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# MEMORANDUM

Pima County Department of Environmental Quality

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**DATE:**

**TO:** Richard Oros  
Director of Plant Operations

**FROM:** Beth Gorman  
Program Manager

**RE: Pima County DEQ Beryllium Monitoring Report 2nd Quarter 2010**

Attached is the Pima County Department of Environmental Quality's (PDEQ) Air Monitoring Division Beryllium Monitoring Network Summary for the 2<sup>nd</sup> Quarter of 2010.

**Highlights:**

- 106 samples collected resulting in 102 valid and 4 invalid samples (96.2% data recovery). EPA requires monitoring data recovery at 75%.
- No beryllium values were detected over the Practical Quantitation Limit (PQL).
- PDEQ and SUSD staff are continuing to employ stringent monitoring protocols to ensure quality data is being collected properly to better protect public health.

For additional information on this report, please contact me at Pima County Department of Environmental Quality at (520) 243-7400.

Attachment

Cc: Ursula Kramer, Pima County Department of Environmental Quality Director  
Richard Grimaldi, Pima County Department of Environmental Deputy Director



**Pima County**

**Department of Environmental Quality**

**Air Monitoring Division**

**Beryllium Monitoring Network Summary**

**2nd Quarter 2010**



*Pima County Department of Environmental Quality  
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Tucson, Arizona 85701*

## **Summary**

The Pima County Department of Environmental Quality has contracted with the Pima County Regional Wastewater Reclamation Department (RWRD) to perform analysis on filters sampled in the Beryllium Monitoring Network located in the Sunnyside Unified School District.

For the 2<sup>nd</sup> quarter of 2010 there was a total of 106 PM<sub>10</sub> samples collected resulting in 102 valid and 4 invalid samples; for a data recovery of 96.2 %. Twelve samples were collected to be used as precision checks as recommended in *40 CFR, Part 58, Appendix A, Section 5.3.1*. All samples run for a 24-hour period as specified in *40 CFR, Part 50, Appendix B*.

There were a total of 107 samples analyzed for beryllium. Beryllium concentrations are reported as <0.265 ng/m<sup>3</sup> PQL (Practical Quantitation Level. In the preamble to a November 13, 1985 rulemaking (50 FR 46906), the PQL was defined as “the lowest concentration of an analyte that can be reliably measured within specific limits of precision and accuracy during routine laboratory operating conditions.” The Agency has used the PQL to estimate or evaluate the minimum concentration at which most laboratories can be expected to reliably measure a specific chemical contaminant during day-to-day analysis.

The following pages display the sampling dates, sampling locations, PM<sub>10</sub> concentrations (µg/m<sup>3</sup>) calculated in standard conditions, PM<sub>10</sub> 24-hour NAAQS standard, precision measurements, Beryllium analysis results, accompanying graphs and a brief explanation of all invalid samples for the 2<sup>nd</sup> quarter of 2010.

## PM<sub>10</sub> /Beryllium Concentrations

### Monthly Summary of PM<sub>10</sub>/Beryllium Data

April - 2010

Date	Location	Standard Concentration PM <sub>10</sub> (µg/m <sup>3</sup> )	24-hour NAAQS PM <sub>10</sub> (µg/m <sup>3</sup> )	Beryllium (ng/m <sup>3</sup> )
04/01/10	Sunnyside H.S.	20.6	150	<0.265
04/02/10	Ocotillo #1	10.9	150	<0.265
04/02/10	Ocotillo #2	14.1	150	<0.265
04/03/10	Los Amigos	15.2	150	<0.265
04/04/10	Los Niños	20.0	150	<0.265
04/05/10	Chaparral M.S.	28.3	150	<0.265
04/06/10	Transportation Bldg	25.2	150	<0.265
04/07/10	Sunnyside H.S.	23.0	150	<0.265
04/08/10	Ocotillo #1	16.7	150	<0.265
04/08/10	Ocotillo #2	19.2	150	<0.265
04/09/10	Los Amigos	22.1	150	<0.265
04/10/10	Los Niños	22.5	150	<0.265
04/11/10	Chaparral M.S.	25.2	150	<0.265
04/12/10	Transportation Bldg	7.8	150	<0.265
04/13/10	Sunnyside H.S.	24.9	150	<0.265
04/14/10	Ocotillo #1	19.9	150	<0.265
04/14/10	Ocotillo #2	19.9	150	<0.265
04/15/10	Los Amigos	29.7	150	<0.265
04/16/10	Los Niños	44.2	150	<0.265
04/17/10	Chaparral M.S.	27.9	150	<0.265
04/18/10	Transportation Bldg	21.9	150	<0.265
04/19/10	Sunnyside H.S.	32.5	150	<0.265
04/20/10	Ocotillo #1	20.5	150	<0.265
04/20/10	Ocotillo #2	22.9	150	<0.265
04/21/10	Los Amigos	48.5	150	<0.265
04/22/10	Los Ninos	34.4	150	<0.265
04/23/10	Chaparral M.S.	15.3	150	<0.265
04/24/10	Transportation Bldg	8.9	150	<0.265
04/25/10	Sunnyside H.S.	15.8	150	<0.265
04/26/10	Ocotillo #1	13.9	150	<0.265
04/26/10	Ocotillo #2	19.2	150	<0.265
04/27/10	Los Amigos	35.3	150	<0.265
04/28/10	Los Ninos	INVALID	150	INVALID
04/29/10	Chaparral M.S.	19.0	150	<0.265
04/30/10	Transportation Bldg	16.4	150	<0.265

Sample running on 04/28/10 invalid due to an equipment malfunction.

\*Sample invalid for use in Beryllium analysis.

NAAQS = National Ambient Air Quality Standard for PM<sub>10</sub>

**PM<sub>10</sub> /Beryllium Concentrations (continued)**

**Monthly Summary of PM<sub>10</sub>/Beryllium Data**

**May - 2010**

<b>Date</b>	<b>Location</b>	<b>Standard Concentration PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	<b>24-hour NAAQS PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	<b>Beryllium (ng/m<sup>3</sup>)</b>
05/01/10	Sunnyside H.S.	17.5	150	<0.265
05/02/10	Ocotillo #1	26.1	150	<0.265
05/02/10	Ocotillo #2	32.6	150	<0.265
05/03/10	Los Amigos	24.5	150	<0.265
05/04/10	Los Niños	INVALID	150	INVALID
05/05/10	Chaparral M.S.	18.7	150	<0.265
05/06/10	Transportation Bldg	9.3	150	<0.265
05/07/10	Sunnyside H.S.	18.1	150	<0.265
05/08/10	Ocotillo #1	9.5	150	<0.265
05/08/10	Ocotillo #2	11.7	150	<0.265
05/09/10	Los Amigos	21.2	150	<0.265
05/10/10	Los Niños	18.7	150	<0.265
05/11/10	Chaparral M.S.	21.7	150	<0.265
05/12/10	Transportation Bldg	14.0	150	<0.265
05/13/10	Sunnyside H.S.	25.9	150	<0.265
05/14/10	Ocotillo #1	20.5	150	<0.265
05/14/10	Ocotillo #2	25.3	150	<0.265
05/15/10	Los Amigos	17.9	150	<0.265
05/16/10	Los Ninos	20.4	150	<0.265
05/17/10	Chaparral M.S.	23.7	150	<0.265
05/18/10	Transportation Bldg	18.1	150	<0.265
05/19/10	Sunnyside H.S.	30.8	150	<0.265
05/20/10	Ocotillo #1	23.6	150	<0.265
05/20/10	Ocotillo #2	24.1	150	<0.265
05/21/10	Los Amigos	22.6	150	<0.265
05/22/10	Los Ninos	26.0	150	<0.265
05/23/10	Chaparral M.S.	28.7	150	<0.265
05/24/10	Transportation Bldg	33.4	150	<0.265
05/25/10	Sunnyside H.S.	35.0	150	<0.265
05/26/10	Ocotillo #1	26.2	150	<0.265
05/26/10	Ocotillo #2	28.8	150	<0.265
05/27/10	Los Amigos	INVALID	150	INVALID
05/28/10	Los Ninos	22.2	150	<0.265
05/29/10	Chaparral M.S.	23.7	150	<0.265
05/30/10	Transportation Bldg	18.3	150	<0.265
05/31/10	Sunnyside H.S.	22.0	150	<0.265

Sample running on 05/04/10 invalid due to the sampler being programmed incorrectly resulting in it running on the wrong day.

Sample running on 05/27/10 invalid due to the sampler being programmed incorrectly resulting in it running on the wrong day.

\* Sample invalid for use in Beryllium analysis.

NAAQS = National Ambient Air Quality Standard for PM<sub>10</sub>

**PM<sub>10</sub> /Beryllium Concentrations (continued)**

**Monthly Summary of PM<sub>10</sub>/Beryllium Data**

**June - 2010**

<b>Date</b>	<b>Location</b>	<b>Standard Concentration PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	<b>24-hour NAAQS PM<sub>10</sub> (µg/m<sup>3</sup>)</b>	<b>Beryllium (ng/m<sup>3</sup>)</b>
06/01/10	Ocotillo #1	23.5	150	<0.265
06/01/10	Ocotillo #2	25.8	150	<0.265
06/02/10	Los Amigos	25.4	150	<0.265
06/03/10	Los Niños	30.3	150	<0.265
06/04/10	Chaparral M.S.	36.0	150	<0.265
06/05/10	Transportation Bldg	17.8	150	<0.265
06/06/10	Sunnyside H.S.	22.7	150	<0.265
06/07/10	Ocotillo #1	21.4	150	<0.265
06/07/10	Ocotillo #2	23.1	150	<0.265
06/08/10	Los Amigos	23.0	150	<0.265
06/09/10	Los Niños	29.0	150	<0.265
06/10/10	Chaparral M.S.	INVALID	150	INVALID
06/11/10	Transportation Bldg	47.8	150	<0.265
06/12/10	Sunnyside H.S.	47.3	150	<0.265
06/13/10	Ocotillo #1	36.3	150	<0.265
06/13/10	Ocotillo #2	38.9	150	<0.265
06/14/10	Los Amigos	24.9	150	<0.265
06/15/10	Los Niños	32.9	150	<0.265
06/16/10	Chaparral M.S.	35.2	150	<0.265
06/17/10	Transportation Bldg	21.4	150	<0.265
06/18/10	Sunnyside H.S.	26.6	150	<0.265
06/19/10	Ocotillo #1	15.3	150	<0.265
06/19/10	Ocotillo #2	18.6	150	<0.265
06/20/10	Los Amigos	21.2	150	<0.265
06/21/10	Los Ninos	19.5	150	<0.265
06/22/10	Chaparral M.S.	26.7	150	<0.265
06/23/10	Transportation Bldg	26.0	150	<0.265
06/24/10	Sunnyside H.S.	39.1	150	<0.265
06/25/10	Ocotillo #1	20.5	150	<0.265
06/25/10	Ocotillo #2	23.6	150	<0.265
06/26/10	Los Amigos	23.0	150	<0.265
06/27/10	Los Ninos	18.4	150	<0.265
06/28/10	Chaparral M.S.	45.3	150	<0.265
06/29/10	Transportation Bldg	18.6	150	<0.265
06/30/10	Sunnyside H.S.	23.3	150	<0.265

Sample running on 06/10/10 invalid due to sampler being programmed incorrectly resulting in it running on the wrong day.

\* Sample invalid for use in Beryllium analysis.

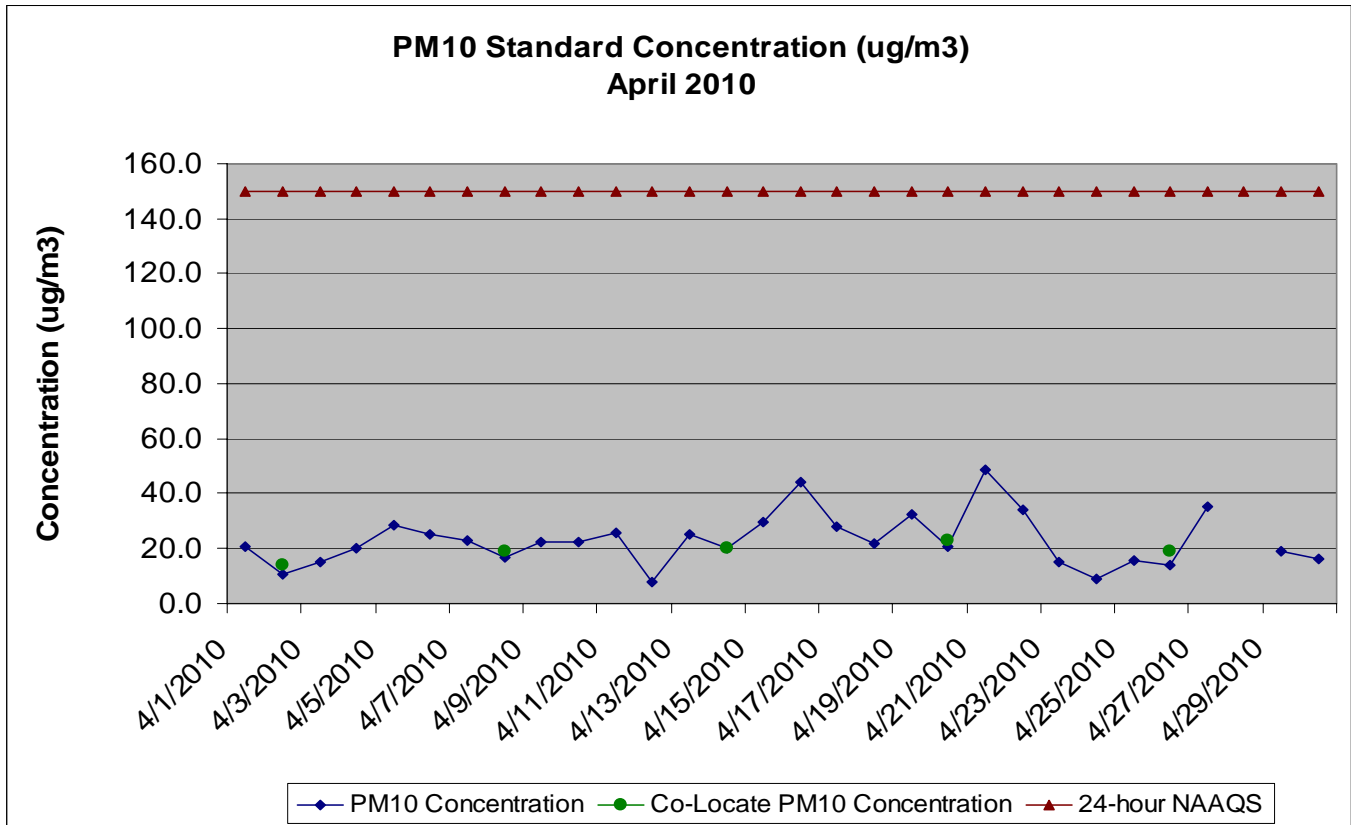
NAAQS = National Ambient Air Quality Standard for PM<sub>10</sub>

## Precision of Duplicate Pairs – PM10

At low concentrations, agreement between the measurements of collocated samplers, expressed as relative percent difference, may be relatively poor. For this reason, collocated measurement pairs are selected for use in the precision and bias calculations only when both measurement pairs are equal to or above 15µg/m<sup>3</sup> (40CFR58, Appendix A, Section 4c).

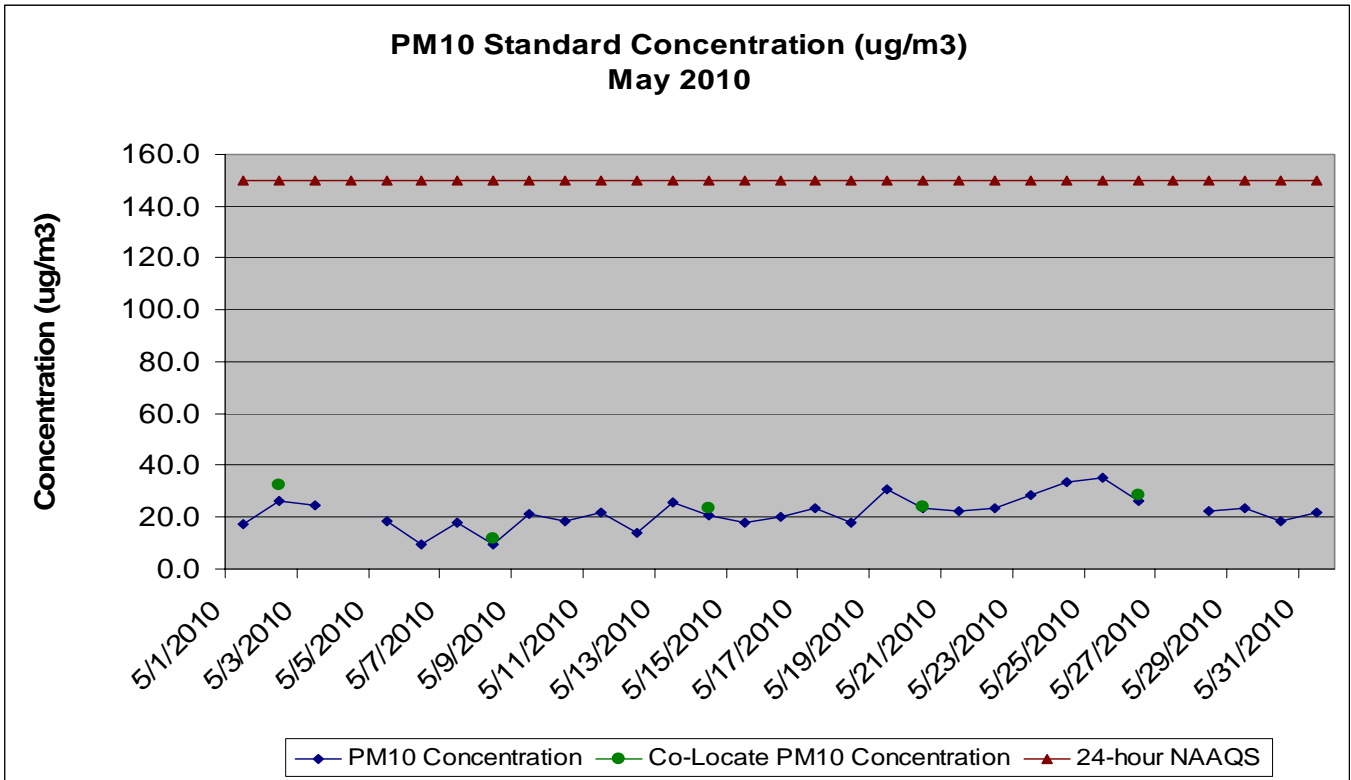
Sample Date	Primary Sampler Number	Measured PM <sub>10</sub> (µg/m <sup>3</sup> )	Duplicate Sampler Number	Measured PM <sub>10</sub> (µg/m <sup>3</sup> )	Difference (µg/m <sup>3</sup> )	Percent Difference %
04/08/10	1	16.7	2	19.2	2.5	13.93
04/14/10	1	19.9	2	19.9	0.0	0.0
04/20/10	1	20.5	2	22.9	2.4	11.06
05/02/10	1	26.1	2	32.6	6.5	22.15
05/14/10	1	20.5	2	23.5	3.0	13.64
05/20/10	1	23.6	2	24.1	0.5	2.10
05/26/10	1	26.2	2	28.8	2.6	9.45
06/01/10	1	23.5	2	25.8	2.3	9.33
06/07/10	1	21.4	2	23.1	1.7	7.64
06/13/10	1	36.3	2	38.9	2.6	6.91
06/19/10	1	15.3	2	18.6	3.3	19.47
06/25/10	1	20.5	2	23.6	3.1	10.06

## PM<sub>10</sub> Concentration Charts



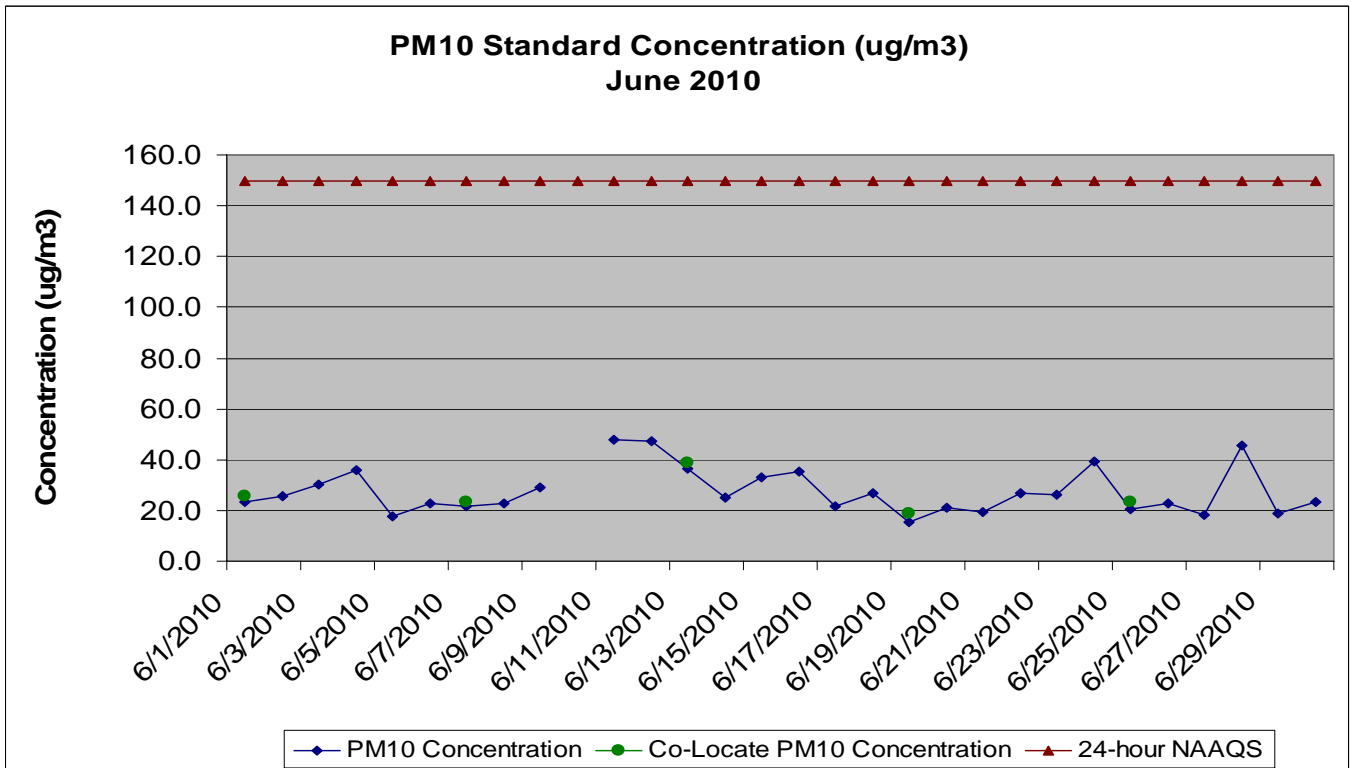
Sample running on 04/28/10 invalid due to an equipment malfunction.

NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>



Samples running on 5/4/10 and 5/27/10 invalid due the sampler being programmed incorrectly resulting in it running on the wrong day.

NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>



Sample running on 6/10/10 invalid due to sampler being programmed incorrectly resulting in it running on the wrong day.

NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>



## Audit Results

Audits were performed on all of the samplers for the 2<sup>nd</sup> quarter of 2010. If the audit flow rate percent difference is  $\leq \pm 10\%$ , the sampler calibration is accepted. Differences exceeding  $\pm 10\%$  require sampler recalibration. Differences exceeding  $\pm 15\%$  will result in invalidation of all data subsequent to the last calibration or valid flow check. The following pages display the audit results for each sampling location.

### AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Chaparral M.S.      **Ts =** 300.3  
**Audit Date:** 06/24/10      **Ps =** 693.4  
**Motor:** 1424      **Temp c =** 44.10  
**Temp f:** 111.38      **Ta =** 317.1  
**Press:** 27.244      **Pa =** 692.0  
**Altim:** 29.910      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	3.43	34.9	1.78	0.90
13	2.87	32.0	1.56	0.85
10	2.40	29.4	1.32	0.78
7	1.62	24.3	0.96	0.66
5	1.09	20.2	0.72	0.57

Orifice dH2O                      2.282  
 Sample dPex                      1.3  
 Orifice Qa(m3/m)              0.811431  
 Sample Qa dPex                28.55659

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
2.282	28.64	0.81

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
1.27	30.11	0.85

Sampler Audit Relationship		
<b>m =</b>	0.023	
<b>b =</b>	0.115	
<b>r =</b>	0.999	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	42.3	52.9
<b>Set Point (H2O)</b>	2.5	3.8

Audit flow rate % diff: 5.09 %

### AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Sunnyside H.S.      **Ts =** 300.3  
**Audit Date:** 06/25/10      **Ps =** 693.4  
**Motor:** 1418      **Temp c =** 36.90  
**Temp f:** 98.42      **Ta =** 309.9  
**Press:** 27.323      **Pa =** 694.0  
**Altim:** 29.995      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	3.43	34.4	2.04	0.95
13	2.94	32.0	1.76	0.89
10	2.44	29.2	1.54	0.82
7	1.66	24.3	1.05	0.68
5	1.11	20.1	0.76	0.58

Orifice dH2O                      2.316  
 Sample dPex                      1.4  
 Orifice Qa(m3/m)              0.807144  
 Sample Qa dPex                28.44614

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
2.316	28.49	0.81

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
1.42	29.89	0.85

Sampler Audit Relationship		
<b>m =</b>	0.026	
<b>b =</b>	0.056	
<b>r =</b>	0.999	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.2	51.6
<b>Set Point (H2O)</b>	2.9	4.4

Audit flow rate % diff: 4.88 %

**AUDIT SPREADSHEET FOR PARTICULATES**

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Los Amigos      **Ts =** 300.3  
**Audit Date:** 06/24/10      **Ps =** 693.4  
**Motor:** 1419      **Temp c =** 40.70  
**Temp f:** 105.26      **Ta =** 313.7  
**Press:** 27.323      **Pa =** 694.0  
**Altim:** 29.995      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.70	30.9	1.18	0.73
13	2.31	28.6	0.96	0.66
10	1.93	26.3	0.74	0.58
7	1.36	22.3	0.42	0.44
5	0.89	18.2	0.19	0.29

Orifice dH2O                      1.838  
 Sample dPex                      0.70  
 Orifice Qa(m3/m)                0.727016  
 Sample Qa dPex                25.89531

Audit flow rate % diff: 3.81 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.838	25.66	0.73

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.70	26.65	0.75

Sampler Audit Relationship		
<b>m =</b>	0.035	
<b>b =</b>	-0.339	
<b>r =</b>	1.000	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.7	52.2
<b>Set Point (H2O)</b>	2.7	4.8

**AUDIT SPREADSHEET FOR PARTICULATES**

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Los Niños      **Ts =** 300.3  
**Audit Date:** 06/24/10      **Ps =** 693.4  
**Motor:** 1421      **Temp c =** 42.80  
**Temp f:** 109.04      **Ta =** 315.8  
**Press:** 27.244      **Pa =** 692.0  
**Altim:** 29.910      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.31	28.8	0.89	0.64
13	1.99	26.8	0.73	0.58
10	1.67	24.6	0.60	0.52
7	1.18	20.9	0.38	0.42
5	0.80	17.4	0.20	0.30

Orifice dH2O                      1.59  
 Sample dPex                      0.60  
 Orifice Qa(m3/m)                0.681691  
 Sample Qa dPex                24.19198

Audit flow rate % diff: 3.84 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.59	24.06	0.68

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.56	25.00	0.71

Sampler Audit Relationship		
<b>m =</b>	0.029	
<b>b =</b>	-0.201	
<b>r =</b>	0.998	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	42.1	52.7
<b>Set Point (H2O)</b>	2.3	3.9

**AUDIT SPREADSHEET FOR PARTICULATES**

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Ocotillo #1      **Ts =** 300.3  
**Audit Date:** 06/24/10      **Ps =** 693.4  
**Motor:** 1420      **Temp c =** 37.90  
**Temp f:** 100.22      **Ta =** 310.9  
**Press:** 27.323      **Pa =** 694.0  
**Altim:** 29.995      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	2.06	27.0	0.80	0.60
13	1.79	25.2	0.64	0.54
10	1.51	23.3	0.51	0.48
7	1.08	19.9	0.29	0.36
5	0.71	16.3	0.14	0.25

Orifice dH2O                      1.43  
 Sample dPex                      0.50  
 Orifice Qa(m3/m)              0.642606  
 Sample Qa dPex                22.87412

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.43	22.68	0.64

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.48	23.54	0.67

Sampler Audit Relationship		
<b>m =</b>	0.033	
<b>b =</b>	-0.286	
<b>r =</b>	0.999	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.4	51.7
<b>Set Point (H2O)</b>	2.5	4.4

Audit flow rate % diff: 3.74 %

**AUDIT SPREADSHEET FOR PARTICULATES**

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Ocotillo #2      **Ts =** 300.3  
**Audit Date:** 06/24/10      **Ps =** 693.4  
**Motor:** 1417      **Temp c =** 37.90  
**Temp f:** 100.22      **Ta =** 310.9  
**Press:** 27.323      **Pa =** 694.0  
**Altim:** 29.995      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	2.30	28.4	0.99	0.67
13	1.94	26.2	0.81	0.60
10	1.67	24.4	0.67	0.55
7	1.17	20.6	0.46	0.45
5	0.80	17.3	0.27	0.35

Orifice dH2O                      1.576  
 Sample dPex                      0.60  
 Orifice Qa(m3/m)              0.672894  
 Sample Qa dPex                23.82654

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.576	23.75	0.67

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.64	24.73	0.70

Sampler Audit Relationship		
<b>m =</b>	0.028	
<b>b =</b>	-0.133	
<b>r =</b>	0.998	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.4	51.7
<b>Set Point (H2O)</b>	2.4	3.9

Audit flow rate % diff: 4.06 %

**AUDIT SPREADSHEET FOR PARTICULATES**

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
June	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

**Sampler:** Transportation      **Ts =** 300.3  
**Audit Date:** 06/25/10      **Ps =** 693.4  
**Motor:** 1422      **Temp c =** 36.40  
**Temp f:** 97.52      **Ta =** 309.4  
**Press:** 27.283      **Pa =** 693.0  
**Altim:** 29.952      **Orifice Calibration Relationship**  
    **m= 1.31620      b= -0.04542**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.40	29.0	0.98	0.66
13	2.03	26.8	0.82	0.61
10	1.71	24.7	0.68	0.55
7	1.19	20.8	0.47	0.46
5	0.81	17.4	0.27	0.35

Orifice dH2O                      1.628  
 Sample dPex                        0.60  
 Orifice Qa(m3/m)                0.682246  
 Sample Qa dPex                 24.14424

Audit flow rate % diff: 4.19 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.628	24.08	0.68

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.64	25.10	0.71

Sampler Audit Relationship		
<b>m =</b>	0.027	
<b>b =</b>	-0.106	
<b>r =</b>	0.996	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.2	51.5
<b>Set Point (H2O)</b>	2.2	3.6