Natural Events Action Plan
For the
Yuma PM_{10} Nonattainment Area

Arizona Department of Environmental Quality
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Phoenix, Arizona 85007

February 17, 2004

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I. EXECUTIVE SUMMARY

Yuma, Arizona experienced an exceedance of the 24-hour National Ambient Air Quality Standards (NAAQS) for particulate matter 10 microns or less (PM_{10}) on August 18, 2002. The Yuma area is currently a moderate nonattainment area for PM_{10}. If the August 18, 2002, reading is not flagged as a natural or exceptional event, the exceedance would be considered a violation and result in the Yuma area being reclassified to a serious nonattainment area.

Arizona Department of Environmental Quality's (ADEQ's) analysis of wind data and other information from August 18 indicates that the exceedance was caused by high winds. ADEQ has flagged the exceedance as attributable to a high wind natural event under EPA's 1996 Natural Events Policy (NEP) and ADEQ's 1999 "Air Quality Exceptional and Natural Events Policy".

In addition to containing documentation and analysis supporting a natural event determination, this Natural Events Action Plan (NEAP) and its Technical Support Document (TSD) document ADEQ's commitment to:

(1) Establishing public notification and education programs;
(2) Minimizing public exposures to high concentrations of PM_{10} due to future natural events;
(3) Abating or minimizing appropriate contributing controllable sources of PM_{10};
(4) Identifying, studying and implementing practical mitigating measures as necessary;
(5) Periodically reevaluating the conditions causing violations of the PM_{10} NAAQS in the area and the state of implementation of the NEAP and the adequacy of the actions being implemented;
(6) Documenting natural events; and
(7) Developing the NEAP in conjunction with the stakeholders affected by the plan.

This NEAP for the Yuma PM_{10} Nonattainment Area demonstrates the commitments and other information necessary for a NEAP under EPA's Natural Events Policy and ADEQ's 1999 "Air Quality Exceptional and Natural Events Policy".

LIST OF ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AIRS	Aerometric Information Retrieval System
BACM	Best Available Control Measures
BLM	Bureau of Land Management
BMP	Best Management Practices
EPA	United States Environmental Protection Agency
NAAQS	National Ambient Air Quality Standard
NEAP	Natural Events Action Plan
NEP	Natural Events Policy
PM_{10}	Particulate Matter 10 microns or less in size
SIP	State Implementation Plan

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II. INTRODUCTION

A. Background

Yuma County covers 5,522 square miles and is located in the southwestern corner of Arizona (Figure II-1).[1] It is bordered by Maricopa and Pima Counties on the east, La Paz County on the north, California and Mexico on the west, and Mexico on the south. Much of Yuma County is located in the Sonoran Desert with the landscape dominated by desert lowlands and dispersed rugged mountains peaking less than 4,000 feet in elevation. The valley regions, however, contain an abundance of arable land, which is primarily used as irrigated agricultural land. The valleys are irrigated primarily with Colorado River water and some groundwater. The Colorado River Valley, the County's most productive area, is found in the western edge of the County. Agriculture, tourism, military installations, and government are the County's principal economic activities. During the winter months, the population grows considerably with seasonal visitors. Yuma has the warmest winter average temperatures of cities in Arizona and is the sunniest year-round spot in the United States.

The Yuma Moderate PM_{10} Nonattainment Area is contained entirely within Yuma County and is located in the far southwest portion of the Lower Colorado River Valley (see Figure II-2). The land area is about 456 square miles or 292,000 acres. The nonattainment area is defined by the following townships:

T7S- R21W, R22W;

T8S-R21W, R22W, R23W, R24W

T9S-R21W, R22W, R23W, R24W, R25W;

T10S-R21W, R22W, R23W, R24W, R25W.

Although there are Indian reservations within the Yuma Nonattainment Area, ADEQ does not have jurisdictions over air quality issues on tribal lands.

A.1. Population

The principal communities in the Yuma Moderate PM_{10} Nonattainment Area (see Figure II-2) are the cities of Yuma and Somerton. The cities of Yuma and Somerton, like other sunbelt cities, have experienced rapid growth.

[1] The northern part of Yuma County was split into LaPaz County with the southern part retained as Yuma County.

Figure II-1

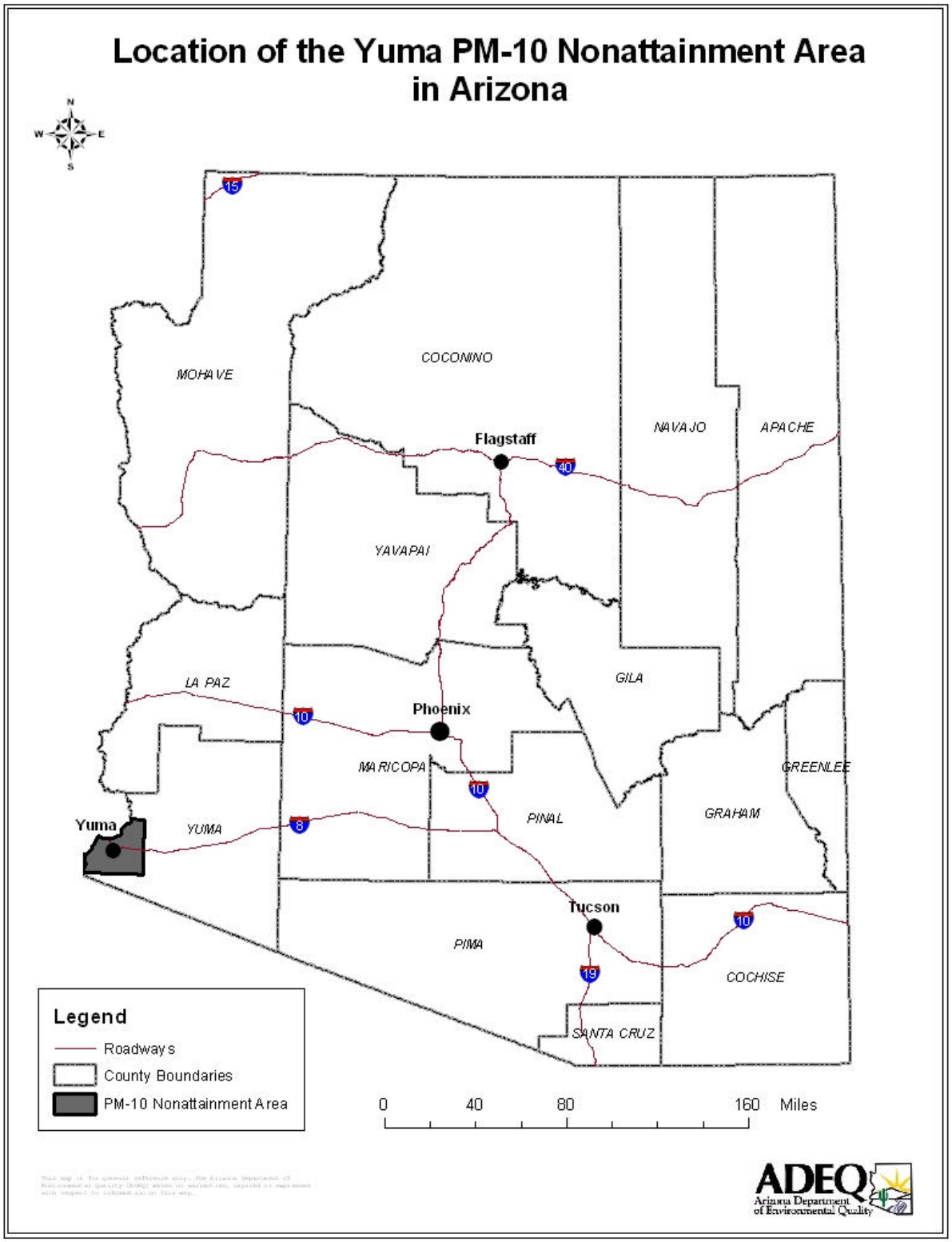
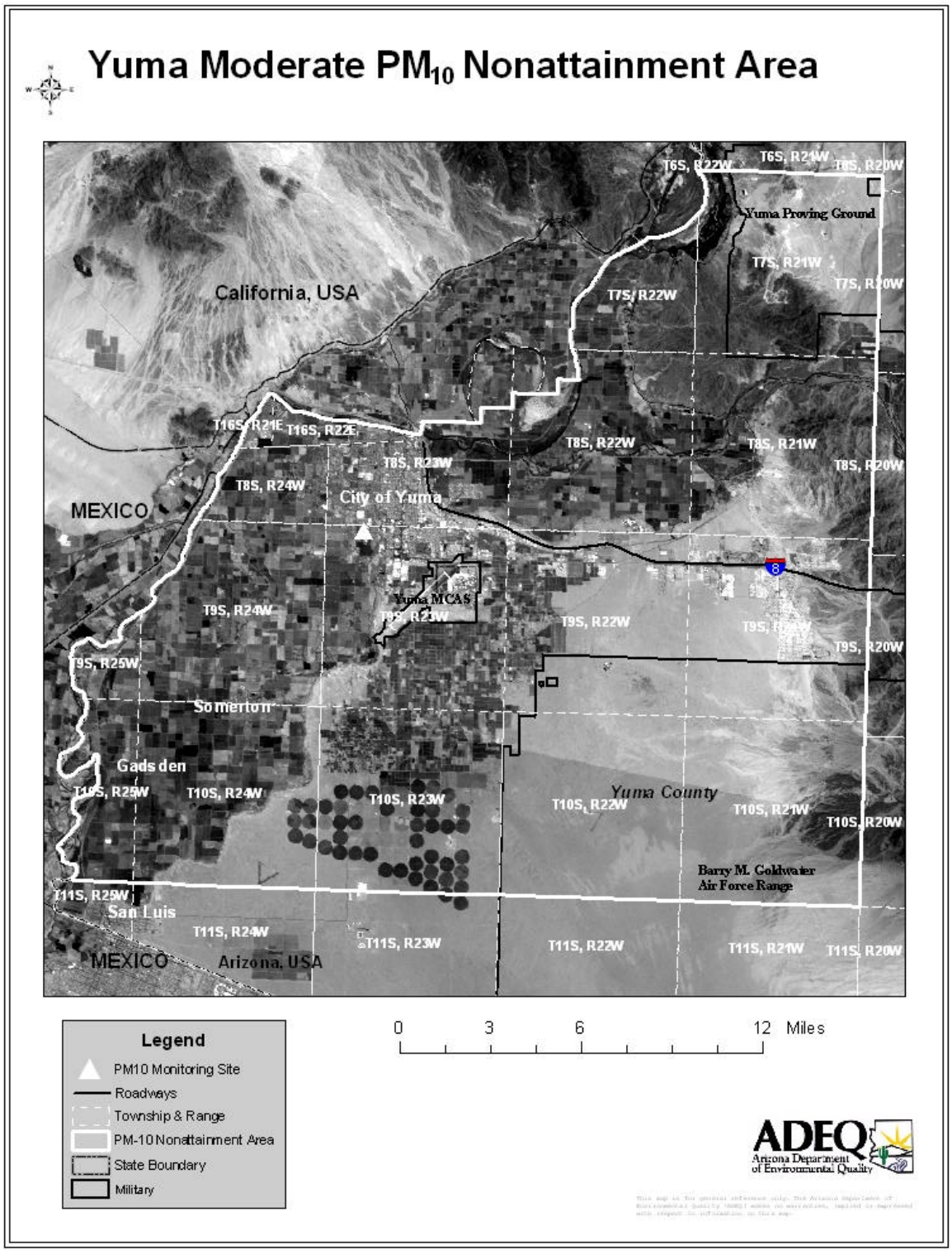

Location of the Yuma PM-10 Nonattainment Area in Arizona
N
W
E
S
MOHAVE
COCONINO
NAVAJO
APACHE
Flagstaff
YAVAPAI
LA PAZ
GILA
Phoenix
MARICOPA
GREENLEE
PINAL
GRAHAM
Yuma
YUMA
Tucson
PIMA
COCHISE
SANTA CRUZ
15
40
10
8
19
Legend
Roadways
County Boundaries
PM-10 Nonattainment Area
0
40
80
160
Miles
ADEQ
Arizona Department of Environmental Quality

Figure II -2


Yuma Moderate PM10 Nonattainment Area
California, USA
MEXICO
City of Yuma
Yuma MCAS
Yuma Proving Ground
Somerton
Gadsden
San Luis
Yuma County
Barry M. Goldwater Air Force Range
Arizona, USA
T6S, R22W
T6S, R21W
T6S, R20W
T7S, R21W
T7S, R20W
T7S, R22W
T16S, R21E
T16S, R22E
T8S, R22W
T8S, R21W
T8S, R20W
T8S, R23W
T8S, R24W
T9S, R24W
T9S, R23W
T9S, R22W
T9S, R21W
T9S, R20W
T9S, R25W
T10S, R25W
T10S, R24W
T10S, R23W
T10S, R22W
T10S, R21W
T10S, R20W
T11S, R25W
T11S, R24W
T11S, R23W
T11S, R22W
T11S, R21W
T11S, R20W
Legend
PM10 Monitoring Site
Roadways
Township & Range
PM-10 Nonattainment Area
State Boundary
Military
0
3
6
12 Miles
ADEQ
Arizona Department of Environmental Quality

Decennial census data for Yuma, Somerton, and Yuma County are shown in Table II-1. These figures do not account for the Yuma area's seasonal population. During the winter months, the population increases considerably, with the influx of part-time residents. A local study conducted during the winter of 1989-90 placed the number of winter visitors at 49,000. Although no recent studies have been conducted to determine the exact number of current winter visitors to the Yuma area, local officials estimate this number to be approximately 90,000. This represents an increase in seasonal population of 83.7 percent. The winter visitors come to enjoy the mild winter climate, the area's desert environment, and the urban amenities that Yuma has to offer.

Table II-1
Decennial Census Population and Percent of Cities of Yuma and Somerton, and Yuma County: 1970-2000

Year	April 1 1970	April 1 1980	April 1 1990	April 1 2000
City of Yuma	29,007	42,481	56,966	77,515
decennial change		46.4%	34.1%	36.1%
Somerton	2,225	3,969	5,282	7,266
decennial change		78.4%	33.1%	37.6%
Yuma County	52,757	76,205	106,895	160,026
decennial change		44.4%	40.3%	49.7%

SOURCE: U.S. Bureau of the Census, decennial census counts. The 1970 and 1980 census counts reflect the La Paz County split that occurred in 1983

Table II-2 portrays the 1997 Arizona Department of Economic Security population projections for the cities of Yuma and Somerton, and Yuma County in five-year increments from 2000 to 2015. Projected populations for Yuma and Yuma County for 2000 and 2005 are significantly less than the 2000 Census enumerated populations. Likewise, the projected population for Somerton for 2000 is less than the 2000 Census enumerated populations. More current population projections are under development.

Table II-2
Population Projections for Yuma, Somerton, and Yuma County: 2000 – 2015

Year	July 1, 2000	July 1, 2005	July 1, 2010	July 1, 2015
Yuma	67,809	74,347	81,836	90,271
Somerton	6,729	7,475	8,224	9,001
Yuma County	138,025	154,582	171,689	189,783

Source: Arizona Department of Economic Security, August 1, 1997.

A.2. Economy

The major economic activities in Yuma County include agriculture, tourism, military installations, and government. Manufacturing, warehousing, and distribution also contribute to the economic base of Yuma County.

There is an abundance of arable land in the Yuma Nonattainment Area. Local estimates place 90,000 acres of farmland in the nonattainment area. A warm, dry climate and irrigation water from the Colorado River result in a thriving agricultural business. Farming takes place in three districts of the nonattainment area: the Yuma Valley, the Gila Valley, and the Yuma Mesa. Crops are generally grown in the valleys. Citrus orchards and alfalfa are predominantly found on the Mesa. Principal field crops include cotton, hay, lettuce, vegetables, and wheat.

The gradients of the Yuma and Gila Valleys are gentle and the water table is relatively high compared to the rest of the desert area of the nonattainment area. The soils found in the valleys are in the Holtville-Gadsden-Kofa Series. These soils are deep, nearly level, and well drained and are found on the flood plains and low terraces. Winter wheat, cotton and vegetables (e.g., lettuce, broccoli, and cauliflower) are grown on these soils.

The soils found on the Yuma Mesa are in the Rositas-Superstition Series. These soils are sandy, deep, nearly level or undulating, and somewhat excessively drained. These soils are found on old terraces, alluvial fans, and sand dunes. Citrus orchards and alfalfa are predominantly grown on the Mesa.

The Colorado River is the primary source of irrigation water. Yuma County diverts 1.2 million acre-feet of Colorado River water per year through an extensive system of canals. Due to return flow credits to the Colorado River, the County agricultural water consumptive use totals approximately 920,000 acre feet per year.

In 2002, farm commodities sales for Yuma County amounted to $1.3 billion.[2] Agriculture makes up 45% of Yuma County's economy. Yuma County sales accounted for 43.3 percent of all farm commodity sales in the State. Yuma County ranks first in Arizona in the production of broccoli,

[2] Arizona Agricultural Statistics Service, *2002 Arizona Agricultural Statistics Bulletin*, p. 2, September 2003.

cauliflower, grapefruit, hay (excluding alfalfa hay), lemons, lettuce, tangerines, and wheat; it ranks second in the production of corn, cantaloupes, summer honeydews melons, oranges, watermelons, and American-Pima cotton. It ranks third in the production of all types of cotton.

Yuma County is the Nation's winter salad bowl (farm-gate value over $1 billion) producing 85-90% of the Nation's winter vegetables. There are times during mid-winter and into the early spring when fully 90-95% of the iceberg lettuce for the United States and Canada comes from Yuma County fields.

Table II-3 presents employment data by sector for Yuma County for the year 2000. This table also includes data for the total civilian labor force, unemployment, and total employment. Wholesale and retail trade, and government employment represent the largest two sectors, comprising 56.5 percent of total nonfarm employment in Yuma County.

Table II-3
Employment by Sector for Yuma County: 2000

Employment Sector	2000	Percent
Total civilian labor force	**65,925**	**-**
Unemployment	18,025	27.4%
Total employment	47,900	-
Farm Employment (based on total less nonfarm)	**7,475**	**-**
Nonfarm employment	**40,525**	**100.0%**
Construction	2,750	6.8%
Manufacturing	2,325	5.7%
Transportation, Communication, and Public Utilities	1,500	3.7%
Trade	11,500	28.0%
Finance, Insurance, and Real Estate	1,325	3.3%
Services and miscellaneous	9,700	23.9%
Government	11,575	28.6%

Source: Arizona Department of Economic Security

III. NEAP POLICIES AND REQUIREMENTS

A. Overview

Yuma has experienced only one exceedance of the 24-hour National Ambient Air Quality Standard (NAAQS) since 1991. On August 18, 2002, the monitor operated by ADEQ at the County Juvenile Center on Avenue B recorded a 24-hour average of 170 $\mu g/m^3$. The NAAQS is 150 $\mu g/m^3$ or less for a 24-hour average. An unusually large and intense thunderstorm developed in east-central Sonora, Mexico on the afternoon of August 18, 2002. By evening, the thunderstorm had moved to the northwest through Yuma, producing sustained winds in excess of 25 miles per hour with gusts up to 45 miles per hour. Wind speeds of 15 miles per hour and greater can suspend surface soil dust into the air.[3]

High wind events are a type of natural event covered by EPA's Natural Events Policy (hereafter NEP, see Appendix A, Areas Affected by PM-10 Natural Events, Memorandum, 1996, Mary D. Nichols). Under the NEP, ADEQ is submitting this NEAP to reduce particulates in the event of future high wind conditions in the Yuma area.

The NEP requires ADEQ to submit a NEAP to the U.S. Environmental Protection Agency (EPA) by February 18, 2004, or eighteen months after the exceedance. ADEQ worked with local governments and stakeholders to develop the Yuma NEAP, including the identification of and commitment to implement Best Available Control Measures (BACM) to satisfy the requirements for abating sources of dust. The deadline for full implementation of control measures is August 18, 2005.

B. EPA Natural Events Policy

B.1. Background

Prior to the 1990 Clean Air Act Amendments (CAAA), the Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events (see Appendix B) and Appendix K to 40 CFR, Part 50, were issued by EPA to address, in part, the situation where natural sources strongly affected an area's air quality. EPA stated that it did not want to impose State Implementation Plan (SIP) requirements on such areas. Consequently, EPA provided for the exclusion of certain natural source data from nonattainment determinations.

The 1986 Exceptional Events Guideline contains EPA's guidance regarding the process states should follow when dealing with PM_{10} air quality data that may be eligible for flagging authorized under section 2.4 of Appendix K. Appendix K provides, in part, that measured exceedances of the PM_{10} NAAQS in an area may be discounted from decisions regarding nonattainment status if the data are shown to be influenced by uncontrollable events caused by natural sources of particulate matter.

[3] See Technical Support Document, p. 11.

On May 30, 1996, EPA issued the NEP in a memorandum from Mary D. Nichols, Assistant Administrator for Air and Radiation (see Appendix A). This memorandum announced EPA's new policy for protecting public health in all areas where the PM_{10} standard is violated due to natural events. Under this policy, EPA stated that, under certain circumstances, it is appropriate to exclude PM_{10} air quality data that are attributable to uncontrollable natural events from the decisions regarding an area's nonattainment status.

Normally, if an area violates one of the NAAQS, the area, by law, is designated nonattainment for that pollutant. The state must then develop a State Implementation Plan (SIP) for the area and implement measures that will reduce emissions of the pollutant and bring the ambient levels of the pollutant back within standards. SIPs must include pollution control measures for new and existing sources of the pollutant.

EPA's NEP sets forth the requirements for high PM_{10} concentrations caused by natural events. Under this policy, three categories of natural events are identified as affecting the PM_{10} levels: 1) volcanic and seismic activity; 2) wildland fires; and 3) high wind events such as the one that has precipitated this NEAP. The NEP defines high wind events as follows:

> "High Winds: 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)."

B.2. Natural Events Action Plan

In the event of a PM_{10} violation of the NAAQS caused by a natural event in a moderate PM_{10} nonattainment area, the state can develop and submit to EPA a plan of action to address future events (see Appendix A). The following is a summary of the EPA guidance regarding development of a NEAP as provided in the NEP. The NEAP should:

1) Include documentation and analysis of the event showing a clear causal relationship between the measured exceedance and the natural event. The documentation should be sufficient to demonstrate that the natural event occurred and that it affected a particular monitoring site in such a way as to cause a violation of the NAAQS. Documentation of natural events and their impact on measured air quality should be made available to the public for review.

2) Be developed in conjunction with the stakeholders affected by the plan.

3) Identify, study, and implement practical mitigating measures as necessary. The NEAP may include commitments to conduct pilot tests of new emission reduction techniques. For example, it may be desirable to test the feasibility and effectiveness of new strategies for minimizing sources of windblown dust through pilot programs.

The NEAP must contain a timely schedule for conducting such studies. A state has eighteen months after the submittal of the NEAP to EPA to implement measures that are technologically and economically feasible.

4) Include programs that abate or minimize appropriate contributing controllable sources of PM_{10}. Programs to minimize PM_{10} emissions may include application of BACM to any sources of soil that have been disturbed by anthropogenic activities. The BACM application criteria require analysis of the technological and economic feasibility of individual control measures on a case-by-case basis. The NEAP should include analyses of BACM for contributing sources. The BACM for windblown dust include, but are not limited to, 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 or prohibiting recreational off-road vehicle activities; and use of surface coverings.

5) Establish public notification and education programs. Such programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM_{10} could have on their health and inform them that: (a) certain types of natural events affect the air quality of the area periodically; (b) a natural event is imminent; and (c) specific actions are being taken to minimize the health impacts of events.

6) Include programs that help minimize public exposure to unhealthy concentrations of PM_{10} due to future natural events. 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 its exposure to high concentrations of PM_{10}, and (d) suggest precautions to take if exposure cannot be avoided.

7) Be made available for public review and comment.

8) Be submitted to EPA for review and comment.

9) Commit the State to periodically reevaluate: (a) the conditions causing violations of a PM_{10} NAAQS in the area; (b) the status of implementation of the NEAP; and (c) the adequacy of the actions being implemented. The State should reevaluate the NEAP for an area every five years at a minimum and make appropriate changes to the plan.

C. <u>ADEQ Air Quality Exceptional and Natural Events Policy</u>

ADEQ has developed and adopted an Air Quality Exceptional and Natural Events Policy, similar to EPA's NEP. It is ADEQ Policy 0159.000 (Appendix C). The policy describes the requirements and procedures that are to be followed in the event of an air quality exceptional and natural event in Arizona. ADEQ developed this policy to govern the

responses by the State and local jurisdictions to the occurrences of air quality natural events in Arizona, pursuant to A.R.S. § 49-424(3).

C.1. Analysis Procedures

When an Arizona natural event is observed and verified by ADEQ based on the analysis of meteorological and PM_{10} monitoring data, the characteristics of the high wind event are to be defined by the state based on analysis of meteorological data parameters listed in the NEP and the unique conditions existing in Arizona, pursuant to a document entitled Technical Criteria Document for Determination of Natural Exceptional Events in Arizona (Appendix D).

Elevated emissions of natural and/or well-controlled human-caused sources resulting from high winds events are exempted from additional regulation, except for the requirements of the EPA's NEP.

C.2. Preparation and Submittal to EPA of a Notice of An Air Quality Natural Event

Under the ADEQ policy, when an exceedance of the PM_{10} NAAQS is observed, ADEQ makes the determination that the exceedance is the result of one of the types of events considered in the federal NEP as a natural event, based on technical and scientific evidence. ADEQ and/or the county air pollution control departments or districts will perform an initial standard data quality review to determine the veracity of the reading.

Within six months of the date of the natural event, ADEQ and/or the county air pollution control departments or districts prepare a finding that the NEP may be applicable. If the exceedance is valid and related to a high wind event, ADEQ and/or the county air pollution control departments hold a public meeting in the community near the monitoring site where the exceedance occurred to educate interested members of the public, request additional technical data input, and begin the planning process.

Within 18 months of the date of the air quality exceptional event, ADEQ and/or the county air pollution control departments, in conjunction with the local planning agencies certified pursuant to A.R.S. §49-406, and affected stakeholders prepare the draft NEAP for review.

IV. DOCUMENTATION AND ANALYSIS OF NATURAL EVENT

A. Monitoring Network

ADEQ has operated a PM_{10} monitor at the Yuma County Juvenile Center site since February 1988 to assess particulate concentrations in the Yuma area according to EPA guidelines. The objective of the Yuma PM_{10} monitor is to determine representative concentrations in an area of population density. The site where the monitor is located has been designated the state and local air monitoring station (SLAM) site, neighborhood scale for population exposure. Sampling occurs for 24 hours (midnight to midnight) on a one in six day schedule as required by EPA. The location, method, and parameters measured are detailed below in Table IV-1. Figure IV-1 shows the location of the Juvenile Center Site in Yuma.

Table IV-1
Parameters of the Yuma Monitoring Site

Site Address	Began Operating	Latitude	Longitude	Type of Device	Parameters Measured	Classification	Scale	Objective
2795 Ave. B, Yuma, AZ	1988	32E 40’	114E 39’	Dichoto-mous Sampler	PM_{10}, $PM_{2.5}$	State and Local Air Monitoring Station	neighbor-hood	general population exposure

Figure IV-1

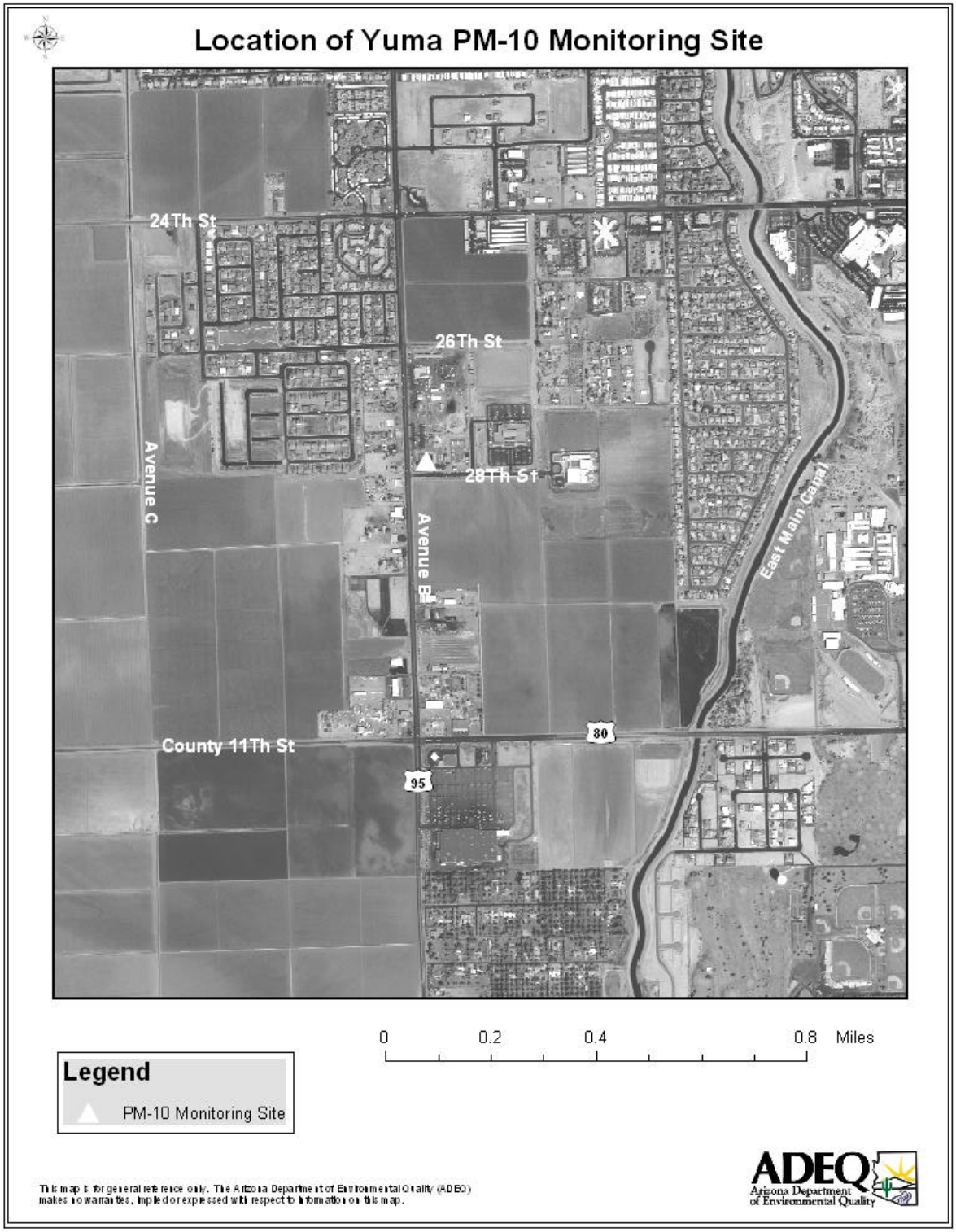

Location of Yuma PM-10 Monitoring Site
24Th St
26Th St
28Th St
Avenue C
Avenue B
East Main Canal
County 11Th St
80
95
0
0.2
0.4
0.8
Miles
Legend
PM-10 Monitoring Site
This map is for general reference only. The Arizona Department of Environmental Quality (ADEQ) makes no warranties, implied or expressed with respect to information on this map.
ADEQ
Arizona Department of Environmental Quality

Table IV-2 contains the monitoring readings for calendar year 2002. It is clear that the 24-hour readings for the Yuma area were well below the standard except for August 18, 2002, the day of the wind event in the Yuma area. On August 18, 2002, the measured PM_{10} concentration was 170 $\mu g/m^3$. It was documented that a very large dust storm occurred in the afternoon of that day. Based on the storm and high winds, ADEQ flagged the data for August 18, 2002, as an exceptional event. (See Appendix E)

Table IV-2
2002 PM_{10} DATA COLLECTED IN YUMA *
AQS ID Number 04-027-0004

Sample Date	Concentration (µg/m3)	Operator Comments
1/2/2002	No data	Operator error
1/8/2002	No data	"
1/14/2002	No data	"
1/20/2002	No data	"
1/26/2002	45	"
2/1/2002	25	15/20 mph wind
2/7/2002	91	Breezy
2/13/2002	115	
2/19/2002	43	
2/25/2002	63	10-15 mph winds, no dust
3/3/2002	19	
3/9/2002	42	Light breeze
3/15/2002	47	Light breeze <10 mph
3/21/2002	101	
3/27/2002	33	Windy on sample day
4/2/2002	42	
4/8/2002	35	Winds <10 mph
4/14/2002	30	4/15 terrible dust storm (35 mph +)
4/20/2002	29	Light winds <10 mph
4/26/2002	93	Wind > 25 mph
5/2/2002	38	
5/8/2002	125	Light winds
5/14/2002	63	
5/20/2002	113	Winds >30 mph
5/26/2002	23	Slightly breezy
6/7/2002	54	
6/13/2002	92	6/12-6/13 parking lot torn up around bldg with sampler
6/19/2002		No sample
6/25/2002		No sample
7/1/2002		No sample
7/7/2002	3	
7/13/2002	6	10/15 mph wind dusty most of day
7/19/2002		No sample
7/25/2002	32	
7/31/2002		Instrument malfunction
8/6/2002	44	
8/12/2002	28	
8/18/2002	170**	Nasty dust storm in afternoon
8/24/2002	69	
8/30/2002	111	

Sample Date	Concentration (µg/m3)	Operator Comments
9/5/2002	51	
9/11/2002	27	
9/17/2002	51	
9/23/2002	23	
9/29/2002	16	
10/5/2002		No filter available
10/11/2002	55	Building demo in progress, much dust
10/17/2002	61	Building demo 100' away
10/23/2002	48	Building demo cleanup
10/29/2002	39	Building demo in parking lot construction 50' south
11/4/2002	47	Parking lot construction
11/10/2002	18	
11/16/2002	24	Construction of parking lot 50' south
11/22/2002	46	Windy/Rain slightly
11/28/2002		Construction complete – damaged filter
12/4/2002	24	
12/10/2002	25	Minor landscaping
12/16/2002	41	
12/22/2002	16	
12/28/2002	21	

Source: Air Quality Division, Assessment Section, Monitoring Unit, September, 2003

* During 1/1/02 - 6/13/02, the monitoring site was located at 2795 Avenue B, Yuma Juvenile Center; Dichot monitor.

During 7/7/02 - 7/19/02, the monitoring site was located at 2440 W. 28th St., Yuma Courthouse (across street from Juvenile Center); Dichot monitor.

During 8/6/02 - 12/28/02, the monitoring site was located at 2440 W. 28th St, Yuma Courthouse; Partisol monitor.

** Exceedance identified as an Exceptional Event; value not included in quarterly and annual calculations.

B. <u>August 18, 2002, Event</u>

ADEQ is responsible for identifying any exceedances of the NAAQS that are caused by high winds in the Yuma area. ADEQ must first "flag" the exceedances due to high winds in EPA's national database of AIRS. Then, ADEQ must demonstrate a clear causal relationship between the measured exceedance of the NAAQS and the natural event.

During the early afternoon of August 18, 2002, large thunderstorms developed over western Chihuahua and eastern Sonora, Mexico, in a moist and unstable airmass. These storms combined to form a mesoscale convection system[4] (MCS) that continued to expand and move

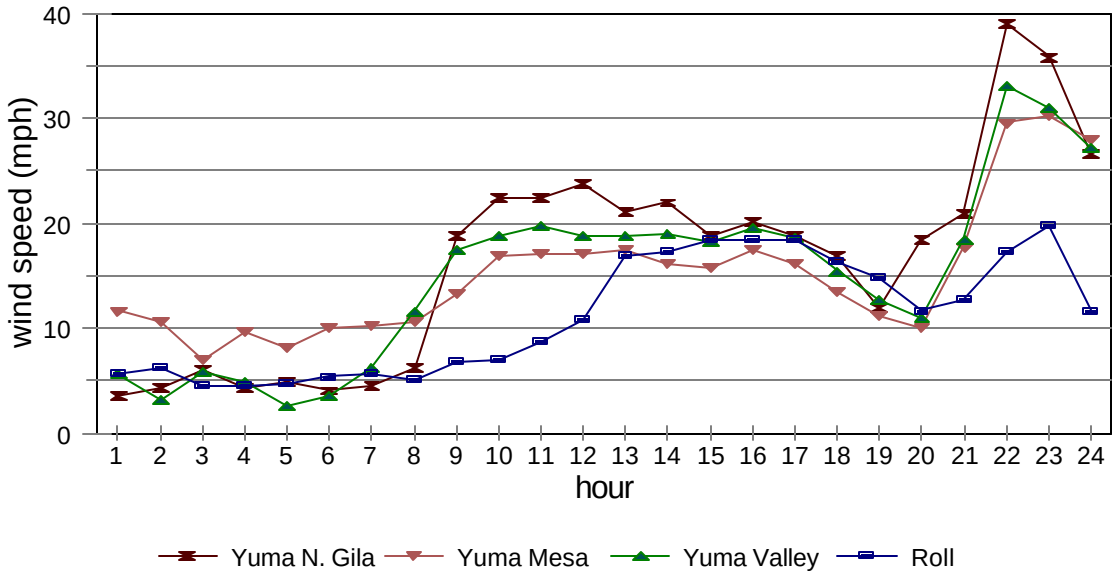
[4]A mesoscale convection system or MCS is a network of thunderstorms which becomes organized on a scale larger than the individual thunderstorms, and normally persists for several hours or more.

toward the northwest. By 5:00 p.m. the entire southeast quarter of Arizona was under cloud cover associated with the MCS. At 9:30 p.m. the leading edge of a thunderstorm outflow boundary[5] spawned by the MCS reached Yuma and produced sustained south-southeast winds of 37 mph with gusts up to 44 mph. Visibility dropped rapidly from 10 miles to 1 mile due to blowing sand and dust. Between 10 p.m. and midnight visibility was at or below 1 mile and as low as ¼ mile as south winds gusted near 40 mph. As is typical for a thunderstorm outflow boundary, barometric pressure rose rapidly and the air temperature fell, in this case 10°F. Restricted visibility (6 miles or less) was measured through 2:00 a.m. on August 19, 2002.

The variation in wind speeds throughout the day can be seen in Figure IV-2. These data were taken from four sites in the Yuma area maintained by the University of Arizona. The data show high winds with dust producing potential were not limited to the late evening thunderstorm. In fact, 10 hours in the middle of the day had maximum wind speeds in excess of 15 mph, the threshold wind speed to produce blowing dust. The highest wind speeds at the four sites were consistent with the observations at the Yuma Marine Corps Air Station.

Figure IV-2. Maximum Hourly Wind Speeds at Four Yuma Sites on August 18, 2002

SOURCE: Air Quality Division, Assessment Section, Monitoring Unit, September, 2003



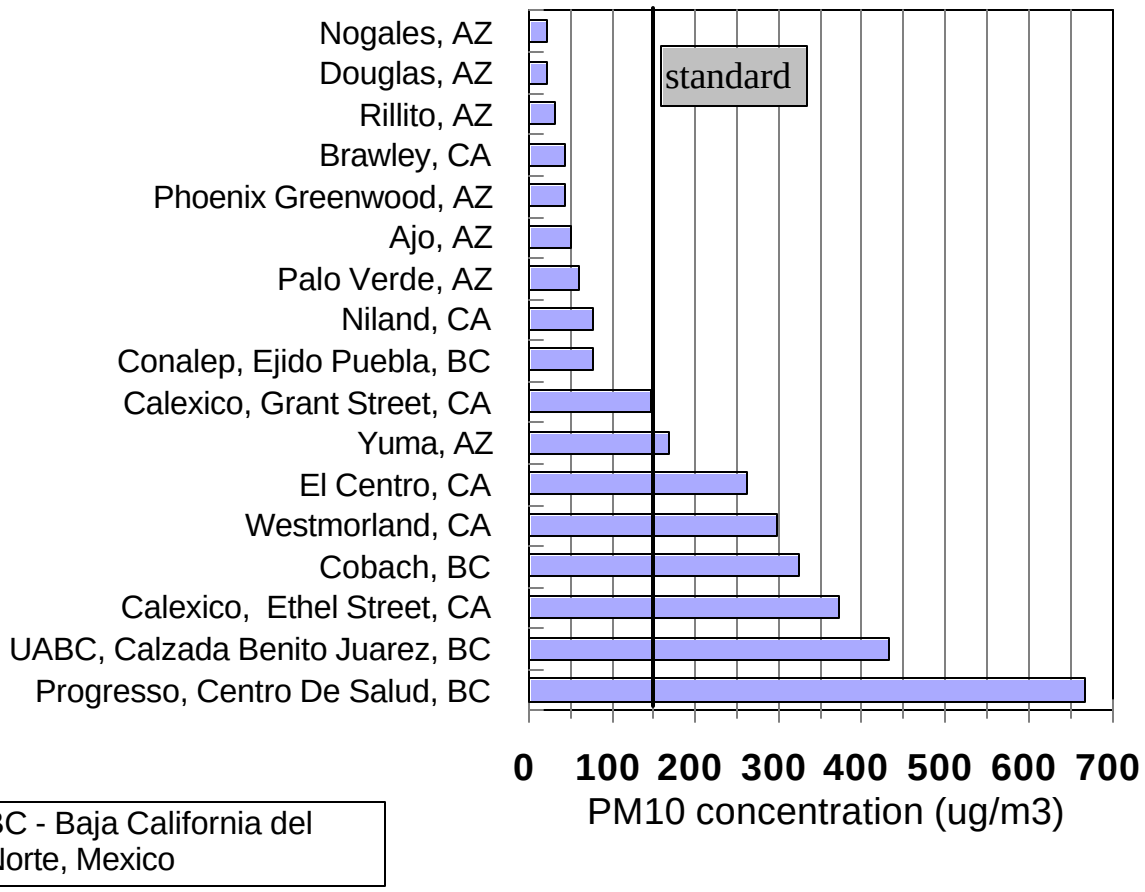
Other PM_{10} monitors are operated in Arizona, California, Sonora, and Baja California, Mexico. Given the size and strength of this particular storm and its generally northwestern movement from east-central Sonora towards Yuma, it is instructive to compare Yuma's PM_{10} reading for August 18, 2002 with other sites. First, the only elevated concentrations recorded in Arizona

[5]The outflow boundary is a lower layer of the atmosphere most prone to friction that separates thunderstorm-cooled air or outflow from the surrounding air; similar in effect to a cold front with passage marked by a wind shift and usually a drop in temperature.

were located in Yuma. In Phoenix and at the U.S.-Mexico border (including Nogales, Douglas-Agua Prieta) concentrations were normal. Second, in the Imperial Valley, concentrations ranged as high as almost 300 $\mu g/m^3$ on a 24-hour basis. Third, monitoring sites in Baja California, near the border, recorded concentrations as high as almost 700 $\mu g/m^3$ on a 24-hour basis. The center of the storm, in its northwesterly course, appeared to have passed somewhat west of Yuma. Figure IV-3 presents these concentrations for August 18.

Figure IV-3. August 18, 2002 PM_{10} Concentrations in Arizona, California, and Northern Mexico

SOURCE: Air Quality Division, Assessment Section, Monitoring Unit, September, 2003



Although the 24-hour PM_{10} standard was exceeded on August 18, 2002, in Yuma, given the occurrence of this major dust storm, ADEQ has requested that EPA not count this exceedance as a violation of the 24-hour standard. ADEQ has presented evidence that the monitoring event on August 18, 2002, was part of a regional meteorological episode which was atypical for Yuma, and the Sonoran Desert in general - a natural high wind event.

V. PUBLIC EDUCATION PROGRAM

A. Commitment to Establish Public Notification and Education Program

If natural events cause violations of the NAAQS, the NEAP should include commitments to establish a public notification and education program. The program may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM_{10} could have on their health and inform them: (a) that certain types of natural events affect the air quality of the area periodically; (b) when a natural event is imminent; and (c) of specific actions that can be taken to minimize the health impacts of natural events.

ADEQ and the City of Yuma have developed an area on ADEQ's Web site for high wind forecasting. This site can be used by stakeholders, the general public, city and county staff, and construction contractors for the cities of Yuma and Somerton and Yuma County. The Web page shows forecasts to alert area residents of Yuma, Somerton, and Yuma County of high wind events. The forecasting web page is currently located at http://www.adeq.state.az.us/environ/air/ozone/yumawind.pdf. An example of the format of the Web page is contained in Appendix F.

In addition to utilizing the Web site as a public information source, ADEQ is working with the local and federal government organizations to develop general education training sessions to raise the public's awareness about both the health effects of PM_{10} pollution and steps citizens can take to reduce the creation of excessive dust. For example, ADEQ is partnering with the Yuma Proving Grounds (YPG) to hold sessions as part of YPG's annual employee training in February. Although YPG is located outside the nonattainment area, the majority of its employees live in the nonattainment area, and teaching them that simple things such as driving slower on unpaved roads and avoiding soil-disturbing activities on high wind days can help as much as using street sweepers to remove dust from paved roads.

An example of another level of public education will be to train construction workers and city and county employees for whom earth-moving activities are part of their jobs. ADEQ is working with the Arizona Department of Transportation to develop a training class for these and other interested stakeholders, with an anticipated completion date in the spring 2004.

B. Minimize Public Exposure to High Concentrations of PM_{10} due to Future Natural Events

ADEQ commits to develop and implement a program to minimize public exposure to high PM_{10} levels. This program will: (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 PM_{10}; and (d) suggest precautions to take if exposure cannot be avoided. ADEQ plans to work with the local newspaper, city and county officials, and other interested organizations to issue notices on specific days when high winds are forecasted so the susceptible members of the public are reminded that they should limit outdoor activities for that day.

VI. MODELING RESULTS

The Arizona Department of Environmental Quality's Yuma PM_{10} sampler recorded an exceedance of the 24-hour average PM_{10} standard on August 18, 2002, principally because of high winds. The recorded concentration was 170 $\mu g/m^3$; the standard is 150 $\mu g/m^3$. The meteorological conditions on and preceding this day were examined to determine that the date qualified as a natural exceptional event under the Department's Air Quality Natural and Exceptional Events Policy. The date met all the technical criteria to be considered a natural exceptional event.

The date was then modeled using Industrial Source Complex Short Term 3 (ISCST-3) to identify the major contributing sources to the observed exceedance. This modeling was based on windblown emissions for those hours where wind speed exceeded the 15 mph dust suspension threshold, as estimated for a high wind day from the Yuma PM_{10} maintenance plan modeling (March 31, 1999). Figure VI-1 contains the relative percentage contributions of windblown dust and dust generated from human activity. Figure VI-2 contains a detailed look at PM_{10} contributions from windblown dust on August 18, 2002.

The predicted windblown dust contribution on August 18, 2002 amounted to 59.5%. The predicted contribution of dust created by human activity amounted to 40.5%. In the windblown dust category, the modeling results showed that windblown dust from agricultural fields constituted roughly 17.7% of all PM_{10} emissions predicted, with windblown dust from miscellaneous disturbed areas following at 16.0%, windblown dust from unpaved roads contributing 15.1%, urban disturbed areas contributing 10.5%, and windblown dust from alluvial plains and channels contributing 0.1%.

More detailed information on the modeling analysis is contained in the Technical Support Document.

Figure VI-1
Yuma August 18, 2002 Ambient PM_{10}: Contributions from Human Activity and Windblown Dust

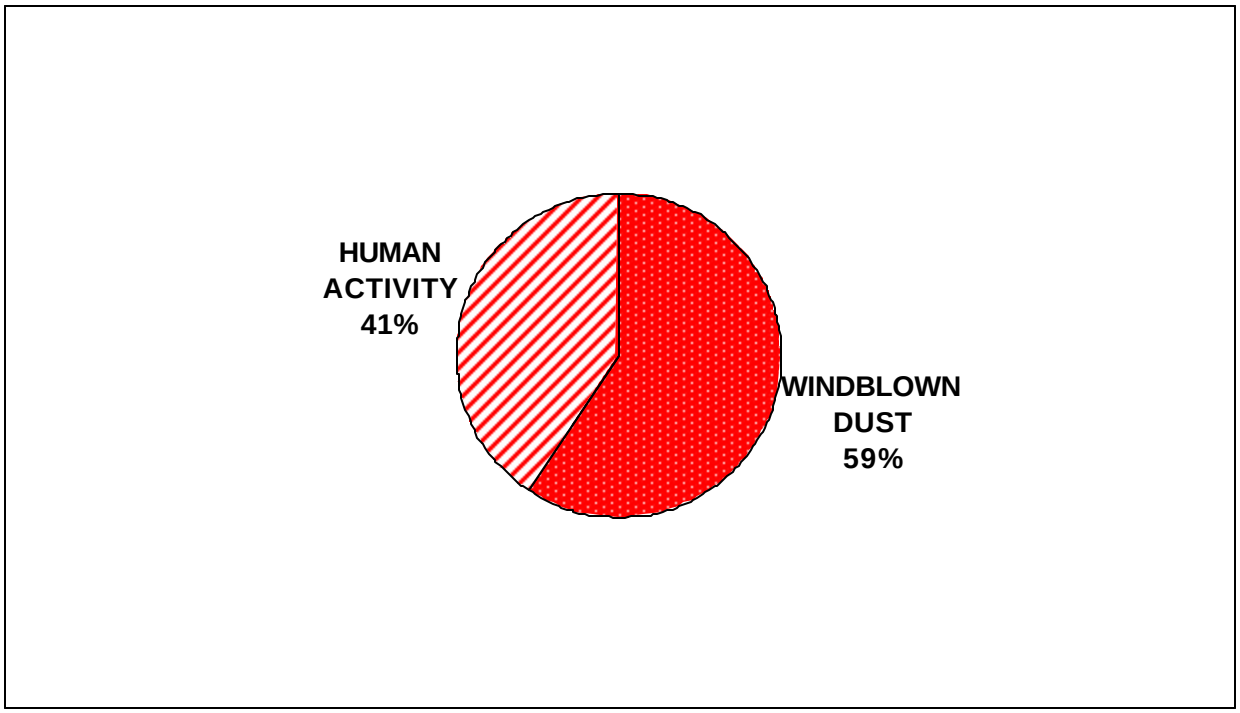


Figure VI-2
Yuma August 18, 2002 Windblown Dust Contributing to PM_{10}

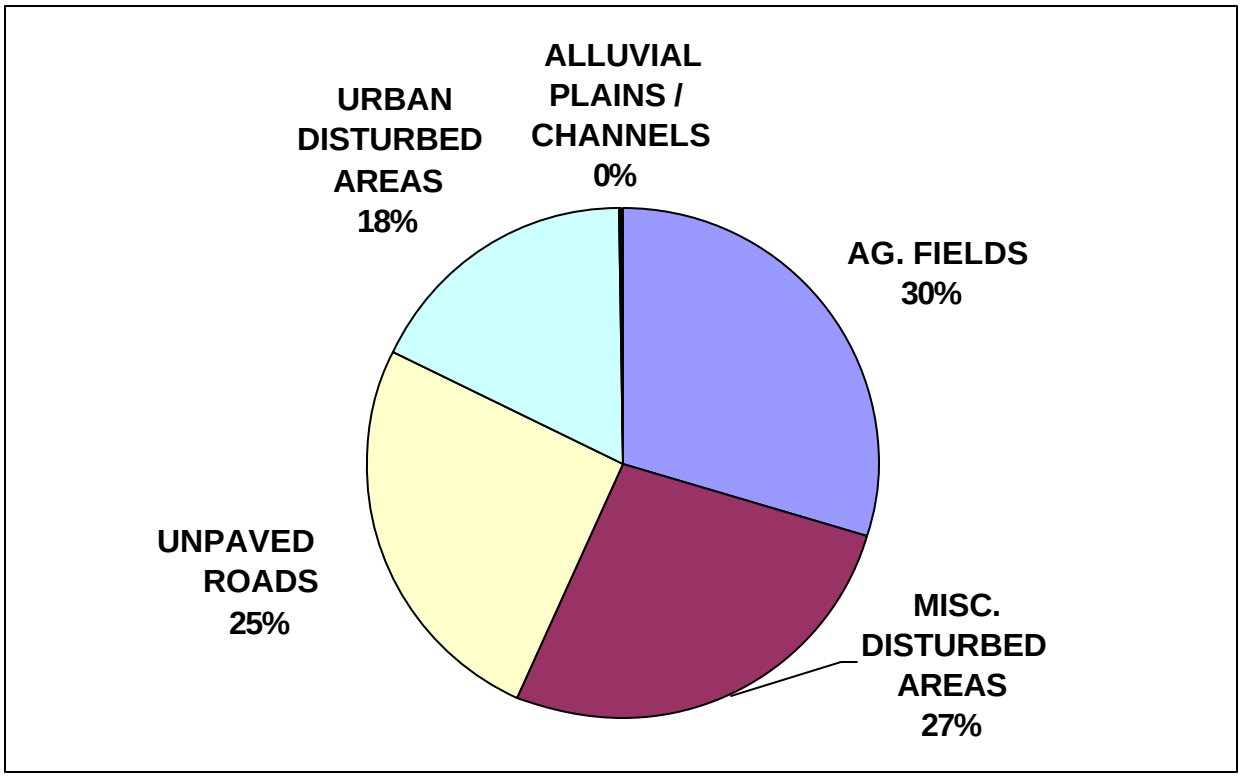
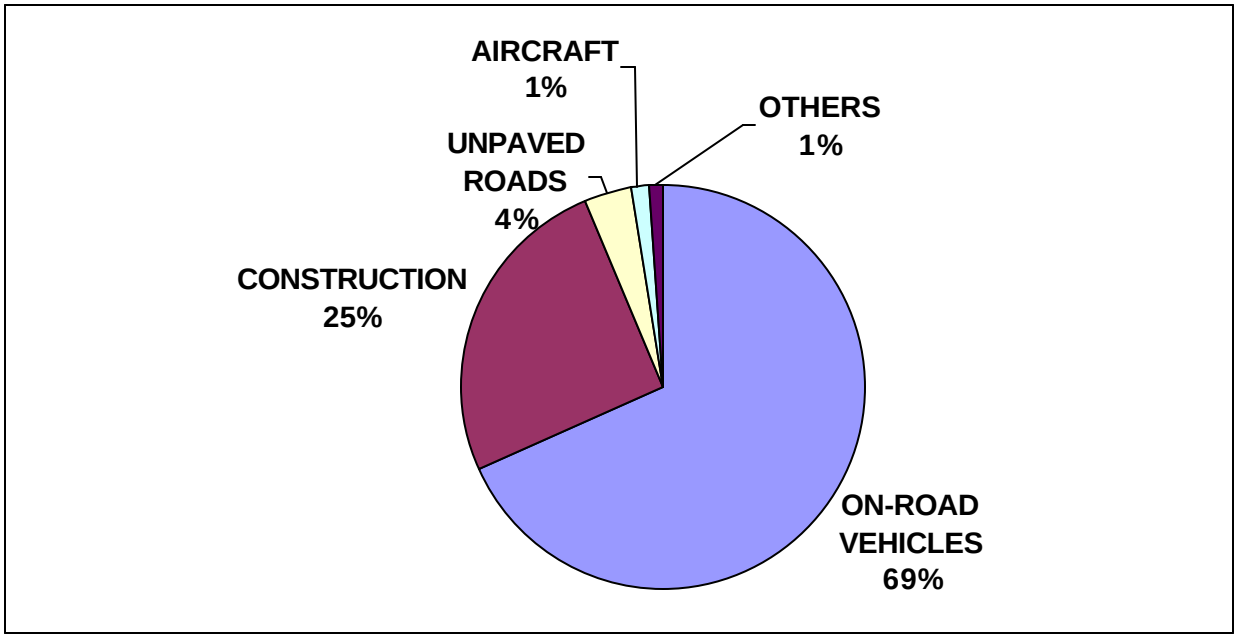


Figure VI-3
Human Activities Contributing to Ambient PM_{10}



Others: miscellaneous mining and quarrying, miscellaneous manufacturing, railroads, citrus burning

VII. DETERMINATION AND IMPLEMENTATION OF BACM

The NEP requires that best available control measures (BACM) be implemented for significant anthropogenic sources contributing to PM_{10} exceedances. EPA defines BACM for PM_{10} as "techniques that achieve the maximum degree of emissions reductions from a source as determined on a case-by-case basis considering technological and economic feasibility" (59 FR 41998; August 16, 1994).

ADEQ's modeling revealed that the sources of PM_{10} affecting the Yuma County Juvenile Center Monitor on August 18, 2002, can be divided into windblown dust and human activities that produce airborne dust such as reentrained dust from vehicles and construction (see TSD, p. 28). ADEQ is working with the Yuma area stakeholders to develop BACM for the PM_{10} sources in these categories.

A. Identifying and Implementing BACM

BACM must be identified and implemented in the Yuma Nonattainment Area for significant anthropogenic sources contributing to the PM_{10} NAAQS violation which occurred on August 18, 2002. BACM are tailored to the type of activity, size of the area requiring dust control, the ground slope, the soil type and the amount of human disturbance. Larger areas may require several methods of dust control to adequately address problems.

The candidate list of BACM is a compilation of research results recently completed for the proposed Salt River PM10 SIP (see Appendix G). It should be noted that the list includes candidate "most stringent measures", a requirement not applicable to the Yuma area, and also includes source categories not found in the Yuma nonattainment area. These issues will be addressed during the feasibility analysis stage of BACM development.

As specific BACM are analyzed and outreach activities for the NEAP continue, an assessment will be completed by ADEQ to determine the resources necessary to carry out the plan. ADEQ will evaluate the staffing levels required for outreach activities, enforcement, air quality analyses, and overall NEAP administration. ADEQ and the Yuma area stakeholders will develop funding mechanisms to meet resource needs as required.

ADEQ met several times with local stakeholders to identify sources of windblown dust and determine how to control those sources. These meetings included staff from the local, state, tribal, and federal governments, representatives from the agricultural community, and the general public.

Additional NEAP stakeholder meetings were held November 5, 2003, and December 3, 2003, in Yuma. Presentations were made about NEAP requirements and approaches to develop BACM for the Yuma area by staff from ADEQ. The following sections describe the efforts to date to determine appropriate BACM for the various source categories.

A.1. Windblown Dust

Windblown dust in Yuma County occurs from both natural and human-caused sources. While windblown dust is generated in undisturbed areas throughout Yuma County, it is much more prevalent where the County's natural soils have been disturbed by human activities. This is because natural desert soils have a tendency to form a mineral and organic crust that is resistant to wind erosion. Human activities can remove or break this crust, allowing wind to cause dust to become airborne. Also, even sparse desert vegetation provides protection to the soil surface by serving as a windbreak and organic binder. If human activities destroy the vegetation, the soil is more susceptible to wind erosion, and as a result, windblown dust is produced. Windblown dust in Yuma County during periods of high winds cannot be eliminated entirely. However, there are a variety of things that can be done to decrease windblown dust caused by human activities.

A.1.1. Agricultural Operations

As was shown in Section VI of the NEAP, dust from windblown sources accounted for 59.5 percent of all model-predicted PM_{10} concentrations in the Yuma modeling domain on August 18, 2002. A detailed look at PM_{10} contributions reveals that agricultural fields contributed 17.7 percent of those concentrations during the wind event of August 18, 2002. ADEQ has met and continues to meet with representatives of the agricultural community in Yuma to develop a best management practices (BMP) program. The Arizona Department of Agriculture is also participating as part of its Consultation and Training Program.

The BMP program will take into consideration the fact that predominant crops on the mesa are multi-year crops (alfalfa and citrus) and agricultural fields in the valley are vacant a minimum amount of time. Figure VII-1 shows the status of the agricultural fields in the nonattainment area in 2002. In general, fields in the Yuma nonattainment area do not lie fallow as more than one crop is able to be grown on the same field during a year's time.

Figure VII-1

2002 Crop Calendar for Yuma PM_{10} Nonattainment Area												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Cotton	1	1,2	2,3	3	3	3	3	3,4	4	4		
Wheat	1,2,3	2,3	2,3	3	3,4	4	4				1,2,3	1,2,3
Veget-ables (lettuce broccoli, cauli-flower)	3,4	3,4	3,4			1	1	1,2,3	1,2,3	1,2,3	1,2,3,4	2,3,4
Alfalfa	3	3	3,4	3,4	3,4	3,4	3,4	3,4	1,3,4	1,2,3,4	3,4	3,4
Citrus	3	3	1,2,3	3	3	1,3,4	1,3,4	1,3,4	3,4	2,3,4	1,3,4	1,3,4
Bermuda Grass	3	3	3	3	3	3	3,4	3	1,3	1,2,3	3,4	3,4
Legend:	**Source of Data: Yuma County Farm Bureau**											

1) Tilling
2) Planting
3) Crop in Field
4) Harvest

Track-out from agricultural fields is also a contributor to the re-entrained dust problem on paved roads, most notably U. S. Highway 95 in Somerton. Highway 95 is the major route from Yuma to the Mexican border. Trucks that have been fully loaded with produce from the fields pull out on Highway 95 to transport the produce to processing plants in the Yuma area. Upon exiting the fields, the trucks may deposit soil onto Highway 95 from where it is subsequently re-entrained in the atmosphere by the tires of passing traffic. Potential solutions to reduce excess dust are part of the agricultural BMP discussions.

Dust from unpaved roads utilized by both farmers and the general public is another contributor to the problem. Growers typically water unpaved roads during the vegetable growing season to prevent dust from settling on high value crops. However, when high value crops are not present, the growers do not intend to water those unpaved farm roads that, legally, may be under the County's jurisdiction. ADEQ is in the process of working with the agricultural community and County staff to determine how emissions from these roads can be controlled during times when high value crops are not present. Usage of unpaved roads are lower during the non-growing seasonal and during the time that winter visitors are not present in the Yuma area. One issue that needs to be addressed is the determination if more dust reduction can be achieved by addressing trespass on unpaved private roads versus the county more intensively watering the roads under its jurisdiction.

A.1.2. Construction

Current local laws require some level of dust mitigation during construction projects. Building permits for projects in the City of Yuma can be obtained through either the zoning department or the public works department, depending upon the type of project undertaken. In each case, local law requires that a dust control plan be submitted to the Building Official. ADEQ is committed to working with the City of Yuma to enforce this requirement, and, if necessary, to determine the necessary resources to strengthen it. One option under consideration is adding a project information sign requirement for certain size construction projects. The sign would be posted prominently at the construction site and display a phone number for citizens to report dust complaints.

ADEQ also plans to work with the City of Somerton to review its dust control plan requirements to determine if its requirements can be made more effective to control dust associated with construction projects in Somerton. As in the case of Yuma, ADEQ will work with City of Somerton staff to add a project information sign requirement for certain size construction projects.

Yuma County also issues building permits and has requirements similar to the City of Yuma for dust control plans for projects in the unincorporated portions of Yuma County. ADEQ is committed to working with the County to enforce this requirement, and, if necessary, to determine the necessary resources to strengthen it. One option under consideration is adding a project information sign requirement for certain size construction projects. The sign would be posted prominently at the construction site and display a phone number for citizens to report dust complaints.

Section VI of this Plan discloses that human activity was the second category of emissions that contributed to the violation of August 12. The following sections examine specific sources that contributed to the emissions in this category.

A.2. Dust from Human Activity

The categories of human activity contributing to PM_{10} emissions are depicted in Figure VI-3 on page 26. The following sections describe these sections in detail.

A.2.1. Paved Roads

During meetings with the Yuma area stakeholders, it was disclosed that haul trucks often transport material throughout the nonattainment area uncovered, letting dirt and debris escape onto paved roads, and contributing to PM_{10} emissions. Existing laws are available for each jurisdiction to require haul trucks with the potential to produce dust from their loads to be covered, however, there are varying enforcement procedures. Although there was general consensus that the city of Yuma has ordinances to enforce, Yuma County may not be enabled by State statute to write and enforce a county ordinance on this subject. Instead, the County can enforce state statutes and rules and work with the Arizona Department of Public Safety to enforce those statutes and rules. Arizona Administrative Code R18-2-606 provides: "No person shall cause, suffer, or allow the transporting of materials to result in significant amounts of airborne dust without taking reasonable precautions to prevent loads from becoming airborne." A.R.S. §§ 28-1098 and 28-7056 are also applicable.

ADEQ and the local jurisdictions will continue to review options. Another control strategy under consideration is the use of PM_{10} efficient street sweepers to keep the streets of the Cities of Yuma and Somerton and Yuma County free of soil and other dust-producing debris. The Yuma Metropolitan Planning Office (YMPO) has submitted a proposal to ADOT to buy three new PM_{10} efficient street sweepers, one each for Yuma, Somerton, and Yuma County, to the Arizona Department of Transportation.

A.2.2. Unpaved Roads

Section VI discloses that emissions from unpaved roads amounted to 4.0 percent of all the emissions resulting from human activities on August 18, 2002.

In the nonattainment area, the county roadways are primarily the section line roads, some of which are unpaved. Yuma County Public Works Department (YCPWD) has the legal responsibility to water, grade and compact the county unpaved roads in the Yuma Nonattainment Area. YCPWD can maintain, as a courtesy, public highways that were established by June 13, 1975, and all roads established by the Yuma County Board of Supervisors. The maintenance schedule varies from once every two weeks to once every two months, depending upon the daily traffic on the road. YCPWD increases its maintenance schedule during the vegetable growing season because the roads experience more use during that time.

The agricultural producers water county unpaved roads during the growing season, in addition to the watering by YCPWD. The growers do this extra watering to prevent dust from these roads settling on their crops.

Unplanned unpaved roads are being created in the Yuma Nonattainment Area by wildcat development and illegal lot splits. Wildcat subdivisions are on the Yuma Mesa. YCPWD does not have the legal authority to maintain these unpaved roads, and, consequently, is prohibited from controlling dust emissions from this source.

Canal roads are a subcategory of unpaved roads and are found in the Yuma Nonattainment Area. There are two principal canals in the nonattainment area that are used for water delivery, the East Main Canal and the West Main Canal in the Yuma Valley. There are service roads on either side of these canals. Traffic can go in either direction on these roads. These canals are owned by the Bureau of Reclamation, but are maintained by the Yuma County Water Users' Association (YCWUA)[6]. From City 2nd Street to City 21st Street, there is a city bike path and a walkway along the eastside of the East Main Canal. Another problem area is the stretch of the East Main canal road between 16th Street and 24th Street. It has been reported that unauthorized traffic, all terrain vehicles (ATVs), and other suspicious activity is common along this stretch of canal. The City of Yuma routinely receives a number of calls complaining about the unauthorized traffic on this part of the canal. There are plans to expand the bike path and walkway to County 12 Street, but it is estimated that this will be completed in 5 years. In the contract that the YCWUA presently has with the City, the city police patrol both sides of the canal.

There are barricades at both sides of County 11 ½ and County 13th Street.

A Yuma County Deputy Sheriff works sixteen to twenty hours a week patrolling the canal roads under the jurisdiction of the YCWUA. In addition, YCWUA maintenance people prohibit unauthorized traffic to use the canal roads.

Track-out resulting mostly from passenger cars is created where the canal roads end at the main roads. The YWCUA routinely waters and grades these roads, which helps to mitigate dust emissions from this source.

To solve the problems of insufficient funds to police the canal roads, ADEQ commits to coordinate with local government the establishment of a hotline number that the public can use to report the license plate number of unauthorized or speeding vehicles on any unpaved roads.

A.2.3. Off Highway Vehicles

Off highway vehicles (OHVs) are another source of dust in the nonattainment area. Local residents will be advised to call the countywide dust complaint number when they suspect OHVs are trespassing on public or private lands.

A.2.4. Permitted Sources

[6] BOR and the YCWUA entered into a contract requiring YCWUA to maintain the East Main Canal in 1951.

ADEQ's inventory of sources was recently updated and it was determined that 38 ADEQ permitted sources were operating in the nonattainment area in 2002 (see Table VII-1). Of these, sixteen were portable sources. A significant source of PM_{10} emissions associated with the permitted sources in the Yuma Nonattainment Area is track-out from the plant property onto paved roads. This is especially a problem with sand and gravel operations which are concentrated along U. S. Highway 95 in the Blaisdell area. Unpaved roads and unpaved parking areas are generally part of the plant property. Trucks hauling loads of sand or gravel from the plant track dirt from these unpaved areas onto major thoroughfares in the nonattainment area. ADEQ staff has noted that track-out is sometimes visible for fifty yards from the point of exit from the plant property.

In an effort to address this problem, ADEQ is taking a three stage approach. In the first stage, ADEQ is revisiting the permits of the sources that are currently in the Yuma Nonattainment Area to determine which permit conditions can be strengthened and made more effective to qualify as BACM. Once these areas of improvement have been identified, ADEQ will determine what legal means it has to re-open the permits to incorporate more effective dust control strategies and programs. Rule revisions may be necessary for ADEQ rules. The third and final stage will consist of revising the necessary permits to incorporate the improved dust control strategies and programs.

Table VII-1
Permitted Sources Identified in the Yuma PM_{10} Nonattainment Area in 2002

Source	Type of Operation	Location of Operation in 2002	2002 PM_{10} Emissions Tons/Year
Alsco American Linen	Yuma Plant- boilers	350 S. Gila Street, Yuma	0.003 tpy (2002)
Arizona Public Service Co.	Power plant, natural gas/fuel oil fired. 250,000 kW capacity	7522 S. Somerton Ave., Yuma	14.1 tpy (2001)
Chaparral Veterinary Clinic	Crematory – animal	1963 Arizona Ave., Yuma	0.0026 tpy (2002)
City of Yuma Figueroa Wastewater Treatment Plant	Wastewater treatment plant, 4 boilers, 2 gas flares, 2 standby generators.	289 N. Figueroa St., Yuma	0.038 tpy (2002)
City of Yuma Main Street Water Treatment Plant	Emergency Generator, 780 KVA, natural gas fired.	175 N. Main, Yuma	0.0065 tpy (2002)
Coca-Cola Enterprises Inc.	Remediation equipment	439 Gila Street, Yuma	**Non-operational**
Desert Lawn Memorial Park	Crematory, 150 pounds per hour	1550 S. Arizona Ave., Yuma	0.029 tpy (2001)
Fertizona Fertilizer Company	Agricultural chemicals and fertilizers plant	4290 E. County 10 2 St., Yuma	0.8585 tpy (2002)
Gila Mountain Development *Facility called Sunset Vista Cemetery*	Crematory, 100 pounds per hour	11357 E. 40th St., Yuma	0.028 tpy (2001)
Gowan Company	Agricultural chemicals and fertilizers mixing and repackaging plant	12300 E. County 8th St., Yuma	<1 tpy (2002)

Source	Type of Operation	Location of Operation in 2002	2002 PM_{10} Emissions Tons/Year
Highway Ceramics	Ceramics manufacturing	3130 E. 32nd Street, Yuma	**Permit terminated in 2001**
Melody Cleaners	Dry cleaning plant, 40 hp boiler	877 Orange Ave., Yuma	0.003 tpy (2002)
Sonoma Pacific Co.	Wood processing	10183 Thomas, Yuma	**No longer permitted**
Tri-State Hospital Supply	Surgical supply and appliance manufacturing	3101 E Marine Industrial Park, Yuma	0.00059 tpy (2002)
US Army Proving Ground	SVE Units	US Army Proving Ground, Yuma	0.292 tpy (2002)
US Army Proving Ground	1609 hp Caterpillar Generators-permit 1000097	US Army Proving Ground, Yuma	Non-operational
US Marine Corps	Generators/Sand blasting/Fuel Cells/Paint booths/gas station/others-permit #s 1001517, 1001518, 1001519, 1001520, 1001521, 1001522	US Marine Corps, Yuma	1.93 tpy (2002)
Valley Seed Co	Agriculture services	Hwy. 95 & Ave 3E	0.787 tpy (2002)
Weyerhaeuser Paper Company	Paper products, natural gas fired boilers	2641 E. 24th St., Yuma	1.472 tpy (2002)
Yuco Gin Inc.	Cotton gin-permit # 94048-93	7474 N. Hwy 95, Blaisdell	11.565 tpy (2002)
Yuma Cogeneration Associates	Power plant, natural gas fired, 55 MW	280 N. 27th Dr., Yuma	14.24 tpy (2001)

Source	Type of Operation	Location of Operation in 2002	2002 PM_{10} Emissions Tons/Year
Yuma Mortuary & Crematory (alias - Ryzek Yuma Mortuary)	Crematory, 100 pounds per hour	551 W. 16th St., Yuma	<1 tpy (2002)
Yuma Regional Medical Center	Incinerators and boilers	2400 Avenue A, Yuma	0.27 tpy (2001)

Portable Sources			
Source	**Type of Operation**	**Location of Operation in 2002**	**2002 PM_{10} Emissions Tons/Year**
BTZ Inc., dba Zeller=s	Crushing and screening - permit 1001432	240 Wellington Ave., Yuma	1.4 tpy (2002)
BTZ Inc., dba Zeller=s	Crushing and screening - permit 1001433	240 Wellington Ave., Yuma	0.69 tpy (2002)
BTZ Inc., dba Zeller=s	Hot mix asphalt - permit 1000918	240 Wellington Ave., Yuma	1.17 tpy (2002)
Don Kelland Materials, Inc.	Hot mix asphalt plant-permit 1000797	12522 E. County 8th Street, Yuma	0.52 tpy (2002)
Don Kelland Materials, Inc.	Hot mix asphalt plant-permit 1001062	4E and County 19th Street Yuma	1.92 tpy (2002)
Fisher Sand and Gravel	Crushing and screening plant-permit 27820	In Yuma - exit 3 off I-8, south on Ave 3E past county 19th street	0.323 tpy (2002)
Fisher Sand and Gravel	Crushing and screening plant-permit 1001476	From Yuma, north on us-95 to milepost 37.5, east (right) 1 mile to pit	1.49 tpy (2002)

Portable Sources			
Source	**Type of Operation**	**Location of Operation in 2002**	**2002 PM_{10} Emissions Tons/Year**
FNF Construction	Crushing and screening plant-permit 1001375	From Yuma, north on us-95 past milepost 37, east on Butterfield Stage rd approx 800 ft, north on first road (T8s r21w)	**Non-operational**
H & S Developers, Inc.	Sand & Gravel	12486 S. Foothill Blvd., Yuma	3.89 tpy (2002)
J & F Sand, Gravel & Construction	Crushing and screening plant-permit 1001507	13700 N. Frontage, Yuma	0.024 tpy (2002)
Meadow Valley Contractors, Inc	Crushing and screening-permit 1001495	I-8 exit 12, north on Fortuna rd 2.0 miles, north (right or initially east) on US-95 4.1 miles to milepost 37.7, east on Butterfield stage rd 0.2 miles, north side of road (T8s r21w)	**Non-operational**
Meadow Valley Contractors, Inc	Hot Mix Asphalt Plant-permit 1001544	1.4 miles south of the intersection of Avenue 3E and county road 19	3.2 tpy (2002) (no longer in Yuma 7-02)

Portable Sources			
Source	**Type of Operation**	**Location of Operation in 2002**	**2002 PM_{10} Emissions Tons/Year**
Meadow Valley Contractors, Inc.	PEP screen plant - permit # 1001598	I-8 exit 3, south on S avenue 3 e 9.4 miles, east on E county 19th st 0.9 miles, south side of road (T10s r23w)	**Non-operational**
T. Warnock Trucking	Crushing and screening plant	12260 Somerton, Ave., Yuma	**Permit Terminated in 2002**
Tanner Companies	Sand, gravel-permit 1001458	MP 37, SR 95, North of Yuma	1.12 tpy (2002)
Tanner Companies	Asphalt plant-permit 4074-95	Tanner Way & U.S. Highway 95	4.02 tpy (2002)
Tanner Companies	Concrete batch plant-permit 1001126	2088 E. 20th St. Yuma	0.75 tpy (2002)
Unocal Corporation	SVEU-permit 26487	505 South Gila Street	Non-operational
Unocal Corporation	SVEU-permit 1001784	505 South Gila Street	Non-operational
Valley Sand & Gravel Co.	Concrete batch plant	1717 E. 16th St., Yuma	0.334 tpy (2002)
W & L, Inc.	Crushing and Screening Plant	4720 E. 16th St., Yuma	0.717 tpy (2002)
Yuma County Dept. of Public Works	Crushing and screening plant	1 mile east of intersection of Laguna Dam Rd. and County 5th Street, Yuma	0.567 tpy (2002)

A.2.4. Arizona Administrative Code R18-2-702 General Provisions

Additional emissions reductions from permitted sources in the Yuma Nonattainment Area are expected as a result of revising Arizona Administrative Code R18-2-702 General Provisions. R18-2-702 applies to certain categories of permitted sources not covered by a separate opacity limit in other sections of ADEQ rules. ADEQ revised this rule in 2003 to conform to EPA's requirement for a 20% opacity limit.

B. Stakeholder and Public Review

A list of the stakeholders working with ADEQ on the development of BACM for the Yuma Nonattainment Area NEAP appears in Appendix H.