, the winds were from the east southeast and gusts reached 54 mph. The weather type for most of the day was clear (Weather type CLR). The weather type shifted after 7:00 pm to rain and snow.

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day winds at the airport were between 10 - 17 mph for multiple hours. During this period, the winds were from east southeast, gusts reached 25 mph, and weather type was few clouds (Weather Type FEW). The overall weather type for the exceedance day was few clouds.

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours in the afternoon. During this period, the winds were from

the southwest and shifted to the north, gusts reached 48 mph, and weather type was “Haze and smoke” (Weather Type HZ:7|FU|HZ). The overall weather type for the day was scattered clouds to clear (Weather Type SCT/CLR).

Figure 9-9 on page 86 shows the 24-hour PM<sub>10</sub> measurements from Chaparral, Desert View, Deming, Holman, and West Mesa on the exceedance day. Desert View exceeded the NAAQS level of 150 µg/m<sup>3</sup> and the other measurements were above average: West Mesa 105 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>), Deming 127 µg/m<sup>3</sup> (average 23 µg/m<sup>3</sup>), Chaparral 77 µg/m<sup>3</sup> (average 27 µg/m<sup>3</sup>) and Holman 101 µg/m<sup>3</sup> (average 27 µg/m<sup>3</sup>). Anthony was offline for QC issues on this day.

The PM<sub>10</sub> manual monitors in El Paso County did not sample on the exceedance day. The PM<sub>10</sub> continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hours measurement of 70 µg/m<sup>3</sup> is above the site average of 25 µg/m<sup>3</sup>.

The narrative on page 82 explains that satellite imagery was not available during the event due to the development of dense cloud cover.

The NWS did not issue a wind advisory for this day.

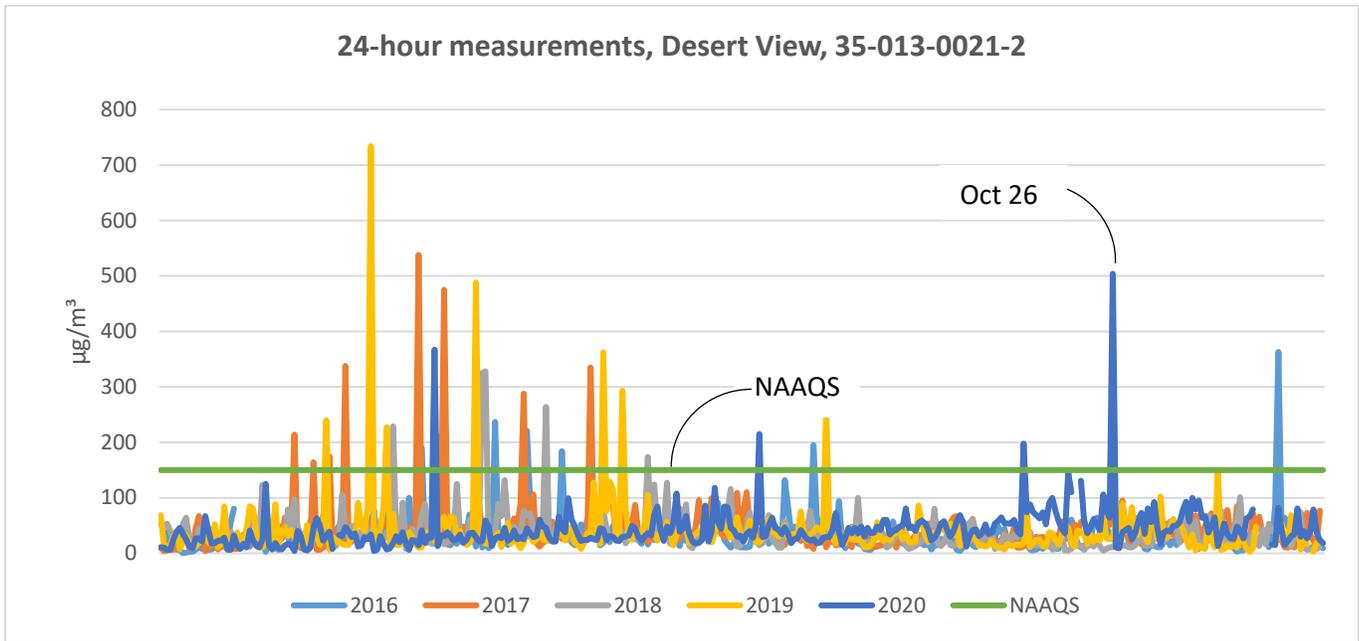
Figure 9-6 on page 84 shows the hourly PM<sub>10</sub> measurements from Chaparral, Desert View, Deming, and West Mesa on the exceedance day. Elevated PM<sub>10</sub> measurements correlate with elevated wind speeds shown in Figure 9-3.

Figures 9-7 on page 85 shows hourly wind speeds and PM<sub>10</sub> measurements at Desert View on the exceedance day. The elevated PM<sub>10</sub> measurements correlate with elevated wind speeds.

There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day, the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedance at the monitor on the exceedance day.

#### **OCTOBER 26, 2020, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor.**

The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is above the 95<sup>th</sup> percentile of historical site data. The graph below reflects the 24-hour monitor data from 2016 to 2020 for the Desert View site.



Based on the analyses and statistics, the comparison of the exceedance to the historical concentrations of PM<sub>10</sub> at the monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedance and the wind incident on the exceedance day.

**OCTOBER 26, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** - The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Desert View exceeded the threshold on the exceedance day. The winds were from the southeast.

See discussion about the March 27, 2020, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the hours of highest impact on the monitor, the winds were from the southeast. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED’s Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during,

and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state’s jurisdiction.

Portions of Dona Ana County were upwind of Desert View on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View.

Figure 9-4 on page 83 and the narrative on page 82 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the “start” of the wind event at Desert View. The results show the winds originated in northern Mexico and southwest Texas and travelled into southern New Mexico and El Paso, TX. Any upwind anthropogenic sources are outside the state of New Mexico’s jurisdiction. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

**NOVEMBER 24, 2020**

The exceedances occurred on November 24, 2020; hereafter referred to as the “exceedance day” at a monitor site in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Chaparral	35-013-0020-81102-2	270 µg/m <sup>3</sup>

**NOVEMBER 24, 2020, EXCEEDANCE DAY, Clear Causal Relationship.**

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from the southwest throughout the border region.”

Table 10-2 on page 89 shows hourly wind speed measurements from the Deming, Desert View, and Chaparral monitor sites for certain hours on the exceedance day. The table shows hourly wind speeds exceeded 25 mph at Chaparral. Both Deming and Desert View had elevated winds with Deming

approaching the threshold. Gusts at both monitoring sites exceeded the threshold throughout the day. Maximum wind gusts of 46 mph were measured at the Chaparral site, respectively.

Figure 10-6 on page 93 shows the frequency distribution of wind direction correlated with PM<sub>10</sub> data at the Chaparral site when PM<sub>10</sub> concentrations exceeded 150 µg/m<sup>3</sup> on the exceedance day. The winds were from the west southwest.

Figure 10-3 on page 91 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming monitor sites on the exceedance day. The winds at most of the sites were elevated between the hours of 10:00 am – 3:00 pm on the exceedance day with West Mesa, Chaparral, and Deming exceeding the threshold during these hours.

On the exceedance day, AQS data shows the hourly wind speeds at the Chaparral, West Mesa, and Deming monitoring sites exceeded the 25 mph threshold for multiple hours. Other NMED monitoring locations had wind speeds between 18 and 21 mph on the exceedance day.

On the exceedance day, AQS data shows the hourly wind speeds at the TCEQ El Paso monitoring sites had elevated wind speeds between 17-20 mph. The monitor sites in El Paso County were not upwind of Desert View on the exceedance day.

The Las Cruces airport is about 38 miles northwest of Chaparral. On the exceedance day the winds at the airport at the time of the exceedance were over the 25 mph threshold for multiple hours. The winds were from the west and west southwest with gusts over 44 mph reported. During the hours of 10:35 am through 2:15 pm, the weather was “Haze with Dust or Sand raised by wind” Weather Type (HZ:7|FU|HZ). The overall weather type for the day was clear (Weather Type CLR).

The El Paso airport is about 15 miles south of the Chaparral site. On the exceedance day the winds at the airport exceeded 25 mph for multiple hours. The winds were from the west, shifting to the northwest as the day progressed and gusts of 44 mph were recorded. The overall weather type for the day was clear with few clouds (Weather Type CLR/FEW).

The Deming airport is about 79 miles northwest of Chaparral. On the exceedance day winds at the airport exceeded 25 mph for multiple hours and wind gusts of 39 mph were recorded. The winds were predominantly from the west. The overall weather type for the day was clear (Weather Type CLR).

Figure 10-7 on page 95 shows the 24-hour PM<sub>10</sub> measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The 24-hours PM<sub>10</sub> measurement at the Chaparral site was above the NAAQS level of 150 µg/m<sup>3</sup> at 270 µg/m<sup>3</sup>. Other monitoring sites recorded measurements above their averages: Anthony 64 µg/m<sup>3</sup> (average 38 µg/m<sup>3</sup>), Desert View 67 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>), Deming 36 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>) and West Mesa 32 µg/m<sup>3</sup> (average 16 µg/m<sup>3</sup>).

Samples were not collected on the exceedance day from the El Paso County PM<sub>10</sub> NAAQS comparable monitors.

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The Chamizal site in El Paso County reports PM<sub>10</sub> non-NAAQS comparable measurements. On the exceedance day, Chamizal recorded an average of 41 µg/m<sup>3</sup>, above the average (25 µg/m<sup>3</sup>). Chamizal is about 19 miles south of Chaparral.

Figure 10-7 on page 95 shows hourly PM<sub>10</sub> measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The largest spike in PM<sub>10</sub> was between 9:00 am and 3:00 pm. The elevated PM<sub>10</sub> measurements correlate with elevated wind speeds shown on Figure 10-3 on page 90.

Figure 10-8 on page 95 shows the hourly wind speed and PM<sub>10</sub> data at Chaparral on the exceedance day. The elevated PM<sub>10</sub> measurement correlates with the elevated wind speed.

The National Weather Service issued a Wind Advisory for the event day. An excerpt from the Advisory stated: “Wind Advisory from 11:00 am to 5:00 pm this afternoon... wind speeds to reach 25 to 35 mph with gust up to 40 to 50 mph. Patchy blowing dust will be possible...”.

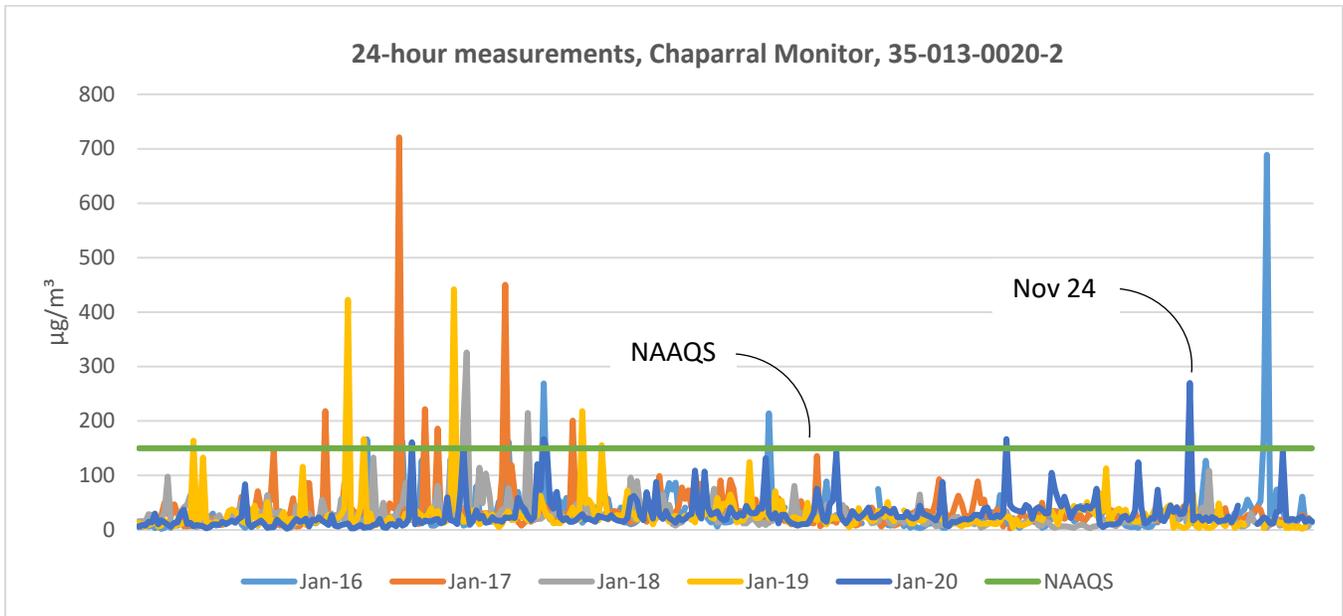
Figure 10-4 on page 92 shows on the event day an image captured by the VIIRS NOAA-20 satellite RGB shows dust plumes originating upwind of NMED’s monitoring site near Ascension and Janos, Chihuahua. The dust plumes appear to be limited to Mexico, orientated in a northwest position, and traveling toward El Paso and NMED’s monitoring site at the time that the image was captured.

There are independent weather reports, evidence of satellite images of dust plumes and wind data which showed, that on the exceedance day, the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM<sub>10</sub> measurements at the monitor correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM<sub>10</sub> exceedances at the monitor on the exceedance day.

### **NOVEMBER 24, 2020, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.**

The graph below reflects the 24-hours monitor data from 2016 to 2020 for the Chaparral site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is above the 99<sup>th</sup> percentile of historical site data.

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Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM<sub>10</sub> at this monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedance and the wind incident on the exceedance day.

**NOVEMBER 24, 2020, EXCEEDANCE DAY, not reasonably controllable or preventable.**

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

**Not Reasonably Controllable, Anthropogenic Sources** – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds at Chaparral exceed the threshold on the exceedance day. The winds at Chaparral reached a maximum hourly wind speed of 27 mph, and there were gusts of wind speeds that reached 46 mph during the event.

See discussion about the March 27, 2020, exceedance for information about the location of the Chaparral site. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Chaparral monitor site on the exceedance day. The demonstration provides information on the Anthony PM<sub>10</sub> SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM<sub>10</sub> exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Chaparral on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memoranda of understandings exist between NMED and local municipalities for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Chaparral.

Figure 10-6 on page 114 and the narrative on page 113 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the "start" of the wind event, at Chaparral. The results show the winds originated in Arizona and southern New Mexico. The analysis shows support for the hypothesis that dust plumes originated in Arizona and southern New Mexico. Any upwind anthropogenic sources are outside the state of New Mexico's jurisdiction. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from elevated winds on extensive upwind undeveloped arid lands contributed significantly to

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the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.