

Met One BAM PM10/PM2.5 Data Review Table

Station Name & Monitoring Period Dates

Criteria (PM2.5/PM10)	2) Frequency	3) Acceptable Range	Comments
Critical Criteria PM10/PM2.5 Continuous			
Data Reporting Period	Report every hour	A 24-hr period is calculated in AQS if 18 or more valid hours are reported for a day	40 CFR Part 50 App N sec 3(c)
Average flow rate	Every 24 hour of ops; alternatively each hour can be checked	Average within 5% of 16.67 L/min at local conditions	
Variability in flow rate	Every 24 hour of ops	CV \leq 2%	
One-point Flow Rate Verification	Every 30 days each separated by 14 days	< \pm 4.1% of transfer standard & < \pm 5.1% of flow rate design value	
Design Flow Rate Adjustment	After multi-point calibration or verification	< \pm 2.1% of design flow rate	
External Leak check	Before each flow rate verification/calibration and before and after PM2.5 separator maintenance	< 1.0 L/min	
PM10 inlet	At setup	Louvered PM10 size selective inlet as specified in CFR	40 CFR App L, figs L-2 through L-19
PM2.5 inlet	At setup	BGI VSCC or equivalent second stage separator approved for the method	
Operational Criteria PM10/PM2.5 Continuous			
Temperature multi-point verification/calibration	On installation, then every 365 days and 1/calendar year	< \pm 2.1° C	
One-point temperature verification	Every 30 days	< \pm 2.1° C	
Pressure verification/calibration	On installation, then every 365 days and 1/calendar year	< \pm 10.1 mm Hg	
One-point pressure verification	Every 30 days	< \pm 10.1 mm Hg	
Flow rate multi-point verification/calibration	Following any electromechanical maintenance or transport, or every 365 days and 1/calendar year	< \pm 2.1 % of transfer standard	
72-hour zero test	1/yr. (1/6 mo. recommended)	Std dev of the data from a 72-hr zero test < 2.4 $\mu\text{g}/\text{m}^3$	
Precision			

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Collocated samples	Every 12 days for 15% of sites by method designation	CV < 10.1% of samples $\geq 3 \mu\text{g}/\text{m}^3$	
Accuracy			
Temperature audit	Every 180 days and at time of flow rate audit	< $\pm 2.1^\circ \text{C}$	
Pressure audit	Every 180 days and at time of flow rate audit	< $\pm 10.1 \text{ mm Hg}$	
Flow Rate audit	Twice a calendar year and 5-7 months apart	< $\pm 4.1 \%$ of transfer standard & < $\pm 5.1 \%$ of design flow rate	
Shelter Temperature			
Temperature range	Daily	20 to 30°C (hourly avg.) or per manufacturer's specifications if designated to wider temp. range (0 to $+50^\circ \text{C}$ for BAM 1020, shelter temp stable to within $\pm 2^\circ \text{C}$ per hour)	
Temperature control	Daily (hourly values)	< 2.1°C Std Dev over 24 hours	
Temperature device check	Every 180 days and twice a calendar year	< $\pm 2.1^\circ \text{C}$	
BAM routine inspection, cleaning, and maintenance			
Inlet Head	Every 30 days	Inspect, clean if necessary	
PM _{2.5} separator (VSCC)	Every 30 days	cleaned/changed	
Down tube	Every 90 days	cleaned	
Nozzle & vane	1/mo. or more often as needed	Inspect and clean	
Capstan shaft & roller	1/mo.	Inspect and clean	
Smart heater	1/yr.	Inspect and maintain	
Replace or clean pump muffler	1/6 mo.	Inspect, clean or replace	
Rebuild or replace pump	1/yr.	Rebuild or replace	
Clean or replace internal debris filter	1/yr.	Clean, replace as needed	
Membrane span foil check	1/yr.	Avg. < $\pm 5 \%$ of ABS value	
Beta detector count rate	1/yr.	Between 600,000 to 1,100,000 counts 4-min. test	
Dark Count Value	1/yr.	< 50 (recommended < 10)/4-min. test	
Data comparison internal data logger to external data logger	Every 30 days 10 randomly selected values	Digital – exact match, analog $\pm 1 \mu\text{g}/\text{m}^3$	
Systematic Criteria PM10/PM2.5 Continuous			
Monitor	-	Meets requirements listed in the FEM designation	

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Siting	Every 365 days and 1/calendar year	Meets citing criteria or waiver documented	
Data Completeness	Quarterly	≥ 75% scheduled sampling days in each quarter	
Reporting Units			
PM2.5	All concentrations	µg/m ³ at ambient temperature & pressure	
PM10L (local conditions)	All concentrations	µg/m ³ at ambient temperature & pressure	
PM10S (standard conditions)	All concentrations	µg/m ³ corrected to standard temperature at 25° C & standard pressure at 760 mm Hg	
Rounding convention for data reported to AQS	All concentrations	To one decimal place, with additional digits to the right truncated, or as reported by instrument	
Annual 3-yr. average	All concentrations	Nearest 0.1 µg/m ³ (≥ 0.05 round up)	
24-hour, 3-yr. average	All concentrations	Nearest 1 µg/m ³ (≥ 0.5 round up)	
Detection Limits			
Lower detection limit	24-hour avg.	< 1 µg/m ³ .	
	1-hour avg.	< 4.8 µg/m ³ .	
Upper detection limit	All hourly avgs.	1000 µg/m ³	
Verification/calibration standards recertification		All standards should have multi-point certifications against NIST-traceable standards	
Flow rate transfer standard	Every 365 days and 1/calendar year	< ± 2.1% of NIST-traceable standard	
Field thermometer	Every 365 days and 1/calendar year	± 0.1° C resolution, ± 0.5° C accuracy	
Field barometer	Every 365 days and 1/calendar year	± 1 mm Hg resolution, ± 5 mm Hg accuracy	
Clock/timer verification	Every 30 days	1 minute/mo.	
Data Precision			
Single analyzer (collocated monitors)	Every 90 days	Coefficient of variation (CV) < 10.1% for values ≥ 3.0 µg/m ³	
Primary Quality Assurance Org.	Annual and 3 yr. estimates	90% CL of CV < 10.1% for values ≥ 3.0 µg/m ³	
Data Bias			
Performance Evaluation Program (PEP)	5 audits for PQAOs with ≤ 5 sites 8 audits for PQAOs with > 5 sites	< ± 10.1% for value > 3µg/m ³	

Data Management Procedures and Documentation	
1st Level Review	Comments and/or required actions

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Daily review for limit checking, anomalies and irregularities		
Review for data flags indicating out of limit conditions or instrument errors		
PM coarse data comparison (PM10-PM2.5) for invalidation of negative values < - 5 µg/m³		
Logbook review: Station Logbook hardcopy and digital log entries		
1st Level Data Editing		
Explanation of missing or invalidated data		
Appropriate use of AQS null codes		
Appropriate use of AQS data qualifiers		
General Notes		
Critical and operational QC forms and NIST Traceable Certifications	Archived in Air Tools.	Comments and/or required actions
Most recent QA audit report and data sheets		
1-point QC forms for all leak, flow, pressure, temperature and time checks.		
BAM multi-point verification/calibration data sheets		
BAM 72-hour zero air background checks data sheets		
Images of station logbook notes and/or digital record of electronic log entries		
Images of current NIST traceable certifications for all reference devices and transfer standards.		
Date & Performed by:		