



WASHINGTON STATE  
DEPARTMENT OF  
E C O L O G Y

**Documentation of a Natural Event  
Due to High Winds  
February 23, 2006  
Kennewick, Washington**

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06-02-015  
August 2006

 Printed on Recycled Paper

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# **Documentation of a Natural Event Due to High Winds February 23, 2006 Kennewick, Washington**

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Prepared by:

Washington State Department of Ecology  
Air Quality Program

August 2006



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## Summary

On February 23, 2006, the Federal Reference Method monitor (Site ID: 53-005-0002-81102-1) in Kennewick, Washington measured a concentration of particulate matter 10 microns and smaller in size (PM<sub>10</sub>) of 173 µg/m<sup>3</sup>. This concentration exceeded the primary 24-hour PM<sub>10</sub> National Ambient Air Quality Standard (NAAQS) of 150 µg/m<sup>3</sup>.

The Washington State Department of Ecology has determined that the Kennewick exceedance was due to a natural event caused by high winds. Thus, this data point should be excluded from assessment of the attainment status for the area. Ecology flagged the data point for February 23, 2006 in the Air Quality System (AQS) database maintained by EPA to indicate that a natural event was involved. This documentation is being submitted to EPA in support of the data flag, and for EPA's acknowledgement and flagging of the data point.

Ecology prepared this documentation on behalf of the Benton Clean Air Agency due to limited staff resources. Benton Clean Air Agency is the local air agency whose jurisdiction includes the Kennewick monitor.

## Overview of EPA's Natural Events Policy

EPA issued the policy on "Areas Affected by PM-10 Natural Events" (referred to as the Natural Events Policy or NEP) on May 30, 1996. EPA's reasons for issuing the Natural Events Policy are described in the following terms:

In issuing the natural events policy, EPA now believes that, under certain circumstances, it is appropriate to again exclude PM-10 air quality data that are attributable to uncontrollable natural events from the decisions regarding an area's non-attainment status.

Under the policy, ambient PM<sub>10</sub> concentrations raised by unusually high winds are treated as uncontrollable natural events when the dust originates from:

- non-anthropogenic (non-human caused) sources, or
- contributing anthropogenic (human caused) sources controlled with best available control measures (BACM).

After natural events cause the PM<sub>10</sub> concentration to violate the PM<sub>10</sub> NAAQS, the Natural Events Policy requires a state to develop a natural events action plan (NEAP) to deal with future exceedances. The Natural Events Policy specifies that the NEAP is available for public review and comment. A state submits the NEAP to EPA for review and comment.

Under the Natural Events Policy, when a state has reason to believe that natural events have caused monitored exceedances of the PM<sub>10</sub> standard, the state is responsible for establishing a clear causal relationship between the natural event and the exceedance. Documentation of the natural event should be sufficient to demonstrate that the natural event occurred and that it impacted a particular monitoring site. The documentation should provide evidence that

concentrations at the monitoring site would not have exceeded the PM<sub>10</sub> standard in the absence of a natural event.

## Ecology's Response to High Wind Events on the Columbia Plateau

During the late 1980s and early 1990s, a large number of exceedances of the 24-hour standard for PM<sub>10</sub> were recorded in Spokane, Kennewick, and Wallula, Washington. Detailed examination of these exceedances showed a close correlation to high wind events. Upwind agricultural fields were identified as the chief source of the windblown dust. Accordingly, Ecology developed the *Natural Events Action Plan for High Wind Events in the Columbia Plateau* in March 1998, to deal with high wind natural events in eastern Washington.

EPA's Natural Events Policy identifies various criteria states are expected to address in a NEAP, including a commitment to re-evaluate the NEAP every five years. Ecology completed a re-evaluation and submitted a revised NEAP to EPA in June 2003. The Columbia Plateau NEAP continues to address the NEP by providing for:

- Notification of citizens when air quality is likely to be impaired due to high wind events;
- Advice to citizens about steps to minimize exposure;
- Development of a program to identify and implement controls for anthropogenic sources of windblown dust in the Columbia Plateau.

Based on the re-evaluation, several changes were incorporated into the 2003 NEAP. Significant changes include a more refined definition for a high wind event and a finding that BACM is in place throughout the Columbia Plateau.

The 2003 NEAP refined the definition of a high wind event for Washington state in accordance with the provisions of the NEP that allows the states to determine this definition. This provision recognizes the multiple variables that affect the wind erosion processes that result in windblown dust and the generation and transport of PM<sub>10</sub>.

*A high wind event occurs when the wind entrains and suspends dust to the extent that concentrations of PM<sub>10</sub> are elevated. This typically occurs when the average hourly wind speed at 33 ft is 18 miles per hour or greater for two or more hours; or in excess of 13 miles per hour for two hours or more hours when conditions of higher susceptibility to wind erosion exist. A high wind event that exceeds the PM<sub>10</sub> standard is a natural event.*

The Columbia Plateau NEAP documents the research and explains the logic behind this "high wind event" definition. The high wind event definition necessarily includes the concept that the intensity of the wind event is a combination of wind speed and significant duration (sustained wind). The State of Washington finds that windblown dust from agricultural fields is still a significant contributing source of PM<sub>10</sub> exceedances throughout the Columbia Plateau. The soil is very fine with low organic content. This, coupled with low precipitation weather patterns, leads to very dry soil that is highly susceptible to wind erosion.

The 2003 NEAP identified BACM for agricultural fields as conservation programs and practices that reduce or minimize wind erosion. Specifically, this means USDA Conservation Title Programs supplemented by incentive-based implementation of wind-erosion conservation practices or best management practices (BMPs).

Washington State evaluated BACM implementation for agricultural fields in the 2003 NEAP. Based on the evaluation, Washington State views these levels of wind erosion control as sufficient to fulfill BACM criterion of the NEP. A 2005 Annual Status Report regarding BACM implementation is found in Appendix C.

## **Evaluation of the February 23, 2006 Exceedance at Kennewick, Washington**

### **1. Kennewick PM<sub>10</sub> Monitors:**

The Kennewick PM<sub>10</sub> Federal Reference Method (FRM) monitor operates on a 1-in-1-day schedule. In addition to the FRM monitor, a continuous, PM<sub>10</sub> Tapered Element Oscillating Microbalance (PM<sub>10</sub> TEOM) operates at the Kennewick site (Site ID: 53-005-0002-81102-3). EPA has designated the PM<sub>10</sub> TEOM as a Federal Equivalent Method (FEM) monitor and Ecology began submitting data to EPA in October 2004.

The PM<sub>10</sub> TEOM has not collected any valid data since January 1, 2006 due to instrument failure. Consequently, Ecology has invalidated the data collected from January 1, 2006 to date, including February 23, 2006. Validated Kennewick PM<sub>10</sub> FRM and PM<sub>10</sub> TEOM FEM monitor data for 2005, as well as data for January and February 2006, are found in Appendix A.

### **2. Kennewick PM<sub>10</sub> Data:**

Data reported for the Kennewick FRM monitor show an annual average PM<sub>10</sub> concentration of 24.8 µg/m<sup>3</sup> for 2005. Monthly maxima ranged from a low of 14.5 µg/m<sup>3</sup> in January 2005 to a high of 55.6 µg/m<sup>3</sup> in October 2005. The Kennewick FRM monitor recorded three exceedances of the standard due to windblown dust in 2005 (March 16, 2005, August 12, 2005, and September 29, 2005). 24-hour PM<sub>10</sub> concentrations measured 205, 590, and 268 µg/m<sup>3</sup>, respectively.

On August 29, 2005, Ecology submitted natural event documentation for the March 16, 2005 exceedance recorded by the FRM monitor to EPA. EPA concurred with Ecology's finding in a March 24, 2006 letter.

Kennewick FRM data shows January and February 2006 had monthly mean PM<sub>10</sub> concentrations of 7.9 µg/m<sup>3</sup> and 27.4 µg/m<sup>3</sup>, respectively. With the exception of the February 23, 2006 PM<sub>10</sub> concentration of 173 µg/m<sup>3</sup> due to windblown dust, the highest PM<sub>10</sub> concentration was 78 µg/m<sup>3</sup> recorded on February 16, 2006.

Data reported for the Kennewick FEM monitor shows the monthly maxima ranged from a low of 5.9 µg/m<sup>3</sup> in January 2005 to a high of 30.3 µg/m<sup>3</sup> in August 2005. The Kennewick FEM

monitor recorded two exceedances of the standard due to windblown dust in 2005. On August 12, 2005 and September 29, 2005, 24-hour PM<sub>10</sub> concentrations measured 153 µg/m<sup>3</sup> and 245 µg/m<sup>3</sup>, respectively. On February 14, 2006, Ecology submitted to EPA natural event documentation for both the FRM and FEM monitor exceedances recorded on August 12, 2005 and September 29, 2005. Ecology anticipates EPA concurrence with these findings.

### 3. Kennewick Meteorological Data:

The Hanford Meteorological Monitoring Network (HMMN) includes a station at Kennewick Vista Field which is located about four miles west of the Kennewick FRM monitor. The Pacific Northwest National Laboratory (PNNL) operates the HMMN and Ecology finds the data representative of the broader general area. Kennewick Vista Field data shows winds were directionally variable and ranged from about three to 16 mph from about 2000 Pacific Standard Time (PST) February 22, 2006 to about 0600 PST, February 23, 2006. At about 0600 PST on February 23, 2006, the wind direction became consistent and sustained from the west-southwest and wind speeds increased to 25 mph. From 0545 to 1815 PST on February 23, 2006, wind speeds ranged from 18 to 31 mph; gusts ranged from 29 to 52 mph. Select Kennewick Vista Field data for the day are displayed in Table 1. The meteorological data is found in Appendix B.

#### 3.1. Select Wind Observations

Table 1. Select Wind Observations for Kennewick, Washington, February 23, 2006

Time (PST)	Wind Direction	Wind Speed (mph)	Gusts (mph)
1045	236 (WSW)	26	44
1100	237 (WSW)	28	45
1115	232 (SW)	31	52
1145	236 (WSW)	28	45
1200	239 (WSW)	26	41
1245	242 (WSW)	26	45
1300	243 (WSW)	28	47
1315	239 (WSW)	25	45
1345	240 (WSW)	24	43
1400	249 (WSW)	25	40
1415	245 (WSW)	26	44
1445	244 (WSW)	23	40
1500	244 (WSW)	26	45
1545	241 (WSW)	24	43
1600	243 (WSW)	26	44

The data shows the winds at Kennewick, Washington clearly met Ecology's definition for a high wind event.

*A high wind event occurs when the wind entrains and suspends dust to the extent that concentrations of PM<sub>10</sub> are elevated. This occurs when the average hourly wind speed at 10 m is 18 miles per hour or greater for two or more hours; or in excess of 13 miles per hour for two or more hours when conditions of higher susceptibility to wind erosion exist (see attachment A1). A high wind event that exceeds the PM<sub>10</sub> standard is a natural event.*

Wind speeds and wind direction at Kennewick, Washington from 2000 (PST) on February 22, 2006 to 0000 (PST) on February 23, 2006 are displayed in Figure 1.

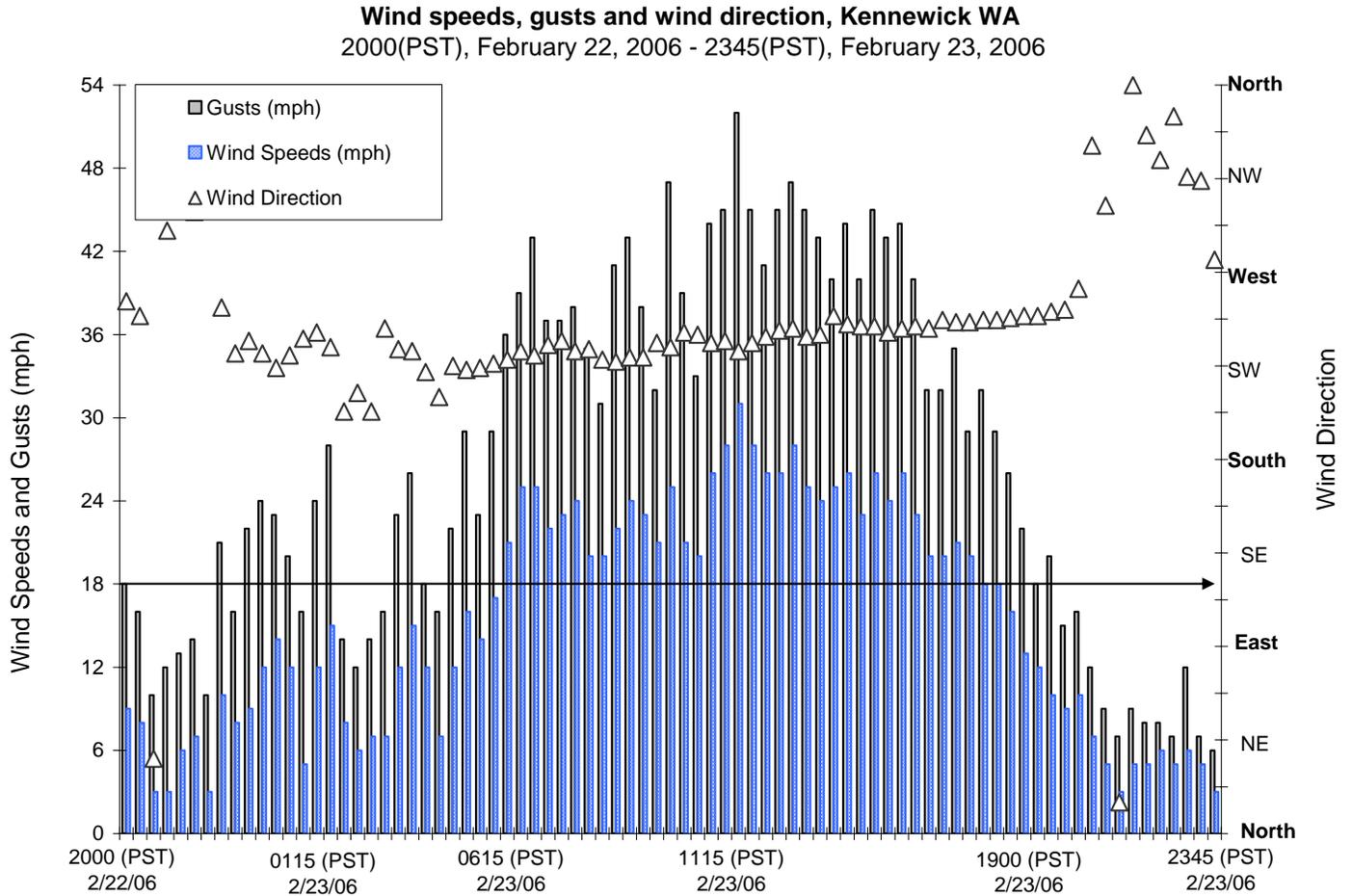


Figure 1

### 3.2. Precipitation Prior to and Including February 23, 2006:

1. Table 2 summarizes precipitation data from several reporting meteorological sites in the greater Kennewick, Washington area. Washington State University’s Public Agricultural Weather System (PAWS) operates these sites. The sites are generally located in an arc ranging from south through west-southwest, generally upwind of Kennewick, Washington with respect to the direction of the prevailing high winds on February 23, 2006. None of the sites is more than about 15 miles from Kennewick, Washington. Appendix B contains a map showing the location of each site as well as the precipitation data.

Table 2. Precipitation Prior to and Including February 23, 2006

STATION	20th	21st	22nd	72 hour total	23rd
Carlson (PAWS)	0	0	0	0	0
Fourmile (PAWS)	0	0	0	0	0
Gramling (PAWS)	0	0	0	0	0
Horrigan (PAWS)	0	0	0	0	0
Hundred Circle Farm (PAWS)	0	0	0	0	0
McNary (PAWS)	0	0	0	0	0

Ecology analyzed data from the six sites to assess the general vulnerability of soils to high winds. The data show the area generally south through west-southwest (upwind on February 23, 2006) of Kennewick recorded no precipitation either 72 hours prior to or on February 23, 2006.

2. Ecology also compared February precipitation data from the six Public Agriculture Weather System (PAWS) stations with mean precipitation for the same time period, over the past 6-15 years (Table 3). The period of record for each site is found in Appendix B.

All sites report measurable precipitation well below the mean for February 2006. Moreover, the data shows that the majority of precipitation recorded in February 2006 was measured after February 23, 2006. The data shows that precipitation measured from February 1 through February 23, 2006 ranged from 0 to 13 percent of February mean precipitation.

Table 3. February 2006 Precipitation Compared to Mean Precipitation

Station	Feb. precip. long-term mean	Feb. 2006	Percent of mean	Feb. 1 – 23, 2006 Precip.	Percent of mean, Feb. 1 – 23, 2006
Carlson (PAWS)	.80	.41	51	.09	11
Fourmile (PAWS)	.70	.21	30	.05	7
Gramling (PAWS)	.80	.63	79	.10	13
Horrigan (PAWS)	.60	.22	37	.02	3
Hundred Circle Farm (PAWS)	.60	.24	40	.00	≤ 0
McNary (PAWS)	.80	.25	31	.05	6

The data show the area generally south through west-southwest (upwind on February 23, 2006) of Kennewick was especially dry through February 23, 2006 when compared to mean February precipitation. Moreover, all sites analyzed show conditions were sufficiently dry to generate windblown dust 72 hours prior to the high winds on February 23, 2006. Such dry conditions leave soils vulnerable to wind erosion, particularly in light of the 12 consecutive hours of recorded high winds.

## BACM Implementation

The 2003 NEAP determined BACM is implemented in the Columbia Plateau based on 68 percent use of conservation practices. BACM for agricultural fields is defined as USDA Conservation Title Programs supplemented by incentive-based implementation of wind erosion

conservation practices or BMPs. In short, the BACM definition recognizes the critical role of agricultural agencies in defining and instituting BACM on the Columbia Plateau. The NEAP acknowledges the combined expertise of these agencies and relies on the various programs of these agencies in implementing the conservation practices that constitute BACM.

For defining BACM, the NEAP uses USDA's Conservation Reserve Program (CRP) and the wind erosion BMPs encouraged by NRCS and/or the Columbia Plateau Wind Erosion /Air Quality Project (referred to as the CP3). Use of these practices is tracked by the Conservation Technology Information Center's (CTIC) Core 4 program. The CTIC's Core 4 program tracks conservation tillage (No-Till, Ridge-Till, Mulch-Till) and conventional tillage (0-15 percent and 15-30 percent residue) practices and CRP enrollment on a county by county basis.

A 2004 Annual Status Report regarding BACM implementation (Appendix C) shows the levels of CRP and BMP use have increased to 78 percent in the priority counties of the Columbia Plateau. 78 percent of the total farmable acres in these counties are now part of a USDA conservation program, use one of the minimum till practices, or contain 15-30 percent residue.

Washington State finds this level of CRP and BMP implementation fulfills BACM criteria. A full discussion on Ecology's BACM definition and tracking mechanism may be found in the revised NEAP.

## Findings

The meteorological data from Kennewick, Washington shows that February 23, 2006 was characterized by windy conditions. Wind speeds ranged from 18 to 31 mph for over 12 consecutive hours; gusts ranged from 29 to 52 mph. The winds meet Ecology's high wind event definition.

Much of the area lying upwind of Kennewick, Washington with respect to the prevailing winds received well below mean precipitation during February, 2006; none of the sites reviewed report any precipitation from February 5 to 23, 2006. Such conditions are consistent with areas being susceptible to windblown dust. Moreover, Ecology finds that BACM was implemented on agricultural fields.

Under the dry conditions so common in this area, the windy conditions are likely to raise dust that led to the monitored high PM<sub>10</sub> levels. Therefore, the monitored PM<sub>10</sub> concentrations of 173 µg/m<sup>3</sup> at Kennewick, Washington on February 23, 2006 are reasonably attributed to a natural event due to high winds.

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## **APPENDIX A**

2005 and January-February 2006  
Kennewick Federal Reference Method (FRM) and  
Federal Equivalent Method (FEM) Data



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 1  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AQCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT: 9

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (063) HI-VOL SA/GMW-1200 GRAVIMETRIC  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: 2005

DURATION: 24 HOURS  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: 4

MONTH												
Day	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1		27	16	42	23		28		26	11	73	12
2		37	22		21	32	27	23	32	4	16	
3	10	42	20	12	18	26	14	35		7		19
4	10	40	26	9	10	20		38	19	14	6	
5	17	3	16	12		17		42		13	4	17
6	22	5	14	17	23	9	66	36	27	16	3	
7	14		25	112	11	23	25	23	34	10	8	13
8	9	28	17	12	14	13	65	35	37	11	13	22
9	7	22	23	20		16	10	31	65		27	36
10	8	28	25	14	8	24	11	43	13	21	23	39
11	8	26	32	23	16	31	14	42	12	17	12	45
12	6	24	33	21	14	10	18	590 a	22	26	5	34
13	10	5	15	12	25	18	16	39	21		5	35
14	10	11		21	13	19	22	32	25	18	10	18
15	12	16	41	20	15	20	36		27	15	17	20
16	9	21	205 A	15	9	38	18	95		22	17	16
17	19		10	11	11	9	14	34	11	39	24	20
18	24	27	16	9	11	10		20	13	21	29	14
19	18	31	9	19		12	25	36	25		28	12
20	18	19	12	20	9		25	43	21	11		21
21	19	24	12	15	8	60	31	33	22	15	10	22
22	19	35	11	18	12	31	48		24	20	8	20
23	22	35	18	20	12	15	15		22	32	8	17
24	11		12	10	13	26	16	21	18	36		18
25	16	46	12	11	17	17	22	33	20	42	6	12
26	25	52	13	16	19	28	29	38	38	12	3	8
27	18	28	4	101	25	13	34	24	30	17	11	11
28	15	23	46	22			41	24	50	10		7
29	16		98	24	39	14	27		268 a	10	8	11
30	5		13	14	37	32	25	15	16	9	6	10
31	24						30	20		9		8
NO.:	29	25	29	29	26	27	28	26	27	28	26	28
MAX:	25.	52.	205.	112.	39.	60.	66.	590.	268.	42.	73.	45.
MEAN:	14.5	26.2	28.1	23.2	16.7	21.6	26.9	55.6	34.7	17.4	14.6	19.2
ANNUAL OBSERVATIONS:		328	ANNUAL MEAN:	24.8	ANNUAL MAX:	590.						

Note: Qualifier codes with regional concurrence are shown in upper case, and those without Regional review is shown in lower case. An asterisk ("\*") indicates that the region has reviewed the value and does not concur with the qualifier.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
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 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

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 AQCR: (230) SOUTH CENTRAL WASHINGTON  
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 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
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 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: JANUARY 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM		
1	1	4	8	6	3	1	2	2	2	1	4	1	3	3	1	5	3	3	3	3	2	3	4	4	24	8.		
2	3	3	3	2	4	3	4	2	8	8	12	11	3	3	5	3	4	4	5	3	9	6	15	7	24	15.		
3	6	5	6	2	3	2	4	15	10	6	6	4	5	5	8	6	8	9	7	8	6	11	8	5	24	15.		
4	2	2	3	4	6	7	17	19	7	6	6	6	4	6	12	12	11	8	9	14	15	14	10	7	24	19.		
5																										0		
6																											0	
7																											0	
8																											0	
9																											0	
10																											0	
11																											0	
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31																											0	
NO.:	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
MAX:	6.	5.	8.	6.	6.	7.	17.	19.	10.	8.	12.	11.	5.	6.	12.	12.	11.	9.	9.	14.	15.	14.	15.	7.				
AVG:	3.0	3.5	5.0	3.5	4.0	3.3	6.8	9.5	6.8	5.3	7.0	5.5	3.8	4.3	6.5	6.5	6.5	6.0	6.0	7.0	8.0	8.5	9.3	5.8				

MONTHLY OBSERVATIONS: 96 MONTHLY MEAN: 5.9 MONTHLY MAX: 19.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

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 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
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 MONITOR COMMENTS:

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 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: MAY 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM		
1																										0		
2																											0	
3																											0	
4															14	6	11	7	4	21	20	9	11	11	10	10	21.	
5	4	0	1	1	3	1	1	11	6	18	23	5	7	15	7	4	6	5	3	13	9	2	1	23	23.			
6	2	4	5	0	7	8	15	16	9	10	14	35	1	2	34	38	57	57	22	17	17	0	18	20	24	57.		
7	4	17	1	11	5	1	6	8	14	12	6	23	49	9	12	11	10	6	2	3	10	7	4	6	24	49.		
8	5	4	6	1	10	35	11	6	10	11	11	13	13	17	12	69	10	10	13	7	16	17	5	0	24	69.		
9	3	3	1	5	0	5	8	16	9	10	16	16	13	19	2	5	2	38	43	41	7	1	6	0	24	43.		
10	0	1	2	0	0	4	18	12	10	11	10	6	12	13	16	6	14	8	5	6	15	11	3	2	24	18.		
11	2	4	2	2	4	28	13	17	11	8	2	5	17	9	16	11	13	24	17	43	23	7	7	10	24	43.		
12	9	27	9	5	4	10	15	19	20	14	21	10	11	7	8	7	38	3	9	28	11	18	21	20	24	38.		
13	19	13	19	13	14	11	12	15	25	7	16	23	19	13	24	18	36	21	19	31	19	49	186	43	24	186.		
14	29	12	8	6	14	15	10	10	8	8	7	16	8	9	8	17	14	3	39	21	14	13	16	8	24	39.		
15	12	18	22	14	14	6	6	13	13	15	3	28	6	6	24	25	21	26	9	3	3	2	5	24	28.			
16	3	2	6	7	4	1	10	10	6	8		6	4	2	5	5	11	42	14	1	17	1	3	6	23	42.		
17	2	6	3	3	9	11	9	11	13	11	14	18	4	11	14	5	6	9	9	15	9	9	20	9	24	20.		
18	7	6	10	7	14	19	13	17	6	1	0	1														12	19.	
19											2	8	9	24	3	15	35	3	4	6	11	42	20	6	14	42.		
20	9	3	5	16	0	18	2	6	3	12	4	6	22	10	10	9	11	12	16	8	22	11	0	10	24	22.		
21	4	3	2	2	6	11	3	4	9	4	9	9	5	6	6	30	35	17	30	14	17	12	13	6	24	35.		
22	4	4	5	9	1	2	7	6	12	8	5	3	12	25	20	21	31	21	21	8	10	13	0	6	24	31.		
23		22	4	0	4	14	13	7	6	2	6	4	5	12	14	11	13	1	3	12	7	16	36	13	23	36.		
24	5	10	7	4	8	15	19	25	13	7	12	14	3	10	11	15	10	14	7	16	2	20	9	25	24	25.		
25	46	4	11	23	5	28	37	8	17	23	20	18	18	13	8	4	14	18	44	20	22	18	18	6	24	46.		
26	4	3	8	7	9	21	26	37	28	28	30	19	24	18	2	4	16	22	35	22	52	26	12	22	24	52.		
27	20	11	10	23	20	26	10	23	31	20	29	27	24	20	5	36	8	8	22	66	7	51	33	6	24	66.		
28	24	19	16	31	24	13	11	37	28	20	11	30	14	31	27	22	12	27	51	43	19	40	16	21	24	51.		
29	34	107	39	42	34	32	19	30	31	17	28	35	25	19	19	14	15	57	28	34	39	56	54	41	24	107.		
30	35	21	19	14	13	13	18	21	11	13	11	14	13	4	5	8	63	34	59	48	131	55	28	19	24	131.		
31	9	4	22	12	14	21	22	33		59	75	86	101	62	84	71	37	75	25	11	2	6	12	5	23	101.		
NO.:	25	26	26	26	26	26	26	26	25	26	27	25	26	27	27	27	27	27	27	27	27	27	27	27	27	27		
MAX:	46.	107.	39.	42.	34.	35.	37.	37.	31.	59.	75.	86	101.	62.	84.	71.	63.	75.	59.	66.	131.	56.	186.	43.				
AVG:	11.8	12.6	9.3	9.9	9.2	14.2	12.8	15.8	14.0	13.7	15.3	16.8	18.2	14.5	14.8	18.1	20.4	20.9	21.2	20.5	19.8	19.3	20.6	12.1				

MONTHLY OBSERVATIONS: 632 MONTHLY MEAN: 15.7 MONTHLY MAX: 186.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AOCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: JUNE 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM	
1	2	28	10	5	11	4	8	2	19	22	16	31	29	38	15	23	24	49	35	13	21	18	3	10	24	49.	
2	18	6	10	3	4	9	9	4	6	7	7	28	17	13	16	35	88	192	125	31	17	7	11	30	24	192.	
3	4	4	1	2	5	6	24	36	28	23	13	9	10	10	7	24	21	17	26	36	32	24	26	17	24	36.	
4	10	4	7	2	4	16	10	5	5	8	20	8	9	18	11	11	14	24	24	37	54	23	19	46	24	54.	
5	10	16	37	18	9	5	8	5	0	5	6	14	8	21	55	22	25	55	23	27	9	6	3	8	24	55.	
6	7	13	5	3	5	12	8	11	3		1	3	5	6	8	9	45	31	12	7	6	8	7	14	23	45.	
7	2	10	12	8	5	11	28	24	10	12	9	17	5	20	40	39	42	119	40	17	28	18	15	7	24	119.	
8	3	3	1	1	4	4	10	6	12	7	2						18	16	11	14	16	14	13	13	19	18.	
9	13	9	7	7	9	13	17	14	10	11	12	13	8	9	8	11	11	19	11	6	20	24	12	10	24	24.	
10	9	10	10	10	13	15	11	13	14	11	14	15	10	7	11	14	64	55	38	29	15	10	9	8	24	64.	
11	5	2	3	3	3	3	9	24	31	20	23	28	48	83	129	70	62	49	38	23	12	11	6	5	24	129.	
12	4	5	3	3	5	3	3	4	4	2	3	3	4	4	3	4	7	7	4	4	2	3	6	10	24	10.	
13	7	6	6	8	9	11	17	36	17	12	23	30	18	18	18	12	7	8	7	6	10	5	4	4	24	36.	
14	3	4	4	5	9	17	12	18	19	13	11	16	17	15	12	15	13	12	22	9	6	5	5	6	24	22.	
15	8	6	6	8	7	9	7	8	7	8	6	6	5	10	11	12	10	12	16	20	20	21	16	16	24	21.	
16	18	9	9	10	12	14	18	17	16	18	18	18	18	15	20	36	85	162	78	17	32	31	22	9	24	162.	
17	10	5	8	5	7	2	4	5	4	3	4	5	6	8	9	15	15	17	8	6	8	6	5	3	24	17.	
18	6	4	4	3	4	5	3	6	4	5	2	3	4	5	24	7	2	3	5	5	7	12	6	8	24	24.	
19	13	4	5	13	7	11	12	9	7	7	10	5	3	3	4	5	8	10	36	15	11	9	12	8	24	36.	
20	7	13	9	9	10	15	26	25	65		23	22	20	16	19	19	23	21	20	20	21	22	16	12	23	65.	
21	14	13	12	11	14	22	27	26	26	26	30	26	26	35	30	51	207	357	197	40	39	35	18	17	24	357.	
22	15	11	12	15	12	14	25	14	12	10	12	14	15	25	75	51	45	44	15	10	13	10	8	5	24	75.	
23	4	3	9	2	8	9	11	10	5	3	4	7	4	2	6	5	10	10	6	10	18	17	15	8	24	18.	
24	20	20	14	14	31	27	22	20	13	17	20	22	26	19	17	11	8	11	13	20	20	25	24	20	24	31.	
25	24	14	15	16	10	11	10	23	4	6	5	5	7	11	13	12	12	10	20	17	13	5	21	26	24	26.	
26	18	7	9	10	5	9	20	20	17	6	18	7	8	7	11	13	24	44	25	50	37	36	99	39	24	99.	
27	14	21	6	5	5	7	7	15	10	9	13	3	5	6	5	6	5	8	11	9	11	11	14	1	24	21.	
28	2	7	3	3	4	3	7	6	1	5	6	6	3	4	5	7	11	11	12	15	8	9	13	9	24	15.	
29	7	14	15	3	5	6	8	9	6	11	11	5	3	5	11	4	6	8	5	11	17	9	11	38	24	38.	
30	18	13	15	17	20	20	33	27	16	19	15	25	6	6	24	58	101	34	17	9	55	15	13	14	24	101.	
31																										0	
NO.:	30	30	30	30	30	30	30	30	28	30	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30		
MAX:	24.	28.	37.	18.	31.	27.	33.	36.	65.	26.	30.	31.	48.	83.	129.	70.	207.	357.	197.	50.	55.	36.	99.	46.			
AVG:	9.8	9.5	8.9	7.4	8.5	10.4	13.8	14.7	13.0	10.9	11.9	13.6	12.0	15.1	21.3	20.7	33.8	47.2	30.0	17.8	19.3	15.0	15.1	14.0			

MONTHLY OBSERVATIONS: 713 MONTHLY MEAN: 16.4 MONTHLY MAX: 357.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AOCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: JULY 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM	
1	10	16	10	9	10	14	7	11	14	10	6	11	9	8	6	16	19	15	9	23	42	109	24	19	24	109.	
2	17	20	14	11	12	11	10	10	16	12	11	18	17	17	12	17	20	35	47	42	11	9	6	2	24	47.	
3	12	12	12	14	8	6	4	6	5	9	9	20	5	4	5	4	8	3	4	26	18	22	13	31	24	31.	
4	20	34	16	20	14	18	15	20	15	11	12	10	7	7	6	10	4	2	14	18	12	20	28	51	24	51.	
5	61	46	61	29	8	11	14	48	22	22	24	21	15	8	23	33	88	115	75	22	25	19	19	25	24	115.	
6	17	20	24	21	13	73	142	313	168	61	53	44	52	67	40	48	61	35	20	23	10	5	5	3	24	313.	
7	4	8	7	8	6	17	9	8	6	5	4	8	1	4	4	8	7	13	14	22	20	25	3	34	24	34.	
8	58	145	85	22	19	18	20	23	29	33	25	32	31	22	40	63	340	78	17	7	9	1	1	1	24	340.	
9	0	3	2	1	5	5	4	4	2	4	6	3	4	10	2	6	6	9	8	14	3	15	2	10	24	15.	
10	13	5	3	4	6	4	7	4	7	5	4	11	8	4	4	6	4	3	5	9	3	2	0	2	24	13.	
11	3	8	8	4	2	4	8	13	5	8	6	5	6	9	5	4	7	5	8	17	12	21	32	17	23	32.	
12	8	14	9	8	8	20	9	5	8	8	7	6	16	9	3	8	14	17	13	23	21	22	17	22	24	23.	
13	18	11	6	7	5	6	7	7	8	7	11	6	9	16	9	11	13	13	20	22	15	8	6	7	24	22.	
14	8	7	10	13	8	21	14	19	16	19	11	13	14	13	16	8	7	9	6	22	37	28	17	12	24	37.	
15	16	32	6	30	22	38	39	22	29	18	27	26	24	21	31	28	23	38	47	62	32	28	14	8	24	62.	
16	10	7	8	9	6	11	9	10	13	11	2	10	11	10	19	4	5	10	11	7	29	5	2	5	24	29.	
17	4	5	5	5	12	8	21	7	6	5	4	4	6	6	3	4	2	5	8	15	16	5	7	13	24	21.	
18	20	2	45	24	14	37	21	22	7	19	27	12	17	12	17	4	9	12	2	52	26	12	14	6	24	52.	
19	10	23	13	20	20	12	6	2	8	17	16	9	17	22	20	9	18	27	28	15	16	11	32	27	24	32.	
20	23	15	9	7	9	20	27	28	24	21	18	18	14	12	19	14	8	18	14	23	23	19	8	17	24	28.	
21	13	18	20	13	16	31	31	29	19	28	23	20	27	16	6	20	11	30	20	20	17	20	39	33	24	39.	
22	26	50	45	49	39	45	40	45	256	48	37	24	15	8	39	10	5	2	4	2	4	5	10	24	256.		
23	16	11	3	17	11	12	12	9	3	6	11	14	13	13	11	9	12	10	17	14	4	40	8	9	24	40.	
24	5	9	11	13	11	16	6	7	4	4	10	7	7	7	8	3	11	9	14	21	8	25	9	24	25.		
25	36	15	9	12	13	28	38	21	6		10	11	8	8	8	15	6	9	9	24	7	8	22	25	23	38.	
26	9	25	21	12	40	49	31	17	25	23	16	11	10	3	13	8	9	15	12	30	45	16	15	25	24	49.	
27	38	25	15	45	36	30	27	54	19	32	35	27	20	27	13	22	13	5	32	45	25	20	15	29	24	54.	
28	20	28	17	46	24	56	65	45	37	24	30	9	27	24	17	22	20	46	65	11	14	78	37	42	24	78.	
29	71	22	10	6	6	10	10	25	14	8	20	20	21	11	20	7	19	23	23	17	14	26	4	4	24	71.	
30	17	13	2	14	16	21	45	52	11	5	10	9	18	13	13	14	10	8	32	14	2	5	42	37	24	52.	
31	21	11	19	10	20	11	59	26	10	6	21	11	11	8	8	13	11	16	19	14	9	18	8	20	24	59.	
NO.:	31	31	31	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MAX:	71.	145.	85.	49.	40.	73.	142.	313.	168.	256.	53.	44.	52.	67.	40.	63.	340.	115.	75.	62.	45.	109.	42.	51.			
AVG:	19.5	21.3	16.9	16.2	14.2	21.4	24.4	29.3	19.4	23.8	16.7	14.9	15.1	13.7	13.2	15.5	25.4	20.6	19.7	21.6	17.4	20.3	15.2	17.9			

MONTHLY OBSERVATIONS: 742 MONTHLY MEAN: 18.9 MONTHLY MAX: 340.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AOCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: AUGUST 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM	
1	125	42	20	15	14	21	27	16	7	7	10	5	13	14	7	13	17	49	18	2	1	12	3	8	24	125.	
2	20	12	11	1	3	20	17	21	9	11	11	8	10	9	5	6	6	12	11	38	11	18	34	33	24	38.	
3	32	20	31	19	24	46	37	22	22	22	32	34	33	24	27	19	28	35	20	31	12	29	23	21	24	46.	
4	24	7	33	17	28	37	43	51	38	48	41	36	30	26	10	22	21	43	32	64	41	13	5	31	24	64.	
5	44	34	36	30	63	49	83	40	35	27	27	34	19	33	34	31	36	45	38	59	23	9	86	45	24	86.	
6	44	26	22	26	21	23	67	35	43	33	15	15	21	17	17	5	12	8	17	45	60	41	33	40	24	67.	
7	28	9	7	9	11	12	12	47	20	14	5	22	11	22	18	13	14	27	37	4	8	23	24	19	24	47.	
8	27	32	32	24	17	28	47	47	34	45	16	16	13	19	21	20	22	34	40	13	15	90	55	43	24	90.	
9	27	17	15	16	19	17	22	36	38	29	13	12	23	19	28	23	11	13	24	41	12	55	33	31	24	55.	
10	15	3	13	18	14	18	25	36	37	23	22	16	8	14	17	28	46	144	93	77	34	66	53	28	24	144.	
11	16	12	8	13	19	29	24	46	16	8	17	9	11	19	20	43	13	10	28	35	68	91	52	36	24	91.	
12	53	52	34	17	14	14	17	17	21	22	25	11	18	27	30	47	52	49	242a	1004a	1004a	667a	177a	63	24	1004.	
13	30	20	20	20	8	8	11	11	21	16	16	20	17	19	18	12	13	18	25	25	35	20	6	18	24	35.	
14	26	50	15	46	26	36	26	27	25	29	22	22	17	14	8	9	7	92	21	40	17	23	30	22	24	92.	
15	51	59	38	24	41	60	34	58	12	10	39	14	17	49	25	16	51	23	43	89	14	22	103	19	24	103.	
16	48	93	37	26	33	41	73	72	34	29	40	38	14	35	26	59	31	69	139	80	70	95	39	59	24	139.	
17	59	22	20	20	55	16	27	30	62	35	25	4	9	7	22	12	11	6	18	9	15	22	18	5	24	62.	
18	1	16	3	8	5	15	18	9	7	0	31	21	20	17	13	14	13	11	19	27	24	28	15	18	24	31.	
19	21	30	30	22	24	25	33	35	31	29	27	24	16	11	16	14	14	21	42	69	51	33	20	19	24	69.	
20	19	18	23	37	35	30	36	36	31	27	29	30	30	27	25	30	42	27	27	38	34	27	22	21	24	42.	
21	21	16	19	18	23	24	23	36	36	21	15	11	13	13	12	10	13	15	19	19	25	29	83	80	24	83.	
22	72	26	20	12	17	17	16	10	12	13	11	10	13	14	16	18	17	21	22	36	44	41	30	26	24	72.	
23	27	26	29	20	16	20	20	69	16	18	15	13	24	21	20	16	70	100	42	22	11	10	8	7	24	100.	
24	6	9	7	8	8	21	23	24	24	9	6	6	5	8	12	10	7	11	14	26	27	22	18	18	24	27.	
25	21	14	16	17	19	24	41	50	33	20	35	44	35	26	17	19	29	26	39	34	20	23	20	23	24	50.	
26	21	19	48	46	46	48	52	49	39	30	34	31	27	30	26	24	27	34	34	33	35	29	28	24	24	52.	
27	27	20	21	20	21	23	28	19	24	18	20	7	20	19	15	30	7	24	32	16	13	13	18	19	24	32.	
28	15	11	11	10	10	11	14	16	12	11	11	8	8	4	5	15	7	11	17	38	64	134	36	20	24	134.	
29	9	29	65	79	123	42	35	204	104	61	51	82	61	15	13	16	10	34	36	19	16	15	7	7	24	204.	
30	5	7	8	6	7	14	16	11	2	12	7	7	10	11	7	6	12	10	14	18	12	7	5	6	24	18.	
31	8	9	4	6	10	17	25	37	28	7	3	7	12	10	11	16	15	20	28	18	19	17	18	28	24	37.	
NO.:	31	31	31	31	31	31	31	31	30	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MAX:	125.	93.	65.	79.	123.	60.	83.	204.	104.	61.	51.	82.	61.	49.	34.	59.	70.	144.	242.	1004.	1004.	667.	177.	80.			
AVG:	30.4	24.5	22.5	21.0	25.0	26.0	31.4	39.3	28.4	22.1	21.3	19.8	18.7	19.4	17.4	20.1	21.1	33.5	39.8	66.5	60.3	55.0	35.8	27.0			

MONTHLY OBSERVATIONS: 740 MONTHLY MEAN: 30.3 MONTHLY MAX: 1004.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AOCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: SEPTEMBER 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM	
1	24	24	19	20	16	29	32	35	30	23	18	20	15	18	12	16	17	19	29	37	27	26	23	10	24	37.	
2	17	13	17	19	22	26	56	54	48	42	32	19	24	23	25	30	9	24	22	44	69	33	21	21	24	69.	
3	13	11	11	7	8	8	9	10	7	12	6	3	4	14	12	10	9	11	7	13	13	12	9	8	24	14.	
4	8	11	12	8	9	8	9	5	12	9	34	117	23	25	4	8	10	15	22	12	11	10	13	17	24	117.	
5	17	13	11	11	11	13	14	19	8	7	5	11	10	12	11	11	9	12	12	23	19	13	13	13	24	23.	
6	22	5	12	5	11	17	38	25			20	23	19	14	16	15	14	19	20	25	19	17	21	15	22	38.	
7	20	14	14	21	18	28	39	65	42	25	19	12	27	26	28	31	24	26	61	40	20	22	28	31	24	65.	
8	32	22	35	28	30	45	44	43	39	39	15	19	46	29	34	26	30	31	20	17	24	31	30	32	24	46.	
9	39	30	36	71	54	60	110	90	87	71	72	69	65	118	91	91	63	35	8	26	10	11	9	4	24	118.	
10	3	5	7	4	5	8	11	10	8	11	5	9	5	7	14	5	4	6	12	8	5	12	9	11	24	14.	
11	6	11	13	4	6	6	10	8	10	1	1	2	2	4	2	9	6	13	10	9	10	13	7	7	24	13.	
12	14	24	0	13	12	7	11	11	10	5	6	8	10	4	9	12	9	17	116	13	20	34	23	21	24	116.	
13	16	16	13	13	16	15	21	25	21	15	18	13	14	21	19	17	15	15	27	10	7	13	23	11	24	27.	
14	28	11	13	13	22	18	52	51	49	27	6	12	11		2	3	15	12	22	21	22	13	28	19	23	52.	
15	21	13	13	10	12	8	5	15	13	4	2	3	8	17	25	25	26	29	32	44	32	35	29	25	24	44.	
16	12	10	5	6	8	12	12	11	18	18	10	9	15	15	9	14	16	14	14	16	29	23	5	9	24	29.	
17	16	15	6	3	7	7	22	9	13	5	5	5	5	8	7	3	12	12	7	6	13	19	20	8	24	22.	
18	4	3	4	5	6	6	5	11	10	9	3	3	3	0	4	3	17	15	10	14	14	11	12	11	24	17.	
19	6	8	12	13	21	25	45	17	17		7	11	21	19	20	14	39	49	24	50	19	16	12	10	23	50.	
20	11	10	11	10	12	18	40	24	23	13	8	2	10	11	11	12	10	15	32	20	6	10	15	25	24	40.	
21	18	19	21	18	15	24	58	48	19	19	11	19	14	11	8	7	8	12	22	21	2	14	15	15	24	58.	
22	21	34	31	20	35	23	33	28	28	22	9	7	6	13	7	10	19	25	37	46	14	29	27	13	24	46.	
23	7	5	8	7	5	10	16	18	24	52	41	28	32	31	26	19	16	21	32	15	16	17	7	21	24	52.	
24	21	15	23	6	25	16	19	15	19	14	9	7	5	9	8	14	13	24	12	16	14	17	26	10	24	26.	
25	47	23	16	9	14	13	24	43	21	24	16	12	5	6	6	5	6	21	7	13	22	29	30	18	24	47.	
26	19	13	21	19	29	34	48	39	26	39	34	25		21	19	21	35	48	37	51	28	35	31	32	23	51.	
27	37	20	39	35	44	48	47	64	44	27	29	17	12	8	10	9	13	23	39	22	26	14	14	48	24	64.	
28																											0
29	69	93	259a	151a	117	148	163a	554a	784a	895a	712a	289a	107	61	33	59	138	481a	211a	179a	106a	64	173a	22	24	895.	
30	17	20	26	15	14	14	10	22	22	28	11	18	4	5	11	2	1	0	9	0		0	5	3	23	28.	
31																											0
NO.:	29	29	29	29	29	29	29	29	28	27	29	29	28	28	29	29	29	29	29	29	28	29	29	29	29		
MAX:	69.	93.	259.	151.	117.	148.	163.	554.	784.	895.	712.	289.	107.	118.	91.	91.	138.	481.	211.	179.	106.	64.	173.	48.			
AVG:	20.2	17.6	24.4	19.4	20.8	23.9	34.6	47.2	51.8	54.3	40.1	27.3	18.6	19.6	16.7	17.0	20.9	35.8	31.6	28.0	22.0	20.3	23.6	16.9			

MONTHLY OBSERVATIONS: 690 MONTHLY MEAN: 27.1 MONTHLY MAX: 895.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May. 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AQCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: OCTOBER 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM	
1	1	0	9	3	2	6	4	2	5	2	6	4	10	3	4	6	6	2	8	11	3	0	0	0	24	11.	
2	0	2	1	3	2	1	0	10	7	2	3	1	2	6	4	11	6	20	7	2	5	3	1	5	24	20.	
3	6	8	0	5	4	2	4	6	8	0	10	1	2	2	4	12	8	12	11	6	1	7	4	3	24	12.	
4	4	5	2	4	0	8	24	19	11	12	3	4	8	4	3	6	10	14	10	4	9	9	10	8	24	24.	
5	10	8	4	6	7	9	13	7	14	3	12	10	4	7	9	8	10	9	3	9	8	4	6	15	24	15.	
6	6	3	10	3	9	14	22	18	12	8	19	8	2	7	55	36	31	40	31	25	22	18	13	11	24	55.	
7	11	6	7	5	6	6	7	7	7	6	5	3	5	5	5	4	5	8	13	14	11	8	7	8	24	14.	
8	9	5	4	4	5	5	8	14	13	12	8	6	6	9	12	11	7	16	11	9	10	8	4	3	24	16.	
9	5	5	5	4	4	5	7	8	8	6	7	6	6	7	9	6	6	10	13	6	8	8	4	7	24	13.	
10	7	7	6	5	4	11	23	24	16	11	10	9	10	8	9	14	20	18	25	32	27	19	16	12	24	32.	
11	9	12	10	9	12	12	15	24	24	21	8	4	2	8	9	9	9	13	14	8	7	12	12	9	24	24.	
12																										0	
13																										0	
14																										0	
15																										0	
16																										0	
17																										0	
18																										0	
19																										0	
20																										0	
21																										0	
22																										0	
23																										0	
24																										0	
25																										0	
26																										0	
27																										0	
28																										0	
29																										0	
30																										0	
31																										0	
NO.:	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11		
MAX:	11.	12.	10.	9.	12.	14.	24.	24.	24.	21.	19.	10.	10.	9.	55.	36.	31.	40.	31.	32.	27.	19.	16.	15.			
AVG:	6.2	5.5	5.3	4.6	5.0	7.2	11.5	12.6	11.4	7.5	8.3	5.1	5.2	6.0	11.2	11.2	10.7	14.7	13.3	11.5	10.1	8.7	7.0	7.4			

MONTHLY OBSERVATIONS: 264 MONTHLY MEAN: 8.6 MONTHLY MAX: 55.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May. 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AQCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: NOVEMBER 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM		
1	150	96	119	145	81	75	80	132	135	84	95	126	94	88	93	101	76	3	54	25	52	59	74	78	24	150.		
2	119	106	97	43	75	88	64	84																	8	119.		
3																										0		
4																										0		
5																										0		
6																										0		
7																										0		
8																										0		
9																										0		
10																										0		
11																										0		
12																										0		
13																										0		
14																										0		
15																										0		
16												12	22	22	24	22	25	35	42	38	38	31	25	23	13	42.		
17	22	22	20	30	20	34	32	49	77	50	20	23	25	30	28	26	34	54	42	40	41	34	38	48	24	77.		
18	47	48	28	27	25	23	26	42	41	42	31	38	36	38	40	51	47	46	43	41	40	36	41	43	24	51.		
19	41	38	38	41	55	43	49	41	39	46	37	24	17	17	17	20	17	15	17	19	23	20	19	19	24	55.		
20	22	20	16	11	15	15	15	16	19	11	15	11	11	10	6	9	10	14	14	14	15	14	10	11	24	22.		
21	8	11	9	8	10	11	16	16	13	11	13	17	16	14	22	14	14	16	14	22	10	20	16	11	24	22.		
22	12	12	10	12	13	12	7	10	10	7	3	11	14	11	11	10	11	13	15	14	16	14	14	14	24	16.		
23	13	13	9	9	9	8	9	12	15	13	4	1	4	3	10	8	23	17	14	17	15	13	12	13	24	23.		
24	12	11	6	9	12	17	14	12	10	14	10	2	9	12	12	11	15	15	23	19	15	20	19	15	24	23.		
25	12	7	5	2	3	2	6	5	3	3	1	8	3	4	9	4	9	10	9	18	13	7	3	8	24	18.		
26	7	9	4	12	9	8	8	5	9	11	10	4	9	7	10	9	23	16	15	13	11	10	10	11	24	23.		
27	13	16	26	16	15	15	22	29	28	25	21	18	10	14	16	17	22	46	42	39	26	17	24	16	24	46.		
28	15	13	19	11	11	15	23	16	20	23	24	19	9	12	15	10	16	17	18	16	17	21	19	18	24	24.		
29																										0		
30	8	11	9	9	8	7	10	15	11	11	7	18	11	16	13	12	19	24	30	28	21	18	17	21	24	30.		
31																										0		
NO.:	15	15	15	15	15	15	15	15	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15			
MAX:	150.	106.	119.	145.	81.	88.	80.	132.	135.	84.	95.	126.	94.	88.	93.	101.	76.	54.	54.	41.	52.	59.	74.	78.				
AVG:	33.4	28.9	27.7	25.7	24.1	24.9	25.4	32.3	30.7	25.1	20.8	22.1	19.3	19.9	21.7	21.6	24.1	22.7	26.1	24.2	23.5	22.3	22.7	23.3				

MONTHLY OBSERVATIONS: 357 MONTHLY MEAN: 24.7 MONTHLY MAX: 150.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

May. 25, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 3  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AQCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM ZONE: 11  
 UTM NORTHING: 5120514  
 UTM EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT:

SUPPORT AGENCY: (1136) Washington State Department Of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (079) INSTRUMENTAL-R&P SA246B-INLET TEOM  
 REPORTING ORG: (1136) Washington State Department Of Ecology

REPORT FOR: DECEMBER 2005

DURATION: 1 HOUR  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: -50

DAY	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	OBS	MAXIMUM		
1	11	15	6	5	6	6	10	23	19	15	20	8	7	10	14	18	23	20	16	17	28	26	43	45	24	45.		
2	17	3	5	5	6	11	9	9	9	7	10	8	10	13	18	14	13	13	29	26	34	44	41	34	24	44.		
3	26	19	19	18	10	13	10	23	20	27	23	19	19	23	23	20	36	35	60	92	72	52	42	47	24	92.		
4	45	43	41	39	18	23	15	19	20	28	24	23	22	23	21	20	25	28	29	34	42	37	37	27	24	45.		
5	28	28	17	10	23	17	34	44	29	39	12	13	6	16	19	22	26	25	29	16	12	21	23	17	24	44.		
6	15	15	17	17	21	21	25	36	44	46	33	26	2	3	13	18	18	22	24	21	19	22	27	26	24	46.		
7	31	33	26	14	15	15	17	25	27	23	22	15	16	19	22	22	24	22	22	26	25	25	27	28	24	33.		
8																										0		
9																											0	
10	55	40	33	39	36	28	27	45	62	62	47	36	52	42	39	37	50	51	80	56	47	63	51	75	24	80.		
11	80	64	47	46	53	56	44	45	73	64	36	27	33	37	41	37	54	67	75	62	41	46	40	34	24	80.		
12	39	39	38	34	36	33	38	39	43	41	37	35	32	42	40	50	37	31	44	52	40	37	43	27	24	52.		
13	35	42	42	45	42	45	47	45	47	35	25	23	23	31	42	45	46	34	35	33	40	45	38	27	24	47.		
14	19	8	11	13	11	8	12	17	14	7	8	10	9	8	8	12	17	16	16	15	14	12	10	10	24	19.		
15	8	10	16	25	15	22	25	24	25	20	21	21	23	22	23	17	14	6	7	14	13	8	5	11	24	25.		
16	6	11	10	11	16	19	25	20	13	16	7	12	17	18	19	16	18	17	13	16	15	16	17	8	24	25.		
17	10	12	23	5	8	18	6	7	14	16	25	30	36	32	30	22	14	21	30	31	32	31	24	52	24	52.		
18	75	49	19	28	24	12	10	14	34	20	21	5	13	14	26	21	16	19	19	17	14	15	18	14	24	75.		
19	15	12	12	16	31	19	15	16	11	22	13	7	7	11	10	12	11	14	10	15	17	9	16	11	24	31.		
20	6	9	9	8	8	15	20	21	25	31	12	23	17	27	20	21	33	28	23	21	14	11	19	14	24	33.		
21	16	10	7	18	20	31	29	42	23	11	11	13	7	9	9	11	17	21	15	19	7	19	4	1	24	42.		
22	7	2	11	12	15	15	20	24	28	22	24	28	17	35	47	54	45	54	7	4	34	11	5	0	24	54.		
23	0	5	5	11	0	8	10	19	19	29	19	12	3	50	73	45	25	31	27	15	27	21	25	21	24	73.		
24	24	23	32	19	12	21	16	16	19	31	23	6	2	21	25	21	24	33	5	17	4	1	0	3	24	33.		
25	3	5	6	5	6	10	19	9	30	29	24	39	31	20	15	5	19	19	22	24	31	35	31	14	24	39.		
26	6	1	4	5	4	5	14	9	17	22	15	29	24	1	19	11	2	5	12	4	4	7	3	4	24	29.		
27	11	19	31	17	20	25	23	32	25	34	12	3	3	10	11	19	19	12	50	20	20	24	20	3	24	50.		
28	4	9	10	7	3	0	6	4	6	7	3	14	13	20	15	14	13	11	16	12	13	0	9	6	24	20.		
29	8	7	4	6	3	6	6	6	9	15	12	16	14	11	5	19	50	51	92	67	42	20	5	5	24	92.		
30	18	23	13	9	9	9	9	5	10	4	6	1	4	3	5	6	6	9	13	12	26	13	23	27	24	27.		
31	16	14	17	5	4	16	8	2	5	24	9	4	3	8	6	9	14	22	19	21	17	4	2	4	24	24.		
NO.:	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
MAX:	80.	64.	47.	46.	53.	56.	47.	45.	73.	64.	47.	39.	52.	50.	73.	54.	54.	67.	92.	92.	72.	63.	51.	75.				
AVG:	21.9	19.7	18.3	17.0	16.4	18.2	18.9	22.1	24.8	25.8	19.1	17.4	16.0	20.0	22.7	22.0	24.4	25.4	28.9	26.9	25.7	23.3	22.3	20.5				

MONTHLY OBSERVATIONS: 696 MONTHLY MEAN: 21.6 MONTHLY MAX: 92.

Note: Qualifier codes with regional concurrence are shown in upper case, and those without regional review are shown in lower case. An asterisk ("\*") indicates that the region has

QUALIFIER CODES:

Qualifier Code	Qualifier Description	Qualifier Type
A	HIGH WINDS	NAT
a	HIGH WINDS	NAT

Note: Qualifier codes with regional concurrence are shown in upper case,  
and those without regional concurrence are shown in lower case.

User ID: JMI

RAW DATA REPORT

Report Request ID: 342119

Report Code: AMP350

Jun. 20, 2006

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	53	005	0002	81102											
	53	005	0002	81102	3										

SELECTED OPTIONS

Option Type	Option Value
INCLUDE NULLS	YES
DAILY STATISTICS	MAXIMUM
UNITS	REPORTED
RAW DATA EVENTS	INCLUDE EVENTS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	STATE_CODE
2	COUNTY_CODE
3	SITE_ID
4	PARAMETER_CODE
5	POC

GLOBAL DATES

Start Date	End Date
2006 01 01	2006 02 28

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 AIR QUALITY SYSTEM  
 RAW DATA REPORT

Jun. 20, 2006

(81102) PM10 Total 0-10um STP

SITE ID: 53-005-0002 POC: 1  
 COUNTY: (005) Benton  
 CITY: (35275) Kennewick  
 SITE ADDRESS: KENNEWICK VSC/5929 W METALINE  
 SITE COMMENTS:  
 MONITOR COMMENTS:

STATE: (53) Washington  
 AQCR: (230) SOUTH CENTRAL WASHINGTON  
 URBANIZED AREA: (6740) RICHLAND-KENNEWICK-PASCO, WA  
 LAND USE: RESIDENTIAL  
 LOCATION SETTING: URBAN AND CENTER CITY

CAS NUMBER:  
 LATITUDE: 46.218611  
 LONGITUDE: -119.205556  
 UTM\_ZONE: 11  
 UTM\_NORTHING: 5120514  
 UTM\_EASTING: 329896  
 ELEVATION-MSL: 0  
 PROBE HEIGHT: 9

SUPPORT AGENCY: (1136) Washington State Department of Ecology  
 MONITOR TYPE: SLAMS  
 COLLECTION AND ANALYSIS METHOD: (063) HI-VOL SA/GMW-1200 GRAVIMETRIC  
 REPORTING ORG: (1136) Washington State Department of Ecology

REPORT FOR: 2006

DURATION: 24 HOURS  
 UNITS: Micrograms/cubic meter (25 C)  
 MIN DETECTABLE: 4

Day	MONTH											
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1		8										
2	7	4										
3	7											
4	9	9										
5		9										
6	26	30										
7	6	17										
8	1	34										
9	5	20										
10	5	10										
11	6	14										
12	8	26										
13	9											
14	2	15										
15	3	11										
16	8	78										
17	6	48										
18	6	9										
19	8											
20	5	24										
21	12	24										
22		52										
23	15	173 a										
24		17										
25	14	14										
26		15										
27	10	19										
28	11	5										
29	3											
30												
31	5											
NO.:	25	25	0	0	0	0	0	0	0	0	0	0
MAX:	26.	173.										
MEAN:	7.9	27.4										
ANNUAL OBSERVATIONS:		50	ANNUAL MEAN:	17.6	ANNUAL MAX:	173.						

Note: Qualifier codes with regional concurrence are shown in upper case, and those without Regional review are shown in lower case. An asterisk ("\*") indicates that the region has reviewed the value and does not concur with the qualifier.

QUALIFIER CODES:

Qualifier Code	Qualifier Description
----------------	-----------------------

Qualifier Type
----------------

a	HIGH WINDS
---	------------

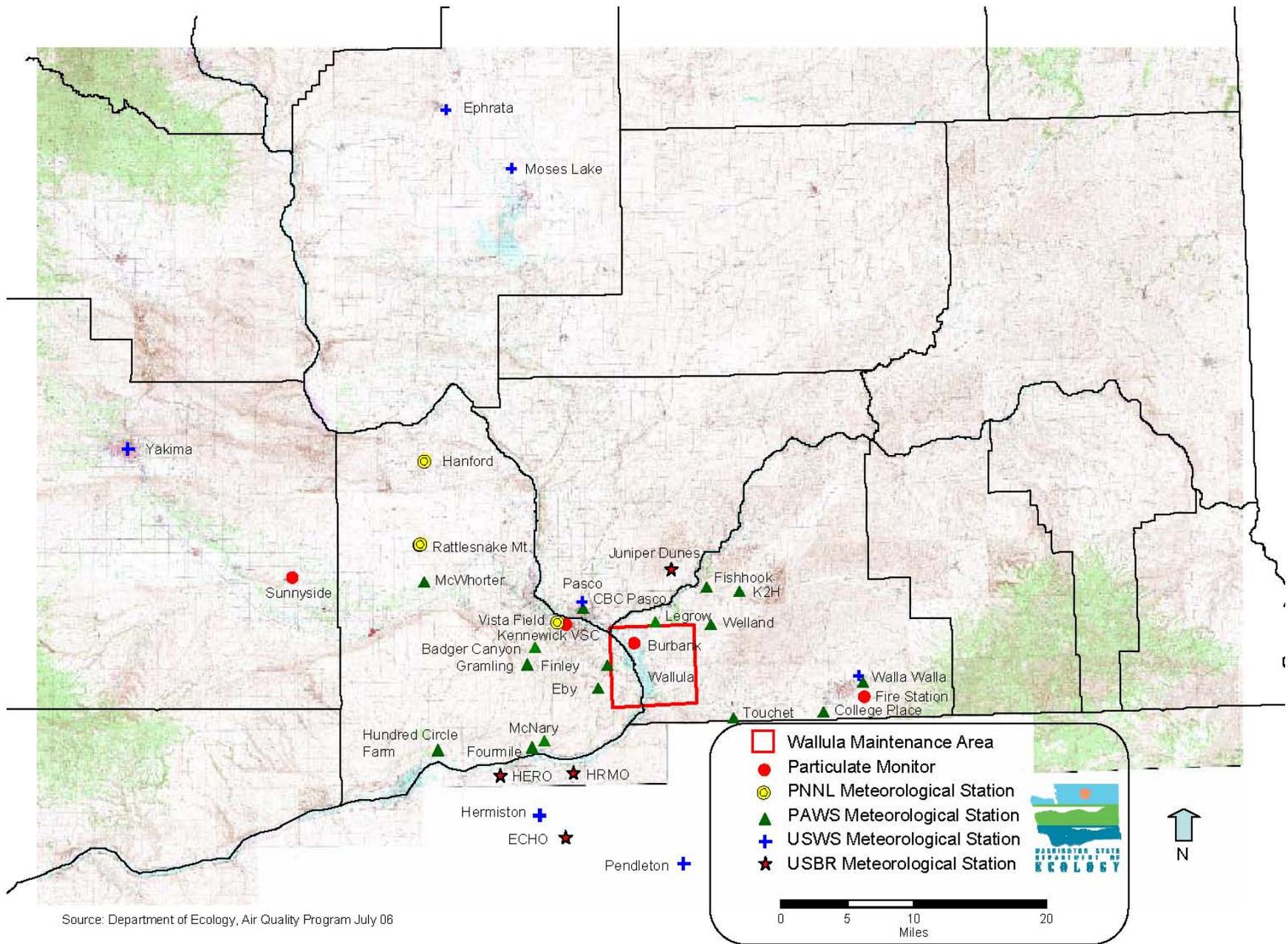
NAT
-----

Note: Qualifier codes with regional concurrence are shown in upper case,  
and those without regional concurrence are shown in lower case.

## **APPENDIX B**

### Map of Meteorological Stations and Meteorological Data





Source: Department of Ecology, Air Quality Program July 06



[Kennewick Vista Field](#) ID: HVSTA; Network: HMMN

ID = HVSTA	TMPF °F	SKNT &nbsp;mph	GUST &nbsp;mph	DRCT	QFLG
2-22-2006 20:00 PST	45	9	18	256	OK
2-22-2006 20:15 PST	45	8	16	249	OK
2-22-2006 20:45 PST	45	3	10	36	OK
2-22-2006 21:00 PST	45	3	12	290	OK
2-22-2006 21:15 PST	45	6	13	312	OK
2-22-2006 21:45 PST	45	7	14	299	OK
2-22-2006 22:00 PST	45	3	10	304	OK
2-22-2006 22:15 PST	46	10	21	253	OK
2-22-2006 22:45 PST	46	8	16	231	OK
2-22-2006 23:00 PST	46	9	22	237	OK
2-22-2006 23:15 PST	45	12	24	231	OK
2-22-2006 23:45 PST	45	14	23	224	OK
2-23-2006 0:15 PST	44	12	20	230	OK
2-23-2006 0:45 PST	45	5	16	238	OK
2-23-2006 1:00 PST	45	12	24	241	OK
2-23-2006 1:15 PST	45	15	28	234	OK
2-23-2006 1:45 PST	44	8	14	203	OK
2-23-2006 2:00 PST	45	6	12	212	OK
2-23-2006 2:15 PST	45	7	14	203	OK
2-23-2006 2:45 PST	45	7	16	243	OK
2-23-2006 3:00 PST	46	12	23	233	OK
2-23-2006 3:15 PST	46	15	26	232	OK
2-23-2006 3:45 PST	45	12	18	222	OK
2-23-2006 4:00 PST	45	7	16	210	OK
2-23-2006 4:15 PST	46	12	22	225	OK
2-23-2006 4:45 PST	46	16	29	223	OK
2-23-2006 5:00 PST	45	14	23	224	OK
2-23-2006 5:15 PST	45	17	29	226	OK
2-23-2006 5:45 PST	46	21	36	228	OK
2-23-2006 6:00 PST	47	25	39	232	OK
2-23-2006 6:15 PST	47	25	43	230	OK
2-23-2006 6:45 PST	47	22	37	235	OK
2-23-2006 7:00 PST	48	23	37	237	OK
2-23-2006 7:15 PST	48	24	38	232	OK
2-23-2006 7:45 PST	48	20	35	233	OK
2-23-2006 8:00 PST	48	20	31	228	OK
2-23-2006 8:15 PST	49	22	41	227	OK
2-23-2006 8:45 PST	49	24	43	229	OK
2-23-2006 9:00 PST	49	23	38	229	OK
2-23-2006 9:15 PST	50	21	32	236	OK
2-23-2006 9:45 PST	51	25	47	234	OK
2-23-2006 10:00 PST	52	21	39	241	OK
2-23-2006 10:15 PST	53	20	33	240	OK
2-23-2006 10:45 PST	54	26	44	236	OK
2-23-2006 11:00 PST	53	28	45	237	OK
2-23-2006 11:15 PST	54	31	52	232	OK

2-23-2006 11:45 PST	55	28	45	236	OK
2-23-2006 12:00 PST	55	26	41	239	OK
2-23-2006 12:45 PST	57	26	45	242	OK
2-23-2006 13:00 PST	58	28	47	243	OK
2-23-2006 13:15 PST	58	25	45	239	OK
2-23-2006 13:45 PST	59	24	43	240	OK
2-23-2006 14:00 PST	58	25	40	249	OK
2-23-2006 14:15 PST	58	26	44	245	OK
2-23-2006 14:45 PST	57	23	40	244	OK
2-23-2006 15:00 PST	57	26	45	244	OK
2-23-2006 15:45 PST	56	24	43	241	OK
2-23-2006 16:00 PST	55	26	44	243	OK
2-23-2006 16:15 PST	55	23	40	244	OK
2-23-2006 16:45 PST	54	20	32	243	OK
2-23-2006 17:00 PST	53	20	32	247	OK
2-23-2006 17:15 PST	53	21	35	246	OK
2-23-2006 17:45 PST	52	20	29	246	OK
2-23-2006 18:00 PST	52	18	32	247	OK
2-23-2006 18:15 PST	51	18	29	247	OK
2-23-2006 18:45 PST	50	16	26	248	OK
2-23-2006 19:00 PST	49	13	22	249	OK
2-23-2006 19:15 PST	48	12	18	249	OK
2-23-2006 19:45 PST	48	10	20	251	OK
2-23-2006 20:00 PST	47	9	15	252	OK
2-23-2006 20:15 PST	47	10	16	262	OK
2-23-2006 20:45 PST	46	7	12	331	OK
2-23-2006 21:00 PST	46	5	9	302	OK
2-23-2006 21:15 PST	45	3	7	15	OK
2-23-2006 21:45 PST	43	5	9	360	OK
2-23-2006 22:00 PST	43	5	8	336	OK
2-23-2006 22:15 PST	42	6	8	324	OK
2-23-2006 22:45 PST	41	5	7	345	OK
2-23-2006 23:00 PST	41	6	12	316	OK
2-23-2006 23:15 PST	40	5	7	314	OK
2-23-2006 23:45 PST	40	3	6	276	OK

MesoWest Disclaimer

Data provided by: Hanford Meteorological Monitoring Network (PNNL) & University of Washington

Contact MesoWest

WSU Public Agricultural Weather System

Data Extracted:2006-07-14 14:57:29

[Carlson](#)

Lat:0.00 Lng:0.000 elevation:0

Dates Range From 1989-03-15 To 2006-07-13

DATE	Total Precip Gregorian inches
-----	-----
2006-02-01	.00
2006-02-02	.00
2006-02-03	.00
2006-02-04	.09
2006-02-05	.00
2006-02-06	.00
2006-02-07	.00
2006-02-08	.00
2006-02-09	.00
2006-02-10	.00
2006-02-11	.00
2006-02-12	.00
2006-02-13	.00
2006-02-14	.00
2006-02-15	.00
2006-02-16	.00
2006-02-17	.00
2006-02-18	.00
2006-02-19	.00
2006-02-20	.00
2006-02-21	.00
2006-02-22	.00
2006-02-23	.00
2006-02-24	.00
2006-02-25	.00
2006-02-26	.00
2006-02-27	.00
2006-02-28	.32

Data Extracted:2006-07-14 14:57:30

[Fourmile](#)

Lat: Lng: elevation:

Dates Range From 1993-03-16 To 2006-07-13

DATE	Total Precip Gregorian inches
-----	-----
2006-02-01	.00
2006-02-02	.00

2006-02-03 .00  
 2006-02-04 .05  
 2006-02-05 .00  
 2006-02-06 .00  
 2006-02-07 .00  
 2006-02-08 .00  
 2006-02-09 .00  
 2006-02-10 .00  
 2006-02-11 .00  
 2006-02-12 .00  
 2006-02-13 .00  
 2006-02-14 .00  
 2006-02-15 .00  
 2006-02-16 .00  
 2006-02-17 .00  
 2006-02-18 .00  
 2006-02-19 .00  
 2006-02-20 .00  
 2006-02-21 .00  
 2006-02-22 .00  
 2006-02-23 .00  
 2006-02-24 .00  
 2006-02-25 .00  
 2006-02-26 .00  
 2006-02-27 .00  
 2006-02-28 .16

Data Extracted:2006-07-14 14:57:31  
[GRAMLING, 7.5 MI S of Kennewick, Wa](#)  
 Lat:46.1 Lng:119.2 elevation:1267  
 Dates Range From 1989-03-30 To 2006-07-13

DATE	Total Precip Gregorian inches
-----	-----
2006-02-01	.00
2006-02-02	.03
2006-02-03	.00
2006-02-04	.07
2006-02-05	.00
2006-02-06	.00
2006-02-07	.00
2006-02-08	.00
2006-02-09	.00
2006-02-10	.00
2006-02-11	.00
2006-02-12	.00
2006-02-13	.00
2006-02-14	.00
2006-02-15	.00
2006-02-16	.00
2006-02-17	.00
2006-02-18	.00
2006-02-19	.00
2006-02-20	.00

2006-02-21 .00  
2006-02-22 .00  
2006-02-23 .00  
2006-02-24 .00  
2006-02-25 .00  
2006-02-26 .03  
2006-02-27 .03  
2006-02-28 .47

Data Extracted:2006-07-14 14:57:32  
[HORRIGAN, 6.8 MI S of Prosser, Wa](#)  
Lat:46.0 Lng:119.7 elevation:882  
Dates Range From 1989-03-21 To 2006-07-13

DATE	Total
Gregorian	Precip
-----	-----
2006-02-01	.00
2006-02-02	.00
2006-02-03	.00
2006-02-04	.02
2006-02-05	.00
2006-02-06	.00
2006-02-07	.00
2006-02-08	.00
2006-02-09	.00
2006-02-10	.00
2006-02-11	.00
2006-02-12	.00
2006-02-13	.00
2006-02-14	.00
2006-02-15	.00
2006-02-16	.00
2006-02-17	.00
2006-02-18	.00
2006-02-19	.00
2006-02-20	.00
2006-02-21	.00
2006-02-22	.00
2006-02-23	.00
2006-02-24	.00
2006-02-25	.00
2006-02-26	.00
2006-02-27	.00
2006-02-28	.20

Data Extracted:2006-07-14 14:57:33  
[Hundred Circle Farms, Watts Brothers](#)  
Lat:45.9 Lng:119.8 elevation:685  
Dates Range From 2000-06-21 To 2006-07-13

DATE	Total
Gregorian	Precip
-----	-----

```

-----
2006-02-01 .00
2006-02-02 .00
2006-02-03 .00
2006-02-04 .00
2006-02-05 .00
2006-02-06 .00
2006-02-07 .00
2006-02-08 .00
2006-02-09 .00
2006-02-10 .00
2006-02-11 .00
2006-02-12 .00
2006-02-13 .00
2006-02-14 .00
2006-02-15 .00
2006-02-16 .00
2006-02-17 .00
2006-02-18 .00
2006-02-19 .00
2006-02-20 .00
2006-02-21 .00
2006-02-22 .00
2006-02-23 .00
2006-02-24 .00
2006-02-25 .00
2006-02-26 .00
2006-02-27 .00
2006-02-28 .24

```

Data Extracted:2006-07-14 14:57:34

[McNary](#)

Lat: Lng: elevation:

Dates Range From 1992-05-12 To 2006-07-13

```

          Total
DATE      Precip
Gregorian inches
-----
2006-02-01 .00
2006-02-02 .00
2006-02-03 .00
2006-02-04 .05
2006-02-05 .00
2006-02-06 .00
2006-02-07 .00
2006-02-08 .00
2006-02-09 .00
2006-02-10 .00
2006-02-11 .00
2006-02-12 .00
2006-02-13 .00
2006-02-14 .00
2006-02-15 .00
2006-02-16 .00
2006-02-17 .00

```

2006-02-18 .00  
 2006-02-19 .00  
 2006-02-20 .00  
 2006-02-21 .00  
 2006-02-22 .00  
 2006-02-23 .00  
 2006-02-24 .00  
 2006-02-25 .00  
 2006-02-26 .00  
 2006-02-27 .00  
 2006-02-28 .20



**WSU Public Agricultural Weather System**

Data Extracted:2006-07-14 15:06:52

[Carlson](#)

Lat:0.00 Lng:0.000 elevation:0

Dates Range From 1989-03-15 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.0	.8	.7	.7	.9	.6	.4	.3	.3	.9	1.1	.9

[Fourmile](#)

Lat: Lng: elevation:

Dates Range From 1993-03-16 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.0	.7	.6	.5	.9	.5	.3	.1	.2	.7	1.3	1.0

[GRAMLING, 7.5 MI S of Kennewick, Wa](#)

Lat:46.1 Lng:119.2 elevation:1267

Dates Range From 1989-03-30 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.0	.8	.7	.7	.6	.4	.4	.3	.2	.6	1.2	1.0

[HORRIGAN, 6.8 MI S of Prosser, Wa](#)

Lat:46.0 Lng:119.7 elevation:882

Dates Range From 1989-03-21 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
.8	.6	.5	.6	.6	.4	.2	.3	.2	.6	.7	.8

[Hundred Circle Farms, Watts Brothers](#)

Lat:45.9 Lng:119.8 elevation:685

Dates Range From 2000-06-21 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
.8	.6	.3	.4	.2	.2	.0	.1	.1	.1	.6	1.1

[McNary](#)

Lat: Lng: elevation:

Dates Range From 1992-05-12 To 2006-07-13

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.2	.8	1.0	1.0	.9	.7	.5	.3	.4	.8	1.7	1.8

---

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*This page was generated on 2006-07-14*



## **APPENDIX C**

### **STATUS REPORT 2005 Best Available Control Measures for Columbia Plateau Agriculture March 2006**



# **STATUS REPORT**

## **2005 Best Available Control Measures for Columbia Plateau Agriculture**

**March 2006**

### **Summary**

This report fulfills Ecology's commitment to review and report annually on the use of Best Available Control Measures (BACM) in the Columbia Plateau. Ecology committed to provide such a report to EPA in the revised Natural Events Action Plan (NEAP).

The level of Conservation Reserve Program (CRP) and Best Management Practice (BMP) use remains at 78 percent in the priority counties of the Columbia Plateau. 78 percent of the total farmable acres in these counties are now part of a US. Department of Agriculture (USDA) conservation program, use one of the minimum till practices, or contain 15-30 percent residue. Washington State finds this level of CRP and BMP implementation easily fulfills BACM criteria.

### **Background**

EPA issued the policy on "Areas Affected by PM-10 Natural Events" or the Natural Events Policy (NEP) on May 30, 1996. Under the NEP, ambient PM<sub>10</sub> concentrations raised by unusually high winds may be treated as uncontrollable natural events when the dust originates from non-anthropogenic sources, or when the dust originates from contributing anthropogenic sources controlled with BACM. After natural events cause the PM<sub>10</sub> concentration to violate the PM<sub>10</sub> National Ambient Air Quality Standard, the NEP allows a state to develop a natural events action plan (NEAP) to deal with future exceedances.

A number of exceedances of the 24-hour standard for PM<sub>10</sub> were recorded in eastern Washington in the late 1980s and early 1990s. Examination of the exceedances showed a close correlation to high wind events and upwind agricultural fields were identified as the chief source of the windblown dust. Ecology developed the *Natural Events Action Plan for High Wind Events in the Columbia Plateau* in March 1998, and submitted it to Region 10 EPA, in accordance with the NEP.

The 1998 NEAP included Ecology's commitment to re-evaluate the NEAP at the end of 2001. The 2001 evaluation is embodied in the revised NEAP submitted to EPA in July, 2003. Several changes were incorporated into the revised NEAP including Ecology's commitment to review and report to EPA annual BACM implementation.

### **BACM Definition and Tracking Mechanism**

The revised NEAP defines BACM for agricultural fields as USDA Conservation Title Programs supplemented by incentive based implementation of wind erosion conservation practices or BMPs. In short, the BACM definition recognizes the critical role of agricultural agencies in defining and instituting BACM on the Columbia Plateau. The primary agencies include those directly reporting to the USDA such as the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), and the Agricultural Research Service (ARS). Additional agricultural agencies include the Washington State Conservation Commission, local conservation districts, and various agriculture-related departments of the Washington State University. The NEAP acknowledges the combined expertise of these agencies and relies on the various programs of these agencies in implementing the conservation practices that constitute BACM.

For defining BACM, the NEAP uses USDA's CRP program and the wind erosion BMPs encouraged by the NRCS and/or the Columbia Plateau Wind Erosion /Air Quality Project (referred to as the CP3). Use of these practices is tracked by the Conservation Technology Information Center's (CTIC), Core 4 program. The CTIC's Core 4 program tracks conservation tillage (No-Till, Ridge-Till, Mulch-Till) and conventional tillage (0-15 percent and 15-30 percent residue) practices and CRP enrollment on a county by county basis.

A full discussion on Ecology's BACM definition and tracking mechanism is found in the revised NEAP.

### **Status Report: 2005 BACM**

The 2003 NEAP determined BACM is implemented in the Columbia Plateau based on 68 percent use of conservation practices. Attachment 1 shows the implementation of conservation practices for the seven priority counties, as defined in the NEAP. These counties have the lowest rainfall and thus are the most susceptible to windblown dust.

Data evaluated is for the year 2004, the most current year for which data is available. The evaluation includes data on CRP, minimum tillage, and residue remaining on the field for the lowest rainfall counties of the Columbia Plateau - counties Ecology finds to be high priority in terms of addressing wind blown dust. Ecology identified Adams, Douglas, Franklin, Grant, and Lincoln as priority counties in the 1998 NEAP. Benton and Walla Walla Counties were added to the list more recently. The Core 4 data shows 78 percent of the priority counties' total farmable acres are in a USDA conservation program, use one of the minimum till practices, or contain 15-30 percent residue.

Similarly, attachment 2 shows the implementation of conservation practices for all counties of the Columbia Plateau NEAP. The data shows 79 percent use of conservation practices throughout the Columbia Plateau.

The results are consistent with the 2003 NEAP determination and show that we continue to meet BACM requirements.

### **Additional Efforts to Enhance Wind Erosion Conservation Measures**

Ecology continues to work with the various agricultural agencies to enhance the use of conservation practices in the Columbia Plateau. In doing so, implementation of wind erosion conservation measures is enhanced beyond that tracked and reported by the Core 4. In 2003, Ecology completed a contract with the Benton Conservation District (BCD) for tasks associated with a special funds grant from EPA. The project (a) provided immediate, temporary treatment to critical areas and (b) promoted conservation buffers as options for longer-term or permanent wind erosion control measures. Results and benefits of the grant have been summarized in previous year's reports. The momentum from this early effort with state and local agricultural agencies and farmers continues.

1. The BCD petitioned and received from the Benton County Commissioners a countywide property assessment to provide ongoing district funding. For five years, the BCD will receive about \$170,000 from the assessment to further natural resource protection efforts. Ecology's Air Quality Program, the BCD and various natural resource agencies have been working together for some time toward this goal. Funding for the assessment will ensure that the BCD can continue to provide valuable support for Ecology's efforts. The BCD expects to use the funds, in part, to support ongoing projects discussed below such as the straw mulcher, field borders, and weedseeker efforts.

2. Previous year's reports discussed the BCD, USDA Natural Resources Conservation Service, Ecology, and the Benton Clean Air Authority's education and outreach program that focused on wind erosion conservation buffers as a longer-term solution to wind erosion. Numerous growers responded favorably to implementing conservation buffers on a trial basis and Ecology, the BCD, and EPA developed a grant to facilitate such an effort in the spring of 2005.

Contracts are now being developed for seven growers to install approximately 400 acres of field borders along several major roadways in the Horse Heaven Hills. NRCS EQIP funds will pay farmers to establish the field borders and this grant will provide annual funds to farmers for lost crop production. Ecology's AQP, the BCD, and farmers are working together to identify funds that will extend this effort from 5 to 10 years.

3. Staff from the BCD, the NRCS, Ecology's AQP, and several dryland growers from the Horse Heaven Hills continue to participate in NRCS's local work group process regarding criteria and eligibility for EQIP funding. Last year, this led to a "dryland" local work group subcommittee with the specific purpose of connecting the needs of dryland land agricultural farming with potential EQIP funding. The group focused their attention on the benefits of using suites of various practices rather than individual practices. As a result, the 2005 EQIP Eligible Practices list included five suites of practices for dryland farming. Each suite included at least one of the other practices growers and air quality stakeholders have recently promoted such as field borders, wind strips, use of the weedseeker, etc.

#### Summary - 2005 EQIP Signup Regarding Dryland Farming

- 14 dryland applications
- 7 dryland applications funded, 7 deferred due to lack of funding
- 4 applicants signed up for WES-1 with field borders

- 1 applicant signed up for AQS-2 with field borders
- 1 applicant signed up for AQS-1 with wind strips
- 1 applicant signed up for a combination of AQS-1, WES-1, and WES-2, with field borders

### Weedseeker

Ecology's Water Quality Program has previously funded projects that enhance wind erosion control measures on the Columbia Plateau. The objectives of both water and wind erosion control are to prevent or minimize soil particle detachment and entrainment by the medium (air or water). Consequently, conservation practices to reduce the effects from both types of erosion are substantially similar. For this reason, air quality is improved when conservation measures to reduce water erosion are increased.

In partnership with Ecology's Air Quality Program, the BCD, Washington State University, and others, Washington State Conservation Commission secured a grant under Ecology's water program to enhance wind erosion practices in Benton County. The grant for \$25,000 enables the BCD to purchase a Weedseeker® that can be rented by farmers. The WeedSeeker® uses advanced technology to 'sense' the chlorophyll color in a weed and spray accordingly. This reduces the frequency and intensity of field operations and ultimately protects water and air quality.

### **Conclusion**

Ecology and the identified agricultural agencies continue to carry out the Columbia Plateau NEAP. Ecology finds the level of CRP and BMP implementation identified in this report continues to fulfill BACM criteria. Ecology will continue to document natural events and flag exceedances when justified under the terms of the 2003 NEAP.