



**Documentation of a Natural Event Due to
High Winds
October 28, 2003
Kennewick and Walla Walla, Washington**

04-02-007
April 6, 2004

 Printed on Recycled Paper

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Documentation of a Natural Event Due to High Winds October 28, 2003 Kennewick and Walla Walla, Washington

Prepared by:

Washington State Department of Ecology
Air Quality Program

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Summary

On October 28, 2003, the Federal Reference Method monitors in Kennewick and Walla Walla, Washington measured concentrations of 1,438 and 1,338 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), respectively, for particulate matter 10 microns and smaller in size (PM_{10}). These concentrations exceeded the primary 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) of 150 $\mu\text{g}/\text{m}^3$.

The Washington State Department of Ecology (Ecology) has determined that the Kennewick and Walla Walla exceedances were due to a natural event caused by high winds. Thus, these data points should be excluded from assessments of the attainment status for the areas. Ecology flagged the data points for October 28, 2003 in the AIRS database maintained by the U.S. Environmental Protection Agency (EPA) to indicate a natural event was involved.

Ecology and the Benton Clean Air Authority determined to provide natural event documentation in one account, due to the regional nature of this high wind event. Thus, this documentation is being submitted to EPA in support of the data flags for EPA's acknowledgement and flagging of the data points.

Natural Events Policy

EPA issued the policy on "Areas Affected by PM-10 Natural Events" (hereafter referred to as Natural Events Policy or NEP) on May 30, 1996. EPA's reasons for issuing the NEP 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 nonattainment status.

Under the policy, ambient PM_{10} concentrations raised by unusually high winds are treated as uncontrollable natural events when the dust originates from nonanthropogenic (other than human-caused) sources, or when the dust originates from contributing anthropogenic sources controlled with best available control measures (BACM).

After natural events cause the PM_{10} concentration to violate the PM_{10} NAAQS, the NEP requires a state to develop a natural events action plan (NEAP) to deal with future exceedances. The NEP specifies that the NEAP is available for public review and comment. A state submits the NEAP to EPA for review and comment.

Under the NEP, when a state has reason to believe that natural events have caused monitored exceedances of the PM_{10} 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_{10} 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 PM₁₀ 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 NEP 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 on steps to minimize exposure.
- Development of a program to identify and implement controls for anthropogenic sources of windblown dust in the Columbia Plateau.

As well, 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 allowing 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 PM₁₀.

“A high wind event occurs when the wind entrains and suspends dust to the extent that concentrations of PM₁₀ 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 PM₁₀ 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 PM₁₀ exceedances throughout the Columbia Plateau. The soil is very fine with low organic content. This, coupled with low precipitation weather patterns, means 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 2003 Annual Status Report regarding BACM implementation is found in Appendix B.

Evaluation of the October 28, 2003 Exceedances on the Columbia Plateau, Washington

1. Kennewick and Walla Walla PM₁₀ Data

The Kennewick monitor operated on a daily monitoring schedule throughout 2003. The average PM₁₀ concentration was 30 µg/m³. Monthly maxima ranged from a low of 10 µg/m³ in January, to a high of 41 µg/m³ in October, after the October 28, 2003 natural event value is excluded. The October average concentration is 92 µg/m³ prior to excluding the October 28, 2003 natural event value.

The October 28, 2003 concentration of 1,438 µg/m³ was one of three monitored exceedances of the PM₁₀ NAAQS for the year in Kennewick, the other two being monitored concentrations of 186 µg/m³ and 164 µg/m³ on March 5, 2003 and November 10, 2003, respectively. The exceedances of March 5, 2003 and November 10, 2003 have been flagged as natural events due to high winds.

The Walla Walla monitor operated on a 1-in-3-day monitoring schedule throughout 2003. The average PM₁₀ concentration was 39 µg/m³. Monthly maxima ranged from a low of 8 µg/m³ in April, to a high of 48 µg/m³ in August, after the October 28, 2003 natural event value is excluded. The October average concentration is 181 µg/m³ prior to excluding the October 28, 2003 natural event value.

The October 28, 2003, concentration of 1,338 µg/m³ was one of two monitored exceedances of the PM₁₀ NAAQS for the year in Walla Walla, the other being a monitored concentration of 165 µg/m³ on November 11, 2003. The exceedance of November 11, 2003 has been flagged as a natural event due to high winds.

2. Kennewick and Walla Walla Meteorological Data

National Weather Service (NWS) data for Kennewick (Tri-Cities Airport) and Walla Walla (Walla Walla Regional Airport) shows high winds consistently from the south-southwest through west for the majority of the day on October 28, 2003. Wind speeds during this time ranged from the low 20s to the upper 30s; gusts ranged from 25 to 51 mph. The meteorological data is found in Appendix B.

A. Kennewick Meteorological Data

Data from the Tri-Cities Airport at Pasco shows windy and gusty conditions from about 0900 to 2200 hours, October 28, 2003, Pacific Standard Time (Table 1). Wind speeds ranged from 20 to 37 mph; gusts ranged from 25 to 46 mph. For 14 consecutive hours the high winds ranged in direction from the south-southwest through west. The data shows the winds at Kennewick 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_{10} 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_{10} standard is a natural event.”

Table 1. Select Pasco Wind Observations, October 28, 2003

Time (PST)	Wind Direction	Wind Speed (mph)	Peak Wind Speed (mph)
0853	SW (220°)	20	25
0953	SW (230°)	23	29
1053	SW (230°)	32	39
1153	SW (230°)	36	44
1253	SSW (210°)	25	37
1353	WSW (250°)	30	40
1453	SW (230°)	21	29
1553	WSW (240°)	37	46
1653	WSW (250°)	29	40
1753	WSW (240°)	32	45
1853	WSW (240°)	32	39
1953	W (260°)	24	36
2053	WNW (290°)	32	41
2153	NW (310°)	25	33

Wind speeds, gusts and wind direction at Pasco and Walla Walla, Washington from 2000, October 27, 2003, to 0000, October 29, 2003 are displayed in Figures 1 and 2.

B. Walla Walla Meteorological Data

At Walla Walla, Washington high winds and gusty conditions were observed for eight consecutive hours, from 1053 to 1753, on October 28, 2003. Wind speeds ranged from 21 to 36 mph; gusts ranged from 26 to 51 mph (Table 2). Winds were primarily from the west, southwest

Wind speeds, gusts and wind direction, Pasco, WA
 2000(PST), October 27, 2003 - 0000(PST), October 29, 2003

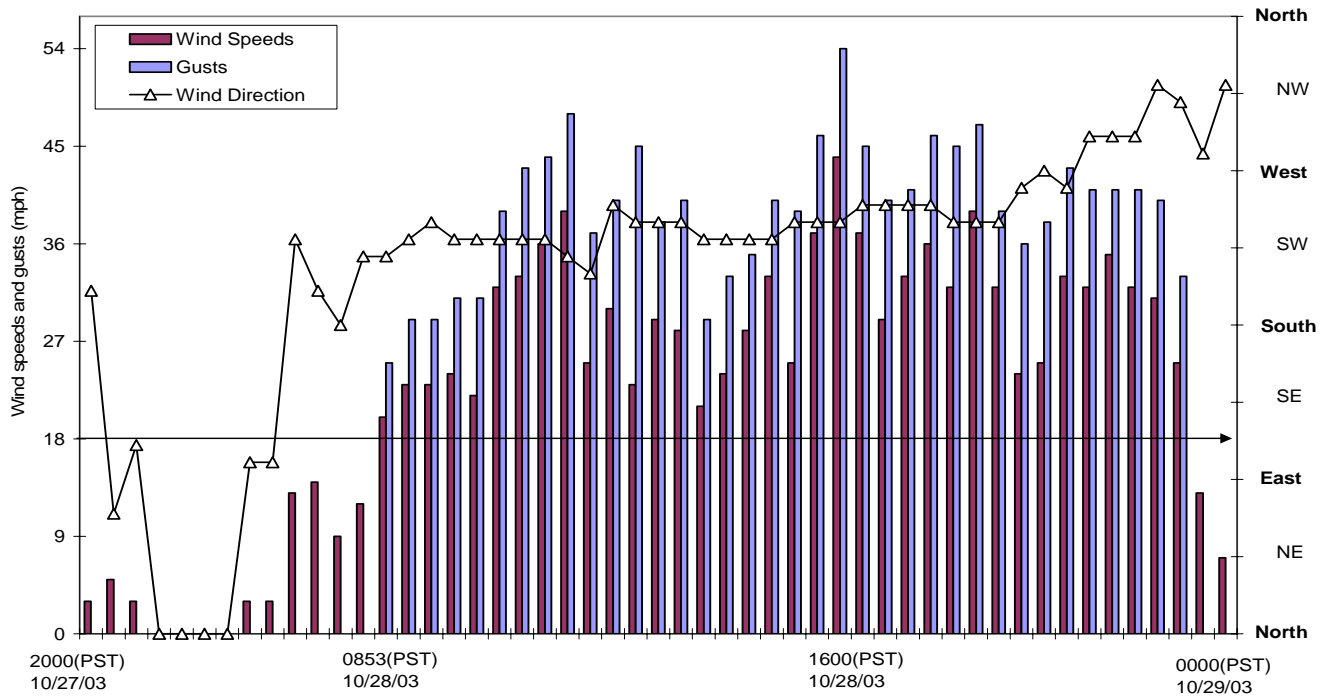


Figure 1

Wind speeds, gusts and wind direction, Walla Walla, WA
 2000(PST), October 27, 2003 - 0000(PST), October 29, 2003

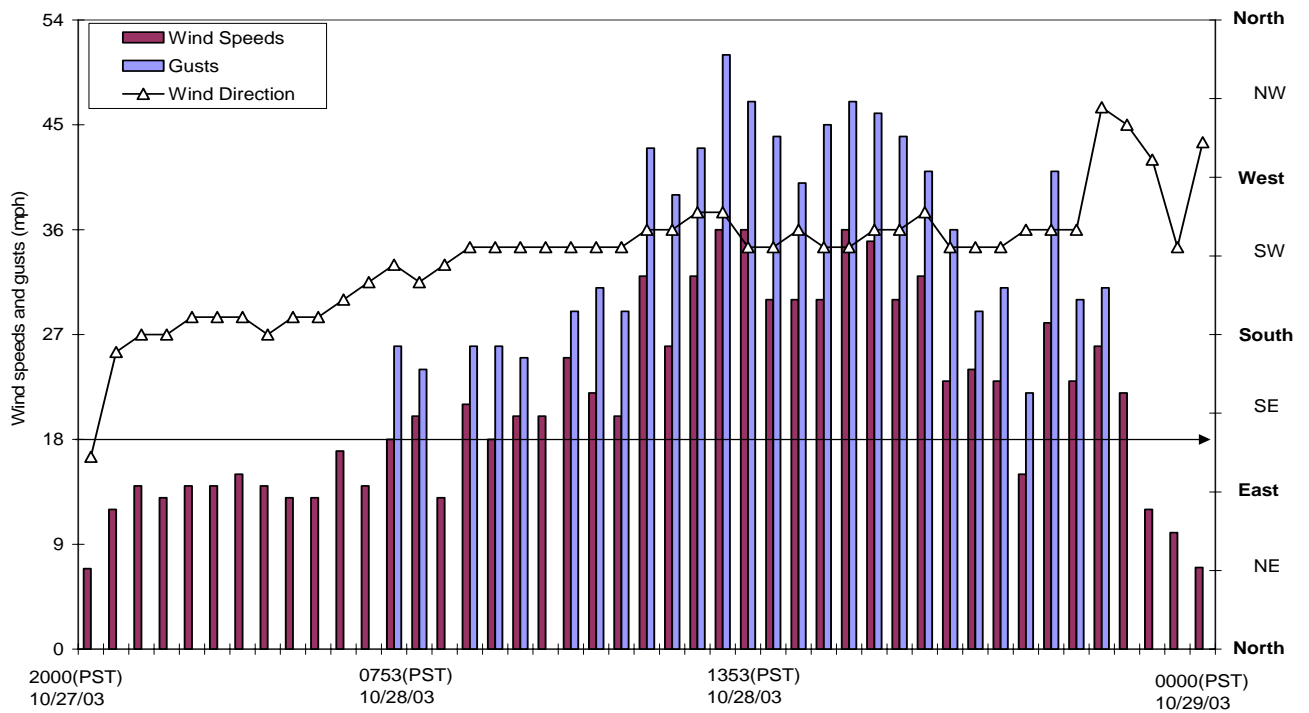


Figure 2

and southwest. The data shows the winds at Walla Walla met Ecology's definition for a high wind event.

Table 2. Select Walla Walla Wind Observations, October 28, 2003

Time (PST)	Wind Direction	Wind Speed (mph)	Peak Wind Speed (mph)
1053	SW (230°)	21	26
1153	SW (230°)	22	31
1253	WSW (250°)	32	43
1353	SW (230°)	36	51
1453	WSW (250°)	36	47
1553	WSW (240°)	30	40
1653	WSW (240°)	35	46
1753	SW (230°)	23	31

C. Additional Meteorological Data

1. Table 3 summarizes precipitation data from several reporting meteorological stations in the vicinity of Pasco and Walla Walla, Washington. These sites are operated by Washington State University's Public Agricultural Weather System (PAWS) and the National Weather Service (NWS). The sites are generally located in an arc ranging from south, southwest to west, upwind of Kennewick and Walla Walla, Washington, with respect to the direction of the prevailing winds on October 28, 2003. None of the sites are greater than about 25 miles of either Kennewick or Walla Walla. A map showing the location of each site as well as the precipitation data is found in Appendix B.

The data show October 17th and October 20th as the most recently recorded precipitation at Walla Walla and Kennewick, Washington, respectively, prior to the high wind event.

Table 3. Precipitation prior to a Natural Event due to high winds, October 28, 2003 (inches)

STATION:	Precipitation (inches)			# Days w/o precipitation prior to event day
	October 28, 2003	72 hrs prior to event day (10/28/03)	Last measured prior to 72 hr. period	
Pasco (NWS)	0	0	0.03 (10/20)	8
Walla Walla (NWS)	0	0	0.16 (10/17)	11
Badger Canyon	0	0	NA	>30
College Place	0	0	0.06 (10/16)	12
R. Eby	0	0	0.09 (10/15)	13
Finley	0	0	NA	>30
Touchet	0	0	NA	>30

Data from the seven sites was analyzed in order to assess the general vulnerability of soils to high winds. The data shows that none of the sites recorded precipitation within 72 hours prior to the high winds on October 28, 2003. Three of the seven sites report no precipitation for over 30 days prior to the high winds.

October 2003 precipitation data from six of the seven sites was compared to long-term mean precipitation for the same time period in order to further assess the likelihood that soils were vulnerable to erosion by high winds. Long-term data is not readily available from Pasco (NWS). For this reason, a seventh site, Kennewick (PAWS) was chosen as a representative site to include in this assessment. The period of record for each site is found in Appendix B. All sites reported measurable precipitation at or below 31 percent of the mean for October 2003.

Table 4. October, 2003 precipitation compared to mean precipitation (inches)

Station	October Precip.	October 2003	Percent of mean
Kennewick	.9	.12	13
Walla Walla	3.5	.47	13
Badger Canyon	.7	0	0
College Place	.9	.28	31
R. Eby	.8	.19	24
Finley	.5	0	0
Touchet	.5	0	0

Thus, all sites analyzed show conditions were sufficiently dry for wind-blown dust generation 72 hours prior to the high winds on October 28, 2003. Moreover, October 2003 was especially dry when compared to the long-term mean precipitation. Such dry conditions leave soils vulnerable to wind erosion, particularly in light of the observed high winds for 14 and eight consecutive hours recorded at Kennewick and Walla Walla, respectively.

BACM Implementation

The 2003 NEAP evaluated data for the year 2000 and 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 the USDA's CRP program 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% and 15-30% residue) practices and CRP enrollment on a county-by-county basis.

A 2003 Annual Status Report regarding BACM implementation evaluated data for the year 2002 (Appendix C). Comparing the 2003 NEAP to the annual report shows the level of Conservation Reserve Program (CRP) and Best Management Practice (BMP) use have increased, from the years 2000 to 2002, from 68 to 70 percent in the priority counties of the Columbia Plateau. Seventy percent of the total farmable acres in these counties are now part of a United States

Department of Agriculture (USDA) conservation program, use one of the minimum till practices, or contain 15-30% 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 the Pasco and Walla Walla, Washington NWS stations show that October 28, 2003 was characterized by windy and gusty conditions. Wind speeds and gusts were in the 20s to 30s at Pasco and Walla Walla, Washington for as many as 14 and eight consecutive hours, respectively. The winds meet Ecology's high wind event definition.

In the area lying upwind of Kennewick and Walla Walla, Washington, with respect to the prevailing winds, no precipitation is reported for as many as eight days prior to the high winds. The data shows precipitation for the month of October, 2003 was well below normal when compared to long-term mean precipitation for the area. 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 PM₁₀ levels. Therefore, the monitored PM₁₀ concentrations of 1,438 µg/m³ at Kennewick, Washington and 1,338 µg/m³ at Walla Walla, Washington on October 28, 2003, are reasonably attributed to a natural event due to high winds.

Appendix A

Kennewick and Walla Walla, Washington PM₁₀ Data

Annual Parameter Report
 Reporting Year: 2003
 Time of Report: 03/31/04 11:59

STATION: KENNEWICK VSC
 SITE: 0050002
 Parameter: PM10

AIRS : Parameter Code: 81102 Method Code: 063 Units Code: 001 Decimal Positioner: 0
 SAROAD: Parameter Code: 81102 Method Code: 63 Units Code: 01 Units:

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAX	MEAN	NO
1	8	5	22	10	11	16	23	32	36	48	40	8			
2	12	5	17	6	21	25	18	26	58	49	26	18			
3	7			32	28	24	24	21		56	17	23			
4	5	13	11	11	33	25	21	47	75	53	22	10			
5	6	21	186	10	14	14	20	45	49	47	40	15			
6	13	26	126	4	13	34		19	86	59		10			
7	11	27	21	10	17	27		18		19	39				
8	12	20	7	16	18	36	36	16	15	84	37	13			
9	11	22	33	13	20	27	27	80	13	30	32	9			
10		22	17	17	17	33		15	29	14	164	5			
11	14	20	34	7	15	19	42	14	5	16	41	12			
12	14	18		11	13	28	69	16	16	138	38	19			
13	14	16	60	9	16	37	25	30	22		40	11			
14	13	22	19		34	15	22	34	27	14	50	3			
15	9	17		9	39	17	30	62		13		8			
16	12	4			8	28	25	41	54		18	10			
17		4		11	9	34	22	17	14	15	31	12			
18	10		12	7	9	65	29		24	23		13			
19	12	15	10	15	14	50	33	50	81		10	15			
20	6	14	36	14	18	17	23	41	20	22	7	18			
21		9	6	13	16	20	25	54		14	16	11			
22	5	5	9	17	27	9	43	40	33	42	14				
23	12	10	11	16	72	16	36	21	36	22	13	11			
24	19	14	11	15	24	19	39	16	43	22	22	10			
25	21	27		4	13	22	34		40	24	37	2			
26	4	25	19	2	9	30	35	31	45	27	12	7			
27	6	25	16	3	10	22	29	17	41		12				
28	9	19	13		22	22	37	24	38	1438	24	7			
29	10		14	5	21	32	40	55	61	40	7	10			
30	11		20	5	28	43	44	45	55	126					
31	6		29		17		35	40		39		22			
AVG	10	16	30	11	20	27	32	33	39	92	31	12		30	
MAX	21	27	186	32	72	65	69	80	86	1438	164	23	1438		
DAYS	28	26	25	27	31	29	28	29	26	27	26	27			329

Annual Parameter Report

Reporting Year: 2003
Time of Report: 04/08/04 09:55

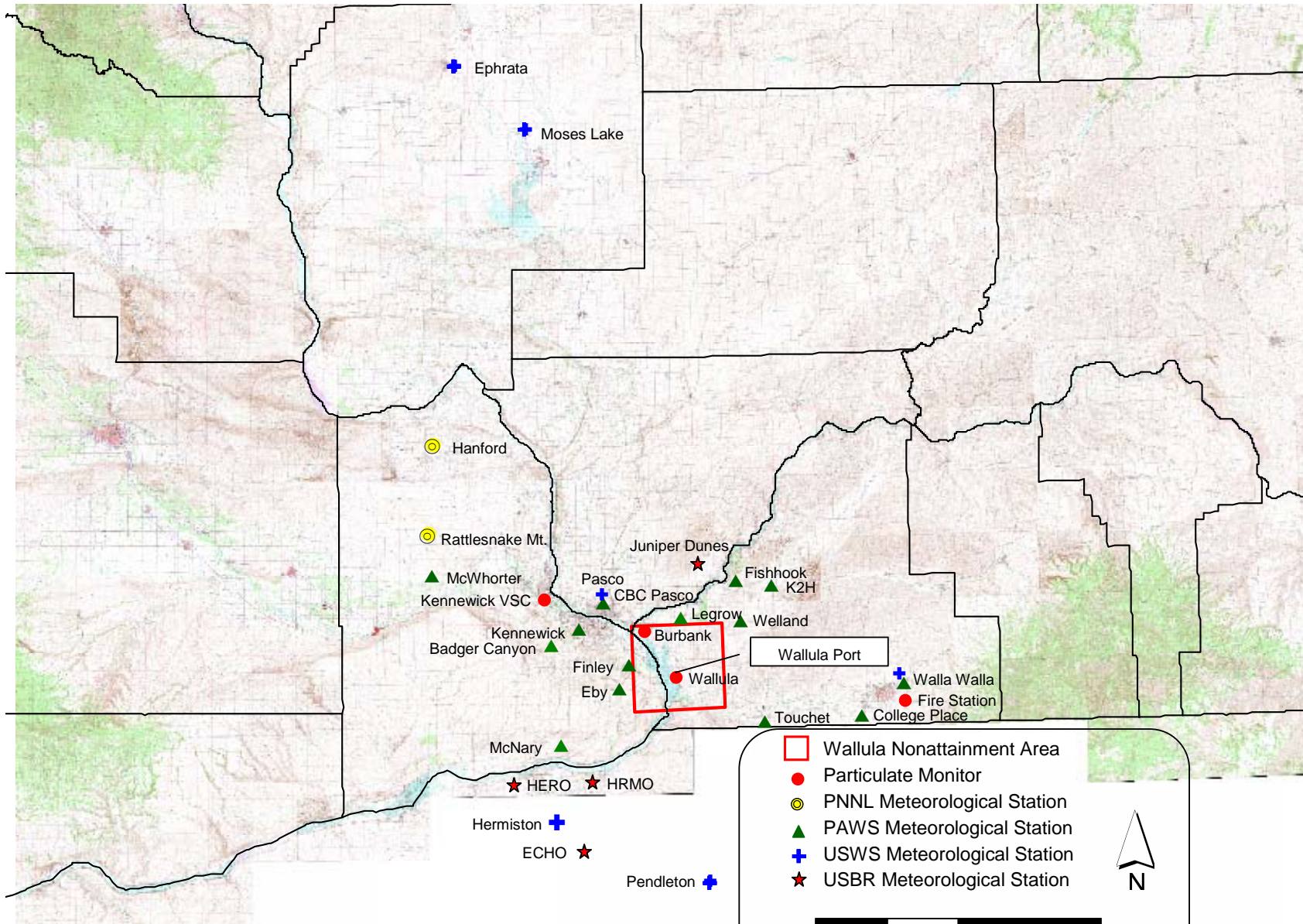
STATION: FIRE STATION
SITE: 0710005
Parameter: PM10

AIRS : Parameter Code: 81102 Method Code: 063 Units Code: 001 Decimal Positioner: 0
SAROAD: Parameter Code: 81102 Method Code: 63 Units Code: 01 Units:

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MAX	MEAN	NO
1			22					53							
2		3				24	22				25	21			
3					6				90	61					
4			9	8				28							
5		27				29	15				36	14			
6	7				13				27	96					
7			8					28							
8		11				43						15			
9	13				16					23					
10			4					26							
11		35									165	12			
12	18				7		40								
13			24												
14		22				16	20				56				
15	13			8	16			104		11					
16			7												
17						41	28				14	20			
18	10			9	13					24					
19			17												
20		4				36	30	57	25						
21				14	15					23		5			
22			2					47	29						
23		6					58								
24	15			6	31				43	22		6			
25			6					51							
26		28				27	31					9			
27	5			1	27				42						
28								38		1338					
29			13			61	38				10	17			
30	4				23				65	35					
31			9												
AVG	11	17	11	8	17	35	31	48	46	181	51	13		39	
MAX	18	35	24	14	31	61	58	104	90	1338	165	21	1338		
DAYS	8	8	11	6	10	8	9	9	7	9	6	9			100

Appendix B

Meteorological Data Kennewick and Walla Walla



Wallula Nonattainment Area

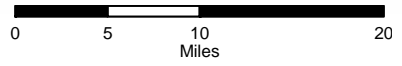
Particulate Monitor

PNNL Meteorological Station

PAWS Meteorological Station

USWS Meteorological Station

USBR Meteorological Station



2003-10-11	16:53	2452924.7034722	1016.2	51.0	40.0	250	4.0	NA	0	120	10	NA	65.8	NA	M	M	M	M	M	M	M	M
2003-10-11	17:53	2452924.7451389	1016.0	52.0	40.0	0	0.0	NA	0	120	10	NA	63.5	NA	52	43	M	M	M	M	M	M
2003-10-11	18:53	2452924.7868056	1015.7	53.0	39.0	0	0.0	NA	6	75	10	NA	58.8	NA	M	M	M	M	M	M	M	M
2003-10-11	19:53	2452924.8284722	1014.7	57.0	40.0	90	3.0	NA	3	120	10	NA	52.9	NA	M	M	M	M	M	M	M	M
2003-10-11	20:53	2452924.8701389	1014.2	61.0	39.0	160	7.0	NA	8	60	10	NA	44.1	NA	M	M	M	M	M	M	0.18	0.019
2003-10-11	21:53	2452924.9118056	1013.2	61.0	40.0	200	10.0	NA	6	90	10	NA	45.8	NA	M	M	M	M	M	M	M	M
2003-10-11	22:53	2452924.9534722	1012.4	61.0	41.0	200	9.0	NA	8	75	10	NA	47.6	NA	M	M	M	M	M	M	M	M
2003-10-11	23:53	2452924.9951389	1012.5	61.0	41.0	190	4.0	NA	8	60	10	NA	47.6	NA	62	52	68.6	M	81	M	M	M
2003-10-12	00:53	2452925.0368056	1012.2	59.0	44.0	180	13.0	NA	6	70	10	NA	57.4	NA	M	M	M	M	M	M	M	M
2003-10-12	01:53	2452925.0784722	1012.5	57.0	46.0	200	9.0	NA	8	48	10	NA	66.6	NA	M	M	M	M	M	M	M	M
2003-10-12	02:53	2452925.1201389	1012.5	58.0	46.0	NA	3.0	NA	8	70	10	NA	64.2	NA	M	M	M	M	M	M	M	M
2003-10-12	03:53	2452925.1618056	1013.1	57.0	46.0	0	0.0	NA	8	80	10	NA	66.6	NA	M	M	M	M	M	M	M	M
2003-10-12	04:53	2452925.2034722	1013.8	57.0	47.0	220	9.0	NA	8	90	10	NA	69.1	NA	M	M	M	M	M	M	M	M
2003-10-12	05:53	2452925.2451389	1013.5	57.0	45.0	230	12.0	NA	0	120	10	NA	64.1	NA	61	56	M	M	M	M	M	M
2003-10-12	06:53	2452925.2868056	1014.9	56.0	44.0	250	10.0	NA	0	120	10	NA	64.0	NA	M	M	M	M	M	M	M	M
2003-10-12	07:53	2452925.3284722	1015.6	56.0	43.0	230	15.0	NA	3	120	10	NA	61.6	NA	M	M	M	M	M	M	M	M
2003-10-12	08:53	2452925.3701389	1015.9	55.0	43.0	220	21.0	28.0	0	120	10	NA	63.8	NA	M	M	M	M	M	M	M	M
2003-10-12	09:53	2452925.4118056	1017.6	53.0	43.0	230	10.0	NA	0	120	10	NA	68.7	NA	M	M	M	M	M	M	M	M
2003-10-12	10:53	2452925.4534722	1017.9	54.0	42.0	220	17.0	NA	0	120	10	NA	63.7	NA	M	M	M	M	M	M	M	M
2003-10-12	11:53	2452925.4951389	1018.5	52.0	42.0	170	8.0	NA	0	120	10	NA	68.6	0.00	57	52	M	42.4	M	35	M	M
2003-10-12	12:53	2452925.5368056	1019.3	52.0	41.0	200	12.0	NA	0	120	10	NA	66.0	NA	M	M	M	M	M	M	M	M
2003-10-12	13:53	2452925.5784722	1019.4	51.0	40.0	200	13.0	NA	0	120	10	NA	65.8	NA	M	M	M	M	M	M	M	M
2003-10-12	14:53	2452925.6201389	1019.9	53.0	40.0	200	13.0	NA	0	120	10	NA	61.2	NA	M	M	M	M	M	M	M	M
2003-10-12	15:53	2452925.6618056	1019.9	56.0	38.0	190	13.0	NA	0	120	10	NA	50.7	NA	M	M	M	M	M	M	M	M
2003-10-12	16:53	2452925.7034722	1020.5	59.0	37.0	220	16.0	NA	3	120	10	NA	43.7	NA	M	M	M	M	M	M	M	M
2003-10-12	17:53	2452925.7451389	1021.2	60.0	38.0	230	12.0	NA	6	70	10	NA	43.9	NA	60	50	M	M	M	M	M	M
2003-10-12	18:53	2452925.7868056	1021.1	65.0	38.0	210	19.0	23.0	3	120	10	NA	36.8	NA	M	M	M	M	M	M	M	M
2003-10-12	19:53	2452925.8284722	1020.7	65.0	38.0	210	24.0	29.0	6	65	10	NA	36.8	NA	M	M	M	M	M	M	M	M
2003-10-12	20:53	2452925.8701389	1020.5	65.0	40.0	230	19.0	26.0	6	70	10	NA	39.8	NA	M	M	M	M	M	M	0.48	0.028
2003-10-12	21:53	2452925.9118056	1020.1	67.0	40.0	240	21.0	30.0	0	120	9	NA	37.1	NA	M	M	M	M	M	M	M	M
2003-10-12	22:53	2452925.9534722	1020.8	67.0	41.0	240	25.0	29.0	0	120	9	NA	38.6	NA	M	M	M	M	M	M	M	M
2003-10-12	23:13	2452925.9673611	NA	66.0	41.0	230	24.0	30.0	1	120	4	NA	40.0	NA	M	M	68.1	M	83	M	M	M
2003-10-12	23:53	2452925.9951389	1020.3	64.0	42.0	230	23.0	32.0	0	120	8	NA	44.5	NA	70	60	68.1	M	83	M	M	M
2003-10-13	00:53	2452926.0368056	1020.2	62.0	42.0	240	23.0	32.0	1	120	10	NA	47.8	NA	M	M	M	M	M	M	M	M
2003-10-13	01:53	2452926.0784722	1021.3	60.0	42.0	230	20.0	26.0	0	120	10	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-13	02:53	2452926.1201389	1021.6	58.0	42.0	230	21.0	27.0	0	120	10	NA	55.1	NA	M	M	M	M	M	M	M	M
2003-10-13	03:53	2452926.1618056	1022.2	57.0	42.0	230	20.0	28.0	0	120	10	NA	57.1	NA	M	M	M	M	M	M	M	M
2003-10-13	04:53	2452926.2034722	1022.3	57.0	43.0	230	16.0	20.0	0	120	10	NA	59.4	NA	M	M	M	M	M	M	M	M
2003-10-13	05:53	2452926.2451389	1022.5	56.0	44.0	240	19.0	27.0	0	120	10	NA	64.0	NA	64	56	M	M	M	M	M	M
2003-10-13	06:53	2452926.2868056	1022.9	55.0	43.0	240	17.0	24.0	0	120	10	NA	63.8	NA	M	M	M	M	M	M	M	M
2003-10-13	07:53	2452926.3284722	1023.2	56.0	43.0	240	22.0	28.0	0	120	10	NA	61.6	NA	M	M	M	M	M	M	M	M
2003-10-13	08:53	2452926.3701389	1024.0	55.0	44.0	230	20.0	27.0	1	120	10	NA	66.3	NA	M	M	M	M	M	M	M	M
2003-10-13	09:53	2452926.4118056	1024.5	54.0	44.0	240	19.0	22.0	0	120	10	NA	68.8	NA	M	M	M	M	M	M	M	M
2003-10-13	10:53	2452926.4534722	1025.0	54.0	44.0	230	17.0	20.0	0	120	10	NA	68.8	NA	M	M	M	M	M	M	M	M
2003-10-13	11:53	2452926.4951389	1025.7	54.0	43.0	230	12.0	19.0	0	120	10	NA	66.2	0.00	56	54	M	42.1	M	25	M	M
2003-10-13	12:53	2452926.5368056	1026.0	53.0	43.0	240	10.0	NA	0	120	10	NA	68.7	NA	M	M	M	M	M	M	M	M
2003-10-13	13:53	2452926.5784722	1026.4	52.0	43.0	230	9.0	NA	0	120	10	NA	71.3	NA	M	M	M	M	M	M	M	M
2003-10-13	14:53	2452926.6201389	1026.9	51.0	44.0	240	5.0	NA	0	120	10	NA	76.8	NA	M	M	M	M	M	M	M	M

2003-10-27	10:53	2452940.4534722	1025.3	36.0	34.0	330	5.0	NA	0	120	10	NA	92.3	NA	M	M	M	M	M	M	M	M
2003-10-27	11:53	2452940.4951389	1024.6	38.0	36.0	0	0.0	NA	0	120	10	NA	92.4	0.00	42	35	M	38.2	M	26	M	M
2003-10-27	12:53	2452940.5368056	1024.2	37.0	35.0	360	4.0	NA	0	120	10	NA	92.4	NA	M	M	M	M	M	M	M	M
2003-10-27	13:53	2452940.5784722	1023.4	38.0	36.0	350	3.0	NA	0	120	10	NA	92.4	NA	M	M	M	M	M	M	M	M
2003-10-27	14:53	2452940.6201389	1023.2	39.0	37.0	20	6.0	NA	0	120	10	NA	92.4	NA	M	M	M	M	M	M	M	M
2003-10-27	15:53	2452940.6618056	1023.2	45.0	41.0	40	3.0	NA	0	120	10	NA	85.8	NA	M	M	M	M	M	M	M	M
2003-10-27	16:53	2452940.7034722	1023.2	52.0	42.0	0	0.0	NA	0	120	10	NA	68.6	NA	M	M	M	M	M	M	M	M
2003-10-27	17:53	2452940.7451389	1023.0	56.0	39.0	NA	3.0	NA	0	120	10	NA	52.7	NA	56	37	M	M	M	M	M	M
2003-10-27	18:53	2452940.7868056	1022.8	60.0	39.0	110	4.0	NA	0	120	10	NA	45.7	NA	M	M	M	M	M	M	M	M
2003-10-27	19:53	2452940.8284722	1022.4	63.0	40.0	0	0.0	NA	0	120	10	NA	42.7	NA	M	M	M	M	M	M	M	M
2003-10-27	20:53	2452940.8701389	1021.6	65.0	41.0	0	0.0	NA	0	120	10	NA	41.4	NA	M	M	M	M	M	M	0.23	0.012
2003-10-27	21:53	2452940.9118056	1021.5	67.0	45.0	0	0.0	NA	0	120	10	NA	45.0	NA	M	M	M	M	M	M	M	M
2003-10-27	22:53	2452940.9534722	1021.2	70.0	42.0	120	5.0	NA	0	120	10	NA	36.2	NA	M	M	M	M	M	M	M	M
2003-10-27	23:53	2452940.9951389	1020.9	67.0	45.0	190	4.0	NA	0	120	10	NA	45.0	NA	70	56	60.2	M	72	M	M	M
2003-10-28	00:53	2452941.0368056	1020.6	63.0	48.0	60	3.0	NA	1	120	10	NA	58.0	NA	M	M	M	M	M	M	M	M
2003-10-28	01:53	2452941.0784722	1020.2	56.0	49.0	0	0.0	NA	8	120	10	NA	77.3	NA	M	M	M	M	M	M	M	M
2003-10-28	02:53	2452941.1201389	1020.3	55.0	48.0	30	4.0	NA	8	110	10	NA	77.2	NA	M	M	M	M	M	M	M	M
2003-10-28	03:53	2452941.1618056	1020.2	54.0	47.0	200	3.0	NA	0	120	10	NA	77.1	NA	M	M	M	M	M	M	M	M
2003-10-28	04:53	2452941.2034722	1019.9	51.0	46.0	70	4.0	NA	0	120	10	NA	82.9	NA	M	M	M	M	M	M	M	M
2003-10-28	05:53	2452941.2451389	1019.3	50.0	45.0	110	3.0	NA	0	120	10	NA	82.8	NA	67	48	M	M	M	M	M	M
2003-10-28	06:53	2452941.2868056	1019.1	45.0	43.0	0	0.0	NA	0	120	9	NA	92.6	NA	M	M	M	M	M	M	M	M
2003-10-28	07:53	2452941.3284722	1018.6	46.0	45.0	0	0.0	NA	0	120	10	NA	96.3	NA	M	M	M	M	M	M	M	M
2003-10-28	08:53	2452941.3701389	1018.1	47.0	45.0	0	0.0	NA	0	120	10	NA	92.7	NA	M	M	M	M	M	M	M	M
2003-10-28	09:53	2452941.4118056	1016.9	46.0	44.0	0	0.0	NA	0	120	10	NA	92.7	NA	M	M	M	M	M	M	M	M
2003-10-28	10:53	2452941.4534722	1016.0	50.0	47.0	100	3.0	NA	0	120	10	NA	89.4	NA	M	M	M	M	M	M	M	M
2003-10-28	11:53	2452941.4951389	1014.9	50.0	48.0	100	3.0	NA	0	120	10	NA	92.8	0.00	50	44	M	38.0	M	24	M	M
2003-10-28	12:53	2452941.5368056	1014.0	60.0	49.0	230	11.0	NA	1	120	10	NA	66.9	NA	M	M	M	M	M	M	M	M
2003-10-28	13:53	2452941.5784722	1012.7	62.0	50.0	200	12.0	NA	0	120	10	NA	64.7	NA	M	M	M	M	M	M	M	M
2003-10-28	14:53	2452941.6201389	1012.1	63.0	51.0	180	8.0	NA	0	120	10	NA	64.8	NA	M	M	M	M	M	M	M	M
2003-10-28	15:53	2452941.6618056	1011.2	64.0	53.0	220	10.0	NA	0	120	10	NA	67.4	NA	M	M	M	M	M	M	M	M
2003-10-28	16:53	2452941.7034722	1010.4	67.0	53.0	220	17.0	22.0	0	120	10	NA	60.7	NA	M	M	M	M	M	M	M	M
2003-10-28	17:53	2452941.7451389	1009.1	73.0	54.0	230	20.0	25.0	0	120	4	NA	51.3	NA	74	50	M	M	M	M	M	M
2003-10-28	18:04	2452941.7527778	NA	73.0	54.0	240	20.0	25.0	3	120	4	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	18:15	2452941.7604167	NA	73.0	54.0	230	21.0	27.0	6	6	4	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	18:28	2452941.7694444	NA	73.0	54.0	230	19.0	27.0	8	6	3	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	18:53	2452941.7868056	1008.0	73.0	55.0	230	28.0	34.0	8	6	2	NA	53.2	NA	M	M	M	M	M	M	M	M
2003-10-28	19:04	2452941.7944444	NA	73.0	55.0	230	29.0	37.0	8	6	2	NA	53.2	NA	M	M	M	M	M	M	M	M
2003-10-28	19:53	2452941.8284722	1006.3	76.0	56.0	230	31.0	38.0	6	6	2	NA	49.9	NA	M	M	M	M	M	M	M	M
2003-10-28	20:10	2452941.8402778	NA	75.0	55.0	220	34.0	42.0	8	6	2	NA	49.8	NA	M	M	M	M	M	M	0.40	0.028
2003-10-28	20:53	2452941.8701389	1004.9	77.0	55.0	210	22.0	32.0	6	6	2	NA	46.6	NA	M	M	M	M	M	M	0.40	0.028
2003-10-28	21:53	2452941.9118056	1003.1	77.0	53.0	250	26.0	35.0	3	120	3	NA	43.3	NA	M	M	M	M	M	M	M	M
2003-10-28	22:02	2452941.9180556	NA	77.0	54.0	240	20.0	39.0	6	10	2	NA	44.9	NA	M	M	M	M	M	M	M	M
2003-10-28	22:20	2452941.9305556	NA	75.0	54.0	240	25.0	33.0	1	120	2	NA	48.0	NA	M	M	M	M	M	M	M	M
2003-10-28	22:43	2452941.9465278	NA	75.0	54.0	240	24.0	35.0	3	120	2	NA	48.0	NA	M	M	M	M	M	M	M	M
2003-10-28	22:53	2452941.9534722	1002.0	75.0	54.0	230	18.0	25.0	6	7	2	NA	48.0	NA	M	M	M	M	M	M	M	M
2003-10-28	23:00	2452941.9583333	NA	75.0	54.0	230	21.0	29.0	6	7	4	NA	48.0	NA	M	M	59.7	M	71	M	M	M
2003-10-28	23:16	2452941.9694444	NA	73.0	54.0	230	24.0	30.0	6	7	3	NA	51.3	NA	M	M	59.7	M	71	M	M	M
2003-10-28	23:34	2452941.9819444	NA	73.0	54.0	230	29.0	35.0	8	7	2	NA	51.3	NA	M	M	59.7	M	71	M	M	M

2003-10-28	23:42	2452941.9875000	NA	73.0	54.0	240	22.0	34.0	8	7	2	NA	51.3	NA	M	M	59.7	M	71	M	M	M
2003-10-28	23:53	2452941.9951389	1000.7	75.0	52.0	240	32.0	40.0	8	7	2	NA	44.6	NA	79	72	59.7	M	71	M	M	M
2003-10-29	00:00	2452942.0000000	NA	73.0	52.0	240	38.0	47.0	8	7	2	NA	47.7	NA	M	M	M	M	M	M	M	M
2003-10-29	00:29	2452942.0201389	NA	73.0	54.0	250	32.0	39.0	8	9	2	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-29	00:53	2452942.0368056	1000.5	73.0	53.0	250	25.0	35.0	8	9	3	NA	49.5	NA	M	M	M	M	M	M	M	M
2003-10-29	01:02	2452942.0430556	NA	73.0	54.0	250	29.0	36.0	8	16	3	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-29	01:09	2452942.0479167	NA	73.0	54.0	250	31.0	40.0	8	9	3	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-29	01:53	2452942.0784722	NA	72.0	54.0	240	28.0	39.0	8	9	3	NA	53.1	NA	M	M	M	M	M	M	M	M
2003-10-29	02:00	2452942.0833333	NA	72.0	54.0	240	34.0	41.0	6	110	7	NA	53.1	NA	M	M	M	M	M	M	M	M
2003-10-29	02:53	2452942.1201389	NA	69.0	54.0	240	28.0	34.0	3	120	9	NA	58.8	NA	M	M	M	M	M	M	M	M
2003-10-29	03:53	2452942.1618056	999.8	68.0	50.0	260	21.0	31.0	1	120	10	NA	52.5	NA	M	M	M	M	M	M	M	M
2003-10-29	04:05	2452942.1701389	NA	68.0	45.0	270	22.0	33.0	6	29	5	NA	43.5	NA	M	M	M	M	M	M	M	M
2003-10-29	04:14	2452942.1763889	NA	68.0	39.0	260	29.0	37.0	3	120	7	NA	34.5	NA	M	M	M	M	M	M	M	M
2003-10-29	04:53	2452942.2034722	1001.7	64.0	24.0	290	28.0	36.0	0	120	4	NA	21.6	NA	M	M	M	M	M	M	M	M
2003-10-29	04:56	2452942.2055556	NA	64.0	23.0	290	30.0	36.0	1	120	2	NA	20.7	NA	M	M	M	M	M	M	M	M
2003-10-29	05:03	2452942.2104167	NA	64.0	23.0	290	28.0	36.0	3	120	1	NA	20.7	NA	M	M	M	M	M	M	M	M
2003-10-29	05:11	2452942.2159722	NA	59.0	32.0	320	27.0	35.0	3	120	3	NA	35.8	NA	M	M	M	M	M	M	M	M
2003-10-29	05:53	2452942.2451389	1004.0	54.0	34.0	310	22.0	29.0	0	120	10	NA	46.5	NA	75	54	M	M	M	M	M	M
2003-10-29	06:53	2452942.2868056	1005.1	54.0	33.0	280	11.0	NA	0	120	10	NA	44.7	NA	M	M	M	M	M	M	M	M
2003-10-29	07:53	2452942.3284722	1006.8	49.0	32.0	320	6.0	NA	0	120	10	NA	51.7	NA	M	M	M	M	M	M	M	M
2003-10-29	08:53	2452942.3701389	1007.7	48.0	33.0	350	4.0	NA	3	120	10	NA	55.8	NA	M	M	M	M	M	M	M	M
2003-10-29	09:53	2452942.4118056	1007.1	47.0	32.0	240	9.0	NA	0	120	10	NA	55.7	NA	M	M	M	M	M	M	M	M
2003-10-29	10:53	2452942.4534722	1007.5	43.0	32.0	360	4.0	NA	0	120	10	NA	64.8	NA	M	M	M	M	M	M	M	M
2003-10-29	11:53	2452942.4951389	1007.5	43.0	32.0	200	4.0	NA	0	120	10	NA	64.8	0.00	54	38	M	37.8	M	22	M	M

2003-10-27	08:53	2452940.3701389	1026.3	50.0	42.0	100	4.0	NA	0	120	10	NA	73.8	NA	M	M	M	M	M	M	M	
2003-10-27	09:53	2452940.4118056	1025.6	50.0	40.0	170	5.0	NA	0	120	10	NA	68.3	NA	M	M	M	M	M	M	M	
2003-10-27	10:53	2452940.4534722	1025.3	47.0	40.0	40	3.0	NA	0	120	10	NA	76.5	NA	M	M	M	M	M	M	M	
2003-10-27	11:53	2452940.4951389	1024.7	48.0	39.0	120	6.0	NA	0	120	10	NA	70.8	0.00	52	45	M	40.7	M	30	M	M
2003-10-27	12:53	2452940.5368056	1024.5	49.0	40.0	130	5.0	NA	0	120	10	NA	70.9	NA	M	M	M	M	M	M	M	M
2003-10-27	13:53	2452940.5784722	1023.9	53.0	41.0	130	5.0	NA	0	120	10	NA	63.6	NA	M	M	M	M	M	M	M	M
2003-10-27	14:53	2452940.6201389	1023.3	56.0	40.0	170	7.0	NA	0	120	10	NA	54.8	NA	M	M	M	M	M	M	M	M
2003-10-27	15:53	2452940.6618056	1023.4	59.0	41.0	200	8.0	NA	0	120	10	NA	51.2	NA	M	M	M	M	M	M	M	M
2003-10-27	16:53	2452940.7034722	1023.5	63.0	41.0	NA	3.0	NA	0	120	10	NA	44.4	NA	M	M	M	M	M	M	M	M
2003-10-27	17:53	2452940.7451389	1023.3	66.0	39.0	250	6.0	NA	0	120	10	NA	37.0	NA	66	48	M	M	M	M	M	M
2003-10-27	18:53	2452940.7868056	1023.4	65.0	40.0	210	7.0	NA	6	120	10	NA	39.8	NA	M	M	M	M	M	M	M	M
2003-10-27	19:53	2452940.8284722	1022.9	66.0	42.0	210	9.0	NA	8	110	10	NA	41.5	NA	M	M	M	M	M	M	M	M
2003-10-27	20:53	2452940.8701389	1022.7	66.0	42.0	210	8.0	NA	3	120	10	NA	41.5	NA	M	M	M	M	M	M	0.77	0.078
2003-10-27	21:53	2452940.9118056	1022.0	67.0	42.0	220	5.0	NA	0	120	10	NA	40.1	NA	M	M	M	M	M	M	M	M
2003-10-27	22:53	2452940.9534722	1022.0	67.0	43.0	0	0.0	NA	0	120	10	NA	41.7	NA	M	M	M	M	M	M	M	M
2003-10-27	23:53	2452940.9951389	1021.6	65.0	46.0	0	0.0	NA	1	120	10	NA	50.1	NA	67	65	59.3	M	84	M	M	M
2003-10-28	00:53	2452941.0368056	1021.2	63.0	45.0	120	5.0	NA	0	120	9	NA	51.8	NA	M	M	M	M	M	M	M	M
2003-10-28	01:53	2452941.0784722	1020.8	62.0	43.0	160	5.0	NA	8	120	10	NA	49.7	NA	M	M	M	M	M	M	M	M
2003-10-28	02:53	2452941.1201389	1020.8	60.0	42.0	130	5.0	NA	6	110	10	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	03:53	2452941.1618056	1020.5	56.0	41.0	110	6.0	NA	1	120	10	NA	57.0	NA	M	M	M	M	M	M	M	M
2003-10-28	04:53	2452941.2034722	1020.1	60.0	43.0	170	10.0	NA	1	120	10	NA	53.3	NA	M	M	M	M	M	M	M	M
2003-10-28	05:53	2452941.2451389	1020.0	59.0	44.0	180	12.0	NA	0	120	10	NA	57.4	NA	65	56	M	M	M	M	M	M
2003-10-28	06:53	2452941.2868056	1020.0	58.0	43.0	180	11.0	NA	0	120	10	NA	57.3	NA	M	M	M	M	M	M	M	M
2003-10-28	07:53	2452941.3284722	1019.5	60.0	43.0	190	12.0	NA	6	65	10	NA	53.3	NA	M	M	M	M	M	M	M	M
2003-10-28	08:53	2452941.3701389	1019.1	60.0	43.0	190	12.0	NA	8	70	10	NA	53.3	NA	M	M	M	M	M	M	M	M
2003-10-28	09:53	2452941.4118056	1018.1	61.0	43.0	190	13.0	NA	6	70	10	NA	51.5	NA	M	M	M	M	M	M	M	M
2003-10-28	10:53	2452941.4534722	1017.5	60.0	46.0	180	12.0	NA	8	65	10	NA	59.8	NA	M	M	M	M	M	M	M	M
2003-10-28	11:53	2452941.4951389	1016.5	60.0	48.0	190	11.0	NA	1	120	10	NA	64.5	0.00	61	57	M	40.4	M	24	M	M
2003-10-28	12:53	2452941.5368056	1015.9	61.0	50.0	190	11.0	NA	0	120	10	NA	67.1	NA	M	M	M	M	M	M	M	M
2003-10-28	13:53	2452941.5784722	1014.8	62.0	50.0	200	15.0	NA	1	120	10	NA	64.7	NA	M	M	M	M	M	M	M	M
2003-10-28	14:53	2452941.6201389	1014.2	62.0	52.0	210	12.0	NA	1	120	10	NA	69.7	NA	M	M	M	M	M	M	M	M
2003-10-28	15:53	2452941.6618056	1013.7	64.0	52.0	220	16.0	23.0	3	120	10	NA	65.0	NA	M	M	M	M	M	M	M	M
2003-10-28	16:53	2452941.7034722	1013.3	64.0	53.0	210	17.0	21.0	1	120	10	NA	67.4	NA	M	M	M	M	M	M	M	M
2003-10-28	17:53	2452941.7451389	1012.5	66.0	54.0	220	11.0	NA	8	90	5	NA	65.2	NA	66	60	M	M	M	M	M	M
2003-10-28	18:53	2452941.7868056	1010.9	69.0	55.0	230	18.0	23.0	6	19	2	NA	61.0	NA	M	M	M	M	M	M	M	M
2003-10-28	18:56	2452941.7888889	NA	70.0	55.0	230	16.0	23.0	8	100	2	NA	58.9	NA	M	M	M	M	M	M	M	M
2003-10-28	19:10	2452941.7986111	NA	70.0	55.0	230	17.0	22.0	6	17	2	NA	58.9	NA	M	M	M	M	M	M	M	M
2003-10-28	19:25	2452941.8090278	NA	70.0	55.0	230	17.0	NA	6	100	2	NA	58.9	NA	M	M	M	M	M	M	M	M
2003-10-28	19:37	2452941.8173611	NA	70.0	55.0	230	22.0	25.0	8	29	3	NA	58.9	NA	M	M	M	M	M	M	M	M
2003-10-28	19:53	2452941.8284722	1008.6	71.0	55.0	230	19.0	27.0	8	18	3	NA	57.0	NA	M	M	M	M	M	M	M	M
2003-10-28	20:12	2452941.8416667	NA	72.0	55.0	230	17.0	25.0	8	14	3	NA	55.1	NA	M	M	M	M	M	M	1.43	0.095
2003-10-28	20:28	2452941.8527778	NA	72.0	55.0	240	28.0	37.0	9	10	1	NA	55.1	NA	M	M	M	M	M	M	1.43	0.095
2003-10-28	20:31	2452941.8548611	NA	72.0	55.0	240	23.0	34.0	9	9	75	NA	55.1	NA	M	M	M	M	M	M	1.43	0.095
2003-10-28	20:53	2452941.8701389	1007.2	73.0	55.0	250	28.0	37.0	9	5	75	NA	53.2	NA	M	M	M	M	M	M	1.43	0.095
2003-10-28	21:53	2452941.9118056	1005.9	73.0	54.0	250	31.0	44.0	9	7	75	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	22:53	2452941.9534722	1004.1	73.0	54.0	230	31.0	41.0	9	6	50	NA	51.3	NA	M	M	M	M	M	M	M	M
2003-10-28	23:32	2452941.9805556	NA	72.0	54.0	230	26.0	38.0	6	7	2	NA	53.1	NA	M	M	58.7	M	70	M	M	M
2003-10-28	23:53	2452941.9951389	1003.1	72.0	53.0	240	26.0	35.0	8	9	2	NA	51.2	NA	74	66	58.7	M	70	M	M	M

2003-10-29	00:26	2452942.0180556	NA	72.0	54.0	230	26.0	39.0	8	11	2	NA	53.1	NA	M	M	M	M	M	M	M	M
2003-10-29	00:33	2452942.0229167	NA	72.0	52.0	230	31.0	41.0	8	11	2	NA	49.3	NA	M	M	M	M	M	M	M	M
2003-10-29	00:53	2452942.0368056	1002.1	71.0	52.0	240	30.0	40.0	8	11	2	NA	51.0	NA	M	M	M	M	M	M	M	M
2003-10-29	01:01	2452942.0423611	NA	72.0	52.0	240	26.0	38.0	8	9	2	NA	49.3	NA	M	M	M	M	M	M	M	M
2003-10-29	01:09	2452942.0479167	NA	70.0	52.0	250	28.0	36.0	8	7	75	NA	52.8	NA	M	M	M	M	M	M	M	M
2003-10-29	01:36	2452942.0666667	NA	70.0	54.0	230	20.0	31.0	8	17	5	NA	56.8	NA	M	M	M	M	M	M	M	M
2003-10-29	01:43	2452942.0715278	NA	70.0	54.0	230	21.0	25.0	8	75	7	NA	56.8	NA	M	M	M	M	M	M	M	M
2003-10-29	01:53	2452942.0784722	1001.9	70.0	53.0	230	20.0	27.0	8	75	8	NA	54.8	NA	M	M	M	M	M	M	M	M
2003-10-29	02:53	2452942.1201389	1001.6	68.0	52.0	240	13.0	19.0	8	60	9	NA	56.5	NA	M	M	M	M	M	M	M	M
2003-10-29	03:53	2452942.1618056	1001.2	66.0	53.0	240	24.0	36.0	8	70	8	NA	62.9	NA	M	M	M	M	M	M	M	M
2003-10-29	04:53	2452942.2034722	1001.5	63.0	50.0	240	20.0	26.0	8	60	10	NA	62.5	NA	M	M	M	M	M	M	M	M
2003-10-29	05:53	2452942.2451389	1003.6	58.0	36.0	310	23.0	27.0	8	19	6	NA	43.6	NA	72	58	M	M	M	M	M	M
2003-10-29	06:04	2452942.2527778	NA	54.0	30.0	300	19.0	NA	8	19	7	NA	39.6	NA	M	M	M	M	M	M	M	M
2003-10-29	06:24	2452942.2666667	NA	54.0	32.0	280	10.0	NA	3	120	9	NA	42.9	NA	M	M	M	M	M	M	M	M
2003-10-29	06:53	2452942.2868056	1005.9	52.0	32.0	230	9.0	NA	0	120	8	NA	46.2	NA	M	M	M	M	M	M	M	M
2003-10-29	07:53	2452942.3284722	1006.8	50.0	32.0	290	6.0	NA	0	120	10	NA	49.8	NA	M	M	M	M	M	M	M	M
2003-10-29	08:53	2452942.3701389	1006.5	49.0	25.0	300	18.0	NA	0	120	10	NA	38.8	NA	M	M	M	M	M	M	M	M
2003-10-29	09:53	2452942.4118056	1007.3	47.0	26.0	190	10.0	NA	6	65	10	NA	43.6	NA	M	M	M	M	M	M	M	M
2003-10-29	10:53	2452942.4534722	1007.3	45.0	36.0	200	9.0	NA	3	120	10	NA	70.5	NA	M	M	M	M	M	M	M	M
2003-10-29	11:53	2452942.4951389	1007.4	45.0	36.0	210	10.0	NA	8	65	10	NA	70.5	0.00	57	44	M	40.1	M	19	M	M

WSU Public Agricultural Weather System

Data Extracted:2004-04-12 14:28:46

[BADGER CANYON \(Sleater\), 4.0 MI SW of Kennewick, Wa](#)

Lat:46.1 Lng:119.2 elevation:591

Dates Range From 1995-07-13 To 2004-04-11

DATE	Total
Gregorian	Precip
-----	-----
2003-09-27	.00
2003-09-28	.00
2003-09-29	.00
2003-09-30	.00
2003-10-01	.00
2003-10-02	.00
2003-10-03	.00
2003-10-04	.00
2003-10-05	.00
2003-10-06	.00
2003-10-07	.00
2003-10-08	.00
2003-10-09	.00
2003-10-10	.00
2003-10-11	.00
2003-10-12	.00
2003-10-13	.00
2003-10-14	.00
2003-10-15	.00
2003-10-16	.00
2003-10-17	.00
2003-10-18	.00
2003-10-19	.00
2003-10-20	.00
2003-10-21	.00
2003-10-22	.00
2003-10-23	.00
2003-10-24	.00
2003-10-25	.00
2003-10-26	.00
2003-10-27	.00
2003-10-28	.00

Data Extracted:2004-04-12 14:28:46
COLLEGE PLACE, 1 MI S of College Place, Wa
Lat:46.0 Lng:118.3 elevation:691
Dates Range From 1992-04-28 To 2004-04-11

DATE	Total Precip Gregorian inches
-----	-----
2003-09-27	.00
2003-09-28	.00
2003-09-29	.00
2003-09-30	.00
2003-10-01	.00
2003-10-02	.00
2003-10-03	.00
2003-10-04	.00
2003-10-05	.00
2003-10-06	.00
2003-10-07	.00
2003-10-08	.00
2003-10-09	.00
2003-10-10	.00
2003-10-11	.04
2003-10-12	.00
2003-10-13	NA
2003-10-14	.00
2003-10-15	.18
2003-10-16	.06
2003-10-17	.00
2003-10-18	.00
2003-10-19	.00
2003-10-20	.00
2003-10-21	.00
2003-10-22	.00
2003-10-23	.00
2003-10-24	.00
2003-10-25	.00
2003-10-26	.00
2003-10-27	.00
2003-10-28	.00

Data Extracted:2004-04-12 14:28:46
[R. EBY, 6 MI S of Finley, Wa](#)
Lat:46.0 Lng:119.0 elevation:1176
Dates Range From 1989-03-31 To 2004-04-11

DATE	Total
Gregorian	Precip
-----	-----
2003-09-27	.00
2003-09-28	.00
2003-09-29	.00
2003-09-30	.00
2003-10-01	.00
2003-10-02	.00
2003-10-03	.00
2003-10-04	.00
2003-10-05	.00
2003-10-06	.00
2003-10-07	.00
2003-10-08	.00
2003-10-09	.00
2003-10-10	.00
2003-10-11	.02
2003-10-12	.00
2003-10-13	.00
2003-10-14	.08
2003-10-15	.09
2003-10-16	.00
2003-10-17	.00
2003-10-18	.00
2003-10-19	.00
2003-10-20	.00
2003-10-21	.00
2003-10-22	.00
2003-10-23	.00
2003-10-24	.00
2003-10-25	.00
2003-10-26	.00
2003-10-27	.00
2003-10-28	.00

Data Extracted:2004-04-12 14:28:47
[FINLEY, 1.5 MI S of Finley, Wa](#)
Lat:46.1 Lng:119.0 elevation:755
Dates Range From 1992-06-02 To 2004-04-11

DATE	Total
Gregorian	Precip
-----	-----
2003-09-27	.00
2003-09-28	.00
2003-09-29	.00
2003-09-30	.00
2003-10-01	.00
2003-10-02	.00
2003-10-03	.00
2003-10-04	.00
2003-10-05	.00
2003-10-06	.00
2003-10-07	.00
2003-10-08	.00
2003-10-09	.00
2003-10-10	.00
2003-10-11	.00
2003-10-12	.00
2003-10-13	.00
2003-10-14	.00
2003-10-15	.00
2003-10-16	.00
2003-10-17	.00
2003-10-18	.00
2003-10-19	.00
2003-10-20	.00
2003-10-21	.00
2003-10-22	.00
2003-10-23	.00
2003-10-24	.00
2003-10-25	.00
2003-10-26	.00
2003-10-27	.00
2003-10-28	.00

Data Extracted:2004-04-12 14:28:47
[TOUCHET, 1.5 MI S of Touchet, Wa](#)
Lat:46.0 Lng:118.6 elevation:492
Dates Range From 1989-01-01 To 2004-04-11

DATE	Total
Gregorian	Precip
-----	-----
2003-09-27	.00
2003-09-28	.00
2003-09-29	.00
2003-09-30	.00
2003-10-01	.00
2003-10-02	.00
2003-10-03	.00
2003-10-04	.00
2003-10-05	.00
2003-10-06	.00
2003-10-07	.00
2003-10-08	.00
2003-10-09	.00
2003-10-10	.00
2003-10-11	.00
2003-10-12	.00
2003-10-13	.00
2003-10-14	.00
2003-10-15	.00
2003-10-16	.00
2003-10-17	.00
2003-10-18	.00
2003-10-19	.00
2003-10-20	.00
2003-10-21	.00
2003-10-22	.00
2003-10-23	.00
2003-10-24	.00
2003-10-25	.00
2003-10-26	.00
2003-10-27	.00
2003-10-28	.00

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WSU Public Agricultural Weather System

Data Extracted:2004-04-13 12:51:13
[BADGER CANYON \(Sleater\), 4.0 MI SW of Kennewick, Wa](#)
 Lat:46.1 Lng:119.2 elevation:591
 Dates Range From 1995-07-13 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.1	.9	.6	.4	.4	.3	.3	.0	.1	.7	1.0	1.4
Min Precipitation											
.5	.3	.0	.0	.2	.0	.0	.0	.0	.0	.3	.5
2002	1997	2004	2003	2001	2003	2003	2003	2003	2003	2003	1999

Data Extracted:2004-04-13 12:51:14
[COLLEGE PLACE, 1 MI S of College Place, Wa](#)
 Lat:46.0 Lng:118.3 elevation:691
 Dates Range From 1992-04-28 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.8	1.3	1.2	1.4	1.3	.9	.5	.5	.5	.9	1.5	1.5
Min Precipitation											
.6	.4	.3	.5	.4	.0	.0	.0	.0	.2	.4	.6
2002	1997	2004	2002	1992	2003	2003	2003	1993	2002	1997	1994

Data Extracted:2004-04-13 12:51:16
[R. EBY, 6 MI S of Finley, Wa](#)
 Lat:46.0 Lng:119.0 elevation:1176
 Dates Range From 1989-03-31 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.1	.8	.8	.8	.9	.6	.5	.4	.2	.8	1.3	1.2
Min Precipitation											
.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.2	.6
2003	2003	2000	2000	1992	2003	2003	2003	2003	2003	2002	1992

Data Extracted:2004-04-13 12:51:17
[FINLEY, 1.5 MI S of Finley, Wa](#)
 Lat:46.1 Lng:119.0 elevation:755
 Dates Range From 1992-06-02 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											

.9	.7	.7	.6	.5	.4	.2	.3	.2	.5	.9	.9
Min Precipitation											
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2004	2004	2004	2001	2004	2003	2003	2003	2003	2004	2003	2003

Data Extracted:2004-04-13 12:51:19
[KENNEWICK \(Stewart\), Edison and 8th, Kennewick, Wa](#)
 Lat:46.2 Lng:119.1 elevation:429
 Dates Range From 1995-07-11 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.0	.8	.6	.6	.8	1.0	.7	.8	1.1	.9	.9	1.2
Min Precipitation											
.4	.3	.0	.0	.0	.0	.0	.0	.0	.1	.0	.3
2002	1997	2004	2003	2001	2003	2004	2004	2004	2003	2003	2002

Data Extracted:2004-04-13 12:51:20
[TOUCHET, 1.5 MI S of Touchet, Wa](#)
 Lat:46.0 Lng:118.6 elevation:492
 Dates Range From 1989-01-01 To 2004-04-12

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Precipitation											
1.2	.9	.8	.7	.8	.6	.3	.4	.2	.5	1.0	1.0
Min Precipitation											
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.4
2003	2003	2004	2003	1994	2003	2003	2003	2003	2003	2003	1989

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WALLA WALLA FAA AIRPORT, WASHINGTON (458928)

Period of Record Monthly Climate Summary Period of Record : 12/1/1949 to 12/31/2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Total Precipitation (in.)	2.29	1.75	1.96	1.65	1.80	1.18	0.58	0.75	0.88	1.68	2.51	2.30	19.34

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Appendix C

STATUS REPORT 2003 Best Available Control Measures for Columbia Plateau Agriculture January, 2004

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 the Environmental Protection Agency (EPA) in the revised Natural Events Action Plan (NEAP).

The level of Conservation Reserve Program (CRP) and Best Management Practice (BMP) use has increased from 68 to 70 percent in the priority counties of the Columbia Plateau. Seventy percent of the total farmable acres in these counties are now part of a United States Department of Agriculture (USDA) conservation program, use one of the minimum till practices, or contain 15-30% residue. Washington State finds this level of CRP and BMP implementation 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 PM₁₀ concentrations raised by unusually high winds may be treated as uncontrollable natural events when the dust originates from nonanthropogenic sources, or when the dust originates from contributing anthropogenic sources controlled with BACM. After natural events cause the PM₁₀ concentration to violate the PM₁₀ 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 PM₁₀ 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 wind-blown dust. The Washington State Department of Ecology (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 the USDA's CRP program 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% and 15-30% residue) practices and CRP enrollment on a county by county basis.

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

STATUS REPORT: 2003 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 2002, the most recent 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 70 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% residue.

Similarly, attachment 2 shows the implementation of conservation practices for all counties of the Columbia Plateau NEAP. The data shows 71 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 is continuing 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. For example, Ecology contracted with the Benton Conservation District (BCD) for tasks associated with a special funds grant from the EPA. The goal of the project is twofold: to provide immediate, temporary treatment to critical areas and to promote other options for longer-term or permanent wind erosion control measures identified in the CP3.

The first goal is addressed by the purchase of a straw mulcher and cost share straw for use in the Horse Heaven Hills of Benton County. To date, the straw mulcher has been used by eight different farm operators. They have applied roughly 556 tons of grass straw on about 275 acres of "hot spots" (highly erodible areas). An additional 150 tons was applied without project-supplied cost-share. In total, roughly 706 tons of straw were applied to highly erodible areas in an effort to protect against the occurrence of windblown dust.

Education and outreach will address the second goal. The outreach will focus on installing wind erosion conservation buffers as a longer-term solution to wind erosion. Ecology, the BCD, the NRCS and the CTIC will conduct the outreach in the winter of 2004.

Moreover, Ecology's Water Quality Program recently awarded two funding requests that will 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.

The Water Quality Program awarded the Spokane County Conservation District a \$2,000,000 low interest State Revolving Fund loan for its Eastern Washington Conservation Tillage Program. This program promotes the implementation of direct seeding in Whitman and Asotin Counties, resulting in decreased erosion and improved water infiltration. The low interest loans provided to agricultural producers will facilitate the purchase of direct seeding equipment, making the transition to conservation tillage economically feasible. Direct seeding is recognized by both the CP3 and the NRCS as an effective wind erosion control measure.

Similarly, the Franklin Conservation District was awarded a \$250,000 Centennial Clean Water Fund grant to install perennial wheat erosion buffers. This project is designed to address water and soil runoff from fallow fields in dryland farm areas of Franklin and Whitman Counties. Erosion events increase sediments and contaminants in eastern Washington streams. Perennial wheat will be evaluated as an erosion control method, compared to conventional wheat/fallow and CRP cultivations. Conservation buffers, too, are recognized by both the CP3 and the NRCS as an effective wind erosion control measure.

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.

2003 BACM Status Report: Columbia Plateau

		BACM (component 1)	BACM (component 2) - ADDITIONAL CONSERVATION MEASURES APPLIED				BACM total (components 1 & 2)	
		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
Adams								
HEL withdrawn from production	212,524	212,524					212,524	100.00%
Fallow acres	226,183		11,878	0	11,878	11,397	35,153	15.54%
Planted acres	377,167		31,562	2,675	43,537	42,688	120,462	31.94%
Total farmable acres	815,874	26%	43,440	2,675	55,415	54,085	368,139	45.12%
Asotin								
HEL withdrawn from production	28,648	28,648					28,648	100.00%
Fallow acres	13,754		3,000	0	2,000	8,754	13,754	100.00%
Planted acres	31,035		650	0	9,235	11,650	21,535	69.39%
Total farmable acres	73,437	39%	3,650	0	11,235	20,404	63,937	87.06%
Benton								
HEL withdrawn from production	75,019	75,019					75,019	100.00%
Fallow acres	131,488		3,550	0	0	67,979	71,529	54.40%
Total planted acres	232,100		2,488	0	2,212	124,202	128,902	55.54%
Total farmable acres	438,607	17%	6,038	0	2,212	192,181	275,450	62.80%
Chelan								
HEL withdrawn from production	1,373	1,373					1,373	100.00%
Fallow acres	391		0	0	0	391	391	100.00%
Total planted acres	391		0	0	0	391	391	100.00%
Total farmable acres	2,155	64%	0	0	0	782	2,155	100.00%
Columbia								
HEL withdrawn from production	38,269	38,269					38,269	100.00%
Fallow acres	28,253		8,467	0	5,651	0	14,118	49.97%
Total planted acres	119,622		27,481	0	3,096	25,483	56,060	46.86%
Total farmable acres	186,144	21%	35,948	0	8,747	25,483	108,447	58.26%
Douglas								
HEL withdrawn from production	187,733	187,733					187,733	100.00%
Fallow acres	245,153		0	0	15,514	100,000	115,514	47.12%
Total planted acres	183,770		4,929	0	53,685	75,275	133,889	72.86%
Total farmable acres	616,656	30%	4,929	0	69,199	175,275	437,136	70.89%
Ferry								
HEL withdrawn from production	1,091	1,091					1,091	100.00%
Fallow acres	500		0	0	0	200	200	40.00%
Total planted acres	4,650		0	0	0	2,950	2,950	63.44%
Total farmable acres	6,241	17%	0	0	0	3,150	4,241	67.95%
Franklin								
HEL withdrawn from production	104,417	104,417					104,417	100.00%
Fallow acres	63,000		0	0	0	59,100	59,100	93.81%
Total planted acres	269,900		0	0	9,950	121,977	131,927	48.88%
Total farmable acres	437,317	24%	0	0	9,950	181,077	295,444	67.56%
Garfield								
HEL withdrawn from production	44,527	44,527					44,527	100.00%
Fallow acres	45,545		12,780	0	11,727	14,617	39,124	85.90%
Total planted acres	111,794		38,001	0	32,637	9,038	79,676	71.27%
Total farmable acres	201,866	22%	50,781	0	44,364	23,655	163,327	80.91%
Grant								
HEL withdrawn from production	60,747	60,747					60,747	100.00%
Fallow acres	102,000		1,020	0	24,480	60,180	85,680	84.00%
Total planted acres	342,700		5,310	0	59,290	101,340	165,940	48.42%

Kittitas		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	3,294	3,294					3,294	100.00%
Fallow acres	3,100		0	0	0	2,480	2,480	80.00%
Planted acres	18,300		0	0	0	5,738	5,738	31.36%
Total farmable acres	24,694	13%	0	0	0	8,218	11,512	46.62%
Klickitat		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	57,925	57,925					57,925	100.00%
Fallow acres	22,028		0	0	0	16,080	16,080	73.00%
Planted acres	69,451		30,963	0	0	31,003	61,966	89.22%
Total farmable acres	149,404	39%	30,963	0	0	47,083	135,971	91.01%
Lincoln		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	86,330	86,330					86,330	100.00%
Fallow acres	239,832		23,983	0	83,941	119,916	227,840	95.00%
Total planted acres	483,639		47,182	0	175,071	230,057	452,310	93.52%
Total farmable acres	809,801	11%	71,165	0	259,012	349,973	766,480	94.65%
Okanogan		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	4,057	4,057					4,057	100.00%
Fallow acres	7,151		0	0	0	3,933	3,933	55.00%
Total planted acres	25,425		0	0	0	18,372	18,372	72.26%
Total farmable acres	36,633	11%	0	0	0	22,305	26,362	71.96%
Pend Oreille		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	0	0%					0	NA
Fallow acres	184		0	0	0	0	0	0.00%
Total planted acres	641		0	0	0	315	315	49.14%
Total farmable acres	825	0%	0	0	0	315	315	38.18%
Spokane		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	32,033	32,033					32,033	100.00%
Fallow acres	225,203		11,260	0	45,041	135,122	191,423	85.00%
Total planted acres	224,672		17,133	0	53,535	104,542	175,210	77.98%
Total farmable acres	481,908	7%	28,393	0	98,576	239,664	398,666	82.73%
Stevens		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	3,552	3,552					3,552	100.00%
Fallow acres	6,000		0	0	0	4,020	4,020	67.00%
Total planted acres	29,100		711	0	7,061	15,699	23,471	80.66%
Total farmable acres	38,652	9%	711	0	7,061	19,719	31,043	80.31%
Walla Walla		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	148,578	148,578					148,578	100.00%
Fallow acres	120,084		12,000	0	60,042	33,023	105,065	87.49%
Total planted acres	295,888		29,343	0	99,662	91,884	220,889	74.65%
Total farmable acres	564,550	26%	41,343	0	159,704	124,907	474,532	84.05%
Whitman		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	135,755	135,755					135,755	100.00%
Fallow acres	172,000		30,000	0	20,000	61,000	111,000	64.53%
Total planted acres	733,170		90,650	0	96,000	281,800	468,450	63.89%
Total farmable acres	1,040,925	13%	120,650	0	116,000	342,800	715,205	68.71%
Yakima		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
HEL withdrawn from production	53,727	53,727					53,727	100.00%
Fallow acres	9,175		0	0	0	3,853	3,853	41.99%
Total planted acres	66,770		0	0	4,224	16,903	21,127	31.64%
Total farmable acres	129,672	41%	0	0	4,224	20,756	78,707	60.70%
SUMMARY		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
Total farmable acres	6,560,808	1,279,599	444,341	2,675	929,469	2,013,352	4,669,436	
		20%	7%	0%	14%	31%		71%

2003 BACM Status Report: Columbia Plateau Priority Counties

		BACM (component 1)	BACM (component 2) - ADDITIONAL CONSERVATION MEASURES APPLIED				BACM total (components 1 & 2)	
		CRP	No-Till	Ridge-Till	Mulch-Till	15-30% Residue.	acres	% acres
Adams								
HEL withdrawn from production	212,524	212,524					212,524	100.00%
Fallow acres	226,183		11,878	0	11,878	11,397	35,153	15.54%
Planted acres	377,167		31,562	2,675	43,537	42,688	120,462	31.94%
Total farmable acres	815,874	26%	43,440	2,675	55,415	54,085	368,139	45.12%
Benton								
HEL withdrawn from production	75,019	75,019					75,019	100.00%
Fallow acres	131,488		3,550	0	0	67,979	71,529	54.40%
Total planted acres	232,100		2,488	0	2,212	124,202	128,902	55.54%
Total farmable acres	438,607	17%	6,038	0	2,212	192,181	275,450	62.80%
Douglas								
HEL withdrawn from production	187,733	187,733					187,733	100.00%
Fallow acres	245,153		0	0	15,514	100,000	115,514	47.12%
Total planted acres	183,770		4,929	0	53,685	75,275	133,889	72.86%
Total farmable acres	616,656	30%	4,929	0	69,199	175,275	437,136	70.89%
Franklin								
HEL withdrawn from production	104,417	104,417					104,417	100.00%
Fallow acres	63,000		0	0	0	59,100	59,100	93.81%
Total planted acres	269,900		0	0	9,950	121,977	131,927	48.88%
Total farmable acres	437,317	24%	0	0	9,950	181,077	295,444	67.56%
Grant								
HEL withdrawn from production	60,747	60,747					60,747	100.00%
Fallow acres	102,000		1,020	0	24,480	60,180	85,680	84.00%
Total planted acres	342,700		5,310	0	59,290	101,340	165,940	48.42%
Total farmable acres	505,447	12%	6,330	0	83,770	161,520	312,367	61.80%
Lincoln								
HEL withdrawn from production	86,330	86,330					86,330	100.00%
Fallow acres	239,832		23,983	0	83,941	119,916	227,840	95.00%
Total planted acres	483,639		47,182	0	175,071	230,057	452,310	93.52%
Total farmable acres	809,801	11%	71,165	0	259,012	349,973	766,480	94.65%
Walla Walla								
HEL withdrawn from production	148,578	148,578					148,578	100.00%
Fallow acres	120,084		12,000	0	60,042	33,023	105,065	87.49%
Total planted acres	295,888		29,343	0	99,662	91,884	220,889	74.65%
Total farmable acres	564,550	26%	41,343	0	159,704	124,907	474,532	84.05%
SUMMARY								
Total farmable acres	4,188,252	875,348	173,245	2,675	639,262	1,239,018	2,929,548	
		21%	4%	0%	15%	30%		70%