Data Validation- Level I - $PM_{2.5}$

The 1st level data review process is conducted by the station operators. The station operator has the primary responsibility for distinguishing valid measurements from indications caused by malfunctioning instruments or source interferences (e.g roofing, gasoline vapors, or structure fires)

Review the December 2013 Hourly BAM data provided from the Sacramento Del Paso Manor (DPM).

Identify the data points you would invalidate based on the objective as a level I reviewer. Provide the date, time, reason, and null code.

Date	Time	Reason	Null Code

DEL PASO MANOR
DECEMBER 2013

Date	Time		Initials
12/2	08:15 - 10:00	Weekly checks, change inline filters, download BAM data, change Hi-Vols	JG
12/4	10:30 - 14:30	Change SASS + 3000N, picked up FRMS	RP
12/5	~~08:00~~ xc 11:00 08:00 - 09:00	Change Hi-Vols	JG
12/8	10:30 - 12:30	Change SASS + 3000N	RP
12/9	08:15 - 11:00	Weekly Checks, change inline filters, ZPS	JG
12/10	09:20 - 10:30	BAM flow check, replaced the tape, Change Hi-Vols - (BAM Flow check - Flow - 0.5%, Ambient temp: 1%, Ambient pressure: 0.14%, leak: 0.3)	JG
12/11	10:00 - 11:00	Change SASS + 3000N	JG
12/13	09:00 - 10:00	Change SASS + 3000N, Picked up and loaded FRMS	RP
12/16	12:00 - 13:30	Weekly checks, change inline filters, performed monthly met check	JG
12/16	10:00 - 10:45	Change SASS + 3000N	RP
12/17	08:45 - 09:15	Change Hi-Vols	JG
12/19	10:00 - 11:15	BAM flow check, within control limits Flow rate diff: 0.3% Ambient temp: 0% Ambient pressure: 0.1% leak check: 0.1	JG
12/20	08:10 - 09:20	Change SASS + 3000N	RP
12/22	08:20 - 09:15	BAM stuck on "64". Found broken tape on BAM. Replaced the BAM tape.	JG
12/23	08:10 - 10:30	Weekly checks, change inline filter, change Hi-Vols	JG
	14:00 - 16:00 ~~12:00~~ RP	Change SASS + 3000N, picked up + loaded FRMS	RP
12/26	13:10 - 14:15	Change SASS + 3000N	RP
12/27	09:00 - 15:00	Changed Hi-Vols, BAM membrane not fully extending, cleaned membrane assembly, looks good	JG
12/29	RP 13:45 ~~01:35~~ - 14:10	Changed SASS + 3000N	RP
12/30	08:10 - 10:45	Weekly checks, change inline filters	JG

M

CALIFORNIA AIR RESOURCES BOARD
MONTHLY QUALITY CONTROL MAINTENANCE CHECK SHEET
Met One BAM-1020 AIR SAMPLER

PM 2.5 FEM ☒ PM 2.5 NON-FEM ☐ PM 10 FEM ☐

Location: DEL PASO MANOR Month/Year: DEC. 2013
Station Number: 3400295 Operator: 1
Property Number: 10925 Agency: SMAQMD

Operator Instructions:
1) Daily checks: Review station data logger values for correct operation of BAM-1020.
2) Weekly checks: Check filter tape & replace when necessary (approx. 2 months per roll).
3) Bi-weekly checks: Perform BAM-1020 flow and leak check.
4) Monthly checks: Complete and submit this Monthly Quality Control Maintenance Check Sheet.
Thoroughly clean both PM 2.5 SCC/VSCC and PM10 FRM inlets.
Check pump exit exhaust tubing and replace when needed.
Download and submit data from BAM-1020 data logger.
ESC 8832/ESC 8816: Low Output (E.U.s): — High Output (E.U.s): —
ESC 8800: Channel Intercept (Offset): — Channel Slope: —
5) Semi-annual: Calibrate BAM-1020 Date last performed: 8/13/13
6) Annual: Value of Zero Background: -.004 Date last performed: 2/15/13

Transfer Standard Used:

Make/Model	Serial/I.D.Number	Date Certified
DELTA CAL	459	10/23/13

Bi-Weekly Sampler Flow Rate, Ambient Temp, and Pressure Check Results:

Date: 12/10	Sampler	Standard	Difference	Control Limits*
Flow Rate	16.7	16.78	0.5%	16.00 to 17.34(± .67 L/min)
Ambient Temp.	9.8	9.7	1.0%	±2 °C
Ambient Press.	766.1	765	0.14%	±10 mm Hg
Leak Check	0.3			< 1.0 L/min

Date: 12/19	Sampler	Standard	Difference	Control Limits*
Flow Rate	16.7	16.64	0.3%	16.00 to 17.34(± .67 L/min)
Ambient Temp.	12.6	12.6	0%	±2 °C
Ambient Press.	755.4	755	0.1%	±10 mm Hg
Leak Check	0.1			< 1.0 L/min

Date:	Sampler	Standard	Difference	Control Limits*
Flow Rate				16.00 to 17.34(± .67 L/min)
Ambient Temp.				±2 °C
Ambient Press.				±10 mm Hg
Leak Check				< 1.0 L/min

If subsequent leak checks also exceed limits, initiate a course of action to troubleshoot the source of the leak, remedy, and if required, request a re-calibration.

Operator Comments: 12/22 TAPE BROKE

Reviewed by: _____ Date: _____

AQSB QC Form 400 (Met One BAM-1020) (03/10)

M

ARB Calibration Report - BAM-1020

Met One Beta Attenuation Mass Monitor

Includes Mass Flow Meter (MFM), FTS Streamline and BGI Delta/Tri Calibration

ID Information:

Station Name:	Del Paso Manor	As Is:	
Site #:	3400295	Final:	X
Property #:	10925	Calib. Date:	08/13/13
Agency:	SMAQMD	Last Cal:	02/15/13

Pressure & Temperature Transfer Standard:

	slope (m) :		Intercept (b):		
True Press. =	1.0000	* Display +	0.000	Flow Std. ID#:	459
True Temp. =	1.0000	* Display +	0.0000	Flow Cert.Date:	10/15/12
MFM 30 L =	1.0000	* Display +	0.0000	P/T Std.ID#:	459
FTS Streamline =	1.0000	* Display +	0.0000	P/T Cert. Date:	10/15/12

Flow Controller Check	Pass/Fail
13.0 LPM:	
18.0 LPM:	

Flow Device Used:	
MFM	
FTS	
BGI	X

Temperature Sensor Calibration:

BAM Temp. Display:	Std. Temp. Display:		MFM Temp:	FTS Temp K:	BGI Temp:
13.10	13.40	Corrected Temp:	13.40		13.40
		Diff. In degrees:	-0.30		-0.30

Temperature = +/- 2.0 Celsius

Pressure Sensor Calibration:

BAM Press.Display:	Std. Press. Display:		MFM Press.:	FTS (Atm):	BGI Pressure:
757	757	Corrected Press.:	757.0		757
		Diff. In Pressure:	0.2		0.2

Pressure = +/- 10 mm Hg

Flow Calibration:

BAM Flow Display:	Std. Display:		MFM Flow:	FTS Flow:	BGI Flow:
16.70	16.58	Corrected Flow:	16.58		16.58
		% Diff.:	-0.54%		-0.54%

Flow = +/- 2.0%

Flow Verification:

BAM display:	Std. Display:		MFM Ver.:	FTS Ver.:	BGI Ver.:
16.70	16.60	Corrected Flow:	16.60		16.60
		% Diff.:	-0.42%		-0.42%

Flow = +/- 2.0%

Comments:			
Calibrated by:	m. operator	Checked by:	

Quality Assurance Qualifier/Null/Exceptional Event Codes

IA	African Dust	Informational Only	INFORM	None
IB	Asian Dust	Informational Only	INFORM	None
IC	Chem. Spills & Indust Accidents	Informational Only	INFORM	None
ID	Cleanup After a Major Disaster	Informational Only	INFORM	None
IE	Demolition	Informational Only	INFORM	None
IF	Fire - Canadian	Informational Only	INFORM	None
IG	Fire - Mexico/Central America	Informational Only	INFORM	None
IH	Fireworks	Informational Only	INFORM	None
II	High Pollen Count	Informational Only	INFORM	None
IJ	High Winds	Informational Only	INFORM	None
IK	Infrequent Large Gatherings	Informational Only	INFORM	None
IL	Other	Informational Only	INFORM	None
IM	Prescribed Fire	Informational Only	INFORM	None
IN	Seismic Activity	Informational Only	INFORM	None
IO	Stratospheric Ozone Intrusion	Informational Only	INFORM	None
IP	Structural Fire	Informational Only	INFORM	None
IQ	Terrorist Act	Informational Only	INFORM	None
IR	Unique Traffic Disruption	Informational Only	INFORM	None
IS	Volcanic Eruptions	Informational Only	INFORM	None
IT	Wildfire-U. S.	Informational Only	INFORM	None
J	Construction	Informational Only	INFORM	None
AA	Sample Pressure out of Limits	Null Data Qualifier	NULL	9967
AB	Technician Unavaliable	Null Data Qualifier	NULL	9968
AC	Construction/Repairs in Area	Null Data Qualifier	NULL	9969
AD	Shelter Storm Damage	Null Data Qualifier	NULL	9970
AE	Shelter Temperature Outside Limits	Null Data Qualifier	NULL	9971
AF	Scheduled but not Collected	Null Data Qualifier	NULL	9972
AG	Sample Time out of Limits	Null Data Qualifier	NULL	9973
AH	Sample Flow Rate out of Limits	Null Data Qualifier	NULL	9974
AI	Insufficient Data (cannot calculate)	Null Data Qualifier	NULL	9975
AJ	Filter Damage	Null Data Qualifier	NULL	9976
AK	Filter Leak	Null Data Qualifier	NULL	9977
AL	Voided by Operator	Null Data Qualifier	NULL	9978
AM	Miscellaneous Void	Null Data Qualifier	NULL	9979
AN	Machine Malfunction	Null Data Qualifier	NULL	9980
AO	Bad Weather	Null Data Qualifier	NULL	9981
AP	Vandalism	Null Data Qualifier	NULL	9982
AQ	Collection Error	Null Data Qualifier	NULL	9983
AR	Lab Error	Null Data Qualifier	NULL	9984
AS	Poor Quality Assurance Results	Null Data Qualifier	NULL	9985
AT	Calibration	Null Data Qualifier	NULL	9986
AU	Monitoring Waived	Null Data Qualifier	NULL	9987
AV	Power Failure	Null Data Qualifier	NULL	9988

AW	Wildlife Damage	Null Data Qualifier	NULL	9989
AX	Precision Check	Null Data Qualifier	NULL	9990
AY	Q C Control Points (zero/span)	Null Data Qualifier	NULL	9991
AZ	Q C Audit	Null Data Qualifier	NULL	9992
BA	Maintenance/Routine Repairs	Null Data Qualifier	NULL	9993
BB	Unable to Reach Site	Null Data Qualifier	NULL	9994
BC	Multi-point Calibration	Null Data Qualifier	NULL	9995
BD	Auto Calibration	Null Data Qualifier	NULL	9996
BE	Building/Site Repair	Null Data Qualifier	NULL	9997
BF	Precision/Zero/Span	Null Data Qualifier	NULL	9998
BG	Missing ozone data not likely to exceed level of standard	Null Data Qualifier	NULL	9966
BH	Interference/co-elution/misidentification	Null Data Qualifier	NULL	9965
BI	Lost or damaged in transit	Null Data Qualifier	NULL	9964
BJ	Operator Error	Null Data Qualifier	NULL	9963
BK	Site computer/data logger down	Null Data Qualifier	NULL	9962
BL	QA Audit	Null Data Qualifier	NULL	9961
BM	Accuracy check	Null Data Qualifier	NULL	9960
BN	Sample Value Exceeds Media Limit	Null Data Qualifier	NULL	9947
BR	Sample Value Below Acceptable Range	Null Data Qualifier	NULL	None
CS	Laboratory Calibration Standard	Null Data Qualifier	NULL	9953
DA	Aberrant Data (Corrupt Files, Aberrant Chromatography, Spikes, Shifts)	Null Data Qualifier	NULL	9951
DL	Detection Limit Analyses	Null Data Qualifier	NULL	9949
FI	Filter Inspection Flag	Null Data Qualifier	NULL	9959
MB	Method Blank (Analytical)	Null Data Qualifier	NULL	9955
MC	Module End Cap Missing	Null Data Qualifier	NULL	9958
SA	Storm Approaching	Null Data Qualifier	NULL	9957
SC	Sampler Contamination	Null Data Qualifier	NULL	9948
ST	Calibration Verification Standard	Null Data Qualifier	NULL	9954
TC	Component Check & Retention Time Standard	Null Data Qualifier	NULL	9952
TS	Holding Time Or Transport Temperature Is Out Of Specs.	Null Data Qualifier	NULL	9956
XX	Experimental Data	Null Data Qualifier	NULL	9950
1	Deviation from a CFR/Critical Criteria Requirement	Quality Assurance Qualifier	QA	None
2	Operational Deviation	Quality Assurance Qualifier	QA	None
3	Field Issue	Quality Assurance Qualifier	QA	None
4	Lab Issue	Quality Assurance Qualifier	QA	None
5	Outlier	Quality Assurance Qualifier	QA	None

6	QAPP Issue	Quality Assurance Qualifier	QA	None
7	Below Lowest Calibration Level	Quality Assurance Qualifier	QA	None
9	Negative value detected - zero reported	Quality Assurance Qualifier	QA	None
CB	Values have been Blank Corrected	Quality Assurance Qualifier	QA	None
CC	Clean Canister Residue	Quality Assurance Qualifier	QA	None
CL	Surrogate Recoveries Outside Control Limits	Quality Assurance Qualifier	QA	None
DI	Sample was diluted for analysis	Quality Assurance Qualifier	QA	None
EH	Estimated; Exceeds Upper Range	Quality Assurance Qualifier	QA	None
FB	Field Blank Value Above Acceptable Limit	Quality Assurance Qualifier	QA	None
HT	Sample pick-up hold time exceeded	Quality Assurance Qualifier	QA	None
LB	Lab blank value above acceptable limit	Quality Assurance Qualifier	QA	None
LJ	Identification Of Analyte Is Acceptable; Reported Value Is An Estimate	Quality Assurance Qualifier	QA	None
LK	Analyte Identified; Reported Value May Be Biased High	Quality Assurance Qualifier	QA	None
LL	Analyte Identified; Reported Value May Be Biased Low	Quality Assurance Qualifier	QA	None
MD	Value less than MDL	Quality Assurance Qualifier	QA	None
MS	Value reported is 1/2 MDL substituted.	Quality Assurance Qualifier	QA	None
MX	Matrix Effect	Quality Assurance Qualifier	QA	None
ND	No Value Detected	Quality Assurance Qualifier	QA	None
NS	Influenced by nearby source	Quality Assurance Qualifier	QA	None
QX	Does not meet QC criteria	Quality Assurance Qualifier	QA	None
SQ	Values Between SQL and MDL	Quality Assurance Qualifier	QA	None
SS	Value substituted from secondary monitor	Quality Assurance Qualifier	QA	None
SX	Does Not Meet Siting Criteria	Quality Assurance Qualifier	QA	None

TB	Trip Blank Value Above Acceptable Limit	Quality Assurance Qualifier	QA	None
TT	Transport Temperaure is Out of Specs.	Quality Assurance Qualifier	QA	None
V	Validated Value	Quality Assurance Qualifier	QA	None
VB	Value below normal; no reason to invalidate	Quality Assurance Qualifier	QA	None
W	Flow Rate Average out of Spec.	Quality Assurance Qualifier	QA	None
X	Filter Temperature Difference out of Spec.	Quality Assurance Qualifier	QA	None
Y	Elapsed Sample Time out of Spec.	Quality Assurance Qualifier	QA	None
RA	African Dust	Request Exclusion	REQEXC	None
RB	Asian Dust	Request Exclusion	REQEXC	None
RC	Chem. Spills & Indust. Accidents	Request Exclusion	REQEXC	None
RD	Cleanup After a Major Disaster	Request Exclusion	REQEXC	None
RE	Demolition	Request Exclusion	REQEXC	None
RF	Fire - Canadian	Request Exclusion	REQEXC	None
RG	Fire - Mexico/Central America	Request Exclusion	REQEXC	None
RH	Fireworks	Request Exclusion	REQEXC	None
RI	High Pollen Count	Request Exclusion	REQEXC	None
RJ	High Winds	Request Exclusion	REQEXC	None
RK	Infrequent Large Gatherings	Request Exclusion	REQEXC	None
RL	Other	Request Exclusion	REQEXC	None
RM	Prescribed Fire	Request Exclusion	REQEXC	None
RN	Seismic Activity	Request Exclusion	REQEXC	None
RO	Stratospheric Ozone Intrusion	Request Exclusion	REQEXC	None
RP	Structural Fire	Request Exclusion	REQEXC	None
RQ	Terrorist Act	Request Exclusion	REQEXC	None
RR	Unique Traffic Disruption	Request Exclusion	REQEXC	None
RS	Volcanic Eruptions	Request Exclusion	REQEXC	None
RT	Wildfire-U. S.	Request Exclusion	REQEXC	None