

The AMP255 Precision and Bias Data Report

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Agenda

- How We Got Here (10 Minutes)
 - Brief History of the AMP255
 - Intended Usage of the AMP255
- How to Generate the AMP255 (10 Minutes)
 - Walkthrough Each Report
 - Field & Value Definitions
- Known Bugs & Future Enhancements (10 Minutes)

AMP255 History

- February 2004: EPA Releases “2002-2004 Criteria Pollutant Precision and Bias Data”
 - 1st Publication by EPA Showing Results of Proposed Changes in the P&B Statistics
 - Subsequent Report Released in December 2004

AMP255 History (Cont)

- OAQPS QA Team Proposed Funding the Development of the Annual Report as a Standard Report in AQS
- Development Starts in May 2005
- Development Completes in October 2005
 - Used in Annual Assessment Report December 2005
- January 17, 2006: 40 CFR Part 58 Appendix A Revisions Go FINAL
 - Last Minute Revisions NOT Accounted for in AMP255

AMP255 Intended Usages

- Save \$\$\$: Report was Based on the Annual Assessment Report Which Was Created by Contractors
- Needed a Mechanism to Produce Assessments in AQS to be Consistent with the New Appendix A Rules
 - Replacement of the AMP240 Report Beginning in 2008 for 2007 Data Annual Certification

Limitations with AMP255

- Only for Criteria Pollutants
 - Only Covers What is in Appendix A
 - Non-Criteria Report Under Development
- Known Issues
 - Some Calculations are Based on the Proposal and Not What Was Finalized
 - Formatting Issues

What is Performed

Method	Pollutants	Frequency	MQO	
One-Point QC	SO ₂ , NO ₂ , O ₃ , CO	Every 2 Weeks	O ₃ : Precision = 7% Bias = 7%	SO ₂ , NO ₂ , CO : Precision = 10% Bias = 10%
Annual Performance Evaluation	SO ₂ , NO ₂ , O ₃ , CO	Once per Year @ 3 Levels	<= 15% for each audit concentration	
Flow Rate Verification	PM ₁₀ , PM _{2.5} , PM _c	Once per Month (Quarterly for TSP & PM ₁₀ High Vols)	<= 4% of Standard & 5% of Design Value	
Semi-Annual Flow Rate Audit	PM ₁₀ , PM _{2.5} , PM _c	Every 6 Months	<= 4% of Standard & 5% of Design Value	
Collocated Sampling	PM ₁₀ (Manual), TSP, PM _{2.5} , PM _c	15% of Network Every 12 Days	PM _{2.5} , TSP, PM ₁₀ : Precision = 10%	PM _c : Precision = 15%
PM PEP Program	PM _{2.5} , PM _c	If <= 5 Sites: 5/yr If > 5 Sites: 8/yr All monitors covered in 6 years	PM _{2.5} : Precision = 10%	PM _c : Precision = 15%

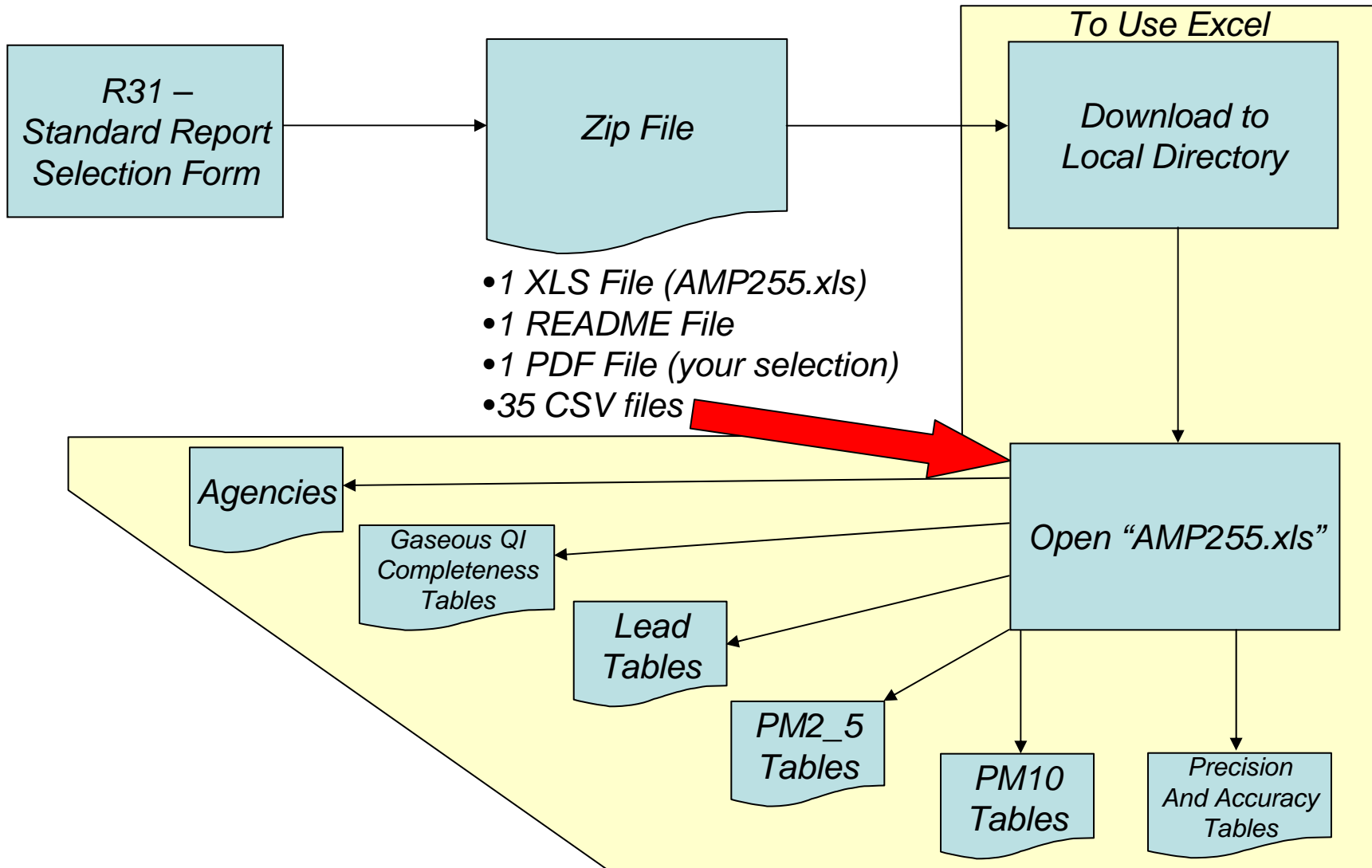
How it is Entered

Method	Pollutants	Frequency	MQO
One-Point QC	SO ₂ , NO ₂ , O ₃ , CO		<i>"Precision"</i>
Annual Performance Evaluation	SO ₂ , NO ₂ , O ₃ , CO		<i>"Accuracy"</i>
Flow Rate Verification	PM ₁₀ , PM _{2.5} , PM _c		<i>"Precision"</i>
Semi-Annual Flow Rate Audit	PM ₁₀ , PM _{2.5} , PM _c		<i>"Accuracy"</i>
Collocated Sampling	PM ₁₀ , TSP, PM _{2.5} , PM _c		<i>"Precision"</i>
PM PEP Program	PM _{2.5} , PM _c		<i>"Precision" – Only Entered by RTI... Not by all Users</i>

The AMP255

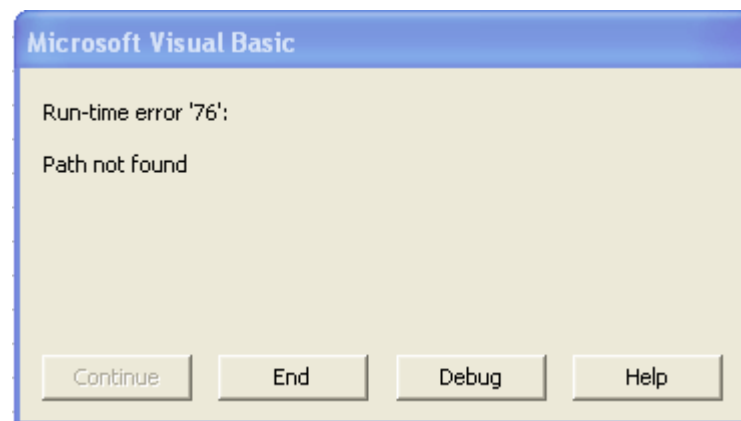
Making Sense of the Madness...
Or adding to it...

Generating an AMP255



Common Errors on Opening

- You Tried to Open the AMP255.xls From the Zip File
- At Least 1 of the 35 csv files are missing from the Directory.



Common Terminology

- PQAO
 - Primary Quality Assurance Organization
 - Organization Responsible for the QA Activities for a Monitor
- NSP vs Other
 - NSP = “NAMS / SLAMS / PAMS” Monitor Type
 - Anything other than “NAMS / SLAMS / PAMS” Monitor Type
 - Applies only to the “Highest Ranking” Monitor Type Defined for the Monitor
- The “M” After a PQAO Organization
 - The Agency Operates in Multiple States (National Park Service for Example)

Gaseous QI Completeness

- Single Point Quality Check Completeness
 - Based on One-Point QC Checks
 - AQS: PRECISION
- Performance Evaluation Check Completeness
 - Based on Annual Performance Evaluations
 - 3 Consecutive Levels
 - AQS: ACCURACY
- Reports Repeated for O₃, CO, SO₂, NO₂

Table A. Single Point Quality Check Completeness for CO, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	% Sites <50% Complete
			SLAMS		1/1/2007	12/31/2007	26	31	100	NA
			SLAMS		1/1/2007	12/31/2007	26	27	100	NA
			SLAMS		1/1/2007	12/31/2007	26	28	100	NA
			SLAMS		1/1/2007	12/31/2007	26	78	100	NA
			SLAMS		1/1/2007	12/31/2007	26	107	100	NA
			SLAMS		1/1/2007	12/31/2007	26	105	100	NA
			SLAMS		1/1/2007	12/31/2007	26	27	100	NA
			SLAMS		1/1/2007	12/31/2007	26	43	100	NA
			SLAMS		1/1/2007	12/31/2007	26	45	100	NA
			SLAMS		1/1/2007	12/31/2007	26	47	100	NA
			SLAMS		1/1/2007	12/31/2007	26	47	100	NA
			SLAMS		1/1/2007	12/31/2007	26	46	100	NA
			SLAMS		1/1/2007	12/31/2007	26	49	100	NA
			SLAMS		1/1/2007	12/31/2007	26	34	100	NA
			SLAMS		1/1/2007	12/31/2007	26	39	100	NA
			SLAMS		1/1/2007	12/31/2007	26	38	100	NA
			SLAMS		1/1/2007	12/31/2007	26	53	100	NA
			SLAMS		1/1/2007	12/31/2007	26	27	100	NA
			All - NSP	NA	NA	NA	468	871	100	0
			OTHER		1/1/2007	12/31/2007	26	51	100	NA
			All - Other	NA	NA	NA	26	51	100	0
			SLAMS		1/1/2007	12/31/2007	26	0	0	NA
			All - NSP	NA	NA	NA	26	0	0	100

Table B. Performance Evaluation Check Completeness for CO, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	Tot. # of Sites	Audits in Quarters
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	4(11)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	4(12)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			SLAMS		1/1/2007	12/31/2007	1(3)	4(12)	100(100)	NA	NA
			All - NSP	NA	NA	NA	18(54)	34(101)	100(100)	18	9(6)/9
			OTHER		1/1/2007	1/1/2007	1(3)	0(0)	0(0)	NA	NA
			OTHER		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
			All - Other	NA	NA	NA	4(12)	2(6)	50(50)	2	0(1)/0
			SLAMS		1/1/2007	12/31/2007	1(3)	0(0)	0(0)	NA	NA
			All - NSP	NA	NA	NA	4(12)	0(0)	0(0)	1	0(0)/0

Precision and Accuracy Tables

- Single Point P&B Estimates
 - One Sheet per Pollutant / MT Group
 - Summarized by PQA0
- PQA0 Accuracy Summary
 - One Sheet per Pollutant / MT Group
 - One Line per PQA0
- Reports Repeated for
 - O₃, CO, SO₂, NO₂
 - NSP / Non-NSP Monitor Types

Region	State	PQA0	Site	CFR Lower Limit	CFR Upper Limit	Bias UB	CV UB
NA				NA	NA	-2.55	1.55
NA				NA	NA	1.54	1.54
NA				NA	NA	1.11	1.54
NA				NA	NA	-1.94	2.24
NA				NA	NA	-2.82	3.07
NA				NA	NA	-2.96	3.41
NA				NA	NA	4.37	5.01
NA				NA	NA	3.77	4.27
NA				NA	NA	5.7	3.83
NA				NA	NA	5.73	7.44
NA				NA	NA	3.84	4.69
NA				NA	NA	1.99	1.84
NA				NA	NA	-1.57	1.67
NA				NA	NA	3.15	3.43
NA				NA	NA	1.07	1.18
NA				NA	NA	-1.07	1.31
NA				NA	NA	-2.01	1.65
NA				NA	NA	6.46	5.98
All - NSP				-7.04	6.92	2.6	3.67
All - NSP				NA	NA		

Region	State	PQA0	I	II	III	IV
			(-7.7, +10.2)	(-6.4, +8.0)	(-9.2, +7.4)	(-11.6, -1.6)

PM_{2.5} Tables

- PM_{2.5} Collocation Summaries
 - Only Shows for “Primary Monitors”
- PM_{2.5} Flow Rate Completeness

Microsoft Excel - PM2_5 Tables

Table GG. PM2.5 Collocation Summaries, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	% Sites <50% Comple	Total # of Sites	No. of Sites Collocat	Site Comp %	Pairs > 6	CV UB	CV Est.
			SLAMS	NA	1/1/2007	12/31/2007	60	54	90	NA	NA	NA	NA	29	7.8	6.32
			All - NS	NA	NA	NA	60	54	90	0	48	1	14	29	7.8	6.32
			ECIAL PURPD		1/1/2007	3/1/2007	10	9	90	NA	NA	NA	NA	8	3.85	2.35
			ECIAL PURPD		1/1/2007	3/1/2007	10	0	0	NA	NA	NA	NA	0		
			All - Other	NA	NA	NA	20	9	45	50	8	2	100	8	3.85	2.35

Microsoft Excel - PM2_5 Tables

Table HH. PM2.5 Flow Rate Completeness, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	Total # of Sites	01/02/03/04
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	0	0	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	3	75	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	2	50	NA	NA
			SLAMS		1/1/2007	12/31/2007	4	0	0	NA	NA
			All - NS	NA	NA	NA	192	84	44	48	25/19/27/13
			OTHER		1/1/2007	12/31/2007	4	2	50	NA	NA
			OTHER		1/1/2007	12/31/2007	4	2	50	NA	NA
			All - Other	NA	NA	NA	8	4	50	2	0/2/0/2

PM₁₀ Tables

- Automated PM₁₀ Precision Completeness
 - Based on Flow Audits
- Manual PM₁₀ Precision Completeness
 - Based on Collocation
- Automated / Manual PM₁₀ Accuracy

Microsoft Excel - PM10 Tables

Table II. Automated PM10 Precision Completeness, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	% Sites <50% Comple
			SLAMS		1/1/2007	12/31/2007	26	54	100	NA
			SLAMS		1/1/2007	12/31/2007	26	60	100	NA
			SLAMS		1/1/2007	12/31/2007	26	0	0	NA
			SLAMS		1/1/2007	12/31/2007	26	0	0	NA
			SLAMS		1/1/2007	5/18/2007	9	20	100	NA
			SLAMS		1/1/2007	12/31/2007	26	53	100	NA
			SLAMS		1/1/2007	12/31/2007	26	53	100	NA

Microsoft Excel - PM10 Tables

Table KK. Manual PM10 Precision, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	% Sites <50% Comple	Total # of Sites	Ho. of Sites Collocat	Site Comp %	Number > 20	CV UB	Lower 95% Prob. Lin	Upper 95% Prob. Lin
	All - NS	NA	NA	NA	NA	NA	180	0	0	100	34	0	0	0			
	All - Other	NA	NA	NA	NA	NA	120	0	0	100	6	0	0	0			

Microsoft Excel - PM10 Tables

Table JJ. Automated PM10 Accuracy Completeness, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	Total # of Sites	01/02/03/04
			SLAMS		1/1/2007	12/31/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	4	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	1/1/2007	1	0	0	NA	NA
			SLAMS		1/1/2007	5/18/2007	1	0	0	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA

Microsoft Excel - PM10 Tables

Table LL. Manual PM10 Accuracy Completeness, 2007.

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Required	Number Submitted	Comp. %	Total # of Sites	01/02/03/04
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	7/1/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	3	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	1	100	NA	NA
			SLAMS		1/1/2007	1/1/2007	1	0	0	NA	NA

Lead Tables

- Lead Collocation Completeness
 - Based on Collocated Precision Data
- Lead Flow Rate Completeness
 - Based on Accuracy Flow Data
- Lead Filter Strip Completeness

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Require	Number Submitted	Comp. %	% Sites <50% Compl'd	Total # of Sites	No. of Sites Collocat	Site Comp %
			All - NS	NA	NA	NA	60	0	0	100	4	0	0
			All - Other	NA	NA	NA	60	0	0	100	2	0	0

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Require	Number Submitted	Comp. %	Total # of Sites	01/02/03/04
			SLAMS		1/1/2007	12/31/2007	1	2	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	3	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	4	100	NA	NA
			SLAMS		1/1/2007	12/31/2007	1	7	100	NA	NA
			All - NS	NA	NA	NA	4	16	100	4	3/5/4/4
			OTHER		1/1/2007	12/31/2007	1	4	100	NA	NA
			OTHER		1/1/2007	12/31/2007	1	0	0	NA	NA
			All - Other	NA	NA	NA	4	4	50	2	0/2/0/2

Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Audits Required (Level 1)	Audits Submitted (Level 1)	Comp. % (Level 1)	Audits Required (Level 2)	Audits Submitted (Level 2)	Comp. % (Level 2)
			SLAMS		1/1/2007	12/31/2007	12	12	100	12	12	100
			SLAMS		1/1/2007	12/31/2007	12	0	0	12	0	0
			SLAMS		1/1/2007	12/31/2007	12	12	100	12	12	100
			SLAMS		1/1/2007	12/31/2007	12	0	0	12	0	0
			All - NS	NA	NA	NA	48	24	50	48	24	50
			OTHER		1/1/2007	12/31/2007	12	0	0	12	0	0
			OTHER		1/1/2007	12/31/2007	12	0	0	12	0	0
			All - Other	NA	NA	NA	24	0	0	24	0	0

Known Issues

Item	Indicator	Issue	What AMP255 Does	What App A Does
Automated PM ₁₀	Completeness	Required # Flow Rate Verifications	Every 2 Weeks	One / Month
Manual PM ₁₀ & PM _{2.5}	Precision Value	Minimum value to be used in Calculations	PM ₁₀ = 20 PM _{2.5} = 6	PM ₁₀ = 15 PM _{2.5} = 3
Manual PM ₁₀ & PM _{2.5}	Completeness	Flow Rate Audits	Once / Quarter	Every 6 Months
Manual PM ₁₀ , PM _{2.5} , Lead	Collocation Completeness	Frequency and Number of Sites	1 in 6 days; based on # sites in PQAO	1 in 12 Days; 15% of the PQAO Network. For PM, this is based on method designation

Known Issues

Item	Indicator	Issue	What AMP255 Does	What App A Does
Lead	Completeness	# Required Flow Rates	1 per Year	1 every 6 months
O ₃ , SO ₂ , NO ₂ , CO		New Tables Need to be Used	Pre-2007 tables with only 4 levels	5 Levels using new level ranges
All	Display	Formatting Issues with Upper/Lower Probability Limits	Program assumes the “,” between the values means it is two values.	