NATURAL EVENTS ACTION PLAN FOR PM10 EXCEEDANCES DUE TO HIGH WIND EVENTS IN LUNA COUNTY, NEW MEXICO

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EXECUTIVE SUMMARY

Purpose of this Report

During 2003, concentrations of airborne particulate matter during dust storms reached unhealthful levels in Luna County. This report outlines a response to this issue that is appropriate for local environmental and economic conditions, and proposes a timeline for the response. Federal policy provides for the plan described here as an alternative to federally imposed requirements that may be unnecessarily restrictive and inappropriate for air quality issues resulting from natural forces and non-industrial sources.

Summary

Particulate matter less than 10 microns in diameter (PM10) is one of the air pollutants for which the Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) to protect human health and the environment. These standards limit the allowable concentration of the pollutant in the ambient air, which is the outside air near ground level that people breathe.

At a number of locations throughout New Mexico, the Air Quality Bureau of the New Mexico Environment Department (NMED) routinely monitors the ambient concentration of PM10 and other pollutants for which ambient standards have been set.

In most cases, violation of a federal air quality standard results in the area being classified as a "nonattainment area" for that pollutant. The State must then submit a plan for reducing pollution levels. Such plans must include stringent controls on industrial and other sources of the pollutant. During 2003, two exceedances of the standard for PM10 were measured at an NMED monitoring site in Luna County. Although air quality was good on most days, the number of days when the standard was exceeded was greater than the federal air quality standard allows.

The NMED Air Quality Bureau has analyzed conditions that caused the recent exceedances and determined that the exceedances resulted from high winds lifting dust into the air from areas of exposed soil (that is, from dust storms).

Federal law and policies recognize that declaring a nonattainment area and requiring stringent pollution controls on industrial sources is not an appropriate response when a standard is violated due to natural events such as blowing dust from high winds. EPA's Natural Events Policy describes alternative steps that States may take to avoid nonattainment status in such cases. The policy calls for States to develop a Natural Events Action Plan (NEAP) to protect public health by educating the public about the problem and what is being done to respond to it and taking reasonable measures to control sources of windblown dust that are the result of human activities and that contribute significantly to the problem.

This document outlines the Luna County Natural Events Action Plan, the full development and implementation of which is an on-going process. Luna County citizens, local governments, businesses and other parties have been and will continue to be involved in the Luna County NEAP.

For more information, please contact Andy Berger of the NMED Air Quality Bureau at (505) 955-8034 or andy_berger@nmenv.state.nm.us.

ACRONYMS & ABBREVIATIONS

BACM	Best Available Control Measures
NMED	New Mexico Environment Department
EPA	U.S. Environmental Protection Agency
NAAQS	National Ambient Air Quality Standards
NEAP	Natural Events Action Plan
PM10	Particulate Matter less than 10 microns in diameter
SIP	State Implementation Plan
$\mu g/m^3$	micrograms per cubic meter

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FEDERAL AIR QUALITY STANDARDS FOR PM10

PM10 refers to suspended particles less than or equal to 10 microns in diameter. PM10 is a mixture of materials that can include dust, smoke, and soot. The size of PM10 creates health hazards; the particles are small enough to be inhaled deep into the lungs. High concentrations of PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, trigger heart attacks and strokes, and reduce the body's ability to fight infections. People most vulnerable to these effects include infants and children, the elderly, adults who exercise (because they breathe in more air), and those suffering from asthma or bronchitis.

The Federal Clean Air Act provides for the establishment of National Ambient Air Quality Standards (NAAQS) to protect the public from harmful levels of the most common pollutants in the ambient air. Ambient air is the outside air near ground level that people breathe. State and local agencies regularly monitor concentrations of the pollutants for which NAAQS have been set.

In 1987, the federal Environmental Protection Agency (EPA) set standards for both short-term (24-hr) and long-term (annual) average concentration of PM10. Concentration of PM10 is measured in units of micrograms of particulate matter per cubic meter of air ($\mu g/m^3$). The PM10 standards are the following:

24-hour standard:

To attain this standard, the daily 24-hr concentration must not exceed **150 $\mu g/m^3$** more than once per year, averaged over three years.

Annual standard:

To attain this standard, the arithmetic average of the 24-hr samples for a period of 1 year, averaged over 3 consecutive years, must not exceed **50 $\mu g/m^3$**.

The distinction between an exceedance and a violation of a standard is important.

An exceedance is when the measured concentration of the pollutant is greater than the concentration limit specified in the standard. A measurement of over 150 $\mu g/m^3$ in a 24-hr period is an exceedance of the 24-hr standard, and a measurement of over 50 $\mu g/m^3$ in any single year is an exceedance of the annual standard.

A violation of the 24-hr standard is when the average number of exceedances per year, averaged over three years, is greater than one. An example would be if there were four exceedances in one year, even if there were no exceedances in the preceding or following two years. If measurements are not taken daily, the observed number of exceedances each year is adjusted upwards to account for the possibility that exceedances may have occurred on days when no measurement was made. For example, if PM10 is monitored only every sixth day, as it is in New Mexico, one measured exceedance would count as six exceedances occurring in the 365-day year. Under this monitoring protocol, a single exceedance is sufficient to qualify as a violation and require development of a NEAP.

Similarly, the annual standard level would be violated only if the average of three consecutive annual averages was greater than concentration limit of 50 $\mu g/m^3$. Violation of a standard ordinarily results in the area being declared nonattainment and being required to take steps to reduce pollutant levels.

EPA NATURAL EVENTS POLICY

Background

By law, the usual consequence when pollutant levels in an area violate one of the NAAQS is that the area is declared nonattainment for that pollutant. The State must then develop and implement a plan for measures that will be taken to reduce emissions of the pollutant and bring the ambient levels of the pollutant back within the standards. Such plans must include stringent pollution control measures for new and existing industries and other sources of the pollutant.

Federal law and policies recognize that declaring an area nonattainment and requiring stringent controls on industrial sources is not an appropriate response where natural events contribute significantly to exceedances of the standard. EPA's Natural Events Policy, which was initially set forth in a 1996 memo, offers a more appropriate approach with a focus on protection of public health.

Guiding Principles

The guiding principles of the Natural Events Policy are:

1. Protection of public health is the highest priority of Federal, State, and local air pollution control agencies.
2. The public must be informed whenever the air quality in an area is unhealthy.
3. All valid ambient air quality data should be submitted to the EPA's national database and made available for public access.
4. State and local agencies must take appropriate reasonable measures to safeguard public health regardless of the source of PM10 emissions.
5. Emission controls should be applied to sources that contribute to exceedances of the PM10 NAAQS when those controls will result in fewer violations of the standards.

Definition of PM10 Natural Events

Three kinds of PM10 Natural Events are defined in the EPA policy memorandum: volcanic and seismic events, wildland fires, and high winds. Only high wind events will be discussed here, as these are kind of events relevant to the recent exceedances in Luna County. The policy defines high wind events as follows:

> "Ambient PM-10 concentrations due to dust raised by unusually high winds will be treated as due to uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources, or (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM)."

The term "anthropogenic" means strongly influenced by the activities of humans. Examples of anthropogenic sources include vehicular traffic on or off roads, and construction activities. Best Available Control Measures (BACM) for PM10 are techniques that achieve the

maximum degree of emissions reduction from a source as determined on a case-by-case basis considering technological and economic feasibility.

Although dust storms are referred to as "natural events", it should be recognized that dust storms require not only high winds, but also areas of soil that can serve as sources of dust. Areas where the soil is loose, dry, and barren of rock, vegetation or other cover are highly susceptible to blowing. Some such susceptible areas exist naturally in the desert climate of southern New Mexico, but others may be created or made to emit more dust by human activities.

Documentation of Natural Events

In New Mexico, the Environment Department is responsible for identifying exceedances of the NAAQS caused by high winds. The Environment Department must first mark the exceedances due to high winds with a special notation (called a "flag") in EPA's national database of ambient monitoring data. The NMED must then prepare a document clearly showing, by analysis of weather data and other information, that the exceedances would not have occurred if not for the high wind events. The Environment Department's documentation of these high wind events and their impact on air quality must be made available to the public.

Attachment 1 includes the documentation prepared and submitted for high wind events that occurred in Luna County during 2003.

Natural Events Action Plan (NEAP)

If including ambient concentrations of PM10 during natural events in attainment determinations would result in a violation of a NAAQS, the State has a choice of allowing the area to be declared nonattainment or developing and submitting to EPA a Natural Events Action Plan (NEAP). The NEAP describes what will be done to address future events. This document is the initiation of a Natural Events Action Plan for Luna County.

Failure to Submit or Implement a Plan

If an adequate Natural Events Action Plan is not submitted or implemented, EPA will notify the Governor of the State that the area in question should be redesignated as nonattainment. This action would be authorized under the Clean Air Act based on the conclusion that the health of citizens affected by such events was not being protected by the State. As described earlier, the State would then be required to adopt a federally enforceable revision to its State Implementation Plan (SIP) to address the sources of PM10 emissions. The SIP revision would likely include the same mitigative measures that could have been included in a NEAP, in addition to new and burdensome federal requirements for local industries.

LUNA COUNTY NATURAL EVENTS ACTION PLAN

Introduction

Luna County is 2,965 square miles in southwestern New Mexico with a total population of near 27,000, of which approximately 14,000 are in Deming. At an elevation of 4,330 feet, Luna County has an arid continental climate with low humidity and average annual rainfall of 9 inches. Winds average around 10 miles per hour for the year, with the prevailing direction being westerly. Late winter and spring are the seasons most closely associated with moderate to strong winds, which can bring blowing dust. The New Mexico Environment Department monitors concentrations of particulate matter at a monitoring station on the roof of the Post Office on Pine Street in Deming. In 2003, violations of the federal standard for particulate matter occurred, requiring the creation of this Luna County Natural Events Action Plan to avoid nonattainment.

Violation of the PM10 Standard in Luna County

The 24-hr standard concentration of 150 $\mu g/m^3$ was exceeded twice in Luna County in 2003. On April 15, 2003, the PM10 concentration was **160 $\mu g/m^3$**. On June 8, 2003, the PM10 concentration was **181 $\mu g/m^3$**. Since PM10 is monitored only every sixth day, these two measured exceedances count as 12 exceedances for the year.

No exceedances of the 24-hour PM10 standard were measured in 2001 or 2002. Therefore, the three-year average number of exceedances is (0+0+12)/3, which equals four. Since the standard is a three-year average number of exceedances no greater than one, the standard has been violated.

Causes of Recent Exceedances

NMED Air Quality Bureau analyzed weather conditions and other circumstances associated with the exceedances and produced documentation of the high wind events, which is included as Attachment 1. Following is summary of that documentation.

In Luna County at Deming on April 15, 2003, wind speeds were sufficient to cause an exceedance of the PM10 standard at 160 $\mu g/m^3$. Wind speeds were equal to or greater than 20 mph for at least 14 hours, with a top wind speed of 40 mph at 11:50 AM.

In Luna County at Deming on June 8, 2003, wind speeds were sufficient to cause an exceedance of the PM10 standard, although winds measured at Deming did not exceed 40 mph. Wind speeds in Deming were equal to or greater than 10 mph for 6 hours, with wind speeds for 9 additional hours at 8 mph or 9 mph. Data from the National Weather Service indicate that there was "smoke or haze" in the area on June 8, 2003, and winds in southern New Mexico were often from the east, south, or east-southeast. This would indicate that much wind coming towards Deming on June 8, 2003 probably included dust from sources in Luna County, as well as other areas in southern New Mexico, west Texas, and Mexico. Winds ranging up to 29 mph were measured on June 8 at Las Cruces Airport and winds ranging up to 37 mph were measured on June 8 at Dripping Springs. Both of those locations are in Doña Ana County, immediately to the east of Luna County. The NMED concludes that the June 8, 2003 exeedance was caused by high winds, with moderate winds in Deming fed by stronger winds from the east and south.

NEAP and Stakeholders in Luna County

In response to these exceedances of the PM10 standard, and to avoid a PM10 nonattainment designation, NMED has been working with local stakeholders in development of this Natural Events Action Plan, outlined below in NEAP Elements 1 through 5. Stakeholders include Luna County, City of Deming, Bureau of Land Management, State Land Office, Natural Resources Conservation Service, and the New Mexico Department of Transportation. Stakeholder agreements are being developed with several of these stakeholders. Attachment 2 is a letter of support from Luna County and Attachment 3 is a letter of support from the City of Deming, indicating their interest in participating in development of the NEAP and control measures. Other stakeholders may be identified in the course of implementing the Luna County NEAP, and if so, adjustments will be made accordingly during the periodic reevaluations described in NEAP Element 5.

Below is a description of each of the elements of the Luna County Natural Events Action Plan.

NEAP Element 1: Public Education Programs

One purpose of the Luna County NEAP is to educate the public about the short-term and long-term harmful effects that high concentrations of PM10 could have on their health and inform the public that certain types of natural events affect the air quality of the area periodically and specific actions are being taken to minimize the health impacts of events.

Actions that have been taken to date to comprise the public education program include:

- Open Houses for the public have been held and will continue to be held in Luna County, featuring informational posters and handouts.

- Handouts distributed include a "Dust Storms and Health" brochure in English and Spanish, a "Particle Pollution and Your Health" brochure, the "Air Quality Guide for Particle Pollution", and the "Why is Dust a Public Health Issue?" fact sheet.

- Presentations and meetings have been held with Luna County and the City of Deming to explain the monitoring of PM10, violations of the federal standard, associated health risks, and the advantages of implementing a NEAP to avoid nonattainment.

- The local media has covered open houses and meetings.

NEAP Element 2: Minimize Public Exposure to High Concentrations of PM10 Due to Future Natural Events

The Natural Events Policy states that programs to minimize public exposure should: (a) identify the people most at risk, (b) notify the at-risk population that a natural event is imminent or currently taking place, (c) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM10, and (d) suggest precautions to take if exposure cannot be avoided.

It should be noted that dust storms are readily observable by the public. Most people, in deciding whether they should take precautions to protect their health during dust storms, will base their actions on their own direct observations of dust conditions and will discount an official advisory if it is contradicted by their own observations.

A public education campaign is the most effective means of heightening awareness of health hazards of high dust concentrations and informing susceptible individuals and their caregivers what precautions they should take when dust concentrations are high. To raise awareness and minimize public exposure, the actions outlined in the Public Education Programs (NEAP Element 1) will continue on a quarterly basis through the end of 2005 and on a less frequent basis afterwards. There will also be considerable outreach conducted through the process of working with local governments and stakeholders in accomplishing NEAP Elements 3 and 4.

NEAP Element 3: Abate or minimize appropriate contributing controllable sources of PM10.

There are several steps to determining which sources might need controls and in identifying appropriate control measures, or Best Available Control Measures (BACM):

(a) Identify sources of fugitive dust that are the result of human activities;

(b) For each type of source, determine whether it contributes significantly to the number or severity of PM10 exceedances during high wind episodes;

(c) For sources that contribute significantly to exceedances, identify candidate control measures for which effectiveness and feasibility have been demonstrated (if no appropriate measure has previously been identified for a particular kind of source, step 4 below is required). Measures previously shown to be effective for reducing windblown dust include paving or application of chemical dust suppressants to unpaved roads, parking lots and open areas; dust suppression at construction sites; use of conservation farming practices on agricultural lands; tree rows and other physical wind breaks; restricting recreational off-road vehicle activities; and use of surface coverings.

(d) Evaluate the effectiveness, technological feasibility, and cost of candidate control measures on a case-by-case basis and produce a rationale for selection of control measures;

(e) Implement the selected control measures and monitor their effectiveness.

Sources, their contributions to PM10 exceedances, and BACM will be identified and analyzed through June 2005. BACM will then be fully implemented by mid-April 2006. The Natural Events Policy states that BACM must be implemented for those contributing sources for which it has been defined within 3 years after the first NAAQS violation attributed to high wind events. In Luna County, this correlates to a BACM implementation date of April 15, 2006. The NMED anticipates that BACM requirements will most likely take the form of local ordinances. However, it should be noted that New Mexico is currently considering development of a dust control regulation that may apply statewide. If such a regulation is pursued, it will be considered and reported on during periodic reevaluations of the Luna County NEAP that are completed in accordance with NEAP Element 5.

In considering what dust control measures are reasonable, both cost and effectiveness should be taken into consideration. Local stakeholders and the State have considerable freedom in deciding what measures are reasonable under the local environmental and economic conditions.

If exceedances of the PM10 standard occur after the NEAP has been fully implemented, the State's documentation of natural events must include evidence that BACM was being implemented when the exceedances occurred.

NEAP Element 4: Identify, study and implement practical mitigating measures as necessary.

In the course of its implementation, the Luna County NEAP may include pilot tests of new emission reduction techniques to determine their effectiveness and technological and economic feasibility. As necessary, implementation of such techniques on sources will be as expeditious as practicable to most adequately protect public health.

NEAP Element 5: Periodically Reevaluate

Periodically reevaluation of the Luna County NEAP will occur with attention paid to:

(a) Conditions causing any exceedances of the PM10 standard in the area;

(b) Status of implementation of the NEAP; and

(c) Adequacy of the actions being implemented.

The State will reevaluate the Luna County NEAP at least every 5 years and make appropriate changes. More frequent evaluations may be performed if necessary for proper implementation of the NEAP.

Timeline for Future Steps

Below is a 2004 through 2009 timeline outlining NMED's commitments and future steps to achieve full implementation of the Luna County Natural Events Action Plan.

Luna County Natural Events Action Plan – Timeline to Full Implementation	
4th Quarter **2004**	Public education programs (NEAP Elements 1, 2)
	Sources and contributions identified (NEAP Element 3)
	BACM identified (NEAP Elements 3, 4)
1st and 2nd Quarters **2005**	Public education programs (NEAP Elements 1, 2)
	Sources and contributions identified (NEAP Element 3)
	BACM identified (NEAP Elements 3, 4)
3rd and 4th Quarters **2005**	BACM implemented (NEAP Elements 3, 4)
	Public education programs (NEAP Elements 1, 2)
1st Quarter **2006 through 2008**	BACM implemented (NEAP Elements 3, 4)
	Occasional public education programs (NEAP Elements 1, 2)
2009	First scheduled periodic reevaluation (NEAP Element 5), with reevaluations every 5 years thereafter

ATTACHMENT 1: Analysis of PM10 Exceedances, 2003, Luna County, New Mexico

Documentation of Natural Events: Particulate Matter Exceedances Caused by High Winds Chaves, Lea, and Luna Counties, New Mexico

Update for April – June 2003

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April 2004

INTRODUCTION

In a memorandum dated May 30, 1996, the Environmental Protection Agency (EPA) issued the Natural Events Policy (NEP) concerning violations of the PM_{10} ambient air quality standard that are caused by natural events such as high winds. This policy allows for ambient air quality monitoring data affected by natural events to be excluded from determinations of attainment status, if certain requirements are met.

One requirements of the NEP is that the state or local air quality agency provide adequate documentation to show that the exceedances were caused by natural events and are therefore to be noted as such in the EPA Aerometric Information Retrieval System (AIRS). The purpose of this update is to meet this requirement for documentation of PM_{10} exceedances that occurred during the current reporting period.

Particulate matter monitoring sites in Chaves, Lea, and Luna Counties are listed in Table 1. Previous reports documenting natural events for the period 1995 through 2002 should be consulted for more background information on PM_{10} exceedances in southern New Mexico caused by high winds. These reports are available on the New Mexico Environment Department's website at www.nmenv.state.nm.us.

Table 1: PM_{10} monitoring sites in Chaves, Lea, and Luna Counties

Site (City)	County	Site ID (AIRS Number)	Latitude	Longitude
Roswell	Chaves	350050005	33.396944	-104.523611
Hobbs	Lea	350250007	32.724722	-103.128611
Deming	Luna	350290001	32.267222	-107.755278

EXCEEDANCES CAUSED BY HIGH WINDS

Table 2 lists the exceedances occurring during the current reporting period and which we have determined to be caused by high winds. We consider the occurrence of wind speed of at least than 18 meters per second (m/s), or 40 miles per hour (mph), to be sufficient for causing one or more exceedances. This wind speed criterion was determined by analysis of data for 101 exceedances that occurred during 1999 and 2000 and were caused by high winds. Approximately 90 percent of these exceedance days had wind speeds greater than 18 m/s. For the exceedances that do not meet the criterion of wind speeds of at least 18 m/s, we provide additional evidence and analysis to document that they were caused by high winds. Such exceedances can result from wind events in which wind speeds are moderate (8 to 18 m/s) but strong enough to raise dust and several hours in duration. Others can result from localized high winds that raise clouds of windblown dust, which are then carried to a monitoring site(s) by winds of lower speeds.

Table 2: PM_{10} exceedances documented in this report as results of high winds.				
Date	**Site**	**County**	**PM_{10} (μm^3)**	**Wind Speeds ≥ 18 m/s or 40 mph**
15-Apr-2003	Roswell	Chaves	235	Yes
15-Apr-2003	Hobbs	Lea	387	Yes
15-Apr-2003	Deming	Luna	160	Yes
08-Jun-2003	Deming	Luna	181	See additional explanation.

In Chaves County at Roswell on April 15, 2003, wind speeds were sufficient to cause an exceedance of the PM_{10} standard at 235 μm^3. Wind speeds were in excess of 20 mph for 13 consecutive hourly measurements (10:00 AM through 10:00 PM), with wind speeds equal to or greater than 40 mph for 5 of those 13 hours. See Appendix A for supporting documents for this exceedance.

In Lea County at Hobbs on April 15, 2003, wind speeds were sufficient to cause an exceedance of the PM_{10} standard at 387 μm^3. Wind speeds were in excess of 20 mph for 13 consecutive hourly measurements (10:00 AM through 10:00 PM), with wind speeds equal to or greater than 40 mph for 2 of those 13 hours. See Appendix B for supporting documents for this exceedance.

In Luna County at Deming on April 15, 2003, wind speeds were sufficient to cause an exceedance of the PM_{10} standard at 160 μm^3. Wind speeds were in equal to or greater than 20 mph for at least 14 hours, with wind speed equal to 40 mph at 11:50 AM. See Appendix C for supporting documents for this exceedance.

See Appendix D for additional supporting documentation for the PM_{10} exceedances on April 15, 2003.

Additional Explanation for Exceedance with Wind Speeds < 40 mph

In Luna County at Deming on June 8, 2003, wind speeds were sufficient to cause an exceedance of the PM_{10} standard, although winds measured at Deming did not exceed 40 mph. Wind speeds in Deming were equal to or greater than 10 mph for 6 hours, with wind speeds for 9 additional hours at 8 mph or 9 mph. Data from the National Weather Service indicate that there was "smoke or haze" in the area on June 8, 2003 (see http://www.srh.noaa.gov/elp/climat/dmnjun2003.shtml), which can be a categorization of blowing dust. On June 8, 2003, winds in southern New Mexico were often from the east, south, or east-southeast; see the past weather conditions for Las Cruces Airport (LRU) and Dripping Springs (LOMN5) near Las Cruces in Appendix E for more information. This would indicate that much wind coming towards Deming on June 8, 2003 probably include dust from sources in Luna County, as well as other areas in southern New Mexico, west Texas, and Mexico. Winds ranging up to 29 mph were measured on June 8 at Las Cruces Airport (LRU) and winds ranging up to 37 mph were measured on June 8 at Dripping Springs (LOMN5). We conclude that the June 8, 2003 exeedance was caused

by high winds, with moderate winds in Deming fed by stronger winds from the east and south. See Appendix E for other supporting documentation.

APPENDIX C

Supporting documents for the April 15, 2003 PM_{10} Exceedance at Deming (DMN).

Past Weather Conditions for DMN

Observations prior to selected time: April 15, 2003 - 23:59 MDT

Weather Conditions at April 15, 2003 - 23:50 MDT

	23:50	24 Hour Max	24 Hour Min
Temperature	48.0° F	69.1 at 0:50	48.0 at 23:50
Dew Point	25.0° F	46.4 at 7:50	19.9 at 17:50
Relative Humidity	40%	67 at 7:50	21 at 17:50
Wind Speed	23 mph from NW	40 at 10:50	9 at 5:50
Wind Gust	29 mph	53 at 10:50	26 at 20:50
Sea level pressure	29.95 in	29.97 at 21:50	29.67 at 5:50
Altimeter	30.08 in	30.10 at 21:50	29.87 at 5:50
Weather conditions	mostly clear	-	-
Visibility	10.00 miles	10.00 at 0:50	0.50 at 10:55

Precipitation variable accumulated	Since Midnight	In 24 Hours
Precipitation 1hr	0.02"	0.02"
Precipitation 6hr	0.02"	0.02"

Tabular Listing: April 14, 2003 - 23:59 through April 15, 2003 - 23:59 MDT

Time (MDT)	Temperature °F	Dew Point °F	Relative Humidity %	Wind Speed mph	Wind Gust mph	Wind Direction	Sea level pressure in	Altimeter in	Pressure Tendency in	Weather conditions	Visibility miles	Precipitation 1hr in	Precipitation 3hr in	Precipitation 6hr in
23:50	48.0	25.0	40	23	29	NW	29.95	30.08		mostly clear	10.00			
22:50	48.2	23.0	37	20	26	WNW	29.95	30.08		mostly clear	10.00			
21:50	50.0	24.8	37	15		W	29.97	30.10		clear	10.00			
20:50	53.1	24.1	32	18	26	WNW	29.92	30.06		mostly clear	10.00			
19:50	55.4	21.2	26	24	32	WNW	29.89	30.02		mostly clear	10.00			
18:50	59.0	23.0	25	20	29	W	29.87	30.01		clear	10.00			
17:50	60.1	19.9	21	26	32	W	29.85	30.00		haze	6.00			0.00
16:50	60.8	21.2	22	25	36	W	29.83	29.99		clear	9.00			
15:50	60.8	21.2	22	28	41	W	29.83	30.00		haze	4.00			
14:50	59.0	28.9	32	26	40	W	29.85	30.01		haze	5.00		0.00	
14:40	59.0	28.4	31	30	44	W		30.01		haze	3.00			
14:10	59.0	30.2	33	37	45	W		30.01		haze	2.00			
13:50	57.2	30.2	36	32	43	WNW	29.85	30.01		haze	3.00	0.00		
13:45	57.2	32.0	38	29	44	W		30.00		haze	2.50			
13:35	57.2	32.0	38	35	46	W		30.00		haze	1.50			
12:50	55.4	35.6	47	37	52	W	29.81	29.97		haze	0.50	0.00		
12:05	62.6	23.0	22	39	53	WSW		29.92		haze	0.50			
11:55	64.4	26.6	24	39	52	WSW		29.91		haze	0.75			
11:50	64.9	28.0	25	40	51	WSW	29.73	29.91	-8.86	haze	1.25			0.02
11:15	64.4	30.2	28	28	41	SW		29.90		haze	4.00			
11:05	66.2	30.2	26	32	45	SW		29.90		haze	2.00			

10:55	64.4	30.2	28	31	53	WSW		29.89	haze	0.50		
10:50	64.4	32.0	30	40	53	WSW	29.70	29.89	haze	0.75		
9:50	62.6	39.2	42	28	39	W	29.71	29.90	mostly clear	10.00	0.00	
9:25	60.8	42.8	51	31	41	WSW		29.88	lt rain	8.00		
9:10	62.6	46.4	55	24	38	WSW		29.88	clear	10.00		
8:50	60.1	46.0	60	21	28	WSW	29.70	29.88	mostly clear	10.00	0.00	0.02
7:50	57.2	46.4	67	18	28	WSW	29.72	29.89	mostly cloudy	10.00	0.02	
6:50	59.0	44.6	59	9		WSW	29.68	29.87	overcast	10.00		
5:50	61.0	45.0	56	9		SSW	29.67	29.87	mostly cloudy	10.00		
4:50	62.6	44.6	52	12		SSW	29.69	29.88	mostly clear	10.00		
3:50	64.4	44.6	49	16		SSW	29.68	29.90	mostly cloudy	10.00		
2:50	66.0	44.1	45	17		SSW	29.70	29.92	clear	10.00		
1:50	68.0	44.6	43	17	28	SSW	29.72	29.95	mostly clear	10.00		
0:50	69.1	42.1	38	21		SSW	29.76	29.97	mostly clear	10.00		

DEMING MUNICIPAL DMN

Wind Speed in mph & Wind Direction for 14 days // Apr 5, 2003 - Apr 18, 2003

Local Hour of Day	Apr 05	Apr 06	Apr 07	Apr 08	Apr 09	Apr 10	Apr 11	Apr 12	Apr 13	Apr 14	Apr 15	Apr 16	Apr 17	Apr 18	Apr 19
00	5 /SE	15 /W	8 /W	22 /NE	14 /E	8 /NE	7 /SW	9 /W	5 /W	12 /W	9 /S	23 /NW	-	14 /W	9 /W
01	6 /SW	15 /W	9 /W	18 /NE	10 /E	8 /NE	9 /SW	8 /W	0	9 /W	21 /SW	16 /NW	5 /W	9 /W	-
02	7 /SW	-	6 /S	28 /N	7 /NE	0	7 /W	8 /W	5 /S	7 /W	17 /S	16 /NW	5 /NW	10 /W	-
03	8 /W	15 /NW	7 /SW	17 /E	13 /NE	8 /NE	8 /SW	6 /S	0	12 /W	17 /S	10 /NW	5 /W	9 /W	-
04	10 /NW	23 /NW	6 /S	16 /E	5 /E	8 /NE	7 /SW	5 /W	0	9 /W	16 /S	5 /NW	6 /NW	10 /W	-
05	7 /W	17 /NW	7 /W	15 /E	12 /NE	8 /N	7 /W	9 /SW	5 /W	9 /NW	12 /S	7 /SW	7 /NW	14 /W	-
06	5 /SW	16 /W	9 /W	15 /NE	10 /NE	0	9 /SW	7 /SW	6 /W	7 /SE	9 /SW	5 /W	0	12 /W	-
07	5 /W	9 /W	8 /W	15 /E	10 /E	0	9 /SW	5 /SW	6 /W	10 /W	9 /SW	3 /W	0	9 /SW	-
08	6 /SW	7 /SW	9 /W	18 /NE	8 /E	0	7 /SW	5 /SW	8 /W	0	18 /SW	0	0	6 /SW	-
09	-	13 /NW	8 /NW	18 /NE	14 /E	7 /NE	9 /W	6 /SW	0	0	21 /W	3 /SE	0	7 /NW	-
10	12 /SW	13 /W	10 /W	21 /E	15 /E	9 /NE	16 /W	7 /SW	-	-	28 /W	-	-	15 /W	-
11	18 /SW	8 /SW	8 /W	16 /E	13 /E	9 /E	16 /W	6 /S	8 /SW	-	31 /SW	0	9 /W	18 /W	-
12	10 /SW	15 /W	-	16 /E	13 /E	-	14 /W	-	13 /SW	-	39 /SW	0	10 /S	17 /W	-
13	25 /SW	21 /W	-	14 /E	10 /E	6 /SE	12 /NW	-	14 /SW	17 /SW	37 /W	8 /S	15 /W	17 /W	-
14	28 /SW	20 /W	6 /SW	16 /E	13 /E	-	13 /NW	12 /SW	18 /SW	13 /SW	32 /W	9 /SW	16 /SW	18 /W	-
15	28 /SW	17 /W	9 /W	16 /E	7 /E	6 /S	13 /W	12 /SW	17 /W	10 /SW	26 /W	9 /SW	32 /SW	21 /W	-
16	25 /SW	21 /W	8 /SW	12 /E	-	-	10 /W	14 /SW	20 /SW	14 /SW	28 /W	9 /SW	30 /SW	25 /SW	-
17	30 /SW	17 /W	14 /W	15 /E	9 /E	5 /SW	14 /W	-	16 /W	10 /W	25 /W	10 /W	31 /SW	22 /W	-
18	24 /W	24 /W	17 /W	14 /E	14 /E	6 /S	10 /W	12 /W	17 /SW	21 /SW	26 /W	10 /W	25 /SW	16 /W	-
19	26 /W	15 /W	15 /W	12 /E	9 /SE	6 /S	16 /W	10 /SW	15 /W	21 /SW	20 /W	6 /W	26 /W	18 /W	-
20	21 /W	13 /W	9 /W	10 /E	6 /SE	7 /S	9 /SW	7 /SW	10 /SW	12 /SW	24 /W	0	22 /W	16 /W	-
21	15 /NW	7 /W	10 /NW	9 /E	3 /E	6 /S	9 /W	7 /SW	14 /W	10 /SW	18 /W	0	23 /W	13 /W	-
22	10 /W	12 /W	10 /N	8 /SE	7 /NE	7 /S	9 /NW	0	9 /W	7 /SW	15 /W	0	18 /W	12 /W	-
23	7 /W	8 /W	25 /NE	9 /E	8 /NE	9 /SW	8 /NW	5 /SW	8 /W	9 /S	20 /W	3 /S	15 /W	10 /W	-

APPENDIX D

Supporting documents for the April 15, 2003 PM_{10} exceedances at Roswell (ROW), Hobbs (HOB), and Deming (DMN).


Aqua/MODIS 4/15/2003 2:20 p.m. MD
White Sands
El Paso
Dust
Source
Courtesy of the National Aeron

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2003 Air Pollution Events

West Texas Dust Storm April 15, 2003

Images

- Satellite Animation
- True-Color Satellite Image
- True-Color Satellite Comparison 4/15/2003 vs 4/16/2003
- Web Cam Animation from Chelsea St.
- Web Cam Animation from the McDonald Observatory
- Surface Weather Analysis 1:00 p.m. MDT
- C12/C37 PM10
- C12/C40 PM2.5
- West Texas PM2.5
- C37 PM10 and Visibility
- C12 PM10 and Wind Gusts
- C37 PM10 and Wind Gusts
- C40 PM2.5 and Wind Gusts
- C12 PM10 and PM2.5
- C12 Temperature and Humidity
- C12 Wind

Description

The worst dust storm since April of 2001 swept across West Texas on Tuesday, April 15, 2003. High winds associated with a strong low pressure system centered in Colorado kicked up large plumes of dust from parts of northern Mexico, southern New Mexico, and West Texas. The University of Texas at El Paso (UTEP) Continuous Air Monitoring Station (CAMS) 12 recorded a peak one-hour PM10 average of 4,724 micrograms per cubic meter (µg/m3) for the hour from 1:00 to 2:00 p.m. Mountain Daylight Time (MDT) and had a 24-hour average of 718 µg/m3. The Ascarate Park CAMS 37 had a peak one-hour PM10 average of 4,710 µg/m3 for the hour from 1:00 to 2:00 p.m. MDT and a 24-hour average of 715 µg/m3. The daily average PM10 at both sites rated as **Hazardous** on the U.S. Environmental Protection Agency (EPA) Air Quality Index (AQI) scale.

The satellite animation shows dust originating in northern Mexico blowing across much of West Texas and parts of southern New Mexico. The largest dust plume originates on the north side of a large dry lake bed about 50

miles west-southwest of El Paso as shown in the true-color satellite image (courtesy of the National Aeronautic and Space Administration).

The El Paso Airport reported visibility as low as to 1/8 mile with blowing dust at 1:03 p.m. MDT and a peak wind gust of 66 miles per hour (mph) at 1:09 p.m. MDT. The Guadalupe Pass automatic weather station reported a mimimum visibility of 1/2 mile at 3:29 p.m. MDT and a peak wind gust of 98 mph at 1:54 p.m. MDT. The highest peak wind gust measured in the El Paso air monitoring network was 68 mph at Lower Valley CAMS 36 at 1:35 p.m. MDT. Two additional sites measured wind gusts above 60 mph. McDonald Observatory CAMS 317 to the east of El Paso measured a maximum wind gust of 61 mph at 6:05 p.m. Central Daylight Time (CDT). Ascarate Park CAMS 37 reported visibilities less than 5 miles from 10:10 a.m. to 4:35 p.m. MDT with a minimum visibility of 0.4 mile at 12:40 p.m. and 1:05 p.m. MDT.

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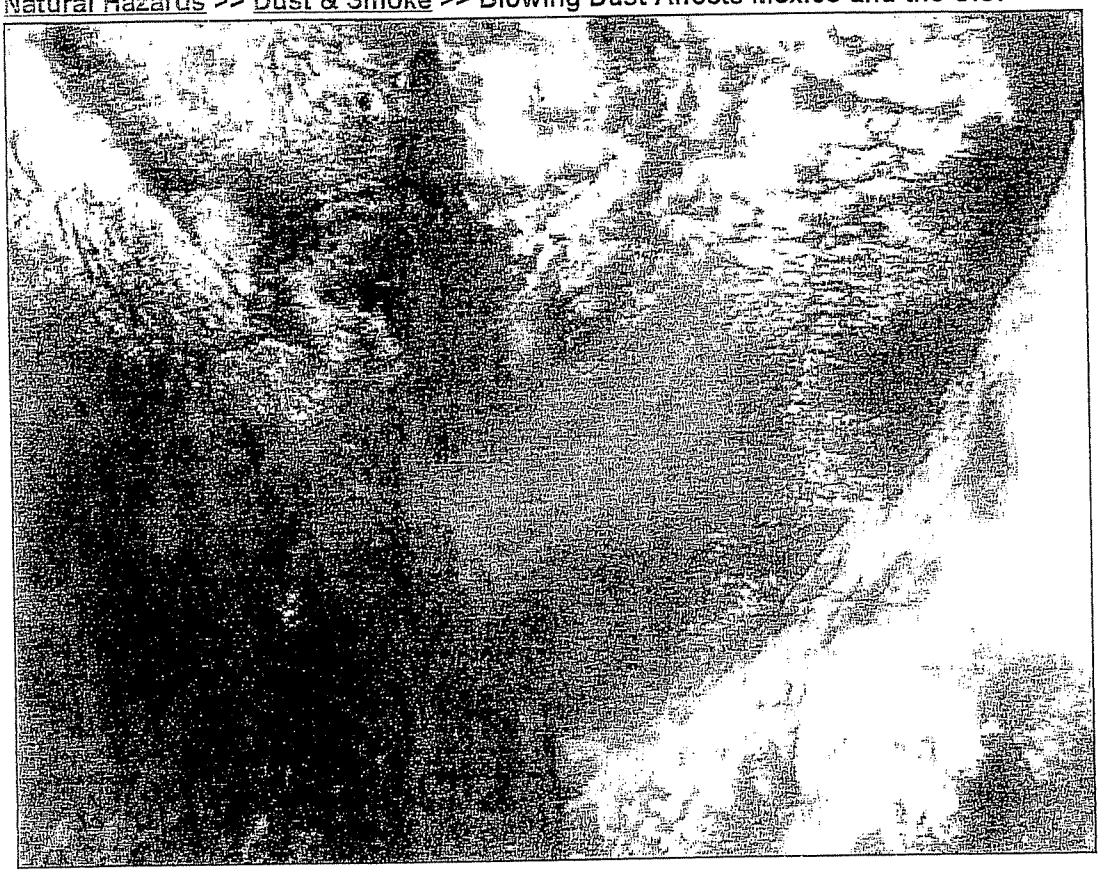

Click here to view high-resolution version (2.14MB)

Blowing Dust Affects Mexico and the U.S.

On Wednesday, April 15, 2003, strong winds blew dust from northern Mexico up into the United States, affecting Texas and New Mexico. In New Mexico at least two people were killed when blowing dust reduced visibility and caused a multiple car accident. This true-color Moderate Resolution Imaging Spectroradiometer (MODIS) of the storm was captured by the Aqua satellite, and it shows the blowing dust centered in the image.

Image courtesy Liam Gumley, based on data acquired by direct broadcast and processed at Space Science and Engineering Center, University of Wisconsin-Madison.

Recommend this image to a friend

Where in the World

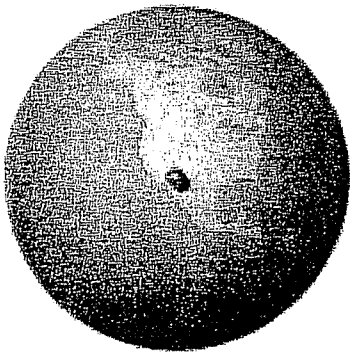

Image Acquired

April 15, 2003

Satellite & Sensor

Aqua- MODIS

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Responsible NASA official: Yoram Kaufman

Las Cruces Sun-News

Strong winds cause minor damage

By Steve Ramirez

Wednesday, April 16, 2003 -

Sun-News report er

Strong westerly winds, which included peak gusts in excess of 126 mph Tuesday at San Augustin Pass on U.S. Highway 70, caused widespread, but minimal, damage throughout Las Cruces and southern New Mexico.

Trees were uprooted, branches on older trees were blown off and littered city streets, and traffic lights at some intersections malfunctioned during Tuesday's windstorm. Motorists reported minor damage to vehicles as a result of trees and branches falling on vehicles.

"It clipped the side of my truck pretty good," Ramon Gomez said of some tree branches that hit his 1991 Chevy pickup truck as he was driving on Melendres Street, near Brown Road. "I was just driving along when, whap, part of this tree hit the passenger side of my truck. It startled me and I swerved, but there wasn't anyone else on the road. So thankfully, it wasn't any worse than it was."

The broken tree branch was about four feet long and slightly scratched the right door to the truck. "Depending on how much it's going to cost me, I might just get some rubbing compound or scratch remover," Gomez said.

Traffic lights at the intersections of Telshor Boulevard and Lohman Avenue, and Madrid Avenue and Alameda Boulevard malfunctioned late Tuesday morning.

Also, all high school sporting events were postponed in Las Cruces.

Recorded peak gusts within Las Cruces reached 46 mph early Tuesday afternoon and visibility was reduced to about half a mile.

Milo Porterfield was walking toward Las Cruces' main post office when an especially strong gust literally pushed him back about four feet.

"That was the dangdest thing. Nothing like that has ever happened to me," said a surprised Porterfield. "I know I'm a little guy, only 5-(foot)-2 and about 90 pounds, but no wind has ever been able to do that to me."

The winds uprooted and damaged several trees, including one located outside a home on Westmoreland Avenue.

"It split the tree in my backyard into three pieces," said a woman who identified herself only as Ms. Marta. "The winds came up, amazingly, about 12:30 (p.m.) outside of my house. It ripped one off one whole side of the tree, and about an hour later it split another piece.

"It kind of made me sad because it was the only tree in the yard that was surviving. I felt sad for my 7-year-old daughter, too. She loved that tree and told us that it was her tree."

While the winds closed Interstate 10, from Las Cruces west to the Arizona state line, U.S. 70 remained open.

Larry Furrow, White Sands spokesman, said the sustained wind speed at San Augustin Pass was 88.5 mph Tuesday with a peak gust of 126.5 mph, which happened about 2:30 p.m. Tuesday. Although no formal records are kept of wind speeds at the pass, Furrow said the previous high gust at the pass was 110.4 mph in January 1996.

San Augustin Pass is located on U.S. 70, about 18 miles east of Las Cruces. The elevation at the pass is slightly more than 5,700 feet above sea level.

"To try to put that into some kind of perspective, it's considered a hurricane when wind gusts reach 75 mph," Furrow said. "As a result of the winds, the commanding general (Brig. Gen. William F. Engel) advised the work force to remain on post until 5 p.m."

A "Phase Three Weather Warning," which is considered life threatening by White Sands officials was issued early Tuesday afternoon and remained in effect until 5 p.m. Furrow said weather warnings at White Sands are classified in three phases, with the third phase being the most severe.

A Phase Three warning includes severe, damaging winds greater than 85 mph, flash flood, tornado or severe thunderstorm warnings.

Winds at pass blew out the windshield of a White Sands police vehicle and six parked vehicles at White Sands' sustained minor wind damage.

The stiff winds also delayed a school bus from leaving Oñate High School with students who live at White Sands. Because the Phase Three Warning did not expire until 5 p.m. Tuesday, the bus did not leave for White Sands until that time.

The winds also caused intermittent outages of some radio and television stations in Las Cruces and El Paso.

A wind advisory for all of southern New Mexico and far west Texas remained in effect until midnight Tuesday. According to meteorologists with the National Weather Service a strong cold front pushed its way across the western one-third of New Mexico Tuesday afternoon, which triggered the winds. Another cold front is expected to pass through the region on Friday, which will bring windy weather again.

But daytime wind speeds today are predicted to be considerably less than Tuesday's, with winds today from the northwest at 5 mph to 15 mph. Winds are expected to shift to the southwest later today.

Partly cloudy skies, breezy conditions, and daytime high temperatures in the mid 70s are in the forecast for Thursday. But winds are expected to return Friday, with partly cloudy skies and temperatures in the lower 70s.

Weather conditions for Saturday and Sunday appear favorable, for now. Skies should be partly cloudy, and winds will be breezy on Saturday, with daytime highs in the lower 70s. It is expected to remain partly cloudy on Sunday with the high temperature near 70.

Steve Ramirez can be reached at sramirez@lcsun-news.com .

Borderland Wednesday, April 16, 2003

60-mph winds cause accidents, damage

Erica Molina and Daniel Borunda
El Paso Times

Tuesday's strong winds, which topped 120 mph near White Sands Missile Range, caused problems throughout the region, including two traffic deaths on a New Mexico highway and the destruction of a church under construction in Tornillo.

Victor Calzada / El Paso Times
Ricardo Davila, holding his daughter Fatima Davila, 2, looked at an uprooted tree outside the Loma Apartments, located on the 2600 block of Sacramento, where they live. The tree was knocked over Tuesday by high winds that hit the region.

The sandstorm reduced visibility and caused a multiple-car pileup that killed an elderly couple from Bayard, N.M., on U.S. 180 between Deming and Silver City, state police said.

The Rev. Silas Cortez, pastor of Apostolic Church in Tornillo, said one wall remains standing of the church building, which was scheduled to be completed at the end of July.

"Everybody was there when it fell, and they were crying," Cortez said. "Thank God nobody was hurt."

The winds struck Tuesday morning as the sky turned brown from the blowing dust. The National Weather Service issued a high-wind advisory for El Paso at 5 a.m., and it was upgraded to a warning about 11 a.m., indicating that the sustained winds of at least 40 mph were accompanied by gusts of around 60 mph. The wind storm was the strongest of the year with gusts topping hitting 98 mph in Guadalupe Pass east of El Paso, the weather service said.

The wind ripped the roof off a house owned by the El Paso Housing Authority in the 2600 block of Sacramento, and an 18-wheeler overturned on Trans Mountain Road and could not be righted for hours because of the winds.

"This could be dangerous for high-profile vehicles, especially in cross-wind conditions," said Michael Langevein, a meteorologist with the National Weather Service in Santa Teresa.

The New Mexico Highway and Transportation Department closed off several major roads because of winds, including Interstate 10 from Las Cruces to the Arizona state line. Many flights were delayed at El Paso International Airport because of the bad weather, said Pat Abeln, director of aviation.

"The wind can reduce visibility to zero," Langevein said.

Several areas throughout El Paso had electrical outages, and crews

worked continuously to fix the problems, El Paso Electric Co. spokeswoman Teresa Souza said.

Some area high-school baseball and softball teams found their games canceled, and four other baseball games were canceled at the Sportspark on the East Side.

Today's weather is expected to be sunny with light winds and a high in the mid-70s. Winds are expected to return Friday.

Erica Molina may be reached at emolina@elpasotimes.com; Daniel Borunda may be reached at dborunda@elpasotimes.com

Las Cruces Sun-News

10-vehicle pileup in heavy dust kills two, injures five

By Kevin Buey

Wednesday, April 16, 2003 -

For the Sun-News

High winds and blowing dust are blamed for a 10-car pileup between Deming and Silver City that killed two people and injured five Tuesday morning.

State Police closed main roads in southwest New Mexico for about five hours.

"All we can determine is one car was stopped in the road and was struck by another, which caused a chain reaction," State Police Capt. Scott Ford said.

There were 10 vehicles involved in all, he said.

Names of those killed were not released pending notification of relatives.

Four people were taken to Mimbres Memorial Hospital in Deming and the fifth was airlifted to Thomason Hospital in El Paso, State Police Lt. Jerry Anderson said.

Their injuries ranged from minor to severe, but conditions were not known and names were being withheld until relatives could be notified.

Kevin Buey is a reporter for the Deming Headlight. The Associated Press contributed to this story.

APPENDIX E

Supporting documents for the June 8, 2003 PM_{10} exceedance at Deming (DMN), including past weather conditions from Las Cruces Airport (LRU) and Dripping Springs (LOMN5).

Past Weather Conditions for DMN

Observations prior to selected time: June 08, 2003 - 23:59 MDT

Weather Conditions at June 8, 2003 - 23:50 MDT

	23:50	24 Hour Max	24 Hour Min
Temperature	87.1° F	95.0 at 16:50	64.4 at 3:50
Dew Point	37.0° F	51.8 at 7:50	24.8 at 3:50
Relative Humidity	17%	53 at 7:50	15 at 16:50
Wind Speed	10 mph from SSW	16 at 5:50	0 at 3:50
Sea level pressure	29.65 in	29.79 at 9:50	29.62 at 18:50
Altimeter	29.92 in	30.03 at 8:50	29.87 at 18:50
Weather conditions	mostly clear	-	-
Visibility	10.00 miles	10.00 at 0:50	10.00 at 0:50

Tabular Listing: June 7, 2003 - 23:59 through June 08, 2003 - 23:59 MDT

Time(MDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality control	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph			in	in		miles
23:50	87.1	37.0	17	10	SSW	OK	29.65	29.92	mostly clear	10.00
22:50	80.6	35.6	20	6	SSW	OK	29.66	29.91	mostly clear	10.00
21:50	82.4	35.6	19	5	SSE	OK	29.65	29.90	mostly clear	10.00
20:50	84.9	37.9	19	7	SSE	OK	29.63	29.88	mostly clear	10.00
19:50	89.6	37.4	16	5	SSE	OK	29.63	29.88	clear	10.00
18:50	91.4	39.2	16	8	S	OK	29.62	29.87	clear	10.00
17:50	93.0	39.0	15	10	SW	OK	29.62	29.88	clear	10.00
16:50	95.0	39.2	15	10	SW	OK	29.64	29.89	clear	10.00
15:50	93.2	39.2	15	8	ESE	OK	29.66	29.90	clear	10.00
14:50	91.9	41.0	17	8	ESE	OK	29.68	29.93	clear	10.00
13:50	91.4	42.8	19	6		OK	29.71	29.96	clear	10.00
12:50	87.8	44.6	22	5		OK	29.74	29.99	clear	10.00
11:50	84.9	48.0	28	8	E	OK	29.77	30.01	clear	10.00
10:50	80.6	48.2	32	7		OK	29.79	30.02	clear	10.00
9:50	77.0	48.2	36	12	E	OK	29.79	30.03	clear	10.00
8:50	73.9	50.0	43	12	E	OK	29.79	30.03	clear	10.00
7:50	69.8	51.8	53	9	E	OK	29.77	30.02	clear	10.00
6:50	66.2	46.4	49	9	ENE	OK	29.75	30.00	clear	10.00
5:50	66.9	46.0	47	16	E	OK	29.70	29.95	mostly clear	10.00
4:50	64.4	26.6	24	7	ESE	OK	29.68	29.93	mostly clear	10.00
3:50	64.4	24.8	22	0		OK	29.66	29.91	mostly clear	10.00
2:50	70.0	26.1	19	9	NW	OK	29.63	29.89	mostly clear	10.00
1:50	71.6	24.8	17	8	NW	OK	29.64	29.90	mostly clear	10.00
0:50	70.0	27.0	20	9	WNW	OK	29.65	29.90	mostly clear	10.00

NOAA Cooperative Institute for Regional Prediction

Past Weather Conditions for LOMN5

Observations prior to selected time: June 08, 2003 - 23:59 MDT

Weather Conditions at June 8, 2003 - 23:10 MDT

	23:10	24 Hour Max	24 Hour Min
Temperature	73.0° F	88.0 at 17:10	64.0 at 6:10
Dew Point	39.7° F	39.7 at 23:10	14.8 at 1:10
Relative Humidity	30%	35 at 6:10	10 at 1:10
Wind Speed	22 mph from E	22 at 23:10	2 at 0:10
Wind Gust	36 mph	37 at 22:10	8 at 9:10
Solar Radiation	0.0 W/m*m	1021.0 at 13:10	0.0 at 0:10
Fuel Temperature	73.0° F	105.0 at 15:10	64.0 at 7:10

Precipitation accumulated since midnight: 0.00", in 24 hours: 0.00"

Tabular Listing: June 7, 2003 - 23:59 through June 08, 2003 - 23:59 MDT

Time(MDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Gust	Wind Direction	Quality control	Solar Radiation	Precipitation accumulated	Fuel Temperature
	° F	° F	%	mph	mph			W/m*m	in	° F
23:10	73.0	39.7	30	22	36	E	OK	0.0	2.66	73.0
22:10	75.0	31.2	20	20	37	ESE	OK	0.0	2.66	75.0
21:10	79.0	24.0	13	9	16	ESE	OK	0.0	2.66	79.0
20:10	80.0	24.7	13	4	13	SSE	OK	52.0	2.66	80.0
19:10	86.0	27.5	12	6	21	SW	OK	208.0	2.66	90.0
18:10	88.0	26.9	11	7	17	WSW	OK	340.0	2.66	95.0
17:10	88.0	31.0	13	7	19	SE	OK	556.0	2.66	98.0
15:10	87.0	28.2	12	7	21	W	OK	965.0	2.66	105.0
14:10	86.0	37.5	18	8	17	WNW	OK	1021.0	2.66	100.0
13:10	82.0	38.2	21	6	13	WSW	OK	1021.0	2.66	98.0
11:10	78.0	37.2	23	4	11	E	OK	852.0	2.66	91.0
10:10	75.0	36.8	25	3	9	W	OK	618.0	2.66	87.0
9:10	74.0	37.9	27	6	8	WSW	OK	483.0	2.66	82.0
8:10	70.0	36.3	29	3	22	NNE	OK	241.0	2.66	69.0
7:10	66.0	36.8	34	11	33	E	OK	29.0	2.66	64.0
6:10	64.0	35.8	35	20	33	ESE	OK	1.0	2.66	65.0
5:10	67.0	35.4	31	19	31	ESE	OK	0.0	2.66	65.0
4:10	69.0	27.4	21	9	17	ESE	OK	0.0	2.66	69.0
3:10	69.0	23.7	18	4	19	ESE	OK	0.0	2.66	66.0
2:10	73.0	25.6	17	8	14	ESE	OK	0.0	2.66	73.0
1:10	75.0	14.8	10	5	14	N	OK	0.0	2.66	74.0
0:10	77.0	18.5	11	2	14	N	OK	0.0	2.66	72.0

NOAA Cooperative Institute for Regional Prediction

Past Weather Conditions for LRU

Observations prior to selected time: June 08, 2003 - 23:59 MDT

Weather Conditions at June 8, 2003 - 23:50 MDT

	23:50	24 Hour Max	24 Hour Min
Temperature	78.8° F	93.2 at 15:10	66.2 at 6:30
Dew Point	55.4° F	55.4 at 23:50	28.4 at 1:10
Relative Humidity	45%	60 at 6:10	14 at 19:10
Wind Speed	14 mph from S	15 at 23:10	0 at 4:30
Wind Gust	23 mph	29 at 23:30	16 at 6:10
Altimeter	29.99 in	30.06 at 9:10	29.90 at 17:50
Weather conditions	clear	-	-
Visibility	10.00 miles	10.00 at 0:30	7.00 at 22:30

Tabular Listing: June 7, 2003 - 23:59 through June 08, 2003 - 23:59 MDT

Time(MDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Gust	Wind Direction	Quality control	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph	mph			in		miles
23:50	78.8	55.4	45	14	23	S	OK	29.99	clear	10.00
23:30	80.6	53.6	39	15	29	SSE	OK	29.98	clear	10.00
23:10	80.6	53.6	39	15	18	SSE	OK	29.97	clear	10.00
22:50	82.4	51.8	35	9	17	SSE	OK	29.97	clear	7.00
22:30	82.4	46.4	28	12	22	SSE	OK	29.97	clear	7.00
22:10	84.2	37.4	19	8		S	OK	29.95	clear	10.00
21:50	84.2	37.4	19	7		S	OK	29.95	partly cloudy	10.00
21:30	84.2	37.4	19	8		S	OK	29.94	partly cloudy	10.00
21:10	84.2	35.6	18	7		S	OK	29.94	partly cloudy	10.00
20:50	86.0	35.6	17	5		SW	OK	29.93	partly cloudy	10.00
20:30	87.8	35.6	16	7		SW	OK	29.93	partly cloudy	10.00
20:10	87.8	35.6	16	8		WSW	OK	29.92	clear	10.00
19:50	91.4	37.4	15	5		W	OK	29.91	clear	10.00
19:30	93.2	37.4	14	9	18	W	OK	29.91	partly cloudy	10.00
19:10	93.2	37.4	14	6		W	OK	29.90	clear	10.00
18:50	93.2	39.2	15	3		W	OK	29.90	clear	10.00
18:30	93.2	39.2	15	5		SW	OK	29.90	clear	10.00
18:10	91.4	39.2	16	8		SSW	OK	29.90	clear	10.00
17:50	93.2	39.2	15	9		SSW	OK	29.90	clear	10.00
17:30	93.2	41.0	16	9		SSW	OK	29.91	clear	10.00
17:10	93.2	41.0	16	13	16	SSW	OK	29.92	clear	10.00
16:50	93.2	42.8	18	8		WSW	OK	29.93	clear	10.00
16:30	93.2	42.8	18	10		SSE	OK	29.94	clear	10.00
16:10	93.2	44.6	19	6		S	OK	29.94	partly cloudy	10.00
15:50	93.2	44.6	19	6		SSE	OK	29.95	clear	10.00
15:30	93.2	44.6	19	8		SW	OK	29.95	clear	10.00
15:10	93.2	46.4	20	6		WSW	OK	29.97	partly cloudy	10.00
14:50	91.4	48.2	23	9		S	OK	29.98	clear	10.00
14:30	91.4	48.2	23	9	17	SE	OK	29.99	clear	10.00
14:10	89.6	48.2	24	6		S	OK	29.99	clear	10.00

13:50	89.6	48.2	24	8	17	S	OK	30.00	clear	10.00
13:30	87.8	50.0	27	12	17	SSE	OK	30.01	clear	10.00
13:10	87.8	50.0	27	7		SE	OK	30.02	clear	10.00
12:50	86.0	50.0	29	6	16	S	OK	30.03	clear	10.00
12:30	84.2	51.8	33	10		S	OK	30.03	clear	10.00
12:10	84.2	51.8	33	8		SSE	OK	30.04	clear	10.00
11:50	82.4	51.8	35	8		S	OK	30.05	clear	10.00
11:30	80.6	51.8	37	10		SE	OK	30.06	clear	10.00
11:10	82.4	51.8	35	13		SSE	OK	30.06	partly cloudy	10.00
10:50	80.6	53.6	39	7		SE	OK	30.06	partly cloudy	10.00
10:30	78.8	51.8	39	7		SSE	OK	30.06	partly cloudy	10.00
10:10	78.8	53.6	42	3		SW	OK	30.06	partly cloudy	10.00
9:50	75.2	51.8	44	0			OK	30.06	clear	10.00
9:30	75.2	51.8	44	6		SSE	OK	30.06	clear	10.00
9:10	75.2	51.8	44	5		SSW	OK	30.06	clear	10.00
8:50	73.4	51.8	47	3		WSW	OK	30.05	clear	10.00
8:30	71.6	53.6	53	0			OK	30.05	clear	10.00
8:10	71.6	51.8	50	0			OK	30.04	clear	10.00
7:50	69.8	48.2	46	0			OK	30.04	partly cloudy	10.00
7:30	68.0	46.4	46	0			OK	30.03	partly cloudy	10.00
7:10	68.0	50.0	53	5		ESE	OK	30.03	partly cloudy	10.00
6:50	68.0	53.6	60	6		SE	OK	30.02	clear	10.00
6:30	66.2	51.8	60	7		SE	OK	30.01	clear	10.00
6:10	68.0	53.6	60	9	16	SE	OK	30.00	clear	10.00
5:50	69.8	51.8	53	9		SSE	OK	29.99	clear	10.00
5:30	69.8	51.8	53	8		SSE	OK	29.99	partly cloudy	10.00
5:10	69.8	51.8	53	6		SSE	OK	29.98	clear	10.00
4:50	71.6	51.8	50	5		SE	OK	29.97	partly cloudy	10.00
4:30	69.8	51.8	53	0			OK	29.96	partly cloudy	10.00
4:10	71.6	51.8	50	9		S	OK	29.95	partly cloudy	10.00
3:50	71.6	50.0	46	8		S	OK	29.94	partly cloudy	10.00
3:30	71.6	48.2	43	6		S	OK	29.93	partly cloudy	10.00
3:10	73.4	48.2	41	7		S	OK	29.94	partly cloudy	10.00
2:50	73.4	44.6	36	8		S	OK	29.93	clear	10.00
2:30	75.2	33.8	22	6		ESE	OK	29.94	clear	10.00
2:10	78.8	30.2	17	13		E	OK	29.92	partly cloudy	10.00
1:50	75.2	28.4	18	7		NW	OK	29.91	partly cloudy	10.00
1:30	75.2	28.4	18	9		NW	OK	29.91	partly cloudy	10.00
1:10	75.2	28.4	18	8		NW	OK	29.91	partly cloudy	10.00
0:50	75.2	30.2	19	9		NW	OK	29.92	partly cloudy	10.00
0:30	78.8	30.2	17	9		NW	OK	29.92	clear	10.00

Borderland Thursday, June 5, 2003

Inversion layer traps pollution in El Paso

Darren Meritz
El Paso Times

A dusty pall Wednesday morning made its way into the region, covering the El Paso area with the weather phenomenon known as inversion, meteorologists and health experts said.

Inversion, which developed when cooler -- and in this case polluted -- air was trapped under warmer air, pushed the air quality in El Paso to unhealthful levels early Wednesday, Reynoso said.

"I think it was a freak," Jesus Reynoso, air quality program manager for the El Paso City-County Health and Environmental District, said of the condition, which is more common in winter.

But conditions had subsided by late in the afternoon, providing a respite for at-risk individuals -- the young, the old and those with respiratory illnesses. Experts don't expect to see the phenomenon return again for a while.

"Occasionally, we'll see conditions such as this," Reynoso said. "But this was really just unexpected."

More information

A temperature inversion occurs when the air temperature increases with height above Earth's surface.

Many different processes in the atmosphere form inversions, and inversions often form at a variety of altitudes.

Some inversions are weak and dissipate quickly, while others can hang around for several days depending on the weather pattern.

Source: USA Today.

El Paso weather

Meteorologists at the National Weather Service attributed the high levels of dust and particles in the air to heavy thunderstorms Tuesday night that came from the Midland-San Angelo area, 300 to 400 miles east.

A large front moved through the area, and it "pushed all the way through West Texas, through El Paso, picking up dust," said meteorologist Tom Bird.

Bird said El Paso might see similar conditions throughout the summer, but probably not of the same magnitude because rain in the region will weigh down dust in the air.

For the rest of the week, the National Weather Service expects light winds and a small chance of precipitation.

Wednesday's high temperature was 99 degrees. Temperatures will remain in the mid-90s, slightly below the triple-digit numbers El Paso saw Tuesday.

"June is our warmest month of the year," Bird said. He added that so far this year temperatures have been warmer than usual.

Moisture may come into play Friday and Saturday, but little if any rain is expected -- mostly partly cloudy relief from the sun.

Darren Meritz may be reached at dmeritz@elpasotimes.com

Borderland Friday, June 6, 2003

Strong wind gusts topple mobile home, rip off roof

Diana Washington Valdez
El Paso Times

Wind gusts packing a powerful punch Wednesday night blew the roof off a house in Northeast El Paso and toppled a trailer home, some trees and an electric pole in Fabens.

Rudy Gutierrez / El Paso Times

A large tree was toppled by strong winds Wednesday night along Fourth Street and Texas Highway 20 in Fabens. A powerful windstorm snapped trees and branches and lifted at least one mobile home off its foundation in the small community east of El Paso.

"The wind knocked over my daughter's trailer when she and her two children were inside," Fabens resident Andrea Dozal said. "One of the kids is a year old, and they were all frightened to death. Fortunately, nobody got hurt. They straightened the trailer, but all the pipes and wires got broken, and they have no electricity, water or gas."

Dozal, who lives in another part of Fabens, said the wind gusts did not affect her neighborhood. "We heard the winds, but nothing happened to our homes," she said.

El Paso County Engineer Robert Rivera said a county road crew went out Wednesday night to clear a large tree that fell across River Road in Fabens.

"There was an outburst from a thunderstorm that blew out that tree and some other trees that were on private properties," he said. "We're familiar with these outbursts."

At the El Paso airport, the highest wind gust reported was 30 mph at 8:45 p.m., said Bruce Bradley, a meteorological technician for the National Weather Service. "At 4 a.m. Thursday, we had another gust that registered 37 miles per hour," he said.

Bradley, who lives in Northeast El Paso, said he had a 45-mph gust at his home, "but we have no official wind equipment except for the one at the airport." He explained that a wind gust does not have to reach a high speed to produce damage. A sudden change in air pressure is what creates powerful gusts.

El Paso Electric Co. spokeswoman Teresa Souza said an electric pole went down Wednesday night in the 1100 block of East Main in Fabens because of the wind, "and we heard the wind also blew off the roof of a home in Northeast El Paso."

The forecast for today calls for continued breezes and isolated thunderstorms. Today's temperatures are expected to be in the low 90s.

Diana Washington Valdez may be reached at dvaldez@elpasotimes.com

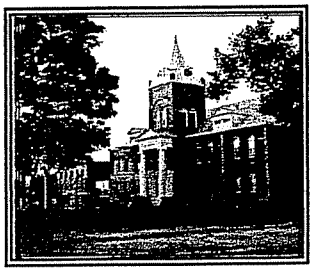
ATTACHMENT 2: Letter of Support from Luna County

STATE OF NEW MEXICO

COUNTY OF LUNA

A. Dennis Armijo
Chairman, Board of Commissioners

Scott Vinson
County Manager



Marilyn Bullock Offutt
Commissioner

Fannie T. Smyer
Commissioner

August 12, 2004

Sandra Ely
Air Quality Bureau Chief
New Mexico Environment Department
2048 Galisteo
Santa Fe, NM 87505

Subject: NEAP and Air Quality in Luna County (Letter of Support)

Dear Ms. Ely,

The staff of the Luna County Planning Department was encouraged to meet this week with Andy Berger and Gale Cooke of the Air Quality Bureau to discuss air quality issues facing our county. They have briefed me on PM10 pollution and the non-attainment designation our county faces if these problems are not resolved.

Luna County supports your efforts and we are encouraged to work with the Air Quality Bureau in developing a Luna County Natural Events Action Plan (NEAP) to avoid a federal EPA designation of non-attainment for particulate matter.

Luna County is comprised of 2,957 square miles of federal, state and private land. Historically we are an agricultural community of ranching and farming. In December 2002, the Board of County Commissioners adopted the Luna County Building Code and Performance Standards Ordinance, which incorporates storm water, grading, drainage and dust control. Our county code enforcement officers actively enforce these measures.

Thank you for the opportunity to meet with your staff to discuss a proactive approach in making Luna County a safer and healthier community. Please feel free to contact Ron Kilman, Planning Director or Phillip Butz, County Planner at 505-543-6621 for further coordination of this vital project.

Sincerely,

Scott Vinson
Luna County Manager

cc: Planning Director, County Planner

ATTACHMENT 3: Letter of Support from City of Deming

SAM D. BACA, MAYOR | IN THE KINGDOM OF THE SUN | JOHN STRAND, ADMINISTRATOR

City of Deming

Phone (505) 546-8848 • Fax (505) 546-6442
E-MAIL deming@cityofdeming.org • Website www.cityofdeming.org
P.O. BOX 706 · DEMING, NEW MEXICO 88031
POPULATION 14,000

September 13, 2004

Sandra Ely
Air Quality Bureau Chief
New Mexico Environment Department
2048 Galisteo
Santa Fe, NM 87505

Dear Ms. Ely,

The City of Deming supports the efforts of the New Mexico Environment Department's Air Quality Bureau to develop a Natural Events Action Plan (NEAP) for Luna County to avoid a federal EPA designation of non-attainment for particulate matter.

Staff from the Air Quality Bureau has informed Deming representatives and residents about PM10 air pollution, the violations of the federal standard that were monitored in Deming during 2003, and the potential implications of a non-attainment designation. We wish to work collaboratively with the Air Quality Bureau in resolving these problems through development of a NEAP. The City of Deming understands the role that a local dust control ordinance can play to control particulate matter from anthropogenic sources and protect human health and quality of life. Deming commits to developing and enforcing a local dust control ordinance.

We look forward to working with you and your staff. Please contact Rick McInturff at (505) 546-8868 for more information related to the City of Deming's involvement in developing a NEAP for Luna County.

Sincerely,

Sam Baca
Mayor, City of Deming