O_3 Ambient Monitoring Data Review Table

Requirement (O_3)	Frequency	Acceptable Range	Review Comments
CRITICAL CRITERIA – Ozone			
Monitor	*NA*	*Meets requirements listed in FRM/FEM designation*	
One-Point QC Check Single analyzer	*Every 14 days*	*< ± 7.1% (percent difference) or < ± 1.5 ppb difference whichever is greater*	
Zero/Span Check	*Every 14 days*	*Zero drift (24-hr) < ± 3.1 ppb Zero drift (>24hr-14 day) < ± 5.1 ppb Span drift < ± 7.1%*	
OPERATIONAL CRITERIA – Ozone			
Shelter Temperature Range	*Daily (hourly values)*	*20 to 30° C (hourly avg.) or per manufacturers specification if designated to a wider temp. range*	
Shelter Temperature Control	*Daily (hourly values)*	*< 2.1° C SD over 24 hours*	
Shelter Temperature Device Check	*Every 182 days and 2/calendar year*	*< ± 2.1° C of standard*	
Annual Performance Evaluation Single Analyzer (SLAMS/NCORE)	*Every site every 365 days and 1/calendar year within period of monitor operation*	*Percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 1.5 ppb difference or < ±15.1%*	
Annual Performance Evaluation Single Analyzer (PSD)	*Quarterly*	*Percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 1.5 ppb difference or < ±15.1%*	
Federal Audit (NPAP) (SLAMS/NCORE)	*20% of sites audited in calendar year*	*Audit levels 1 & 2 < ± 1.5 ppb difference, all other levels percent difference < ±10.1%*	
Verification / Calibration	*Upon receipt/adjustment/repair/installation/moving*	*All points < ± 2.1% or ≤ ±1.5 ppb difference of best-fit*	

As based on the QA Handbook Volume II, Appendix D, Rev. No. 1, March 2017, and the ADEC QAPP.
Last revised December 18, 2017

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	and/or recalibration of higher level transfer standard Every 182 days and 2/calendar year if manual biweekly zero/span checks, or Every 365 days and 1/calendar year if continuous daily zero/span checks	*straight line, whichever is greater, and Slope 1 ± .05*	
Zero Air / Zero Air Check	*Every 365 days and 1/calendar year*	*Concentration below LDL*	
Ozone Level 2 Standard			
Certification/recertification to Standard Reference Photometer (Level 1)	*Every 365 days and 1/calendar year*	*Single point difference < ± 3.1%*	
Level 2 and greater transfer standard precision	*Every 365 days and 1/calendar year*	*Standard Deviation less than 0.005 ppm or 3.0% whichever is greater*	
(if recertified via a transfer standard)	*Every 365 days and 1/calendar year*	*Regression slope = 1.00 ± 0.03 and two intercepts are 0 ±3 ppb*	
Ozone Transfer standard (Level 3 and greater)			
Qualification	*Upon receipt of transfer standard*	*< ± 4.1% or < ±4 ppb (whichever is greater)*	
Certification	*After qualification and upon receipt/ adjustment/repair*	*RSD of six slopes ≤ 3.7% Std. Dev. of 6 intercepts ≤ 1.5*	
Recertification to higher level standard	*Beginning and end of O_3 season or every 182 days and 2/calendar year whichever less*	*New slope = ± 0.05 of previous and RSD of six slopes ≤ 3.7% Std. Dev. of 6 intercepts 1.5*	
Detection (FEM/FRMs)			
Noise	*Every 365 days and 1/calendar year*	*≤ 0.0025 ppm (standard range) ≤ 0.001 ppm (lower range)*	
Lower detectable level	*Every 365 days and 1/calendar year*	*≤ 0.005 ppm (standard range) ≤ 0.002 ppm (lower range)*	
SYSTEMATIC CRITERIA – O_3			
Standard Reporting Units	*All data*	*ppm (final units in AQS)*	
Rounding convention for data reported to AQS	*All data*	*3 places after decimal with digits to right truncated*	

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Requirement (O_3)	Frequency	Acceptable Range	Review Comments
Completeness (SLAMS/NCORE)	*3-year Comparison*	*≥ 90% (avg.) daily max available in ozone season with min of 75% in any one year*	
	8-hour Average	*≥ if at least 6 of the hourly concentrations for the 8-hour period are available*	
	Valid Daily Max	*≥ if valid 8-hour averages are available for at least 13 of the 17 consecutive 8-hour periods starting from 7:00 a.m. to 11:00 p.m.*	
Completeness (PSD)	*1-year*	*≥ 80% of each year*	
	8-hour Average	*≥ if at least 6 of the hourly concentrations for the 8-hour period are available*	
	Valid Daily Max	*≥ 75% of the 24, 8-hour averages (18 of 24, 8-hour averages)*	
Sample Residence Time Verification	*Every 365 days and 1/calendar year*	*≤ 20 seconds*	
Sample Probe, Inlet, Sampling train	*All sites*	*Borosilicate glass,(e.g. Pyrex®) or Teflon® (FEP/TFE)*	
Data Acquisition Systems	*Digital or analog recording devices*	*Collection of continuous data (minimum of 1-minute values)*	
System Clock Verification	*1 / month*	*≤ ± 1 minute*	
Siting	*Every 365 days and 1/calendar year*	*Meeting siting criteria or waiver documented, (PSD per approved QAPP)*	
EPA Standard Ozone Reference Photometer (SRP) Recertification (Level 1)	*Every 365 days and 1/calendar year*	*Regression sloe = 1.00 ± 0.01 and intercept < 0.003 ppm*	
Precision (using 1-point QC Checks) (SLAMS/NCore)	*Calculated annually and as appropriate for design value estimates*	*90% CL CV < 7.1%*	
Precision (using 1-point QC Checks) (PSD)	*Calculated Quarterly*	*90% CL CV < 7.1%*	

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Requirement (O_3)	Frequency	Acceptable Range	Review Comments
Bias (using 1-point QC Checks) (SLAMS/NCore)	*Calculated annually and as appropriate for design value estimates*	*95% CL < ± 7.1%*	
Bias (using 1-point QC Checks) (PSD)	*Calculated Quarterly*	*95% CL < ± 7.1%*	
Technical Systems Audits (SLAMS/NCore)	*1 / 3 years*	*Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver*	
Technical Systems Audits (PSD)	*Annually (within 1 month of startup and annually thereafter)*	*Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver*	
Annual PE Primary QA Organization (PQAO) Evaluation	1 / year	95% of audit percent difference fall within the 1-point QC check 95% probability intervals at PQAO level of aggregation	