United States Environmental Protection Agency
Office of Air Quality Planning and Standards Research Triangle Park, NC 27711
EPA-454/R-00-041 December 2000
Air

Quality Assurance Report

Calendar Year 1999

The $PM_{2.5}$ Ambient Air Monitoring Program

Foreword

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Abstract

This report documents the quality assurance activities that were undertaken for the $PM_{2.5}$ environmental data operations for the calendar year January 1, 1999 to December 31, 1999 (CY99), which was the first year of implementation the $PM_{2.5}$ monitoring program. The QA Report evaluates the adherence to the quality assurance requirements described in *40 CFR 58 App. A* and evaluates the data quality indicators of precision, accuracy, bias, completeness, comparability and detectabilty.

The criteria pollutant defined as particulate matter is a general term used to describe a broad class of substances that exist as liquid or solid particles over a wide range of sizes. As part of the Ambient Air Quality Monitoring Program, EPA measures two particle size fractions: those less than or equal to [a nominal]10 micrometers, and those less than or equal to [a nominal] 2.5 micrometers, hereafter referred to as PM_{10} or $PM_{2.5}$ respectively. In general, the measurement goal of the $PM_{2.5}$ Ambient Air Quality Monitoring Program is to estimate the concentration, in units of micrograms per cubic meter ($\mu g/m^3$), of particulates less than or equal to 2.5 micrometers (µm) that have been collected on a 46.2mm polytetrafluoroethylene (PTFE) filter. For the State and Local Air Monitoring Network (SLAMS), the primary goal is to compare the $PM_{2.5}$ concentrations to the annual and 24-hour National Ambient Air Quality Standard (NAAQS). The national primary and secondary ambient air quality standards for $PM_{2.5}$ are 15.0 micrograms per cubic meter ($\mu g/m^3$) annual arithmetic mean concentration and 65 $\mu g/m^3$ 24-hour average concentration measured in ambient air. A description of the NAAQS and its calculation can be found in the July 18,1997 Federal Register Notice.

A quality system for the $PM_{2.5}$ program was developed in order to achieve the data quality objectives (DQOs) that were developed for this program. In order to meet these DQOs, measurement quality objectives were developed for the data quality indicators of precision, bias, accuracy and completeness. In addition, this report will discuss the data quality indicators of comparability and detectabilty.

The report briefly discusses some of the implementation aspects of the quality assurance program through the first and second years of implementation. The report identifies the data quality indicators and how the estimates of these indicators were derived, evaluates the results, and provides conclusions and recommendations for future improvements.

The data evaluated in this report is based upon a data extraction in AIRS on 7/26/00. This date was chosen because it was after the July 1 certification date, and in the interest to report data quality results to the States and EPA in a timely manner.

In general, the results show that most routine and QA data have not met completeness requirements. The lack of information affects the confidence by which one can make assessments of precision, accuracy and bias at various levels of aggregation. However, precision, accuracy and bias estimates at national levels of aggregation appear to be meeting the data quality objective of the program.

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List of Abbreviations

AIRS	Aerometric Information Retrieval System
CFR	*Code of Federal Regulations*
CV	coefficient of variation
DQA	data quality assessment
DQOs	data quality objectives
EDO	environmental data operation
EMAD	Emissions, Monitoring, and Analysis Division
EPA	Environmental Protection Agency
ESAT	Environmental Services Assistance Team
FEM	Federal Equivalent Method
FRM	Federal Reference Method
FS	field scientist- Performance Evaluation Program
MQAG	Monitoring and Quality Assurance Group
MQOs	measurement quality objectives
NAAQS	National Ambient Air Quality Standards
NAMS	national air monitoring stations
NERL	National Exposure Research Laboratory
NIST	National Institute of Standards and Technology
OAQPS	Office of Air Quality Planning and Standards
ORD	Office of Research and Development
PE	performance evaluation
PEP	Performance Evaluation Program
$PM_{2.5}$	particulate matter $\leq$ 2.5 microns
PTFE	polytetrafluoroethylene
QA	quality assurance
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
QMP	quality management plan
R&P	Rupprecht and Patashnick
SLAMS	state and local monitoring stations
SOP	standard operating procedure
TSA	technical systems audit

Acknowledgments

We are grateful to a number of individuals who have helped in the development or review of this document. We would like to thank Herb Barden, EPA Region 4 and Karen Marisigan, EPA Region 10 with help from Greg Noag, Stephanie Riddle and Edlin Vinluan of the Environmental Services Assistance Team (ESAT) for their support in providing the validated Performance Evaluation Program data base. We acknowledge Andy Clayton and Michael Riggs, Research Triangle Institute, for their help and insight into some of the evaluation techniques. The document went through a peer review process and we appreciate the comments received from: Nancy Wentworth, Director of the EPA Quality Staff; Michael Davis, EPA Region 7 and Anna Kelly, Hamilton County Department of Environmental Services. In addition, we thank individuals from OAQPS, the EPA Regions and the monitoring agencies who reviewed the document and sent us comments.

Executive Summary

This report documents the quality assurance activities that were undertaken for EPA's $PM_{2.5}$ environmental data operations for the calendar year January 1, 1999 to December 31, 1999 (CY99), which was the first year of implementation of the $PM_{2.5}$ monitoring program.

As part of the Ambient Air Quality Monitoring Program, EPA measures two particle size fractions, those less than or equal to 10 micrometers (PM_{10}), and those less than or equal to 2.5 micrometers ($PM_{2.5}$). In general, the measurement goal of the $PM_{2.5}$ Ambient Air Quality Monitoring Program is to estimate the concentration, in units of micrograms per cubic meter ($\mu g/m^3$), of particulate matter less than or equal to [a nominal] 2.5 micrometers (µm) that have been collected on a 46.2mm polytetrafluoroethylene (PTFE) filter. For the State and Local Air Monitoring Network (SLAMS), the primary goal is to compare the $PM_{2.5}$ concentrations to the annual and 24-hour National Ambient Air Quality Standard (NAAQS). The national primary and secondary ambient air quality standards for $PM_{2.5}$ are 15.0 micrograms per cubic meter ($\mu g/m^3$) annual arithmetic mean concentration and 65 $\mu g/m^3$ 24-hour average concentration measured in ambient air. A description of the NAAQS and its calculation can be found in the July 18, 1997 Federal Register Notice.

A quality system for the $PM_{2.5}$ program was developed in order to achieve the data quality objectives (DQOs). The resulting quality assurance requirements are described in *40 CFR 58 App. A*. This QA Report evaluates the adherence to these requirements and evaluates the data quality indicators of precision, accuracy, bias, completeness, comparability and detectabilty.

Table 1 summarizes data completeness and Table 2 summarizes estimates of the primary data quality indicators of precision, accuracy, and bias at a national level. Summary comments about these tables follow.

Table 1. National Completeness Summary for CY99 (as of 7/26/00)

	Sites Meeting overall completeness requirements for all 4 quarters		% Sites meeting 75% Completeness for Each Quarter			
Data Type	**%**	**Number**	**1**	**2**	**3**	**4**
Routine Data	24%	239	31%	56%	60%	67%
Collocation Precision	10%	25	27%	46%	52%	54%
Flow Rate Accuracy	18%	176	35%	42%	44%	40%
Performance Evaluations	100%	247	73%	113%	111%	104%
Performance Evaluation Pairs	65%	160	49%	79%	80%	77%

Table 2. National Estimates of Primary Data Quality Indicators for CY99 (as of 7/26/00)

Data Type	Acceptance Criteria	National Estimate	Quarterly Estimate			
			1	2	3	4
Precision -Collocation	< 10% CV	9.1%	12.1%	9.9%	6.6%	7.6%
Accuracy-Flow Rate	< ± 4% Std. < ± 5% Design	0.02%	0.11%	0.08%	-0.04%	-0.04%
Bias - Performance Evaluations	< ± 10%	1.7%	9.0%	1.9%	-0.9%	-0.49%

Routine Data

Completeness - The completeness evaluation is based upon the strictest interpretation of the completeness requirement in *40 CFR 50, App N* that a site must collect 75% valid data in every quarter in order for comparison to the NAAQS. There are other techniques, such as data substitution, that can be used to allow more information to be used for the NAAQS comparison that are not evaluated in this report. Therefore, the 24% overall completeness estimate is the most conservative estimate of completeness for CY99. Since the requirement is based on 4 quarters, the overall completeness estimate cannot be higher than the lowest quarterly completeness percentage.

Based on early reviews of completeness in March 2000, OAQPS provided guidance to allow the use of data qualifiers (flags) in an attempt to increase the completeness of routine data that some organizations may have felt uncertain about entering to AIRS. An additional 4.7% of the routine data was captured using the new data qualifiers. However, two States accounted for 67% of these data qualifiers, one that flagged all their data and a second that flagged 45%.

Precision - Collocation

Completeness- The number of sites that have met the 75% completeness goal for all 4 quarters is very low. A marked improvement in completeness occurred from the first to second quarter but only marginal improvement in the last three quarters. As with routine data, the overall completeness value cannot be higher than the lowest quarterly value since the requirement is based on 4 quarters. Due to some of the start-up problems in the first quarter, some reporting organizations had to substitute their collocated instruments for the routine instruments. In addition, whenever a routine value was invalidated, a collocated value could be substituted. The lack of information on collocated precision will make it difficult to assess the precision data quality objective at lower levels of aggregation such as reporting organizations or federal reference method designation (sampling monitor type). It may be necessary to institute quarterly assessments of precision completeness in order to identify where information is lacking and to improve the capture rate of this information.

Values around the NAAQS- In order to focus quality assurance activities around the data most crucial in decision making, *40 CFR 58 App A* required that 80% of the collocated monitors be placed at the sites that the State, local and Tribal monitoring organization felt would provide annual averages at

concentrations ≥ 90% of the annual or 24-hour NAAQS. Presently, only 48% (105 sites) of the collocated sites reporting data are located at sites with annual means ≥ 13.5 µg/m^3 and there are 426 routine sites with an annual mean ≥ 13.5 µg/m^3. Since some reporting organizations may not have any or only few sites reporting average annual concentrations ≥13.5 µg/m^3, it was not expected that 80% percent of the collocated sites in the network would have average annual concentrations ≥13.5 µg/m^3. However, if reporting organizations review their routine and collocated sites (Attachments 2-1 and 2-3) it appears that some reporting organizations can relocate collocated monitors to sites where precision and bias estimates are most crucial.

Precision Results - It must be emphasized that the precision data quality objective (DQO) is based on three years of precision data (75% complete). Therefore, any one year or any quarter may exceed the criteria and still meet the precision data quality objectives. An early analysis of precision suggests that the DQO can be achieved, at least at the national level.

It was discovered that 232 outliers (percent differences greater than ± 50%) , which represented 2.8% of the precision data, change the national estimate from 9.1% CV to 6.8% CV and lowered the first quarter estimate from 12.1% CV to 8.2% CV. OAQPS will ask State and locals to review these outliers to ensure their validity. For this report the outliers are considered valid and therefore incorporated into the overall and quarterly precision estimate. Another interesting observation is that OAQPS did not plan on assessing any collocated pairs that had one or both values below 6 µg/m^3. It was assumed that these values were close to the sensitivity of the measurement system and that small actual variance at these low levels would provide large coefficients of variance. This did not prove to be the case and, in fact, the outliers had more influence on the precision estimate.

OAQPS investigated whether there was any significant difference in precision for different method designations. From the available data, all the method designations appear to have comparable precision. Based on the national precision estimates being very close to the DQO, it is anticipated that some reporting organization precision estimates will be above the data quality objective. The effect of the additional variability would be less confidence in estimates of individual or aggregate concentrations.

Accuracy -Flow Rate

Completeness- Flow rate accuracy overall completeness was low for CY99. A positive or negative bias in flow rate can have a direct effect on the cut point of the particulate matter collected on the filter and also affects the 24 hour air volume estimate that goes into the derivation of the concentration. OAQPS will work the EPA Regions and States to ensure a better capture rate of this data for future calendar years.

Accuracy Results - For the information available, the results of the accuracy audits are very good. The national average accuracy estimate is 0.02% which is well within the acceptance criteria of ±4% of the standard and ±5% of the design (see Table 2). For the method designations that had more than 100 flow rate audits performed in CY99, the percentage of audits meeting the criterion of ±4% of the standard was 94% and the percentage meeting the criterion of ± 5% of the 16.67 L/min design flow rate was 99%. Additionally, these percentages did not vary by method designation.

Bias - Performance Evaluation Program and Routine Data

Completeness - Completeness of the performance evaluation data is a little more complicated because it involves two data points that are collected by different organizations. The bias estimate must rely on Performance Evaluation Program (PEP) data collected by technical support contractors provided through the EPA Environmental Services Assistance Team (ESAT) contract. The routine $PM_{2.5}$ data is collected by the State, local and tribal Nations. The PEP achieved its completeness requirement by collecting valid data at 247 sites, which was just over the anticipated 245 sites (25% of the 979 sites established in AIRS). However, when the data for these 247 sites were matched with their respective routine data in AIRS, only 160 sites produced valid site/pairs that met the completeness requirement. If one looks at actual valid samples that were taken, of the 984 valid PEP values, there are only 697 that have a routine sample match in AIRS. Reasons for missing routine values could be due to PEP or routine samples mistakenly sampled on different days, or data not yet entered into AIRS. However, the missing 287 values account for 30% of the performance evaluation information which affects the confidence in the bias estimates, particularly when one attempts to assess bias at a reporting organization or method designation level.

Bias results

As with precision, the bias data quality objective is based on three years of bias data (75% complete). At a national level, the average bias is estimated at 1.7% and it appears that the bias data quality objective is being met. However, there are three factors that affect the bias estimates: 1) lack of paired data, 2) outliers, and 3) method designations..

Lack of paired data - A performance evaluation is only performed on 25% of the sites and each site is audited 1 time each quarter. It is difficult to determine a statistically significant bias at lower levels of aggregation such as reporting organization or method designation with only one years worth of information and with 287 paired values missing.

Outliers - Similar to the findings in the precision data, there is almost no difference in the bias estimate in keeping or removing a pair when one or both values is below 6 $\mu g/m^3$. However, it appears outliers had an effect on bias in the first quarter of 1999. An outlier was any paired value that had an accuracy estimate greater than $\pm$50%. Removing outliers from the national estimate changed the bias estimate from 1.7% to -0.49%. However, 6 outliers (6 % of the quarters total) in the first quarter changed the bias estimate from 9.0% to 3.6%. OAQPS will ask State and locals to review these outliers to ensure their validity. For this report the outliers are considered valid and incorporated into the overall and quarterly bias estimate.

Method Designations - It appeared that method designations did play a role in the bias estimates, particularly in the first and possibly the second quarter of 1999. For the first quarter, the Andersen sequential bias estimate (25.7%) was substantially higher than the R & P sequential bias estimate (-1.01%). However, all 6 (17% of the quarters values for Andersen) outliers identified in the first quarter where related to the Andersen instrument which would change the bias estimate from 25.7% to 12.42%. Outliers did not have any significant effects on R & P sequential data. There was not enough data to make any statements about single channel instruments. The third and fourth quarter estimates do not appear to vary by method designation and are therefore more comparable. This may be due to improvements in sampling and analytical techniques and vendor modifications to the FRM monitors.

1. Introduction

This report documents the quality assurance activities that were undertaken for the $PM_{2.5}$ environmental data operations for the calendar year January 1, 1999 to December 31, 1999 (CY99). The QA Report evaluates the adherence to the quality assurance requirements described in *40 CFR 58 App. A* and evaluates the data quality indicators of precision, accuracy, bias, completeness, comparability and detectabilty. The QA Report should be viewed as an annual snapshot to determine whether or not the quality system, in general, is providing data of acceptable quality for its primary use. Therefore, the report will provide evaluations at higher levels of aggregation (national levels or by method designation). Data used in this report was extracted from AIRS on 7/26/99.

Organization of QA Report

The report has been organized into 3 main sections:

- **Section 1**: overview of the $PM_{2.5}$ monitoring program, the CY99 implementation aspects of the quality system in relation to the quality assurance requirements described in *40 CFR 58 App A,* and a description of the procedures used to assess data quality.
- **Section 2:** results of the data quality assessment.
- **Section 3**: summary and conclusions of the data quality assessment results and recommendations based upon experiences of CY99 implementation.

Program Overview

The criteria pollutant defined as particulate matter is a general term used to describe a broad class of substances that exist as liquid or solid particles over a wide range of sizes. As part of the Ambient Air Quality Monitoring Program, two particle size fractions are measured; those less than or equal to [a nominal]10 micrometers, and those less than or equal to [a nominal] 2.5 micrometers, hereafter referred to as PM_{10} or $PM_{2.5}$ respectively.

The background and rationale for the implementation of the $PM_{2.5}$ ambient air monitoring network can be found in the *Federal Register 40 CFR 50 July 18, 1997* . In general, the measurement goal of the $PM_{2.5}$ network is to estimate the concentration, in units of micrograms per cubic meter ($\mu g/m^3$), of particulate matter less than or equal to 2.5 micrometers (µm) aerodynamic diameter collected over a 24 hour period. Appendix L of *40 CFR 50* also provides the following summary of the measurement principle:

> An electrically powered air sampler draws ambient air at a constant volumetric flow rate into a specially shaped inlet and through an inertial particle size separator (impactor) where the suspended particulate matter in the $PM_{2.5}$ size range is separated for collection on a polytetrafluoroethylene (PTFE) filter over the specified sampling period.
>
> Each filter is weighed (after moisture and temperature equilibration) before and after sample collection to determine the net weight (mass) gain due to collected $PM_{2.5}$. The total volume of air sampled is determined by the sampler from the measured flow rate at actual ambient temperature and pressure and the sampling time. The mass concentration of $PM_{2.5}$

in the ambient air is computed as the total mass of collected particles in the $PM_{2.5}$ size range divided by the actual volume of air sampled, and is expressed in micrograms per actual cubic meter of air ($\mu g/m^3$).

A major objective for the collection of the data is to compare daily $PM_{2.5}$ concentrations to the annual (15.0 $\mu g/m^3$ annual arithmetic mean concentration) and 24-hour (65 $\mu g/m^3$ 24-hour average concentration) national ambient air quality standard (NAAQS). A description of the NAAQS and its calculation can be found in the July 18, 1997 *Federal Register* notice.

As described in the following section (DQOs), OAQPS designed a quality system based upon the primary objective of the network, which was the comparison of data to the NAAQS. For this comparison, State, local, and Tribal monitoring organizations are required to sample using a Federal Reference Method (FRM) or Federal Equivalent Method (FEM). The description of the $PM_{2.5}$ FRM is included in *40 CFR 50, App. L*, published as a final rule in the *Federal Register* on July 18, 1997. There are a number of designated federal reference method samplers at this time including:

- Single channel FRM samplers:
  - Andersen Model RAAS2.5-100 $PM_{2.5}$ Ambient Air Sampler; designated 6/11/98.
  - BGI Inc. Model PQ200 Ambient Fine Particle Sampler; designated 4/16/98.
  - Rupprecht & Patashnick Partisol®-FRM Model 2000 Air Sampler; designated 4/16/98.
  - Thermo Environmental Instruments, Inc. Model 605 “CAPS” Sampler; designated 10/29/98.

- Sequential FRM samplers:
  - Andersen Model RAAS2.5-300 $PM_{2.5}$ Sequential Ambient Air Sampler; designated 6/11/98.
  - Rupprecht & Patashnick Partisol®-Plus Model 2025 Sequential Air Sampler; designated 4/16/98.

- Portable FRM audit samplers (used in the quality assurance program):
  - Andersen Model RAAS2.5-200 $PM_{2.5}$ Ambient Audit Air Sampler; designated 3/11/99.
  - BGI Inc. Model PQ200A Ambient Fine Particle Sampler; designated 4/16/98.
  - Rupprecht & Patashnick Partisol® Model 2000 Audit Sampler; designated 4/19/99.

The $PM_{2.5}$ federal equivalent methods (FEM) vary from this basic FRM definition and are divided into three categories, Class I, II, and III. Definitions for each of these are provided in *40 CFR 53.1*, published as a final rule in the *Federal Register* on July 18, 1997. There are no designated equivalent $PM_{2.5}$ methods at this time, nor have any manufacturers formally pursued this type of designation.

It is important to emphasize that all $PM_{2.5}$ sampling sites that provide data for comparison to either the 24-hour or the annual $PM_{2.5}$ NAAQS for the purposes of addressing attainment and nonattainment decisions must employ designated FRM/FEM sampling techniques.

Data Quality Objectives (DQOs)

DQOs are qualitative and quantitative statements derived from the DQO Process that clarify the monitoring objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions[1]. By applying the DQO Process to the development of a quality system for $PM_{2.5}$ network, the EPA guards against committing resources to data collection efforts that do not support a defensible decision. During the months from April to July of 1997, the DQO Process was implemented for the $PM_{2.5}$ program. The DQOs were based on the ability of the decision maker(s) to make NAAQS comparisons within an acceptable probability of decision errors. Based upon the acceptable decision error of 5%, the DQO for acceptable precision (10% CV) and bias ($\pm$ 10%) were identified.

Decision errors are based on two general types of uncertainty, population uncertainty and measurement uncertainty. Population uncertainty is defined as the natural spatial and temporal variability in the population of the data being evaluated. Confidence in estimates of population uncertainty can be controlled through the use of statistical sampling design techniques, the proper placement of ambient air quality monitors, and spatial averaging (as allowed by the $PM_{2.5}$ NAAQS). Since the population of concern for the $PM_{2.5}$ NAAQS violation decision is a single instrument, the population uncertainty would be an estimate of the uncertainty over the 3-year averaging period. During the development of the NAAQS, population uncertainty, due to temporal variability, was incorporated into the standard by stating that 3 complete years of data (every day sampling) determines a violation of the NAAQS, even though the expected value may be different. Therefore, population variability was considered to be zero, as long as every day sampling was implemented. However, 1-in-6 day sampling and 1-in-3 day sampling, or any deviation from every day sampling, have a population variance that must be understood, and if possible, quantified.

Total measurement uncertainty is the total error associated with the environmental data operation. The environmental data operation for $PM_{2.5}$ represents various data collection activities or phases including: the initial weighing of the filters (and the conditions in which they are weighed), the transportation of the filters, the calibration of the instrument and its maintenance, the handling and placement of the filters, the proper operation of the instrument (sample collection), the removal, handling and transportation of the filter, the storage and weighing of the sampled filter, and finally, the data reduction and reporting of the value. At each phase of this process, errors can occur, that in most cases, are additive. The goal of a QA program is to control and document total measurement uncertainty (precision and bias) to an acceptable level through the use of various quality control and evaluation techniques. In a resource constrained environment, it is most important to be able to calculate/evaluate the total measurement uncertainty and compare this to the DQO. Measurement precision will be estimated using the $PM_{2.5}$ collocated samplers while bias will be estimated using the Performance Evaluation Program. These and other “data quality indicators” are discussed below.

This QA Report will focus on the evaluation of measurement uncertainty. Population uncertainty is being evaluated by other data analysis groups.

Quality System Implementation

Upon promulgation of the July 18, 1997 NAAQS, an implementation start date of Jan 1, 1999 was identified. OAQPS developed a 2-year phased approach for the implementation of a 1500 site network where approximately 950 sites would be operational in CY99 with the remainder in CY00. Requirements for the implementation activities are found in *40 CFR 50, 53* and *58*. In addition to the regulations, a number of guidance documents, videos and broadcasts were developed in 1998 and 99 to assist in the implementation of the monitoring network.

Monitoring organizations also had to meet certain quality assurance requirements. The majority of the quality assurance requirements are defined in:

40 CFR Part 50 Appendix L - which describes many of the critical quality control requirements for the FRM sampler, the filter handling requirements and the laboratory facilities and equipment.

40 CFR Part 58 Appendix A - identifies the quality assurance requirements.

Quality Assurance Guidance Document 2.12 Monitoring PM2.5 in Ambient Air Using Designated Reference or Class I Equivalent Method - provides more detail and guidance to support CFR Parts 50 and 58.

Quality Assurance Guidance Document Model Quality Assurance Project Plan for the PM2.5 Ambient Air Monitoring Programs at State and Local Air Monitoring Stations (SLAMS) - provides a model for the development of a $PM_{2.5}$ QA project plan.

Additional QA Guidance provided in CY99.

During CY99 implementation, various technical issues arose that required additional guidance or clarification. The following guidance was developed in CY99 and CY00 and was distributed to the EPA Regions as well as posted on the Ambient Monitoring Technology Information Center (AMTIC) $PM_{2.5}$ site. Since certification of CY99 data takes place in July of 2000, the guidance distributed in CY00 may apply to CY99 data.

Flexibility in sample transport conditions - guidance was distributed on 1/20/00 that provided an interpolation between the two temperature transport requirements (25ºC/10 day and 4ºC/30 day) that allows one to determine the number of days available for sample weighing from the sample end data and time, based upon the average temperature of the sample upon arrival at the laboratory.

Standard Time - guidance was distributed on 6/22/99 to set and leave all instruments on local standard time.

Archiving $PM_{2.5}$ Samples - Some additional guidance for acceptable procedures for archiving $PM_{2.5}$ samples was distributed on 2/7/00

Collocated substitution and POC codes- guidance was distributed on 1/3/00 to reiterate earlier PM10 guidance that collocated data can be substituted for routine data when the routine sampler was inoperable or otherwise caused the routine sample to be invalidated. However, in order to identify that the collocated value was used, it was suggested that the value be placed in pollutant occurrence code 2 (POC-2). This would help in completeness assessments for P & A. In addition, this memo went on to designate all POCS (1-9) for the $PM_{2.5}$ monitoring (mass, speciation and continuous).

Flagging - A memo, distributed 3/27/00 from OAQPS to the Regions, provided for the use of 6 data qualifiers.

Implementation of 40 CFR 58 Appendix A Requirements.

40 CFR 58 App. A provides the quality assurance requirements for the State and local air monitoring station (SLAMS) network. The requirements for $PM_{2.5}$ include:

- Development, submission, approval and implementation of QA project plans
- Implementation of technical systems audits
- Implementation of quarterly flow rate audits (see Section 2)
- Implementation of collocated sampling (see Section 2)
- Implementation of a performance evaluation program (see Section 2)

The implementation of the quarterly flow rates, the collocated sampling and the performance evaluation will be discussed in the data quality indicators section (below) and evaluated in (Section 2)

Development, Submission and Approval of QA Project Plans

The QA Project Plan (QAPP) is used to document planning results for environmental data operations and to provide a project specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use[2]. All EPA funded environmental data operations are required to have an approved QAPP prior to the collection of environmental data. QAPPs were required for each reporting organization. Reporting organization is defined in *40 CFR 58 App. A*. Table 1-1 provides a status of the QAPP approvals for all $PM_{2.5}$ reporting organizations. All reporting organizations have a approved or conditionally approved QAPP. In some cases, QAPPs were not approved prior to implementation of environmental data operations. Memos related to QAPP submission, approval, and data entry to AIRS were distributed to the EPA Regions on January 21, 1999 and February 11, 1999. The February 11 memo indicated that there would be no submission of data to AIRS prior to QAPP approval. The memo also stated that data collected prior to QAPP approval could be accepted and subsequently submitted to AIRS if and only if the QAPP was fully or conditionally approved upon submission or upon completion of technical system audit (TSA), conducted by the EPA Regions, that

determined ongoing conformance to the QAPP that was submitted prior to conditional or full approval. Table 1-1 also indicates the TSA's conducted by the EPA Regions in CY99.

Data has been submitted by reporting organizations that have not conformed to the 2/11/99 memo. OAQPS will ensure that the QAPP approval dates will be included in the AIRS data base. In addition, OAQPS has created a flag (6) which will be placed on any raw data value not meeting the requirements stated above.

Table 1-1 $PM_{2.5}$ Reporting Organization QAPP Approval Status (as of 7/26/00)

Reg.	State	QAPP Submissions	QAPP Approval Date	Cond (C) or Full (F)	TSA	TSA Date
1	CT	01/08/99	12/30/99	F	N	
	MA	12/10/98	10/05/99	F	N	
	ME	12/31/98	07/01/99	F	N	
	NH	01/20/99	01/11/00	F	N	
	RI	02/05/99	08/30/99	F	N	
	VT	12/30/98	09/27/99	F	N	
2	NJ	11/98	02/04/99	C till	Lab	01/99
			05/20/99	3/15/99	Lab	10/99
	NY	7/99	07/15/99	F	Lab	04/99
	PR	12/98	02/12/99	F	Lab	04/99
			06/10/99	C	Lab	06/99
	VI	2/99	06/17/99	F	Lab	04/99
				F		
3	DE	8 QAPPS	06/22/00	F	Y	9/99
	DC	received	06/22/00	F	Y	9/99
	MD	Nov/Dec 1998	06/22/00	F	Y	9/99
	PA - Philadelphia County		02/15/00	F	Y	
	PA -Allegheny County		06/22/00	F		
	PA		06/22/00	F		
	VA		06/22/00	F	Y	11/99
	WV		06/22/00	F		
4	AL DEM	12/01/98	01/12/99	F	Y	
	FL DEP	01/29/99	02/05/99	C	Y	9/09/99
			10/01/99	F		
	GA	07/28/98	01/14/99	F	Y	
	KY DEP	11/02/98	01/12/99	F		
	MS DEQ	01/07/99	01/12/99	F	Y	
	NC DEM	11/25/98	01/12/99	F		
	SC DHEC	01/11/99	02/17/99	C	Y	5/13/99
	TN DAPC	10/22/98	01/12/99	F	Y	
	AL -Birmingham-Jefferson County	11/30/98	12/19/98	F	Y	
	AL- Huntsville	12/01/98	01/12/99	F		
	KY- Louisville-Jefferson County	11/30/98	12/30/98	F		
	TN- Nashville-Davidson County	01/13/99	01/28/99	C	Y	6/15/99
			02/17/99	F		
	TN- Chattanooga-Hamilton County	11/24/98	01/28/99	C	Y	8/19/99
			03/03/99	F		
	TN- Knoxville-Knox County	11/30/98	01/23/99	C	Y	5/25/99
			04/27/99	F		
	TN- Memphis-Shelby County	12/02/98	01/26/99	F		

Reg.	State	QAPP Submissions	QAPP Approval Date	Cond (C) or Full (F)	TSA	TSA Date
5	MN		02/08/99	F	Y	06/03/99
	WI		02/03/99	F	Y	04/07/99
	MI		02/04/99	F	Y	05/05/99
	OH		01/19/99	F	Y	05/20/99
	IL		01/26/99	F	Y	04/21/99
	IN		01/26/99	F	Y	05/11/99
6	AR	04/01/99	07/01/99	F	Y	7/19/99
	LA	01/22/99	02/03/99	F	N	
	OK	05/12/99	05/24/99	F	Y	7/7/99
	NM	01/29/99	02/04/99	F	N	
	NM -Albuquerque	02/08/99	02/02/99	F	N	
	Texas	01/01/99	02/04/99	F	Y	
	ITEC (Tribal)	08/20/99	09/28/99	F	N	
	AIPC (Tribal)	12/21/99	04/11/99	F	N	
7	MO		12/23/98	C	Y	
	KS		12/16/98	C	Y	
	IA -Linn County		12/09/98	F	N	
	IA- Polk County		12/29/98	F	N	
	NE -		01/29/99	F	N	
	U of Iowa		02/04/99	C	N	
8	CO		02/18/99	C		
			05/18/99	F	Y	7/99
	MT		12/22/98	F	Y	7/99
	ND		08/06/99	F	Y	9/99
	SD		03/26/99	C		
			07/22/99	F	Y	8/99
	UT		03/02/99	F	Y	8/99
	WY		08/05/99	F	Y	9/99
9	AZ	9/98	12/07/99	C	N	
	CA -ARB	11/98	12/21/98	C	N	
	CA - Bay Area AQMD	11/18/98	12/21/98	C	N	
	CA - South Coast AQMD	11/98	12/21/98	C	N	
	San Diego APCD		12/21/98	C	N	
	HI	12/2/98	12/07/98	C	N	
	NV- Pima County	9/98	12/07/98	C	N	
	NV- Washoe County	2/99	07/20/99	C	Y	3/99
	NV- Clark County	12/98	02/02/99	C	Y	9/99
10	AK		01/15/99	F	N	
	ID		11/10/98	F	N	
	OR		11/30/98	F	Y	8-9/99
	WA		12/04/98	F	Y	10-11/99

Technical Systems Audits

Technical systems audits (TSAs) are a thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a system. TSAs are also qualitative on-site evaluations of a complete phase of an environmental data operation (EDO) such as sampling, preparation, or analysis. This audit can be performed prior to the data collection activity in order to verify the existence and to evaluate the adequacy, of equipment, facilities, supplies, personnel, and procedures that have been documented in

the QAPP. TSAs are also employed during the data collection activity in order to verify and evaluate the EDO.

Technical systems audits are required to be performed every three years on all reporting organizations by the EPA Regions. Table 1-1 provides a report of the audits conducted in CY99.

Data Quality Indicators

Once a DQO is established, the quality of the data must be evaluated and controlled to ensure that it is maintained within the established acceptance criteria. Measurement quality objectives are designed to evaluate and control various phases (sampling, preparation, analysis) of the measurement process to ensure that total measurement uncertainty is within the range prescribed by the DQOs. The MQOs can be defined in terms of the following data quality indicators:

Completeness - a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under correct, normal conditions. Data completeness requirements are included in the reference methods (*40 CFR 50*).

Precision - a measure of mutual agreement among individual measurements of the same property usually under prescribed similar conditions. This is the random component of error.

Bias - the systematic or persistent distortion of a measurement process which causes error in one direction. Bias will be determined by estimating the positive and negative deviation from the true value as a percentage of the true value.

Detectability- The determination of the low range critical value of a characteristic that a method specific procedure can reliably discern.

Comparability - a measure of confidence with which one data set can be compared to another.

Representativeness - a measure of the degree which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness, which deals mainly the population variability indicators (spatial and temporal variability) will not be addressed in this document.

Accuracy has been a term frequently used to represent closeness to "truth" and includes a combination of precision and bias error components. This term has been used throughout the CFR and in some of the sections of this document.

Acceptance criteria have been developed for four of these data quality indicators: completeness, precision, accuracy and bias. The process and statistics used to evaluate the data quality indicators will be discussed below. The results of the assessments will be discussed in Section 2.

Completeness Estimation - Routine and Quality Assurance Data

For this report, data completeness was computed for the routine 1999 Federal Reference Method (FRM) data, for 1999 precision information, for 1999 accuracy transactions, and for 1999 bias data extracted from AIRS on 7/26/00.

Routine Data Completeness Estimation Procedure

The following statement is made in *40 CFR 50 App. N Section 2.1*:

> *" For the annual $PM_{2.5}$ standard, a year meets data completeness requirements when 75 percent of the scheduled sampling days for each quarter have valid data. However, years with high concentrations and more than a minimal amount of data (a least 11 samples in each quarter) shall not be ignored just because they are comprised of quarters with less than complete data..."*

Completeness was computed as prescribed for the NAAQS per the following references: 1) *40 CFR 50 APP N*, 2) Guideline on Data Handling for the PM NAAQS, and 3) Use of Make-up PM Samples to Replace Scheduled PM Samples. The specific computations, caveats, and rationale employed for this report are described below. All utilized data were extracted from AIRS on 7/26/00. This date allowed several State updates beyond the official July 1 'certification' deadline. The listing that is referred to in the following information can be found as Attachment 2-1.

- Completeness was computed on an individual site basis. Only data for Primary POC's (the lowest number POC - generally '1') were used.
- A sample frequency was derived for each site-quarter. The quarterly frequency was computed as: mode (days between samples). If the mode was not equal to 1 (every day) or 3 (every 3rd day), a default of 6 (every 6th day - the least stringent frequency) was used. Some of these data-derived frequencies were 'corrected' with feedback received from Regions, States, and MQAG staff. There was no attempt to reconcile the utilized frequencies with the CFR requirements (based on metropolitan statistical area population).
- Null data codes were <u>not</u> counted as valid samples but <u>were</u> used to ascertain sampling frequency. Flagged data were considered valid for the purpose of data completeness.
- Completeness percentages were based on the entire calender year 1999; that is, monitors were assumed to have operated (or have been able to operate) the full year. There were no adjustments made for later start-up or for monitor closing. MQAG recognizes that some monitors <u>did</u> begin operating later in the year due to a variety of circumstances and thus, the calculated completeness percentages may not accurately portray actual 'performance'. The full-year approach was used (as opposed to the partial-year method) so that the results would more closely coincide with NAAQS usage requirements.
- The official EPA 1999 3-day and 6-day monitoring schedules were used to ascertain <u>scheduled</u> sampling days
- 'Make-up' logic <u>was</u> incorporated as stipulated in reference 3: Missed samples on an 'every 3rd day' schedule were counted as taken if an extra ('make-up') sample was reported 1, 2, or 7 days later. Missed samples on an 'every 6th day' schedule were counted as taken if an extra sample was

reported 1, 2, 3, 4, 5, or 7 days later. The number of replacement samples permitted in any quarter was limited to no more than 5. Some concessions to these 'guidelines' were granted on request.

- Extra 'unscheduled' samples were included in the completeness computations by adding the applicable number to the numerator and denominator of the equation. For actual NAAQS usage this approach may be unacceptable, especially if the extra samples were purposely taken all near the end of the quarter, on low concentration days, etc. By adding these samples to the numerator and denominator, we are basically allowing the monitor to temporarily shift sampling frequencies to 'every day sampling'.
- The final formula used for computing completeness was:

$$Completeness_{site-quarter} = \frac{(\#\text{ of scheduled samples taken}) + (\#\text{ of make-up samples}) + (\#\text{ of unscheduled samples taken})}{(\#\text{ of scheduled samples}) + (\#\text{ of unscheduled samples taken})}$$

- Data substitution logic was not incorporated in this iteration. However, since States will be permitted to show Annual NAAQS attainment (over a 3-year period) using quarters less than 75 % but at least 50% complete (by substituting maximum quarterly values or collocated PM2.5, PM10, or TSP for their missing data), metrics using the 50% threshold were calculated in addition to ones using the 75% cutoff.
- Since non-attainment of the Annual NAAQS can be determined with as few as 11 samples in a quarter (which could be as little as 12% of the number of required samples), a metric using the 11 sample cutoff was also included.

Collocated Precision Completeness Estimation Procedure

Information used to compute $PM_{2.5}$ precision and associated completeness were culled from 2 sources, from the AIRS precision area (polled via an AMP250 - P/A Monitor Raw Data retrieval) and from the AIRS raw data area (polled via an AMP350 - Raw Data Listing retrieval). Precision data are supposed to be submitted to AIRS with transaction type 8 and, hence, be deposited in the former area. However, since there has been some confusion with regards to this requirement, additional paired data were retrieved from the latter area and results merged. Both AIRS data extractions were performed on 7/26/00. Below are some additional details of the precision completeness analysis. The listing that is referred to in the following information can be found as Attachment 2-3.

- Per *40 CFR 58 App. A, Sec. 3.5.2*, each $PM_{2.5}$ Reporting Organization is required to collocate 25% (but at least 1) of their FRM monitors for the purpose of calculating measurement precision. State summary lines in the precision completeness report show the total number of FRM sites for 1999 [the number with 88101 monitor records], the number of sites that reported routine FRM data, the number of sites where collocation was required [25% of the total], the number of sites reporting precision information, and the number of sites with 4 complete quarters of precision information. MQAG recognizes that States and Reporting Organizations are not totally synonymous.
- If an attempt was made to run collocated instruments on a particular day, a site was given credit for that attempt, even if one (or both) of the samples was invalidated. That is, null codes did not

reduce data completeness. Hence, completeness computations were less stringent for precision than for the routine data.

- Completeness percentages were based on whole quarters of calender year 1999. On the listing, sites were only held accountable for quarters starting with the first one in which routine information were reported. If a site's first reported 1999 routine FRM data point occurred in the 2nd quarter, the site was not expected to produce precision information until that quarter. Blanks on the site listing are different from zeroes. Blanks indicate no precision data present but no FRM data reported either in that quarter. Zeroes indicate no precision data reported but routine FRM data are present that quarter. Completeness percentages for the 'initial' quarters were not prorated according to when in the quarter that 1st FRM point occurred; the denominator for the ratio was the whole quarter (number of every 6th days).
- *40 CFR 58 App A Sect. 3.5* requires a 6-day sampling schedule for precision collocation. All possible 6-day schedules were evaluated (by quarter) and the one with the greatest capture (most precision pairs) was used for the completeness calculation. A majority of sites appear to have used the official EPA 1999 6-day monitoring schedule. Make-up sampling (on days other than one-in-six) were not credited for completeness. In the attached site listing, a count is provided (by quarter) of the number of total pairs reported and the number reported on the predominant 6-day schedule. Although some quarterly 6-day schedules yielded 16 possible precision pairs, a denominator of 15 was always used. (In cases where 16 pairs were actually reported, the completeness statistic was capped at 100%.)
- Totally complete sites (defined as ones that reported 73% or more [11/15=73%] in each quarter) are flagged.
- A flag is also provided on the listing to indicate if the site's corresponding 1999 annual mean is greater or equal to 13.5 µg/m^3. *40 CFR 58 App A Sect 3.5* notes that during the initial deployment of the PM2.5 network, special emphasis for collocation should be placed on sites in areas likely to exceed the NAAQS. Once areas are determined to be in violation of the NAAQS, 80% of the areas' collocated monitors are to be deployed at sites with concentration $ 90% of the NAAQS or 13.5 µg/m^3. In general (Nationwide), it appears that we are falling short of the 80% goal. States may need to consider moving some of their collocated monitors to higher concentration areas.

Flow Rate Accuracy Completeness Estimation Procedure

Information used to compute PM2.5 accuracy and associated completeness was pulled from the AIRS accuracy area with an AMP250 - P/A Monitor Raw Data retrieval on 7/26/00. Comments on the completeness analysis are shown below. The listing that is referred to in the following information can be found as Attachment 2-4.

- Per *40 CFR 58, App. A, Sec. 3.5.1.2*, each calender quarter every FRM sampler's flow rate is to be audited *at least once* with a certified standard. State summary lines in the accuracy completeness report show the total number of FRM sites for 1999 [the number with 88101 monitor records], the number of sites that reported routine FRM data, the number of sites where collocation was required [All sites], the number of sites reporting accuracy transactions, and the number of sites with 4 quarters of accuracy data. Again, MQAG realizes that States and Reporting Organizations are not totally synonymous

- Since only 1 audit was required per quarter and it was either present or not, no actual completeness *percentages* were computed. An indicator is shown for each site that reported accuracy information in all 4 quarters.
- Like precision, sites were only held accountable for quarters starting with the first one containing a routine FRM data point. Blanks on the site listing are different from zeroes. Blanks indicate no accuracy data present but no FRM data reported either in that quarter. Zeroes indicate no accuracy reported but routine FRM data are present that quarter.
- Note that some sites reported more than 1 accuracy check per site-quarter. States are cautioned that the flow rate standard used for auditing must not be the same flow rate standard to calibrate the analyzer. Calibration results should not be submitted to AIRS as accuracy transactions.

Performance Evaluation Program Completeness Estimation Procedure

Information used to compute PM2.5 bias and associated completeness is predicated on the completeness of the routine network in addition to the completeness of the Performance Evaluation Program (PEP). The completeness of the routine network is described above. The completeness of the PEP is described in this section.

As per *40 CFR 58, App. A, Sec. 3.5.3*, approximately 25% of each method designation of the routine sites within each reporting organization are supposed to be visited 4 times in a year by the PEP, preferably once per quarter. Thus, the PEP is complete if approximately 25% of the PM2.5 monitoring network is evaluated at least 3 times (75% of 4) in a year. To evaluate completeness of the PEP, information was pulled from the data bases maintained by the two regional laboratories supporting the PEP (Region 4 and 10) and from the data base maintained by the RTP laboratory, which supported the PEP during the early phase. The Region 4 data base was queried on 8/7/00, the Region 10 data base on 7/31/00, and the RTP data base on 7/26/00. These three data bases were merged together and completeness statistics were calculated according to the following procedure.

- Any PEP data points with an invalid code (PEVALID=0) were deleted prior to completeness calculations. That is, only valid PEP data were used to calculate completeness.
- Any PEP data points not associated with routine sampling (e.g. internal precision collocations) were deleted prior to completeness calculations, even if the study had a collocated FRM.
- For some site/day combinations, there are multiple observations in the PEP data base. This likely is due to multiple PEP samplers being run. In such cases, only the first valid observation in the data base was used.
- Since a site is supposed to be visited by the PEP 4 times within a year, if 3 (75% of 4) or more visits were made and resulted in valid data, then the site was considered complete, regardless of how the visits were spread among the quarters.

The resulting PEP completeness is summarized only at the national level in Section 2 of this report. The national-level summaries show how complete the various sites are although it does not show whether 25% of each method designation of the routine sites within each reporting organization was evaluated. Such a summary will be prepared at a later date.

Bias Completeness Estimation Procedure

The preceding section describes the completeness of the PEP data base. To estimate completeness of bias, AIRS routine data is merged with the PEP data base since both a PEP and a routine concentration are needed to calculate bias. As per *40 CFR 58 App. A, Sec. 3.5.3*, approximately 25% of each method designation of the routine sites within each reporting organization are supposed to be visited 4 times in a year by the PEP, preferably once per quarter. Thus bias is complete if approximately 25% of the PM2.5 monitoring network has 3 (75% of 4) pairs of valid PEP and routine data.

The data used to estimate bias completeness originated from an AMP350 Raw Data Listing extraction from AIRS on 7/26/00 and from the PEP data base described above. Completeness statistics are calculated according to the following procedure.

- Only non-null routine data and valid PEP data were used in the calculation of completeness.
- Any PEP data points associated with "parking lot studies" were deleted prior to completeness calculations, even if the study had a collocated FRM.
- For some site/day combinations, there are multiple observations in the PEP data base or in the AIRS data base. For the PEP, only the first valid observation was used. For AIRS, the lowest POC with a valid observation was used.
- If a site has at least 3 (75% of 4) valid pairs of PEP and routine data, then it is considered complete, regardless of how the visits were spread among the quarters.

The resulting bias completeness is summarized only at the national level in Section 2 of this report. The national-level summaries show how complete the various sites are although it does not show whether 25% of each method designation of the routine sites within each reporting organization was evaluated. Such a summary will be prepared at a later date.

Precision, Accuracy and Bias Estimation

Three quality control (QC) procedures, at the national level, will be used to evaluate uncertainty for the $PM_{2.5}$ network. All of the statistics described in this section can be found in *40 CFR 58 App. A, Section 5.5.1*. The equation numbers from CFR are included in the discussion for reference.

1. **Flow rate checks** - Since flow rate is checked against standards of known value, this check provides estimates of accuracy and/or bias at the instrument level. The following is a description of the process used to estimate accuracy based on the annual flow rate checks.

   Accuracy is estimated by using pairs of true and measured values for flow rate measured in liters per minute (L/min). The pairs are for the same site and same day. Specifically, for a given site and day, if X_i is the audit standard flow rate and Y_i is the measured flow rate, then accuracy (CFR Equation 13), defined as the percent difference (d_i) is calculated as

$$d_i = \frac{Y_i - X_i}{X_i} \times 100 \quad (Equation\ 1)$$

In this report, estimates of accuracy are presented for various levels of aggregation, sometimes aggregating over time (such as quarterly or annually), sometimes aggregating over samplers (such as all samplers of a specific method designation), and sometimes aggregating over both time and samplers (such as annually for a specific method designation). These various levels of aggregation are achieved using the same basic statistic. This statistic averages the individual accuracy values from Equation 1 to the desired level of aggregation. Specifically, if n_j is the number of flow rate checks and d_1, d_2, ..., d_{nj} are the resulting accuracy values, then the average accuracy estimate (CFR Equations 14, 15, 16, 17, and 18) is

$$D = \frac{1}{n_j} \times \sum_{i=1}^{n_j} d_i \quad \textit{(Equation 2)}$$

For this report, average accuracy values (Equation 2) are calculated for each method designation by quarter and for the entire year. Additionally, the number of flow rate checks that are within 4% of the audit standard and the number within 5% of the design flow rate of 16.67 L/min are also calculated. These results are presented in Section 2.

2. Collocated measurements - Since the true concentrations sampled from collocated samples are unknown, these checks provide an estimate of precision of the measurement system. However, the statistic developed to summarize the collocated measurements has one component attributable to precision and another component attributable to bias. For now, this document describes only the results for the combined effect for precision and bias. The individual components will be described at a later date.

Following is a description of the statistics used to estimate precision based on the collocated instruments. Precision is estimated by using pairs of collocated PM2.5 measurements. The pairs of measurements are for the same site and same day. Specifically, for a given site and day, if X_i is the concentration (µg/m^3) produced from the primary sampler (the routine monitor) and Y_i is the concentration produced from the duplicate sampler (the monitor used for quality control), then the percent difference, d_i(CFR Equation 19), is calculated as

$$d_i = \frac{Y_i - X_i}{(Y_i + X_i)/2} \times 100 \quad \textit{(Equation 3)}$$

The percent difference from Equation 3 is used to calculate the coefficient of variation for a single site and day (CFR Equation 20) as follows

$$CV_i = \frac{|d_i|}{\sqrt{2}} \quad \textit{(Equation 4)}$$

In this report, estimates of precision are presented for various levels of aggregation, sometimes aggregating over time, sometimes aggregating over samplers, and sometimes aggregating over both time and samplers. These various levels of aggregation are all achieved using the same basic statistic. This statistic pools the individual coefficients of variation described above in Equation 4 to the desired level of aggregation. Specifically, if n_j is the number of pairs and CV_1, CV_2, ..., CV_{nj}

are the coefficients of variation for each of the pairs to be pooled, then the precision estimate (approximately CFR Equation 21) is

$$CV = \sqrt{\frac{\sum_{i=1}^{n_j} CV_i^2}{n_j}} \quad \textit{(Equation 5)}$$

Confidence intervals can be constructed for these pooled estimates of precision in Equation 5 by using the following equations, one for the lower limit (CFR Equation 22) and one for the upper limit (CFR Equation 23).

$$Lower\ 90\%\ Confidence\ Limit = CV\sqrt{\frac{n_j}{c^2_{0.95,n_j}}}$$

$$Upper\ 90\%\ Confidence\ Limit = CV\sqrt{\frac{n_j}{c^2_{0.05,n_j}}}$$

In these equations, $c^2_{0.05,df}$ and $c^2_{0.95,df}$ are the 0.05 and 0.95 quantiles of the chi-square distribution with degrees of freedom (df) equal to n_j.

There are a few issues with calculating individual and pooled estimates of precision. (A) In calculating the percent differences in Equation 3, *40 CFR 58 App A Sect 5.5.2* states that only pairs where both concentrations are greater than 6 $\mu g/m^3$ are to be used. For this report, precision was estimated both including these low pairs and excluding them. The impact of these low values is discussed in Section 2. (B) In the equation for the pooled estimate of precision, individual coefficients of variation are squared before being averaged. If there is a large individual coefficient of variation, it can have a very strong influence on the resulting pooled estimate. Hence, pooled estimates of precision were calculated both including all individual coefficients of variation and excluding large coefficients of variation. The impact of these large values is discussed in Section 2. (C) Comparing one pooled estimate of precision to another (such as comparing quarterly estimates or comparing one site to another) requires some care because one estimate may be based on just a few values and hence be less robust than an estimate based on more values. For comparisons of precision for different times or different places, it is important to look at the upper and lower confidence limits to get an understanding of how robust the estimates are.

3. **Federal Reference Method (FRM) Evaluation** - This evaluation is performed by comparing a monitoring instrument against an instrument that is considered "truth" and can provide an estimate of measurement system bias. Following is a description of the statistics used to estimate bias.

Bias is estimated by using pairs of PM2.5 measurements, where one of the measurements is from a routine, State-operated monitor and the second measurement is from a monitor operated as part of the Performance Evaluation Program. The pairs of measurements are for the same site and same

day. Specifically, for a given site and day, if X_i is the concentration produced from the PEP sampler and Y_i is the concentration produced from the State-operated sampler, then accuracy (CFR Equation 26), defined as the percent difference (d_i) is calculated as is calculated as

$$d_i = \frac{Y_i - X_i}{X_i} \times 100 \quad (Equation\ 6)$$

In this report, estimates of bias are presented for various levels of aggregation, sometimes aggregating over time, sometimes aggregating over samplers, and sometimes aggregating over both time and samplers. These various levels of aggregation are achieved using the same basic statistic. This statistic averages the individual biases (d_i) described in Equation 6 to the desired level of aggregation. Specifically, if n_j is the number of pairs and d_1, d_2, ..., d_{nj} are the biases for each of the pairs to be averaged, then the aggregate bias estimate (CFR Equations 27, 31 and 35) D is

$$D = \frac{1}{n_j} \times \sum_{i=1}^{n_j} d_i \quad (Equation\ 6)$$

Confidence intervals can be constructed for these average bias estimates in Equation 6. Such intervals require an estimate of the variability of average bias. Since bias likely varies by site and quarter, the estimate of the variability of the average bias should be based on a pooled estimate of site/quarter variability. However, the PEP usually evaluates each site just once per quarter, which is not sufficient for estimating the site/quarter variability. Since site/quarter variability is not estimable with the current PEP design, the site variability (using all 4 bias estimates for the year) or the quarter variability (using all sites for a quarter) can be used, with the understanding that these estimates of variability are confounded with other sources of variability. Specifically, an estimate of the variability of the average bias is

$$s = \sqrt{\frac{\sum_{i=1}^{n_j} (d_i - D)}{n_j - 1}} \quad (Equation\ 7)$$

The 95% confidence interval for the average bias is then calculated as

$$Lower\ 95\%\ Confidence\ Limit = D - t_{0.975,df} \times s/\sqrt{n_j}$$

$$Upper\ 95\%\ Confidence\ Limit = D + t_{0.975,df} \times s/\sqrt{n_j}$$

where $t_{0.975,df}$ is the 0.975 quantile of Student's t distribution with degrees of freedom (df) equal to n_j and s as defined in Equation 7.

One note about the bias estimates in this report. Two very anomalous values were deleted from the analysis, even though they were validated by the states and the PEP. One pair is from a site in California on 11/2/99 and has a state value of 22.9 $\mu g/m^3$ and a PEP value of 74.2 $\mu g/m^3$. The

second pair is from a site in Missouri on 12/14/99 and has a state value of 24.2 $\mu g/m^3$ and a PEP value of 109.5 $\mu g/m^3$.

Detectability

There are many definitions and even more interpretations for a method detection limit. Sometimes detection limits are based on protecting against false positive conclusions, that is, concluding that a measured concentration has been detected when in fact there is nothing to detect, and sometimes they are based on protecting against both false positive and false negative conclusions. In Appendix L to *40 CFR 50*, it is stated in Section 3.1 that the lower detection limit of the mass concentration range is estimated to be approximately 2 $\mu g/m^3$. In Appendix A to *40 CFR 58*, it is stated in Section 5.5.2 that collocated measurement pairs are to be used in precision calculations only when both measurements are above 6 $\mu g/m^3$. These are two separate issues that need to be addressed. One is that detectability needs to be quantified so that two methods can be compared. For example, a method with a lower limit of detection is generally preferable to one with a higher limit, especially when concentrations are expected to be "low." The second is a cutoff value that needs to be defined so that statistics, such as precision and possibly bias, behave as desired for the entire range of possible measurements.

This report does not attempt to evaluate the currently stated method detection limit of 2 $\mu g/m^3$. In future reports, this method detection limit may be assessed using statistical procedures like those described in some EPA reports and papers (see references 5 & 6).

With regard to a cutoff value for estimation of precision, this report describes the impact of pairs involving concentrations less than or equal to 6 $\mu g/m^3$. Since more than 20% of all the 1999 precision pairs and more than 20% of all the 1999 bias pairs has one or both measurements less than or equal to 6 $\mu g/m^3$, it is important to understand the stability of the estimators to these small concentrations. As shown in Section 2, both the precision and bias estimators appear to be well behaved, even when including pairs involving concentrations less than or equal to 6 $\mu g/m^3$. OAQPS will continue to review the reasonableness of the 6 $\mu g/m^3$ cutoff and minimally will continue to report estimates that include these small values and estimates that exclude these small values.

Comparability

The goal of comparability is to determine whether two measurements can be compared. For example, if one instrument that has a 50% bias and another has no bias, then making statements about how the measurements from one instrument relate to the measurements from the other instrument are questionable.

There is interest in comparing $PM_{2.5}$ measurements from multiple types of instruments, multiple points in time, multiple points in space, and various combinations of instrument, time and place. If the completeness, precision, bias, and detection limit are similar for all the PM2.5 instruments, then such comparisons are reasonable. They may be reasonable even if some of these data quality indicators are not similar, depending on the purpose of the analysis.

Section 2 begins to discuss the comparability of the data from one quarter to the next, at the national level. More discussion is needed, especially at a finer spatial resolution. However, due to the lack of data for these data quality indicators at a spatial level less than the nation, it is not yet feasible to perform such comparisons. When a sufficient quantity of data become available, OAQPS will prepare several graphics to depict comparability. These graphics will include quarterly maps of data completeness, precision at the reporting organization level, and bias at the reporting organization level. Additionally, formal statistical procedures will be applied to the precision and bias data to determine whether there are "clusters" of reporting organizations that appear to have different precision and/or bias.

References

1. U.S. EPA. 2000. *Guidance for the Data Quality Objective Process* EPA QA/G4, EPA/600/R-96/055, August 2000

2. U.S. EPA. 1998 *Guidance for Quality Assurance Project Plans* EPA QA/G-5, EPA/600/R-98/018, February 1998

3. 40 CFR 58 (62 FR 38763, July 18, 1997)

4. 40 CFR 50 (62 FR 38651, July 18, 1997)

5. Clayton, C.A.; Hines, J.W.; Hartwell, T.D.; Burrows, P.M. "Demonstration of a Technique for Estimating Detection Limits with Specified Assurance Probabilities"; Research Triangle Institute Technical Report 2757/05-01F, Environmental Protection Agency Contract No. 68-01-6826; Research Triangle Institute; Research Triangle Park, NC, 1986.

6. Clayton, C.A.; Hines, J.W.; Elkins, P.D. "Detection Limits with Specified Assurance Probabilities" *Anal. Chem.* 1987, 59, 2506-2514

Section 2 Assessment of Data Quality Indicators

This section will provide an assessment of the data quality indicators of completeness, precision, bias, accuracy and comparability. In addition, there will be a brief discussion of techniques being looked at to determine the sensitivity of the measurement system to detect low $PM_{2.5}$ concentrations. ***It must be noted that all assessments were implemented on data present in AIRS on 7/26/00.*** This date was chosen because it was after the July 1 certification date and because OAQPS wanted to report the data quality results to the States and EPA in a timely manner. OAQPS will update the assessment of CY99 data in late January 2001, assuming there is a significant increase of data in AIRS.

Data Completeness

This section will evaluate the completeness statistics for routine $PM_{2.5}$ concentration data and the quality assurance data for the collocated precision, the quarterly flow rate audits, and the Performance Evaluation Program.

Completeness - Routine Data

Figure 2.1 represents CY1999 routine data completeness as of 7/26/00. Figure 2.2 shows a geographic illustration of this information. Section 1 provided an explanation of the process to generate this information which is based upon the completeness requirements for comparison to the NAAQS (*40 CFR 50 App N, Sect 2*). Attachment 2-1 provides a listing of completeness for each site in 1999.

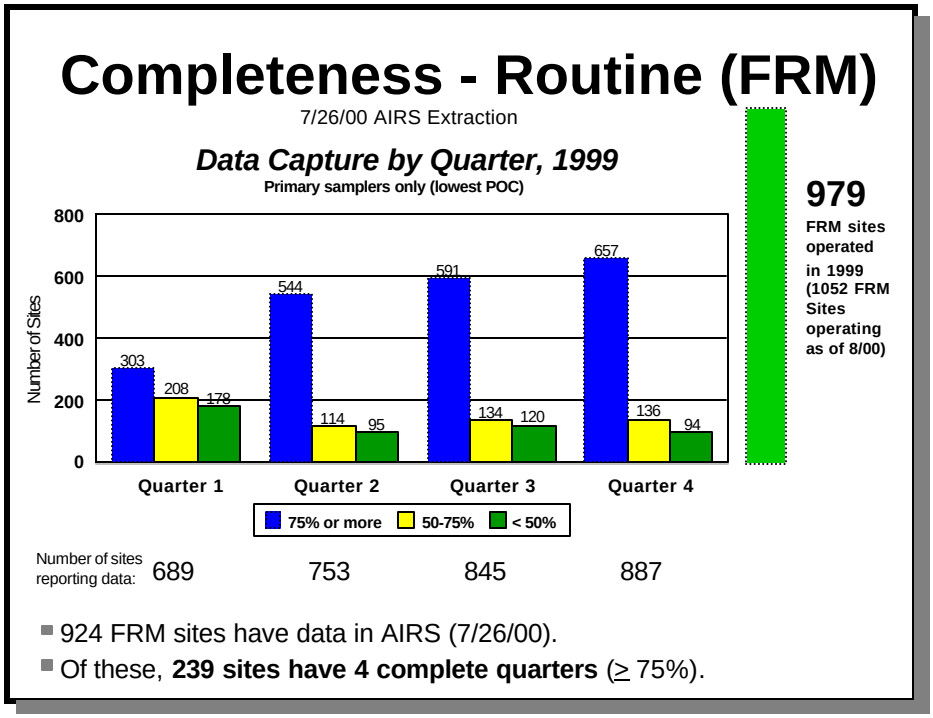

Figure 2.1 Routine data completeness

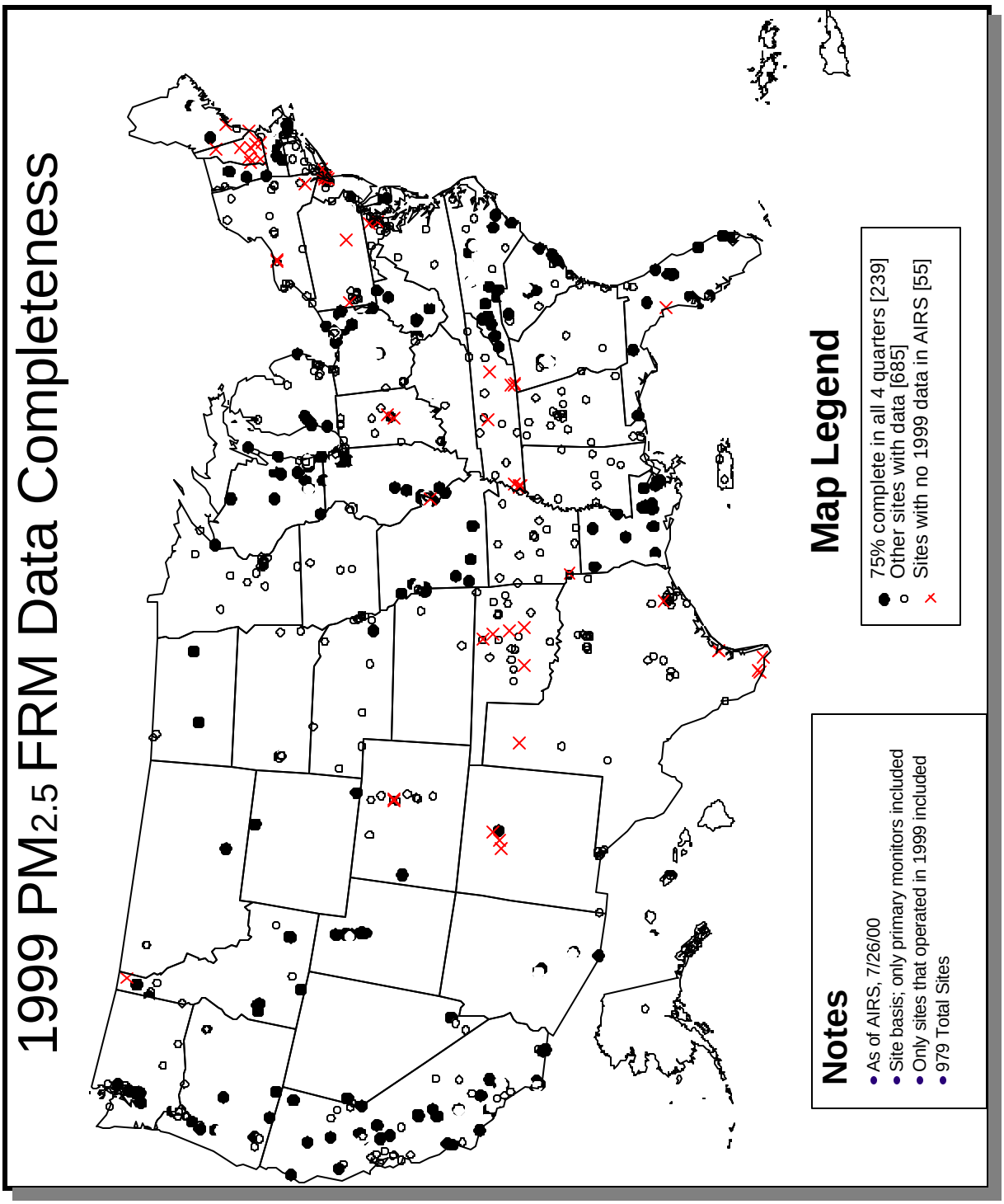

Figure 2.2 PM2.5 Routine data completeness as of 7/26/00

For calendar year 1999, State and local monitoring organizations reported 979 active sites to AIRS. Of these 979 sites, 924 (94%) sites reported $PM_{2.5}$ concentration data; 55 sites did not report concentration data by 7/26/00. Of the 924 sites reporting concentration data, 239 sites (26%) reported 4 complete quarters of data, meaning they had greater than or equal to 75% of the anticipated data reported for each quarter. This level of completeness is important since comparison to the NAAQS for purposes of attainment determinations requires, with some exceptions, that all four quarters meet the completeness statistic. Figure 2.1 also indicates the number of sites reporting data for each quarter (689, 753, 845, 887 respectively). Using these values, one can compare how many sites met the completeness criteria for any quarter. The first quarter had about 43% of the reporting sites meeting the 75% completeness goal, whereas the second, third and fourth quarters each had approximately 72% of the sites reporting data to AIRS meeting the 75% completeness goals. Figure 2.1 also displays statistics for sites having between 50% and 75% completeness because these sites may also be used for NAAQS comparisons based on the average concentration in the quarter, acceptable data substitution for the missing data, and Regional Administrator approval. In addition, for non-attainment purposes, the Regional Administrator may use sites that have as few as 11 values per quarter if the average quarterly concentration is above the NAAQS (*40 CFR 50 App N, Sect 2*) and less under unusual conditions. Information on completeness using these exceptions are not generated for this report. The pie chart, illustrated in Figure 2.3 indicates how many sites reported *any concentration data* (not necessarily meeting the completeness statistic) in any combination of quarters.

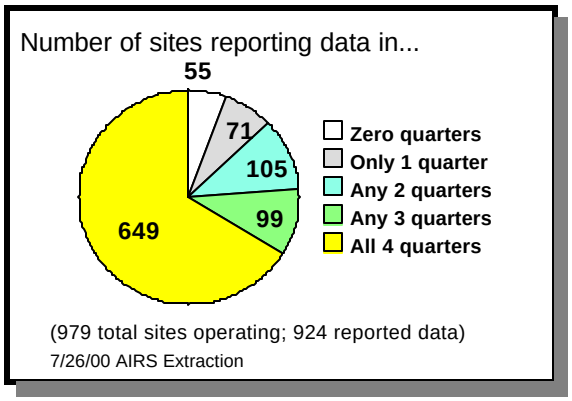

Figure 2.3 Sites reporting routine data

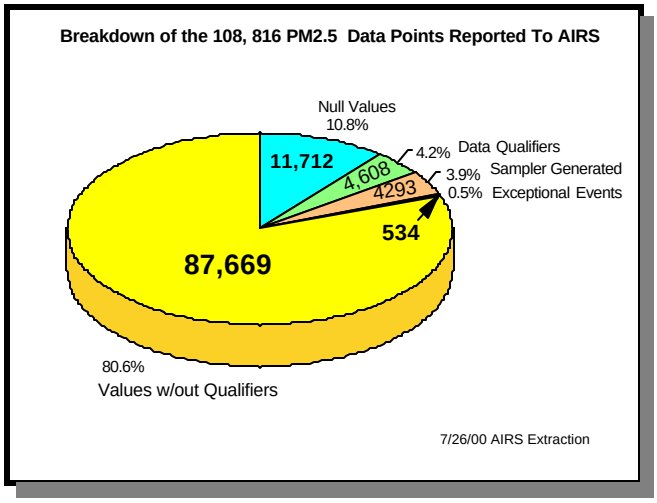

Figure 2.4 Breakdown of routine concentration values in AIRS

Flagged data were included in the completeness count; null value data were not. Flagged data values can be data qualifiers (provided in a March 27, 2000 OAQPS guidance memorandum), sampler generated flags, or exceptional events. Figure 2.4 provides a breakdown of the routine concentration data in AIRS relative to flagged, unflagged, and null value code data. Attachment 2-2 provides a listing of flag use by State and flag type.

It is assumed that some of the data flagged with a data qualifier or sampler generated code (approximately 8% of the data) may be invalidated

which may impact routine completeness. OAQPS and the States will be determining the quality of the flagged information over the next year.

Completeness - Collocated Precision

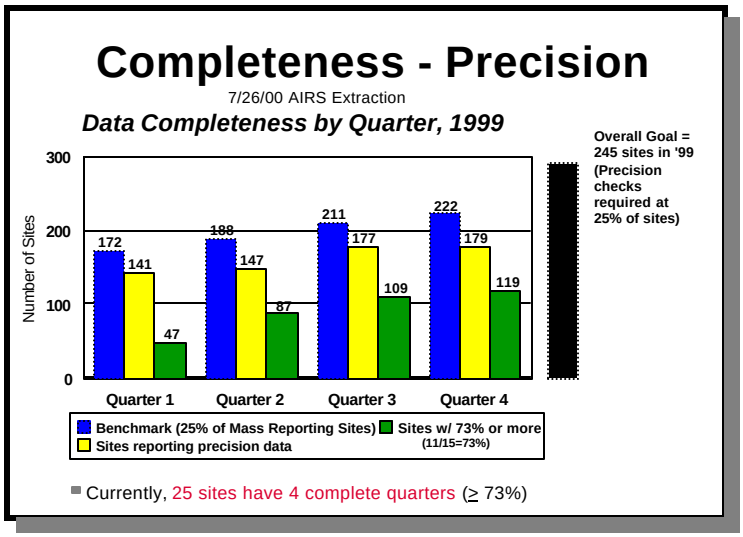

Figure 2.5 Completeness of collocated precision data

Twenty five percent of the monitoring sites for a reporting organization are required to provide collocated data at a frequency of every 6 days (~15 values per quarter). Figure 2.5 provides completeness information for collocated data in AIRS as of 7/26/00. Attachment 2-3 provides a listing, by site, of the precision completeness.

Of the 979 active sites in AIRS, approximately 245 sites should have reported collocated precision data for 1999. This is not an exact calculation since the actual number of collocated sites are determined on a reporting organization/method designation basis. However, for this assessment, 245 collocated sites will be used as an estimate of 25% of the monitoring network. For each quarter, a benchmark value is generated as 25% of the sites that reported any concentration information in that quarter. For example, Figure 2.1 reported that 689 sites reported data in quarter 1; 25% of this value is 172 which is the benchmark reported in quarter 1 of Figure 2.5. The second column (Fig 2.5) for each quarter provides information on sites reporting any precision values. The last column in the quarter reports sites that have complete (11 or more collocated measurements per quarter) precision data. For the first quarter 27% of the sites had complete precision reporting. For the second, third, and fourth quarters, the percentage of sites reporting complete data were 46%, 52% and 54%. Even though there was a large increase in percentage of complete sites from the first quarter to the second quarter, this trend has not continued into the third and fourth quarters. As of the 7/26/00 AIRS extraction there are only 24 sites reporting 4 complete quarters (≥ 73%) of precision data.

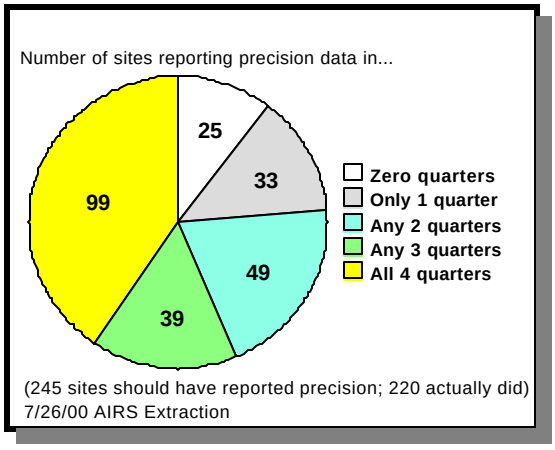

Figure 2.6 Breakdown of precision completeness

Figure 2.6 presents a breakdown of the number of sites providing *any precision data* (not necessarily meeting the completeness statistic) in various combinations of quarters.

Another goal was to establish 80% of the collocated monitors at the sites that the State, local and tribal

monitoring organization felt would provide annual averages at concentrations ≥ 90% of the annual or 24-hour NAAQS (if that is affecting the area). Table 2-1 provides this information for the annual NAAQS. Since 46% of the routine sites (426 sites) had 1999 mean concentrations ≥ 13.5 µg/m^3 and a goal of 196 collocated sites would be needed to meet the 80% criteria, it appears that more sites could be collocated at sites with mean concentrations near or exceeding the annual standard. As of the 7/26/00 AIRS extraction, approximately 50% of the collocated sites (105 sites) had 1999 mean concentrations ≥ 13.5 µg/m3. Since some reporting organizations may not have any or only few sites reporting average annual concentrations ≥13.5 µg/m^3 it was not expected that 80% percent of the collocated sites in the network would have average annual concentrations ≥13.5 µg/m^3. However, if reporting organizations review their routine and collocated sites (Attachments 2-1 and 2-3) it appears that some can relocate collocated monitors to sites near or exceeding the NAAQS.

Table 2-1 Total and Percentages of Precision Sites Located at Sites Around the Annual NAAQS

Of 924 routine sites where...	Total Count	% of 924 Total	Of 220 precision data sites where..	Precision Count	% of 220 Total
CY99 mean ≥ 13.5 µg/m^3	426	46%	CY99 mean ≥ 13.5 ug/m^3	105	48%
CY99 mean < 13.5 µg/m^3	498	54%	CY99 mean < 13.5 ug/m^3	115	52%

Completeness - Flow Rate Audits

As with collocated precision, the States and local monitoring organizations are required to perform and submit flow rate accuracy audits on all their routine samplers every quarter. Figure 2.7 presents the completeness of this information. Attachment 2-4 provides a listing by State and site of the flow rate audit completeness.

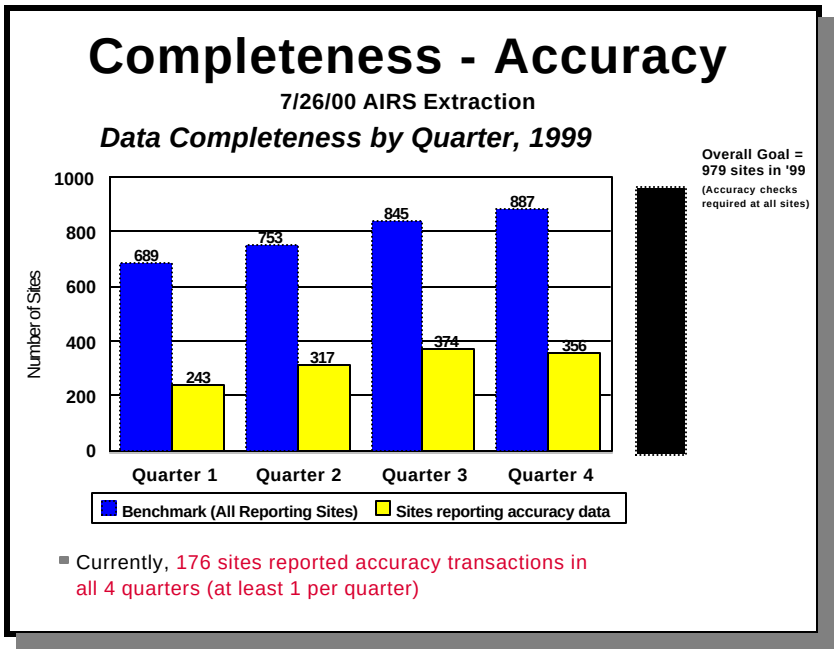

Figure 2.7 Completeness of flow rate audit accuracy data.

Based on active sites in AIRS, 979 sites (as indicated in the routine data completeness section) should have reported flow rate audits in each quarter. However, since sites started up different times of the year, OAQPS used a "benchmark" of sites reporting data in each quarter of 1999, as indicated in Figure 2.1, to assess completeness. Since only one accuracy value is required for each site, the site for any one quarter is either complete or it is not. The percentage of sites reporting

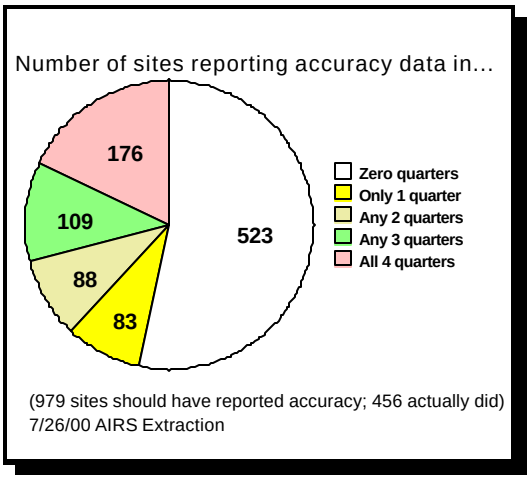

Figure 2.8 Breakdown of flow rate audit data

flow rate audits is around 40% for each quarter, meaning that less than half of the network has flow rate audit information reported to AIRS. For the year, the average completeness for the nation was around 40% for sites reporting data, meaning that, on average, fewer than 2 flow rate accuracy audits are being reported when 4 are required. Currently, 176 sites or approximately 18% of the networks sites meet the accuracy completeness requirements for all four quarters

Figure 2.8 reports the number of sites reporting *any accuracy data* (not necessarily meeting the completeness statistic) in various combinations of quarters.

Completeness - Performance Evaluation Program (PEP) and Routine Data Bias Pairs

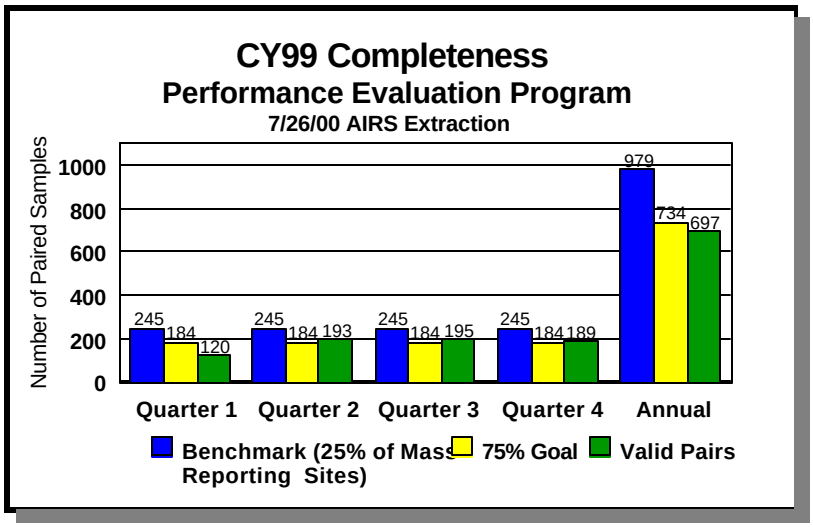

Figure 2.9 Completeness of Performance Evaluation/routine sample pairs

Similar to the collocated precision completeness goal, the completeness goal of the PEP was to collect data from 25% of each method designation in a reporting organization at a frequency of once per quarter. Using the number of active sites in calendar year 1999 (979), ~245 sites would require a performance evaluation. This is not an exact calculation since the actual number of performance evaluation sites must be determined on a reporting organization/method designation basis. However, for this assessment, an initial goal of 245 performance evaluation sites is used. Figure 2.9 provides an evaluation of this goal. The completeness goals were not met for the first quarter; but were met for the other three. The overall completeness goal, based on paired PEP/routine samples was 71%.

PEP Data Completeness –

The PEP completeness goal required that 75% of the samples be valid for each site, or 3 out of the 4 expected samples would be collected from each site. In addition, it was a goal to visit the performance evaluation sites in all four quarters. Table 2-2 presents the evaluation of these completeness goals. The

goals are based on the overall goal of 245 sites (25% of the 979 active sites). Table 2-2 indicates that a total of 281 sites were visited in 1999, which is greater than the goal of 245. However, 34 sites had only one or two PEP visits and therefore did not meet the goal of at least 3 visits per year. The shaded portion of the table indicates the sites that meet the requirement of at least 3 visits, which total 247 sites. This meets the completeness goal. Out of the 247, 7 sites had 3 PEP visits but they occurred in 2 quarters, leaving 240 sites that met the goal of at least 3 visits in 3 different quarters. Thus the PEP had a completeness of 98%.

PEP/Routine Sample Completeness –

For every PEP sample, there must be a corresponding valid routine value to be able to calculated bias. The third column in each quarter and the annual estimate provides this completeness evaluation. Table 2-3 provides the number of paired PEP/routine samples as of 7/26/00. Out of the 281 sites with valid PEP data, only 239 sites have data to pair with the PEP data, and only 160 sites have at least 3 pairs.

Table 2-2 1999 PEP Site Completeness

	Number of Quarters Visits Were Made						
Frequency	**1 Quarter**	**2 Quarters**	**3 Quarters**	**4 Quarters**	**Total Sites**	**Site with ≥ 3 visits**	**Valid Samples**
1 or 2 PEP visits	17	17	NA	NA	34		53
3 PEP Visits	0	7	65	NA	72		216
4 PEP Visits	0	0	33	127	160		640
> 4 PEP Visits	0	0	3	12	15		75
Total Sites	17	24	101	139	**281**	**247**	
Total Samples	19	55	342	568			**984**

Table 2-3 CY99 Paired PEP/Routine Data

	Number of Quarters Visits Were Made						
Frequency	**1 Quarter**	**2 Quarters**	**3 Quarters**	**4 Quarters**	**Total Sites**	**Sites with ≥ 3 pairs**	**Valid Samples**
1 or 2 pairs	31	48	NA	NA	79		127
3 Pairs	0	5	67	NA	72		216
4 Pairs	0	0	17	69	86		344
> 4 Pairs	0	0	0	2	2		10
Total Sites	31	53	84	71	**239**	**160**	
Total Samples	31	111	269	286			**697**

If one looks at the last column in each table, of the 984 valid PEP values, there are only 697 that have a non-null routine sample match in AIRS, which leaves 287 PEP values without a routine value. Forty-five of these PEP values are matched with routine values that are null value codes. The remaining 242 PEP values are shown in attachment 2-5. Possible reasons for missing values could be due to PEP or routine samples taken on different days or data not yet entered into AIRS. However, the missing 287 values account for 30% of the performance evaluation information which affects the confidence in the bias estimates made later on in this section, particularly when one attempts to assess bias at a reporting organization or method designation level

Precision - Collocated Sampling

All precision data were aggregated to provide a national estimate. Figures 2.10 and 2.11 provide three estimates of precision for calendar year 1999 from data extracted from AIRS on 7/26/00. Figure 2.10 presents a national estimate as described in *40 CFR 58* where pairs that have one or both

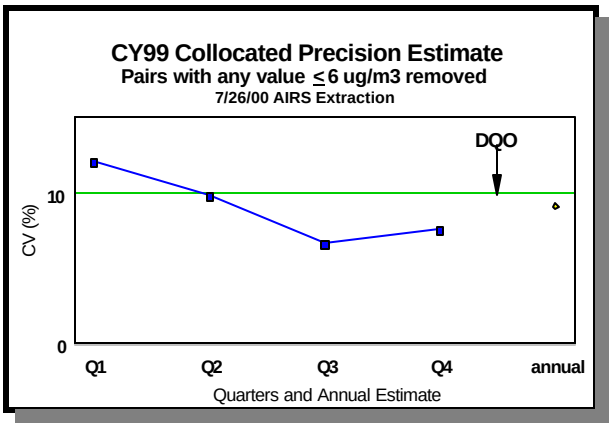

Figure 2.10 Precision estimate based on CFR requirements

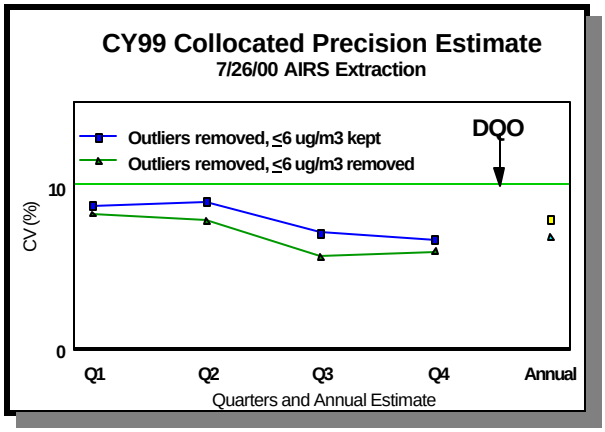

Figure 2.11 Precision estimates with outliers removed

concentration values less than or equal to 6 µg/m^3 removed. The second, third, fourth quarter and the annual precision estimate met the DQO of 10% coefficient of variation. This estimate is based on a data base where less than 50% of the sites have complete precision data for 1999 (see precision completeness above). OAQPS evaluated precision by method designation (e.g. Andersen Sequentials, R&P Sequentials etc.) and did not find any significant difference between the precision estimates at the national level, based upon the limited data set.

Figure 2.11 presents two additional national precision estimates: 1) where 232 outliers where removed but pairs with values less than or equal to 6 µg/m^3 were kept and, 2) where the outliers were removed and the pairs with values less than or equal to 6 µg/m^3 were removed. An outlier was defined as any value with a percent difference greater than $\pm$ 50%. (See Equation 3 of Section 1 for a definition of percent difference.) Of these 232 outliers, 81 were less than -100% or greater than 100%. The 232 outliers represent 2.8% of all paired precision values. Attachment 2-6 provides a listing of these outliers. Table 2-4 provides a comparison of the number of paired values behind the three precision estimates described above.

Table 2-4 Paired Concentration Values Used in Each National Precision Estimate (as of 7/26/00)

Quarter	Total Pairs	Pairs # 6 µg/m^3 removed	Outliers removed, pairs # 6 µg/m^3 kept	Outliers removed, pairs # 6 µg/m^3 removed
1	1424	1172	1397	1145
2	1938	1401	1916	1379
3	2369	1886	2353	1870
4	2497	2041	2480	2024
Annual	8228	6500	8146	6418

Based on the evaluations of both figures, it appears that the outliers, which numbered on average about 55 per quarter, affect the quarterly precision estimates more in the first and second quarters than the 6 µg/m^3 criteria. As an example, 27 collocated "outlier" pairs, out of a total of 1172 pairs, increased the first quarter precision estimate from 8.2% to 12.1%.

Given that the outliers are removed, Figure 2.11 illustrates that the precision estimates are fairly similar with or without the use of pairs with a concentration value of less than or equal to 6 µg/m^3. This might suggest that the precision comparisons can be made with confidence at lower concentrations. Table 2.4 also shows that keeping the pairs with concentrations less than or equal to 6 µg/m^3 increased the pair count by 1,646 pairs.

The precision estimates in Figure 2.10 provide an indication of the *observed* precision during 1999. The precision estimates in Figure 2.11 may provide a better estimate of the *expected* precision for the future. If the large outliers seen in the first and second quarters of 1999 are the result of start-up issues, then the outliers are not expected to exist in future years and hence removing them before estimating precision is appropriate. If, instead, the large outliers in the first and second quarters are due to something seasonal, then the outliers may occur in future years and hence should be retained in the estimation of precision. Analysis of the precision data from 2000 will begin to determine whether the outliers from 1999 are in fact anomalies associated with start-up or are regular occurrences. In the meantime, with the assumption that valid data has been entered in AIRS, OAQPS can not remove or edit outliers and therefore will report the estimates generated in Figure 2.10 which includes outliers.

To this point, the discussion about precision has been at the national level. However, the DQO for precision was established at the reporting organization level. Attachment 2-7 presents estimates of precision for each reporting organization on a quarterly and annual basis. Note that all of the estimates in Attachment 2-7 should be multiplied by 100 to be interpreted as percentages. For example, a precision estimate of 0.121 represents a coefficient of variation of 12.1%. Also, an "A" in the AIRS SITE NUMBER column means that the estimates are for the reporting organization and an "A" in the QUARTER column means that the estimates are for the entire year.

Also included in the attachment is information about the precision for each of the collocated sites within the reporting organization. The site-level precision is being provided to help focus resources on sites where the data appear to be more variable, so that the cause of the increased variability can be understood and hopefully reduced. Note that due to the lack of data, precision at a reporting

organization level, and even more so at the site level, may be based on very few values and hence the aggregate precision may not accurately reflect the true, underlying precision.

The number of pairs behind each of the precision estimates is presented in the attachment. Also included in the attachment are confidence intervals for each of the precision estimates. Again, multiply by 100 to interpret as percentages. Preferably, the interval should be small and be entirely below 10%. If the interval is not small, there may be several reasons. These reasons include:

(a) There are few observations being used to estimate the precision.

(b) One or both of the instruments at the site are imprecise.

(c) There is a consistent difference between the two samplers. For example, one of the samplers may consistently be 10% above the other one. Such consistent differences elevate the precision estimate. The final columns of Attachment 2-7 provide an estimate of this consistent difference. For example, an estimated relative difference of -0.086 means that the concentration measured by the collocated sampler is 8.6% lower than the concentration measured by the routine sampler, on average. Confidence intervals for the relative differences are provided in the final columns of the attachment. If a precision estimate is large, the relative difference should be checked. If the relative difference is large, then one or both of the instruments likely is biased.

(d) A combination of any of the above can be causing the large interval.

Accuracy - Flow Rate Audits

Although the average completeness for flow rate audits is about 40%, the data from these audits indicates that the Federal Reference Method samplers are well within the acceptance requirements. There are two acceptance criteria for flow rate: 1) the flow rate measured by the FRM must be within 4% of the flow rate measured by an independent transfer standard and 2) the flow rate measured by the FRM instrument must be within 5% of the 16.67 L/min design flow rate. Table 2-5 provides a flow rate summary for the instruments providing flow rate data to AIRS as of the 7/26/00 extraction date.

Table 2-5 CY99 Flow Rate Summary (as of 7/26/00)

FRM Instrument	Number of Audits	Number > ±4%	Number > ±5%	Average Accuracy
BGI Single	32	3	2	-0.72
R&P Single	154	11	1	0.48
R&P Sequential	1308	75	15	-0.06
Andersen Single	7	0	0	0.57
Andersen Sequential	264	18	4	0.20
National Estimate	1765	107	22	0.02

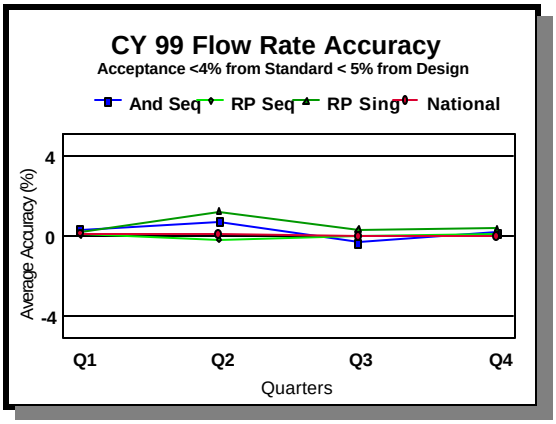

Figure 2.12 CY99 Flow rate summary (as of 7/26/00)

Figure 2.12 provides quarterly average accuracy values of those instruments that had greater than 100 flow rate audits in CY99. Based on this data, 94% of the audits were within the ± 4% criteria and 99% within ± 5% of the 16.67 L/min design flow rate.

Bias- Performance Evaluation Program and Routine Data

Similar to the evaluation of collocated precision, a number of estimates were used to summarize bias using the performance evaluation data and the routine data extracted from AIRS on 7/26/00. Figure 2.13 presents the bias estimates as described in *40 CFR 58* and guidance. The estimates in Figure 2.13 are based on all available pairs, excluding pairs that had one or both sample concentrations less than or equal to 6 µg/m^3. For the data available in AIRS, it appears that the DQO, at a national level, is being achieved.

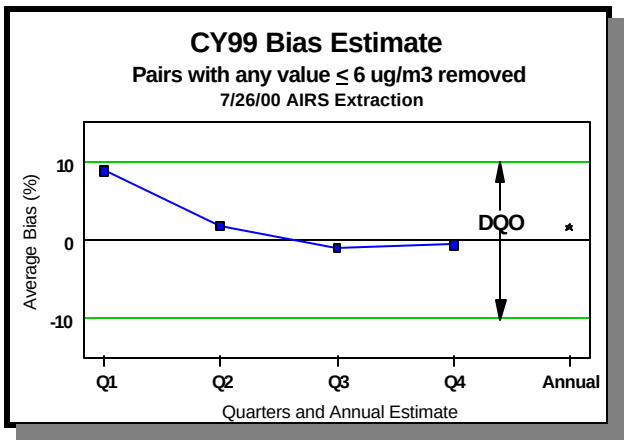

Figure 2.13 Bias estimate based on requirements and guidance

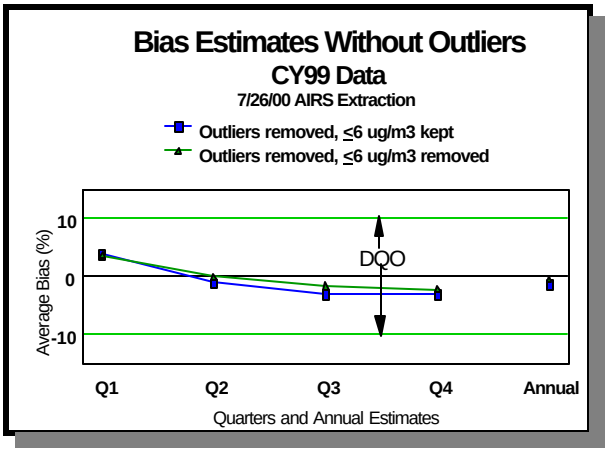

Figure 2.14 Bias estimates with outliers removed

Figure 2.14 provides estimates with outliers removed from the data set. An outlier is defined as any paired value that had an accuracy greater than ±50%. (See Equation 6 of Section 1 for a definition of accuracy.) There were 30 outliers identified representing 4.3% of all bias pairs, and these are listed in Attachment 2-8. Table 2-6 provides a comparison of the number of paired values behind the quarterly and annual bias estimates.

Table 2-6 Paired Bias Values Used in Each Bias Estimate

Quarter	Total Pairs	Pairs # 6 µg/m^3 removed	Outliers removed, pairs # 6 µg/m^3 kept	Outliers removed, pairs # 6 µg/m^3 removed
1	117	97	111	91
2	190	144	184	138
3	190	156	188	154
4	184	151	182	149
Annual	681	548	665	532

Similar to the findings in the precision data, there is almost no difference in the bias estimates whether keeping or removing a pair when one or both values is less than or equal to 6 µg/m^3, as illustrated in Figure 2.14. However, it appears outliers had an effect on the national bias estimate in the first quarter of 1999. The first quarter 1999 bias estimate including outliers was 9.0% and excluding outliers was 3.8%.

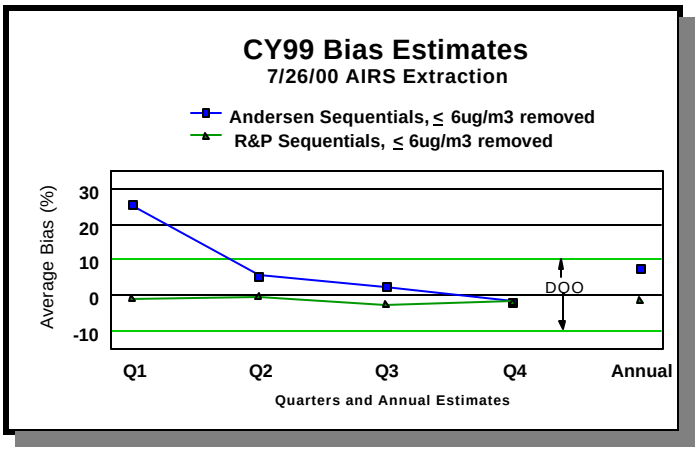

Figure 2.15 Bias estimates of Andersen and R & P sequentials using current bias requirements and guidance

Another illustration of the effects of first quarter data can be seen when reviewing bias estimates for two method designations, the Andersen Sequential and the R & P Sequential. Figure 2.15 provides a comparison of these two method designations. Figure 2.15 shows both that the large national bias for the first quarter is mainly driven by the large estimate for the Andersen Sequentials and that the bias estimate for the Andersen Sequentials has dropped dramatically since the first quarter.

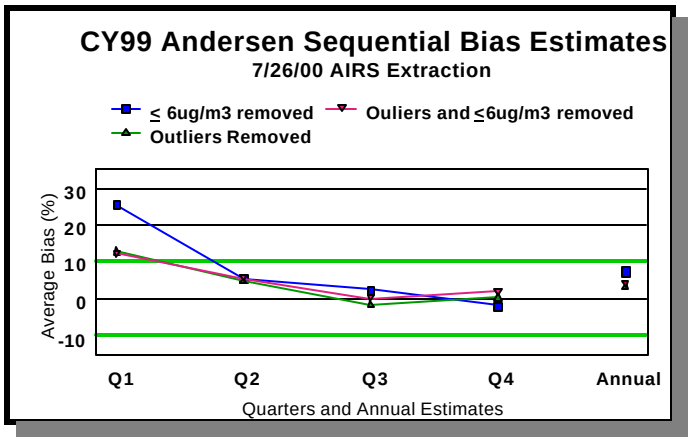

Figure 2.16 Andersen sequential bias estimates

Outliers are partially responsible for the large bias estimate for the Andersen Sequentials for the first quarter, as shown in Figure 2.16. Outliers have less of an impact on the bias estimates for the R&P Sequentials, as shown in Figure 2.17. The number of pairs behind each of the estimates displayed in Figures 2.16 and 2.17 are given in Tables 2-7 and 2-8, respectively.

Table 2-7 Paired Andersen Sequential Bias Data (as of 7/26/00)

Andersen Sequential				
Quarter	**Total Pairs**	**Pairs ≤ 6 µg/m^3 removed**	**Outliers removed, pairs ≤ 6 µg/m^3 kept**	**Outliers removed, pairs ≤ 6 µg/m^3 removed**
1	39	35	33	29
2	64	52	64	52
3	59	53	57	51
4	48	40	48	40
Annual	210	180	202	172

Figure 2.16, for the Andersen sequential, illustrates the effect that outliers had on the 1st quarter. 6 data pairs identified as outliers (both concentrations greater than 6 µg/m3) changed the average quarterly bias estimate from 12.4 to 25.7. This effect is due to the small numbers of paired data. Many State and local organizations using Andersen instruments have not submitted routine

data. As indicated in the bias completeness section, there are still 287 pairs of data missing from the overall bias comparison, some of which might reduce the effect of outliers on the first quarter bias estimate. Once outliers were removed, there were no significant differences between the precision estimates when one kept or removed pairs that had a sample concentrations less than or equal to 6 µg/m^3. In all three precision estimates Andersen Sequentials exceeded the bias DQO for the first quarter.

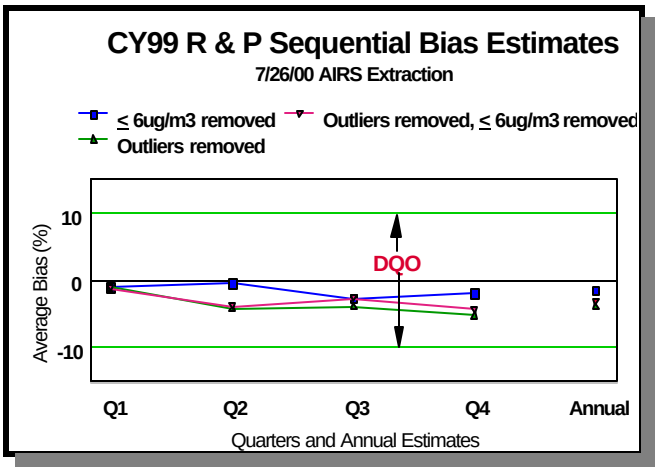

Figure 2.17 R & P sequential bias estimates

Figure 2.17, represents the R&P Sequential bias using the three precision estimates. Neither outliers nor values less than or equal to 6 ug/m^3 seemed to have had much effect on the bias estimate. Based upon the data available on 7/26/00, all bias estimates are well within the DQO limits but appear to be biased slightly negative compared to the PEP. Table 2-8 provides the number of paired values used to generate the estimates in Figure 2.17. There was more paired information available for these estimates than were available for the Andersen Sequentials. In addition, it appears that most of the outliers had at least one or both values less than or equal to the 6 ug/m^3 criteria which is why the values for these two columns (2nd and 4th column) are very close.

Table 2-8 Paired R & P Sequential Bias Data (as of 7/26/00)

R & P Sequential				
Quarter	**Total Pairs**	**Pairs ≤ 6 µg/m³ removed**	**Outliers removed, pairs ≤ 6 µg/m³ kept**	**Outliers removed, pairs ≤ 6 µg/m³ removed**
1	67	55	67	55
2	111	86	105	80
3	119	95	119	95
4	125	103	123	101
Annual	422	339	414	331

To this point, the discussion about bias has been at the national level. The DQO for bias was established at the reporting organization level. However, the reporting organization level statistics are not presented in this report for two reasons. First, there are few data points at the reporting organization level. Specifically, the number of bias estimates for 1999 for each reporting organization should be approximately equal to the number of sites within the reporting organization. Secondly, although it is straight forward to estimate the average bias for each reporting organization, it is less simple to estimate the confidence interval for the average. The confidence intervals are important to understanding the interpretation of an average. Small intervals imply that the average value can be given a lot of credence whereas a large interval implies that the average is less certain. The confidence intervals presented in *40 CFR 58 App A Sect. 5* were predicated on the assumption that there would be more than one PEP visit to a site per quarter. Since this does not occur under the current PEP schedule, the confidence intervals need to be modified. Any

modification will require confounding sources of variability, site to site, seasonally, or both. Once it is determined which of these approaches is preferable, the reporting organization level biases and their associated confidence intervals will be presented. This likely will not occur until the 2001 QA Report.

Section 3 Conclusions and Recommendations

This section will summarize the evaluation of the data quality indicators and make recommendations in an effort to improve the ambient air monitoring quality system and the resultant data quality.

Conclusions

Tables 3-1 and 3-2 provide a summary of data completeness and estimates of our primary data quality indicators. Summary comments about these tables follow.

Table 3-1. National Completeness Summary for CY99 (as of 7/26/00)

	Sites meeting overall completeness requirements for all 4 quarters		Sites Meeting 75% Completeness for Each Quarter			
Data Type	**%**	**Number**	**1**	**2**	**3**	**4**
Routine Data	24%	239	31%	56%	60%	67%
Collocation Precision	10%	25	27%	46%	52%	54%
Flow Rate Accuracy	18%	176	35%	42%	44%	40%
Performance Evaluations	100%	247	73%	113%	111%	104%
Performance Evaluation Pairs	65%	160	49%	79%	80%	77%

Table 3.2. National Estimates of Primary Data Quality Indicators for CY99 (as of 7/26/00)

Data Type	Acceptance Criteria	National Estimate	Quarterly Estimate			
			1	**2**	**3**	**4**
Precision -Collocation	< 10% CV	9.1%	12.1%	9.9%	6.6%	7.6%
Accuracy-Flow Rate	< ± 4% Std. < ± 5% Design	0.02%	0.11%	0.08%	-0.04%	-0.04%
Bias - Performance Evaluations	< ± 10%	1.7%	9.0%	1.9%	-0.9%	-0.49%

Routine Data

Completeness - The completeness evaluation is based upon the strictest interpretation of the completeness requirement in *40 CFR 50 App. N* that a site must collect 75% valid data in every quarter in order for comparison to the NAAQS. There are other techniques, such as data substitution, that can be used to allow more information to be used for the NAAQS comparison that are not evaluated in this report. Therefore, the 24% overall completeness estimate is the most conservative

estimate of completeness for CY99. Since the requirement is based on 4 quarters, the overall completeness estimate cannot be higher than the lowest quarterly completeness percentage. Therefore, the first quarter is responsible for the overall low completeness value. Since only 24% of the sites met completeness in all 4 quarters, the first quarter completeness value of 31% indicates that 22% of the first quarter sites did not achieve acceptable completeness in one or more of the other three quarters. The lack of completeness in quarter 1 can be attributed to a number of start up problems related to the instruments, field and lab operations and data entry. The intent of this document is to report the quality of the data and will therefore not attempt to address or associate these problems with the loss of data. Quarters 2, 3 and 4 had better completeness estimates. In addition, data entered into AIRS after the 7/26/00 may improve the current completeness evaluation.

Based on early reviews of completeness in March 2000, OAQPS provided guidance to allow the use of data qualifiers (flags) in an attempt to increase the completeness of routine data that some organizations may have felt uncertain about entering to AIRS. An additional 4.7% of the routine data was captured using the new data qualifiers. However, two States accounted for 67% of these data qualifiers, one that flagged all their data and a second that flagged 45%.

Precision - Collocation

Completeness- The number of sites that have met the 75% completeness goal for all 4 quarters is very low. A marked improvement in completeness occurred from the first to second quarter but only marginal improvement in the last three quarters. As with routine data, the overall completeness value cannot be higher than the lowest quarterly value since the requirement is based on 4 quarters. Due to some of the start-up problems in the first quarter, some reporting organizations had to substitute their collocated instruments for the routine instrument. In addition, whenever a routine value was invalidated, a collocated value, collected on the same day/site, could be substituted. OAQPS provided data substitution guidance asking the reporting organization to place the collocated information in the AIRS parameter occurrence code 2 (POC-2) in order to be able to give the reporting organization credit for having performed a collocation. However, some reporting organizations may not have followed this guidance and therefore the collocated data can not be identified and counted in the completeness estimate. The lack of information on collocated precision will make it difficult to assess the precision data quality objective at lower levels of aggregation such as reporting organizations or method designation. It may be necessary to institute quarterly assessments of precision completeness in order to identify where information is lacking and to improve the capture rate of this information.

Values around the NAAQS-- In order to focus quality assurance activities around the data most crucial in decision making, *40 CFR 58 App A Sect 3.5* required that 80% of the collocated monitors be placed at the sites that the State, local and tribal monitoring organization felt would provide annual averages at concentrations $\geq$ 90% of the annual or 24-hour NAAQS (if that is affecting the area). Presently, only 48% (105 sites) of the collocated sites reporting data are located at sites with annual means $\geq$ 13.5 $\mu g/m^3$ and there are 426 routine sites with an annual mean $\geq$ 13.5 ug/m^3. Since some reporting organizations may not have any or only few sites reporting average annual concentrations $\geq$13.5 $\mu g/m^3$ it was not expected that 80% percent of the collocated sites in the network would have

average annual concentrations ≥13.5 µg/m^3. However, if reporting organizations review their routine and collocated sites (Attachments 2-1 and 2-3) it appears that some reporting organizations can relocate collocated monitors to sites where precision and bias estimates are most crucial. Currently, the requirement only establishes the lower limit (≥ 90% of NAAQS) but it should have also established the upper limit. CFR should be revised to require 80% of the collocated sites be located at sites ≥90 to 110% of the NAAQS (13.5 to 16.5 µg/m^3).

Precision Results - It must be emphasized that the precision data quality objective (DQO) is based on three years of precision data (75% complete). Therefore, any one year or any quarter may be above the criteria and still meet the precision data quality objectives. An early analysis of precision suggests that the DQO can be achieved, at least at the national level.

It was discovered that 232 outliers, which represented 2.8% of the precision data, change the national estimate from 9.1% CV to 6.8% CV and brought down the first quarter estimate from 12.1% CV to 8.2% CV. OAQPS will ask State and locals to review these outliers to ensure their validity. For this report they are considered valid and therefore incorporated into the overall and quarterly precision estimates. Another interesting observation is that OAQPS did not plan on assessing any collocated pairs that had one or both values below 6 µg/m^3. It was assumed that these values were close to the sensitivity of the measurement system and that small actual variance at these low concentrations would provide large coefficients of variance. This did not prove to be the case and it appears the outliers had more influence on the precision estimate.

OAQPS investigated whether there was any significant difference in precision for different method designations. From the available data, all the method designations appear to have comparable precision. Based on the national precision estimates being very close to the DQO, it is anticipated that some reporting organization precision estimates will be above the data quality objective. The effect of the additional variability would be less confidence in estimates of individual or aggregate concentrations.

Accuracy - Flow Rate

Completeness- Flow rate accuracy overall completeness was low for CY99. A positive or negative bias in flow rate can have a direct effect on the cut point of the particulate matter collected on the filter and also affects the 24-hour air volume estimate that goes into the derivation of the concentration. A 10% bias in flow rate will cause a 10% change in the $PM_{2.5}$ concentration. The quarterly flow rates, using an independent standard, ensures that the sampling instruments are operating within acceptable limits and also ensure that the working check standard is not out of specification. OAQPS will work the EPA Regions and States to ensure a better capture rate of this data for future calendar years.

Accuracy Results - The results of the accuracy audits are very good. The national average accuracy estimate is 0.02% which is well within the acceptance criteria of ±4% of the standard and ±5% of the design (see Table 3-2). For the method designations that had more than 100 flow rate audits performed in CY99, the percentage of audits meeting the criterion of ±4% of the standard was 94%

and the percentage meeting the criterion of ±5% of the 16.67 L/min design flow rate was 99%. Additionally, these percentages did not vary by method designation.

Bias - Performance Evaluation Program and Routine Data

Completeness - Completeness of the performance evaluation data is a little more complicated because it involves two data points that are collected by different organizations. The bias estimate must rely on Performance Evaluation Program (PEP) data collected by technical support contractors provided through the EPA Environmental Services Assistance Team (ESAT) contract. The routine $PM_{2.5}$ data is collected by the State, local and tribal Nations. The PEP achieved its completeness requirement by collecting valid data at 247 sites, which was just over the anticipated 245 sites (25% of the 979 sites established in AIRS). However, when the data for these 247 sites were matched with their respective routine data in AIRS, only 160 sites produced valid site/pairs that met the completeness requirement. If one looks at actual valid samples that were taken, of the 984 valid PEP values, there are only 697 that have a routine sample match in AIRS. Reasons for missing routine values could be due to PEP or routine samples mistakenly sampled on different days, or data not yet entered into AIRS. However, the missing 287 values account for 30% of the performance evaluation information which affects the confidence in the bias estimates, particularly when one attempts to assess bias at a reporting organization or method designation level.

Bias results

As with precision, the bias data quality objective is based on three years of bias data (75% complete). At a national level, the average bias is estimated at 1.7% and it appears that the bias data quality objective is being met. However, there are three factors that affect the bias estimates: 1) lack of paired data, 2) outliers, and 3) method designations.

Lack of paired data - A performance evaluation is only performed on 25% of the sites and each site is audited 1 time each quarter. It is difficult to determine a statistically significant bias at lower levels of aggregation at the reporting organization or method designation level with only one years worth of information and with 287 paired values missing.

Outliers - Similar to the findings in the precision data, there is almost no difference in the bias estimate in keeping or removing a pair when one or both values is below 6 $\mu g/m^3$. However, it appears outliers had an effect on bias in the first quarter of 1999. An outlier was any paired value that had an accuracy estimate greater than ±50%. Removing outliers from the national estimate changed the bias estimate from 1.7% to -0.49%. However, 6 outliers (6 % of the quarters total) in the first quarter changed the bias estimate from 9.0% to 3.6%. OAQPS will ask State and locals to review these outliers to ensure their validity. For this report the outliers are considered valid and incorporated into the overall and quarterly bias estimate.

Method Designations - It appeared that method designations did play a role in the bias estimates, particularly in the first and possibly the second quarter of 1999. For the first quarter, the Andersen

sequential bias estimate (25.7%) was substantially higher than the R & P sequential bias estimate (-1.01%). However, all 6 (17% of the quarters values for Andersen) outliers identified in the first quarter where related to the Andersen instrument which would change the bias estimate from 25.7% to 12.42%. Outliers did not have any significant effects on R & P sequential data. There was not enough data to make any statements about single channel instruments. The third and fourth quarter estimates do not appear to vary by method designation and are therefore more comparable. This may be due to improvements in sampling and analytical techniques and vendor modifications to the FRM monitors.

Recommendations

The following recommendations are made in order to improve the capture rate of information and improve the $PM_{2.5}$ quality system over the next year.

Quarterly Completeness Assessments- OAQPS will run the completeness estimates for routine, precision and accuracy data quarterly and submit this information to AMTIC or the EPA Regions in order to help identify where improvements in data capture are needed. These assessments will follow the quarterly AIRS submission requirement.

Quarterly Precision, Accuracy, and Bias Assessments - OAQPS will run the similar data quality assessments on a quarterly basis and submit this information to AMTIC or the EPA Regions in order to provide more real time assessments of data quality. OAQPS will also identify outliers either through the new AIRS critical data review reports or through this assessment in order to ensure the effect of outliers on data quality is minimized.

Consistent Placement of Accuracy Data in AIRS - In the AIRS accuracy transaction files there appeared to be some inconsistency in the placement of data in the "actual" and "indicated" levels. If monitoring organizations can be consistent in their input, the data can be useful in determining flow rate bias. The "actual" value for flow rate should be the value reported by the standard; the "indicated" value is the value reported by the monitoring instrument.

Assessment of data qualifiers - OAQPS will assess flagged data to determine whether this information is of adequate quality for use in NAAQS comparison. OAQPS will need to work with individual State, local or Tribal agencies to determine what quality control criteria was violated in order to determine whether this acceptance criteria has a significant impact on data quality. This assessment will help determine whether certain critical or operational quality control criteria can be revised to reduce the QA burden where appropriate.

Relocation of collocated monitors - It is recommended that collocated monitors at low concentration sites be moved to sites whose annual mean is $\geq$ 13.5 $\mu g/m^3$. Each reporting organization should try to locate 80% of their monitors within $\geq$90 to 110% of the NAAQS (13.5 to 16.5 $\mu g/m^3$).

CFR corrections - There are a number of corrections to the language and the statistical equations in *40 CFR 58 App A* that would make the requirements more "understandable". OAQPS will attempt the correct CFR in FY2001.

Attachments

Section 1 -Introduction

Number	Title	Pages
1-1	Manipulation of Data Prior to Estimation of Precision, Bias, or Accuracy	4

Section 2- Assessment of Data Quality Indicators

Number	Title	Pages
2-1	PM2.5 Routine Data Completeness	15
2-2	Summary of PM2.5 Data Flags	2
2-3	PM2.5 Collocated Precision Data Completeness	4
2-4	PM2.5 Flow Rate Audit Data Completeness	16
2-5	Performance Evaluation Program Sites without a Routine Data Value Match	6
2-6	Collocated Precision Data with Percent Difference > +/- 50%	7
2-7	Collocated Precision Data Aggregated by Reporting Organizations	36
2-8	Routine and Performance Evaluation Program Pairs with Accuracy > +/- 50%	1

Section 3 -Summary and Conclusions

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Attachment 1-1

Manipulation of Data
Prior to Estimation of Precision, Bias, or Accuracy

The following text and tables describe some data handling issues that had to be addressed prior to the estimation of the precision, bias, and accuracy statistics. These issues are listed both to bring awareness to them in addition to documenting how they were handled.

Issue # 1 - Precision and Accuracy: Sites with more than one method designation

Background- Estimates of both precision and accuracy are summarized at the method designation level. A review of the CY99 data shows that there are some sites that have more than one method designation recorded. There are three patterns for changing method designations. Some sites report one method designation for a period of time and then report a different method designation after a certain date. This is consistent with a change of equipment, if such has occurred. Other sites report the precision transactions with one method designation and the accuracy transactions with a different method. Lastly, some sites have the method designation changing without any apparent pattern. Table 1 contains a list of the sites for which there are multiple method designations reported on the accuracy and/or precision transactions and a note about whether the pattern in method designations appears to be related to a date, transaction type, or unknown.

Action for QA Report- OAQPS used the method designations as they are reported on the precision and accuracy transactions.

Issue # 2A - Accuracy: Wrong units

Background - Accuracy data should be reported with units volume flow rate units code 73 (L/min). Some accuracy data is being reported with code 105 which is concentration units ($\mu g/m^3$). Table 2A contains a list of the site/days with incorrect units for accuracy.

Action for QA Report - OAQPS assumed the units are (L/min) for all of these site/days except for the two site/days in Pennsylvania. The two site/days for PA were omitted since they are associated with performance evaluations.

Issue # 2B - Precision: Wrong units

Background - Precision data should be reported with units code 105 ($\mu g/m^3$). Some precision data is being reported with units 73 which is volume flow rate units (L/min). Table 2B contains a list of the site/days with incorrect units for precision.

Action for QA Report - OAQPS assumed the units are $\mu g/m^3$ for all of these site/days.

Issue # 3 - Accuracy: Apparent outliers

Background- The one point accuracy checks should produce a volume close to the design flow rate 16.67 (L/min). There are 4 accuracy checks reported that are quite divergent from the design value and may actually be precision data that was submitted in the accuracy fields. Table 3 contains a listing of site/days for which neither the actual nor the indicated flow rate is within 5% or 16.67.

Action for QA Report - OAQPS omitted any accuracy transaction when both values (primary monitor flow rate and standard flow rate) are greater than 5% of the design value.

Issue # 4 - Precision: Data reported in POCs rather than precision transactions

Background - Some monitoring organizations are reporting their precision data in POCs rather than in precision transactions. Guidance was distributed to allow for substitution of the primary sampler data that was determined to be invalid with collocated data by placing the collocated data in POC 2. Some States may have misconstrued this guidance and put all their data in POC 2. Other States have submitted all collocated data in POC 2 as well in precision transactions.

Action for QA Report - OAQPS assumed that if a site does not have any data in the precision transaction area for a given date but does have data in POC 2 then the data in POC 2 is collocated precision data. OAQPS did not look for precision data in any POCs other than 2.

Issue # 5 - Accuracy: Interchanging of actual and indicated values

Background - On an accuracy transaction, the "actual" value should contain the true value of the standard which is challenging the instrument, and the "indicated" value should contain the flowrate estimated by the instrument. It is uncertain whether field personnel are utilizing these field s appropriately and consistently. It appears that some organizations may be placing the design value (16.67) in one of these fields, or could possibly be transposing the wrong information in either actual or indicated fields. This will have an impact both on the sign of the estimated accuracy as well as on the value of the statistic.

Note that is it not possible easily to surmise whether a similar miscoding is occurring with the precision data. However, if it is occurring, it only impacts the sign of the estimated percent difference and does not impact the estimated precision.

Action for QA Report - OAQPS assumed that the data are correctly coded, even though it appears that this is not the case.

Issue # 6 - Flagged Data

Background - Routine data can be flagged using data qualifiers, sampler generated flags and exceptional event flags (see Attachment 2-2). These flags indicate that the concentration data may be compromised either by natural causes (exceptional events) or by the measurement process. However, data in the P & A transaction file cannot be flagged and therefore it is very difficult to determine whether one or both the routine and collocated samplers had been flagged which could help explain greater imprecision than would be expected.

Action for QA Report - All data available for precision estimates were used. Flagged data should not have a large effect on national estimates generated for the QA Report.

Issue # 7 - Accuracy: Multiple Groups/Levels

Background - The accuracy transactions allow for the entry of more than one pair of actual and indicated values for a given site and day by permitting several levels within several groups. Some States are using reporting data in more than one group/level combination, likely to report the flow rate audit information for both the primary and collocated sampler.

Action for QA Report - OAQPS used the accuracy information only in the lowest level of the lowest group for a given site and day.

Table 1. Sites With Multiple Method Designations on P&A Transactions
(based on AMP250 extraction dated 07/26/2000)

State	Site	Type of Transactions Reported*	Method Designations	Pattern**
Alaska	0202000181	P&A	117, 118	Temporal
	0211000042	P&A	117, 118	Temporal
California	0602500051	P&A	119, 120	Tran. type
	0607100141	P&A	119, 120	Tran. type
	0607300061	P&A	119, 120	Tran. type
	0611310031	A	117, 120	Unknown
Massachusetts	2500960011	A	119, 120	Unknown
South Dakota	4601100021	A	119, 120	Temporal
	4610300171	A	119, 120	Temporal
Utah	4901100011	A	117, 118	Temporal
	4903530071	A	117, 118	Temporal
	4904500021	A	117, 118	Temporal
	4905700071	A	117, 118	Temporal
Wisconsin	5502700071	A	117, 118	Temporal

* P=Precision, A=Accuracy.
** Pattern of change in method designation.

Table 2A. Site/Days With Incorrect Units for Accuracy Transactions
(based on AMP250 extraction dated 07/26/2000)

State	Site	Date
Georgia	1306300911	03/29/99
	1308920011	03/22/99
	1311500051	03/30/99
	1321500011	03/23/99
	1321500111	03/23/99
	1324500911	03/24/99
Missouri	2907700321	03/11/99, 03/12/99
	2918920031	03/17/99, 03/18/99, 09/02/99, 09/03/99
	2918950011	03/30/99
North Carolina	3702100341	03/24/99
	3708700101	03/24/99
Pennsylvania	4210100041	08/25/99
	4210101361	08/23/99

Table 2B. Site/Days With Incorrect Units for Precision Transactions
(based on AMP250 extraction dated 07/26/2000)

State	Site	Date
Florida	1200100231	All
	1201110021	All
	1203300041	All
	1207100051	All
	1209520021	All
	1210560061	All
	1211500131	All
	1211710021	All
	1211110021	All

Table 3. Site/Days with Neither Actual nor Indicated Flow Rate within 5% of 16.67
(based on AMP250 extraction dated 07/26/2000)

State	Site	Date
Florida	1203300041	02/02/99
	1208140121	11/16/99
Pennsylvania	4210100041	08/25/99
	4210101361	08/23/99

Attachment 2-1

PM2.5 Routine Data Completeness

1999 PM2.5 Data Completeness, Routine FRM (as of AIRS 7/26/00)

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
ALABAMA	**Total # of FRM Sites=19;**		**Number w/ Data=19;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**		**Number w/ 11+ samples in each Q= 0**						
	010270001	1	01/01/99		01/03/99	3	50%										1
	010331002	1	01/01/99		01/03/99	3	50%										1
	010491003	1	01/01/99		01/03/99	3	63%										1
	010690002	1	01/01/99		01/03/99	3	60%										1
	010730023	1	01/01/99		01/01/99	1	96%										1
	010731005	1	01/03/99		01/03/99	3	93%										1
	010732003	1	01/01/99		01/01/99	1	94%										1
	010732006	1	01/03/99		01/03/99	3	100%										
	010735002	1	01/03/99		01/03/99	3	100%										
	010970002	1	01/01/99		01/03/99	3	80%										1
	010972005	1	01/01/99		01/03/99	3	97%										1
	011010007	1	01/01/99		01/03/99	3	90%										1
	011030010	1	01/01/99		01/03/99	3	77%										1
	011130001	1	01/01/99		01/03/99	3	90%										1
	011170006	1	01/01/99		01/03/99	3	0%										
	011190002	1	01/01/99		01/03/99	3	47%										
	011210002	1	01/01/99		01/03/99	3	87%										1
	011250003	1	01/01/99		01/03/99	3	83%										1
	011270002	1	01/01/99		01/03/99	3	80%										1
ALASKA	**Total # of FRM Sites= 7;**		**Number w/ Data= 7;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 2;**		**Number w/ 11+ samples in each Q= 2**						
	020200018	1	11/10/98		01/01/99	1	60%	3	63%	3	90%	1	50%		1	1	
	020200044	1	01/01/99		04/06/99			3	57%	3	94%	3	97%				
	020900010	2	10/23/98		02/18/99	6	56%	3	81%	3	69%	6	42%				
	021100004	2	11/19/98		04/10/99			3	53%	3	65%	3	80%				
	021100026	1	12/18/99		12/18/99							6	20%				
	021300008	1	10/28/99		10/28/99							3	40%				
	021700008	1	12/19/98		01/03/99	3	53%	3	73%	3	87%	3	80%		1	1	
ARIZONA	**Total # of FRM Sites=10;**		**Number w/ Data=10;**		**Number Complete (75%+ in each Q)= 4;**				**Number w/ 50% in each Q= 6;**		**Number w/ 11+ samples in each Q= 9**						
	040031005	1	01/12/99		01/12/99	6	67%	6	73%	6	7%	6	93%				
	040051008	1	01/06/99		01/06/99	6	73%	6	100%	6	100%	6	87%		1	1	
	040070008	1	02/11/99		02/11/99	3	47%	3	77%	3	77%	3	87%			1	
	040139990	1	01/06/99		01/06/99	3	87%	3	90%	3	100%	3	100%	1	1	1	
	040139991	1	01/21/99		01/21/99	1	56%	1	82%	1	96%	1	87%		1	1	
	040139992	1	03/19/99		03/19/99	1	14%	1	80%	1	100%	1	92%			1	
	040139997	1	01/01/99		01/06/99	1	79%	1	90%	1	99%	1	90%	1	1	1	
	040190011	1	01/01/99		01/06/99	1	73%	1	91%	1	83%	1	42%			1	
	040191028	1	01/01/99		01/06/99	3	77%	3	87%	3	97%	3	80%	1	1	1	
	040230004	1	01/06/99		01/06/99	6	100%	6	87%	6	93%	6	93%	1	1	1	
ARKANSAS	**Total # of FRM Sites=18;**		**Number w/ Data=17;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**		**Number w/ 11+ samples in each Q= 0**						
	050010001	1	01/07/99		07/05/99					6	100%	6	80%				1
	050030003	1	03/26/99		07/05/99					6	93%	6	93%				1
	050310001	1	03/12/99		07/05/99					6	93%	6	87%				1
	050350004	1	04/01/99		07/02/99					3	74%	3	80%				1
	050510002	1	03/09/99		07/05/99					6	67%	6	73%				
	050690005	1	02/18/99		07/05/99					6	87%	6	80%				1
	050890001	1	04/02/99		07/02/99					6	75%	6	53%				
	050910001	1	05/05/99														
	050910004	1	05/05/99		07/05/99					6	40%	6	33%				1
	051070001	1	04/05/99		07/11/99					6	47%	6	100%				1
	051130002	1	03/30/99		07/05/99					6	80%	6	80%				
	051150003	1	02/26/99		07/05/99					6	73%	6	87%				1
	051190003	1	01/06/99		07/05/99					6	100%	6	87%				1
	051190007	1	01/22/99		06/30/99			6	7%	1	82%	1	90%				1
	051191008	1	04/02/99		07/02/99					3	84%	3	83%				1
	051310008	1	04/01/99		07/05/99					3	84%	3	93%				1
	051390004	1	02/22/99		07/05/99					6	87%	6	80%				1
	051430003	1	03/15/99		07/02/99					3	77%	3	67%				
CALIFORNIA	**Total # of FRM Sites=76;**		**Number w/ Data=76;**		**Number Complete (75%+ in each Q)=31;**				**Number w/ 50% in each Q=48;**		**Number w/ 11+ samples in each Q=53**						
	060010007	1	12/01/99		12/02/99							3	30%				1
	060011001	1	01/01/99		01/03/99	3	60%	6	87%	6	100%	3	100%		1	1	1
	060070002	1	12/19/98		01/06/99	6	100%	6	100%	6	93%	6	100%	1	1	1	1
	060090001	1	01/06/99		01/06/99	6	100%	6	100%	6	100%	6	93%	1	1	1	
	060111002	1	12/16/98		01/06/99	6	100%	3	73%	3	75%	3	74%		1	1	
	060130002	1	01/01/99		01/08/99	3	17%	6	73%	6	100%	1	80%				
	060170011	1	01/06/99		01/12/99	6	93%	6	100%	6	100%	6	100%	1	1	1	
	060190008	1	01/03/99		01/03/99	3	93%	1	82%	1	96%	1	91%	1	1	1	1
	060195001	1	01/01/99		01/03/99	3	80%	6	100%	6	100%	3	93%	1	1	1	1
	060231002	1	01/01/99		01/08/99	6	94%	6	100%	6	93%	6	93%	1	1	1	
	060250003	1	01/01/99		01/03/99	3	100%	3	80%	3	45%	3	7%				
	060250005	1	01/01/99		01/03/99	3	87%	3	90%	3	100%	3	77%	1	1	1	1
	060251003	1	01/01/99		01/03/99	3	100%	3	90%	3	94%	3	77%	1	1	1	

1999 PM2.5 Data Completeness, Routine FRM (as of AIRS 7/26/00)

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	060271003	1	09/01/98		01/03/99	3	83%	3	70%	3	65%	3	10%				
	060290010	1	01/01/99		01/03/99	3	93%	6	80%	6	93%	3	100%	1	1	1	1
	060290011	1	01/01/99		03/01/99	3	30%	3	97%	3	90%	3	77%				
	060290012	1	01/01/99		06/26/99			6	13%	3	61%	3	83%				
	060290014	1	01/01/99		01/03/99	1	48%	1	97%	1	96%	1	82%			1	1
	060310004	1	01/01/99		01/03/99	3	80%	6	80%	6	100%	3	93%	1	1	1	1
	060333001	1	01/01/99		01/06/99	6	87%	6	88%	6	40%	6	93%				
	060370002	1	01/01/99		01/03/99	1	70%	3	93%	3	94%	3	37%			1	1
	060371002	1	01/01/99		01/03/99	3	73%	3	80%	3	100%	3	97%		1	1	1
	060371103	1	01/01/99		01/03/99	1	53%	3	93%	3	100%	3	97%		1	1	1
	060371201	1	01/01/99		01/03/99	3	53%	3	47%	3	35%	3	100%			1	1
	060371301	1	01/01/99		01/03/99	3	77%	3	97%	3	94%	3	97%	1	1	1	1
	060371601	1	01/01/99		01/03/99	3	73%	3	97%	3	97%	3	100%		1	1	1
	060372005	1	01/01/99		01/03/99	3	30%	3	97%	3	97%	3	90%				1
	060374002	1	01/01/99		01/03/99	1	71%	3	93%	3	97%	3	87%		1	1	1
	060379002	1	01/01/99		01/03/99	3	97%	3	100%	3	90%	3	83%	1	1	1	
	060450006	1	01/01/99		01/07/99	6	100%	6	93%	6	94%	6	93%	1	1	1	
	060472510	1	04/01/99		04/12/99			6	60%	6	100%	3	97%				1
	060490001	1	01/12/99		01/12/99	6	80%	6	100%	6	93%	6	100%	1	1	1	
	060531002	1	01/01/99		01/15/99	3	45%	3	97%	3	56%						
	060570005	1	12/30/98		01/03/99	6	93%	6	100%	6	80%	6	73%		1	1	
	060571001	1	03/31/99		03/31/99	6	7%	3	23%	3	53%	3	70%				
	060590001	1	01/01/99		01/03/99	1	67%	3	17%	3	10%	3	80%				1
	060592022	1	06/15/99		06/17/99			3	17%	3	97%	3	100%				1
	060610006	1	12/31/98		01/06/99	6	100%	6	100%	6	100%	6	93%	1	1	1	
	060631006	1	03/26/99		03/26/99	3	7%	3	77%	3	71%	3	81%				
	060631008	1	03/25/99	02/09/00	03/25/99	3	7%	3	83%	3	68%	3	78%				1
	060651003	1	01/01/99		01/03/99	3	87%	3	97%	3	100%	3	80%	1	1	1	1
	060652002	1	01/01/99		01/03/99	3	43%	3	80%	3	58%	3	93%			1	
	060658001	1	01/01/99		01/03/99	1	70%	3	97%	3	65%	3	83%		1	1	1
	060670006	1	01/03/99		01/03/99	3	97%	3	97%	3	0%	3	22%				1
	060670010	1	12/13/98		01/03/99	3	97%	1	85%	1	91%	1	80%	1	1	1	1
	060674001	1	02/02/99		02/02/99	3	67%	3	94%	3	97%	1	85%		1	1	1
	060710014	1	01/01/99		01/03/99	3	80%	3	100%	3	97%	3	93%	1	1	1	
	060710025	1	01/01/99		01/03/99	3	90%	3	77%	3	68%	3	83%		1	1	1
	060712002	1	01/01/99		01/03/99	3	89%	3	97%	3	97%	3	97%	1	1	1	1
	060718001	1	02/08/99		02/08/99	3	60%	3	73%	3	94%	3	93%		1	1	
	060719004	1	01/01/99		01/03/99	3	73%	3	77%	3	97%	3	97%		1	1	1
	060730001	1	01/01/99		01/03/99	3	90%	3	80%	3	94%	3	77%	1	1	1	1
	060730003	1	01/01/99		01/01/99	1	89%	1	88%	1	89%	1	84%	1	1	1	1
	060730006	1	01/01/99		01/03/99	3	87%	3	83%	3	77%	3	80%	1	1	1	1
	060731002	1	01/01/99		01/01/99	1	59%	1	68%	1	80%	1	64%		1	1	1
	060731007	1	01/01/99		01/01/99	1	68%	1	86%	1	89%	1	75%		1	1	1
	060750005	1	01/01/99		01/03/99	3	43%	6	60%	6	100%	1	91%				
	060771002	1	01/03/99		01/03/99	3	100%	3	90%	3	94%	3	94%	1	1	1	1
	060792002	1	01/01/99		01/06/99	6	93%	6	80%	6	87%	6	100%	1	1	1	
	060798001	1	01/01/99		01/06/99	6	100%	6	100%	6	93%	6	100%	1	1	1	
	060811001	1	01/01/99		01/03/99	3	35%	6	87%	6	100%	3	97%			1	
	060830010	1	01/01/99		01/06/99	6	93%	6	93%	6	93%	6	93%	1	1	1	
	060831007	1	08/04/99		10/03/99							6	93%				
	060850004	2	01/01/99		01/06/99	3	3%	6	93%	6	100%	1	95%				
	060852003	1	01/01/99		01/03/99	3	33%	6	80%	6	80%	1	90%				1
	060870007	1	01/01/99		01/06/99	3	48%	3	100%	3	22%						
	060890004	1	12/19/98		01/06/99	6	94%	6	93%	6	88%	6	93%	1	1	1	
	060950004	1	01/01/99		02/20/99	3	27%	6	87%	6	93%	3	93%				1
	060970003	1	01/01/99		01/24/99	3	60%	6	80%	6	80%	3	90%		1	1	
	060990005	1	01/03/99		01/03/99	3	100%	3	83%	3	94%	3	97%	1	1	1	1
	061010003	1	12/19/98		01/06/99	6	100%	6	63%	6	94%	6	75%		1		1
	061072002	1	01/03/99		01/03/99	3	87%	3	82%	3	97%	3	100%	1	1	1	1
	061110007	1	01/01/99		01/03/99	3	90%	3	90%	3	94%	3	90%	1	1	1	
	061112002	1	01/01/99		01/03/99	3	90%	3	87%	3	87%	3	97%	1	1	1	1
	061113001	1	01/01/99		01/03/99	3	63%	3	97%	3	61%	3	83%		1	1	
	061131003	1	01/09/99		01/09/99	3	93%	3	97%	3	94%	3	38%			1	1
COLORADO	**Total # of FRM Sites=16;**		**Number w/ Data=14;**		**Number Complete (75%+ in each Q)= 1;**			**Number w/ 50% in each Q= 2;**		**Number w/ 11+ samples in each Q= 5**							
	080010001	1	12/01/98		01/26/99	3	37%	3	87%	3	97%	3	97%			1	
	080050005	1	12/01/98		03/10/99	3	17%	3	90%	3	97%	3	87%				
	080130003	1	12/01/98		01/22/99	3	74%	3	90%	3	88%	3	100%		1	1	
	080130012	1	12/01/98		01/30/99	3	43%	3	57%	3	97%	3	97%			1	
	080310002	1	12/01/98		01/01/99	1	61%	1	80%	1	0%						
	080310013	1	11/15/99														
	080310017	1	11/15/99														
	080390001	1	12/01/98		05/28/99			3	30%	3	82%	3	88%				

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	080410008	1	12/01/98		07/02/99					3	50%	3	79%				
	080410011	1	12/01/98		02/19/99	1	39%	1	0%	3	48%	3	81%				
	080690009	1	12/01/98		07/10/99					3	53%	3	88%				
	080770003	1	12/01/98		01/06/99	3	87%	3	100%	3	77%	3	100%	1	1	1	
	081010012	1	12/01/98		02/20/99	3	37%	3	0%	3	63%	3	82%				
	081070003	1	12/01/98		06/23/99			6	13%	6	82%	6	87%				
	081230006	1	12/01/98		02/13/99	3	47%	3	90%	3	61%	3	88%			1	
	081230008	1	12/01/98		08/04/99					3	65%	3	94%				
CONNECTICUT	**Total # of FRM Sites=11; Number w/ Data=11; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 4; Number w/ 11+ samples in each Q= 5**																
	090010010	1	01/01/99		01/03/99	3	90%	3	67%	3	94%	3	93%		1	1	
	090011123	1	01/01/99		01/03/99	3	43%	3	30%	3	48%	3	83%				
	090012124	1	01/01/99		01/03/99	3	40%	3	17%	3	52%	3	83%				
	090019003	1	01/01/99		01/06/99	6	33%	6	47%	6	60%	6	80%				1
	090031003	1	01/01/99		01/01/99	1	53%	1	29%	1	72%	1	91%			1	
	090031018	1	01/01/99		01/03/99	3	43%	3	23%	3	61%	3	80%				
	090090018	1	01/01/99		01/03/99	3	67%	3	60%	3	97%	3	97%		1	1	1
	090091123	1	01/01/99		01/03/99	3	57%	3	57%	3	97%	3	93%		1	1	1
	090092123	1	01/01/99		01/03/99	3	70%	3	63%	3	97%	3	97%		1	1	
	090099005	1	01/01/99		02/05/99	3	0%			3	71%	3	93%				
	090113002	1	01/01/99		01/03/99	3	63%	3	20%	3	55%	3	97%				
DELAWARE	**Total # of FRM Sites= 8; Number w/ Data= 8; Number Complete (75%+ in each Q)= 3; Number w/ 50% in each Q= 4; Number w/ 11+ samples in each Q= 7**																
	100010002	1	01/01/99		01/03/99	3	83%	3	93%	3	77%	3	87%	1	1	1	
	100010003	1	01/01/99		02/11/99	3	43%	3	90%	3	71%	3	87%			1	
	100031003	1	01/01/99		01/03/99	3	87%	3	90%	3	87%	3	93%	1	1	1	1
	100031007	1	01/01/99		01/03/99	3	80%	3	73%	3	71%	3	87%		1	1	1
	100031011	1	01/01/99	12/16/99	03/10/99	1	20%	1	69%	1	82%	1	39%			1	1
	100031012	1	12/15/99		12/16/99							1	17%				1
	100032004	1	01/01/99		02/14/99	1	28%	1	77%	1	86%	1	88%			1	1
	100051002	1	01/01/99		01/03/99	3	93%	3	80%	3	77%	3	93%	1	1	1	1
DISTRICT OF COLUM	**Total # of FRM Sites= 3; Number w/ Data= 3; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 0; Number w/ 11+ samples in each Q= 2**																
	110010041	1	01/01/99		02/21/99	1	40%	1	86%	1	86%	1	72%			1	1
	110010042	1	01/01/99		03/20/99	6	25%	3	62%	3	49%	3	55%				1
	110010043	1	01/01/99		01/15/99	1	48%	1	97%	1	54%	1	87%			1	1
FLORIDA	**Total # of FRM Sites=27; Number w/ Data=26; Number Complete (75%+ in each Q)=14; Number w/ 50% in each Q=17; Number w/ 11+ samples in each Q=21**																
	120010023	1	01/06/99		01/09/99	3	83%	3	93%	3	97%	3	97%	1	1	1	
	120111002	1	01/01/99		01/01/99	1	86%	1	93%	1	87%	1	100%	1	1	1	
	120112004	1	04/01/99		04/02/99			1	92%	1	89%	1	92%				
	120113002	1	04/03/99		04/03/99			3	87%	3	97%	3	97%				
	120170005	1	02/05/99														
	120251016	1	02/04/99		02/04/99	1	46%	1	85%	1	83%	1	88%			1	
	120256001	1	01/27/99		01/27/99	3	63%	3	90%	3	84%	3	97%		1	1	
	120310098	1	06/01/99		06/30/99			6	7%	1	59%	1	86%				
	120310099	1	06/01/99		06/30/99			6	7%	1	60%	1	90%				
	120330004	1	01/03/99		01/06/99	3	90%	3	97%	3	90%	3	93%	1	1	1	1
	120570030	1	01/01/99		01/01/99	1	84%	1	90%	1	89%	1	75%	1	1	1	
	120571075	1	01/01/99		01/20/99	1	77%	1	85%	1	90%	1	80%	1	1	1	
	120710005	1	01/01/99		01/06/99	3	57%	3	97%	3	97%	3	100%		1	1	
	120730012	1	01/01/99		01/03/99	3	77%	3	94%	3	94%	3	87%	1	1	1	1
	120814012	1	01/01/99		01/30/99	3	47%	3	93%	3	84%	3	80%			1	
	120830003	1	01/07/99		01/21/99	3	47%	3	90%	3	94%	3	87%			1	
	120951004	1	01/01/99		01/01/99	1	92%	1	92%	1	93%	1	100%	1	1	1	
	120952002	1	01/01/99		01/03/99	1	92%	1	100%	1	95%	1	99%	1	1	1	
	120990009	1	12/04/99		12/04/99							1	23%				
	120992003	1	01/01/99		01/05/99	1	87%	1	95%	1	76%	1	92%	1	1	1	
	121030018	1	01/01/99		01/01/99	1	94%	1	93%	1	96%	1	98%	1	1	1	
	121031008	1	01/27/99		01/27/99	3	73%	3	94%	3	97%	3	93%		1	1	
	121056006	1	01/01/99		01/06/99	3	37%	3	63%	3	74%	3	80%			1	
	121111002	1	01/03/99		01/06/99	3	90%	3	100%	3	94%	3	97%	1	1	1	
	121150013	1	01/03/99		01/03/99	3	77%	3	93%	3	94%	3	100%	1	1	1	
	121171002	1	01/07/99		01/09/99	3	80%	3	93%	3	84%	3	87%	1	1	1	
	121275002	1	01/04/99		01/06/99	3	93%	3	80%	3	91%	3	97%	1	1	1	
GEORGIA	**Total # of FRM Sites=24; Number w/ Data=24; Number Complete (75%+ in each Q)= 3; Number w/ 50% in each Q=12; Number w/ 11+ samples in each Q=17**																
	130210007	1	02/02/99		02/02/99	3	40%	3	97%	3	96%	3	91%			1	1
	130210012	1	02/11/99		02/11/99	3	37%	3	87%	3	84%	3	100%			1	1
	130510017	1	01/21/99		01/21/99	3	67%	3	80%	3	94%	3	80%		1	1	1
	130510091	1	01/21/99		01/21/99	3	70%	3	70%	3	19%	3	83%				1
	130590001	1	01/21/99		01/30/99	3	63%	3	97%	3	81%	3	87%		1	1	1
	130630091	1	01/09/99		01/09/99	3	77%	3	80%	3	90%	3	97%	1	1	1	1
	130670003	1	02/07/99		02/07/99	3	33%	3	97%	3	74%	3	90%				1
	130890002	1	01/22/99		01/22/99	1	49%	1	86%	1	82%	1	86%			1	1
	130892001	1	01/01/99		01/01/99	1	82%	1	86%	1	89%	1	87%	1	1	1	1
	130950007	1	02/02/99		02/02/99	3	33%	3	93%	3	94%	3	74%				1

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	131150005	1	01/18/99		01/18/99	3	63%	3	90%	3	100%	3	77%		1	1	1
	131210032	1	01/01/99		01/01/99	1	63%	1	84%	1	80%	1	88%		1	1	1
	131210039	1	01/21/99		01/21/99	3	77%	3	77%	3	90%	3	93%	1	1	1	1
	131211001	1	01/01/99		01/01/99	3	68%	3	80%	3	97%	3	93%		1	1	1
	131270004	1	01/21/99	08/30/99	01/21/99	3	47%	3	70%	3	0%						1
	131270006	1	08/31/99		08/31/99					3	32%	3	80%				1
	131390003	1	02/14/99		02/14/99	3	43%	3	97%	3	97%	3	93%			1	1
	132150001	1	03/04/99		03/04/99	3	27%	3	90%	3	87%	3	87%				1
	132150011	1	01/21/99		01/21/99	3	68%	3	87%	3	97%	3	93%		1	1	1
	132230003	1	01/24/99		01/24/99	3	57%	3	90%	3	77%	3	93%		1	1	1
	132450005	1	01/21/99		01/21/99	3	70%	3	100%	3	81%	3	77%		1	1	1
	132450091	1	02/08/99		02/08/99	3	47%	3	87%	3	87%	3	60%			1	1
	133030001	1	01/30/99		01/30/99	6	69%	6	100%	6	93%	6	100%		1	1	1
	133190001	1	01/01/99		04/12/99			3	77%	3	81%	3	97%				1
HAWAII	**Total # of FRM Sites= 5; Number w/ Data= 5; Number Complete (75%+ in each Q)= 2; Number w/ 50% in each Q= 4; Number w/ 11+ samples in each Q= 4**																
	150030010	1	01/01/99		01/03/99	3	83%	3	97%	3	88%	3	53%		1	1	
	150031001	1	01/01/99		01/01/99	1	88%	1	97%	1	90%	1	87%	1	1	1	
	150031004	1	10/01/99		10/03/99							6	100%				
	150032004	1	01/01/99		01/01/99	1	91%	1	90%	1	93%	1	92%	1	1	1	
	150090006	1	01/28/99		01/30/99	3	50%	3	97%	3	71%	3	87%		1	1	
IDAHO	**Total # of FRM Sites=14; Number w/ Data=13; Number Complete (75%+ in each Q)= 8; Number w/ 50% in each Q= 8; Number w/ 11+ samples in each Q= 8**																
	160010011	0	.		01/03/99	3	100%	3	100%	3	97%	3	100%	1	1	1	
	160010017	1	12/13/98		01/06/99	6	100%	6	100%	3	81%	3	100%	1	1	1	
	160050006	1	11/01/98		01/06/99	6	100%	6	93%	6	83%	3	100%	1	1	1	
	160050015	0	.		01/03/99	3	100%	3	97%	3	81%	3	97%	1	1	1	
	160170001	0	.		01/03/99	3	97%	3	100%	3	94%	3	100%	1	1	1	
	160190010	1	08/10/99		08/31/99					6	13%	6	81%				
	160210001	1	05/01/99														
	160270004	1	11/01/98		01/03/99	3	100%	3	97%	3	100%	3	97%	1	1	1	
	160270005	1	12/07/98		01/06/99	6	100%	6	100%	3	81%	3	100%	1	1	1	
	160550006	2	07/23/99		07/23/99					3	71%	3	97%				
	160690009	1	10/04/99		10/04/99							6	88%				1
	160790017	1	09/03/99		09/03/99					6	27%	6	93%				
	160830006	1	12/13/98		01/06/99	6	80%	6	87%	6	80%	6	80%	1	1	1	
	160830010	1	12/08/99		12/08/99							6	27%				
ILLINOIS	**Total # of FRM Sites=25; Number w/ Data=25; Number Complete (75%+ in each Q)=17; Number w/ 50% in each Q=24; Number w/ 11+ samples in each Q=21**																
	170191001	1	01/01/99		01/28/99	6	53%	6	93%	6	93%	6	93%		1		1
	170310014	1	01/01/99		01/06/99	6	81%	6	81%	6	100%	6	100%	1	1	1	1
	170310022	1	01/01/99		01/06/99	6	87%	6	100%	6	100%	6	100%	1	1	1	1
	170310050	1	01/01/99		01/06/99	6	87%	6	100%	6	100%	6	100%	1	1	1	1
	170310052	1	01/01/98		01/06/99	6	93%	6	100%	6	27%	6	100%				1
	170311016	1	01/01/99		01/06/99	6	93%	6	93%	6	100%	6	100%	1	1	1	1
	170311701	1	01/01/99	12/31/99	01/06/99	6	93%	6	100%	6	100%	6	88%	1	1	1	1
	170312001	1	01/01/99		01/06/99	6	93%	6	100%	6	94%	6	100%	1	1	1	1
	170313301	1	01/01/99		01/06/99	6	87%	6	100%	6	100%	6	100%	1	1	1	1
	170314006	1	01/01/99		01/18/99	6	73%	6	72%	6	94%	6	74%		1	1	1
	170314201	1	01/01/98		01/08/99	6	93%	6	100%	6	94%	6	100%	1	1	1	1
	170434002	1	01/01/99		01/24/99	6	80%	6	100%	6	87%	6	93%	1	1	1	1
	171150013	1	01/01/99		01/08/99	6	53%	6	80%	6	93%	6	100%		1		1
	171170002	1	01/01/99	12/31/99	01/06/99	6	93%	6	100%	6	93%	6	100%	1	1	1	1
	171190023	1	01/01/99		01/06/99	6	93%	6	87%	6	100%	6	100%	1	1	1	1
	171191007	1	01/01/99		01/06/99	6	69%	6	100%	6	100%	6	100%		1	1	1
	171193007	1	01/01/99		01/06/99	6	81%	6	80%	6	100%	6	100%	1	1	1	1
	171430037	1	01/01/99		01/18/99	6	69%	6	93%	6	100%	6	93%		1	1	1
	171570001	1	01/01/99		01/21/99	6	87%	6	93%	6	100%	6	100%	1	1	1	1
	171610003	1	01/01/99		01/06/99	6	80%	6	100%	6	100%	6	100%	1	1	1	1
	171630010	1	01/01/99		01/09/99	6	87%	6	93%	6	100%	6	100%	1	1	1	1
	171670012	1	01/01/99		01/07/99	6	88%	6	100%	6	93%	6	100%	1	1	1	1
	171971002	1	01/01/99		01/06/99	6	93%	6	100%	6	100%	6	100%	1	1	1	1
	171971011	1	01/01/99		01/06/99	6	87%	6	87%	6	73%	6	100%		1	1	1
	172010010	1	02/01/99		02/13/99	6	56%	6	81%	6	88%	6	100%		1		1
INDIANA	**Total # of FRM Sites=28; Number w/ Data=26; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 3; Number w/ 11+ samples in each Q= 8**																
	180030004	1	01/01/99		01/21/99	3	73%	3	60%	3	35%	3	67%			1	
	180190005	1	01/01/99		01/30/99	3	63%	3	80%	3	71%	3	83%		1	1	1
	180390003	1	05/12/99		05/15/99			3	47%	3	94%	3	83%				
	180431004	1	01/01/99		01/18/99	3	60%	3	80%	3	97%	3	83%		1	1	1
	180670003	1	06/11/99		06/23/99			3	10%	3	71%	3	87%				1
	180890006	1	01/27/99		01/30/99	1	39%	1	67%	1	64%	1	64%			1	1
	180890022	1	03/04/99		03/05/99	1	18%	1	49%	1	83%	1	82%			1	1
	180891003	1	01/27/99		02/02/99	3	47%	3	63%	3	68%	3	80%			1	1
	180891016	1	01/01/99		01/01/99	1	90%	1	47%	1	78%	1	73%			1	1
	180892004	1	02/11/99		02/11/99	3	33%	3	57%	3	74%	3	87%				1

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	180892010	1	01/27/99		03/07/99	3	30%	3	43%	3	6%						
	180950009	1	03/19/99		03/19/99	3	17%	3	87%	3	45%	3	80%				
	180970042	1	10/01/99														
	180970043	1	01/24/99		01/24/99	3	63%	3	100%								1
	180970066	1	02/05/99		02/05/99	3	43%	3	100%								1
	180970078	1	03/07/99		03/07/99	3	27%	3	93%								1
	180970079	1	10/01/99														
	180970081	1	01/22/99		01/22/99	1	62%	1	99%								1
	180970083	1	01/22/99		01/22/99	1	72%	1	93%								1
	181270020	1	03/04/99		03/13/99	3	20%	3	87%	3	84%	3	93%				
	181270024	1	01/27/99		01/30/99	3	57%	3	87%	3	94%	3	87%		1	1	
	181411008	1	04/01/99		04/15/99			3	73%	3	97%	3	67%				
	181412004	1	04/01/99		04/15/99			3	63%	3	84%	3	93%				
	181570007	1	04/01/99		05/15/99			3	37%	3	94%	3	93%				1
	181630006	1	04/15/99		04/15/99			3	60%	3	84%	3	53%				1
	181630012	1	04/15/99		04/15/99			3	40%	3	71%	3	87%				1
	181630016	1	06/05/99		06/11/99			3	20%	3	87%	3	83%				1
	181670018	1	03/19/99		03/19/99	3	17%	3	80%	3	90%	3	93%				
IOWA	**Total # of FRM Sites=15;**		**Number w/ Data=15;**		**Number Complete (75%+ in each Q)= 0;**					**Number w/ 50% in each Q= 9;**		**Number w/ 11+ samples in each Q=10**					
	190130008	1	01/15/99		02/06/99	3	63%	3	97%	3	100%	3	100%		1	1	
	190330019	1	07/01/99		07/02/99					3	94%	3	100%				
	190450021	1	01/27/99		01/27/99	3	70%	3	94%	3	100%	3	100%		1	1	
	191032001	1	01/27/99		01/27/99	3	69%	3	100%	3	100%	3	100%		1	1	
	191130036	1	01/15/99		01/30/99	3	70%	3	93%	3	94%	3	94%		1	1	
	191130037	1	01/15/99		01/30/99	3	57%	3	100%	3	100%	3	97%		1	1	
	191390016	1	01/27/99	03/31/00	01/27/99	3	74%	3	97%	3	100%	3	100%		1	1	
	191530059	2	11/01/99		11/08/99							3	40%				
	191532510	1	02/01/99		02/05/99	3	37%	3	97%	3	94%	3	84%			1	
	191532520	1	02/01/99		02/05/99	3	50%	3	100%	3	100%	3	93%		1	1	
	191550009	1	07/01/99		07/02/99					3	74%	3	93%				
	191630015	2	01/27/99		01/27/99	3	63%	3	100%	3	100%	3	100%		1	1	
	191630018	1	07/01/99		07/02/99					3	100%	3	100%				
	191692530	1	02/01/99		02/05/99	3	30%	3	100%	3	100%	3	100%				1
	191930017	1	01/30/99		01/30/99	3	67%	3	100%	3	97%	3	100%		1	1	
KANSAS	**Total # of FRM Sites=13;**		**Number w/ Data=13;**		**Number Complete (75%+ in each Q)= 2;**					**Number w/ 50% in each Q= 8;**		**Number w/ 11+ samples in each Q= 8**					
	200910007	1	01/21/99		01/21/99	3	33%	3	77%	3	90%	3	100%				
	200910008	1	01/12/99		01/12/99	3	77%	3	77%	3	81%	3	93%	1	1	1	
	200910009	1	01/12/99		01/12/99	3	80%	3	77%	3	94%	3	100%	1	1	1	
	201070002	1	01/21/99		01/21/99	3	59%	3	77%	3	94%	3	93%		1	1	
	201730008	1	01/27/99		01/27/99	3	73%	3	97%	3	90%	3	90%		1	1	
	201730009	1	01/27/99		01/27/99	3	70%	3	87%	3	94%	3	87%		1	1	
	201730010	1	01/12/99		01/12/99	3	74%	3	93%	3	81%	3	87%		1	1	
	201770010	1	01/27/99		01/27/99	3	67%	3	90%	3	100%	3	90%		1	1	
	201770011	1	01/27/99		01/27/99	3	67%	3	80%	3	94%	3	97%		1	1	
	201770012	1	06/14/99		06/20/99			3	13%	3	87%	3	97%				
	201910002	1	11/17/99		11/17/99							3	40%				
	202090021	1	04/27/99		04/27/99			3	67%	3	100%	3	97%				1
	202090022	1	04/30/99		04/30/99			3	53%	3	77%	3	87%				
KENTUCKY	**Total # of FRM Sites=21;**		**Number w/ Data=21;**		**Number Complete (75%+ in each Q)= 3;**					**Number w/ 50% in each Q=18;**		**Number w/ 11+ samples in each Q=19**					
	210130002	1	07/15/99		08/16/99					6	33%	6	73%				1
	210190017	1	01/01/99		02/02/99	3	57%	3	80%	3	87%	3	97%		1	1	1
	210290006	1	01/01/99		01/21/99	3	73%	3	83%	3	84%	3	87%		1	1	1
	210370003	1	01/01/99		01/27/99	3	63%	3	100%	3	100%	3	83%		1	1	1
	210430500	1	01/01/99		02/02/99	3	63%	3	83%	3	74%	3	84%		1	1	
	210470006	1	01/01/99		01/30/99	3	70%	3	100%	3	100%	3	97%		1	1	1
	210590014	1	01/01/99		02/01/99	3	63%	3	76%	3	90%	3	100%		1	1	1
	210670012	1	01/01/99		01/21/99	3	70%	3	100%	3	100%	3	93%		1	1	1
	210670014	1	12/21/98		01/30/99	3	63%	3	100%	3	97%	3	100%		1	1	1
	210730006	1	01/01/99		01/30/99	3	67%	3	90%	3	94%	3	100%		1	1	1
	210930005	1	01/01/99	10/18/99	01/27/99	3	63%	3	90%	3	100%	3	3%				1
	211010006	1	01/01/99		02/02/99	3	53%	3	70%	3	87%	3	70%		1	1	1
	211110043	1	06/15/98		01/02/99	1	79%	1	98%	1	98%	1	86%	1	1	1	1
	211110044	1	06/15/98		01/01/99	1	77%	1	95%	1	98%	1	93%	1	1	1	1
	211110048	1	01/01/99		01/06/99	3	77%	3	80%	3	87%	3	73%		1	1	1
	211110051	1	06/15/98		01/02/99	6	88%	6	80%	6	100%	6	81%	1	1	1	1
	211170007	1	01/01/99		01/27/99	3	50%	3	87%	3	91%	3	80%		1	1	1
	211451004	1	01/01/99		01/30/99	3	67%	3	83%	3	87%	3	93%		1	1	1
	211510003	1	06/15/98		01/30/99	3	37%	3	93%	3	94%	3	97%			1	1
	211950002	1	01/01/99		02/02/99	3	57%	3	97%	3	100%	3	100%		1	1	1
	212270007	1	01/01/99		01/30/99	3	63%	3	90%	3	100%	3	100%		1	1	1
LOUISIANA	**Total # of FRM Sites=18;**		**Number w/ Data=18;**		**Number Complete (75%+ in each Q)=17;**					**Number w/ 50% in each Q=18;**		**Number w/ 11+ samples in each Q=17**					
	220171002	1	01/01/99		01/03/99	3	100%	3	100%	3	100%	3	100%	1	1	1	1

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	220190009	1	01/01/99		01/12/99	6	60%	6	80%	6	87%	6	87%		1		
	220190010	1	01/01/99		01/06/99	3	83%	3	97%	3	100%	3	100%	1	1	1	
	220290002	1	01/01/99		01/03/99	6	81%	6	100%	6	80%	6	93%	1	1	1	1
	220330002	1	01/01/99		01/15/99	3	83%	3	93%	3	84%	3	93%	1	1	1	1
	220330009	1	01/01/99		01/01/99	1	97%	1	98%	1	99%	1	96%	1	1	1	1
	220331001	1	01/01/99		01/06/99	6	93%	6	87%	6	100%	6	87%	1	1	1	1
	220470005	1	01/01/99		01/12/99	6	93%	6	93%	6	100%	6	93%	1	1	1	1
	220470009	1	01/01/99		01/06/99	6	93%	6	87%	6	75%	6	87%	1	1	1	
	220511001	1	01/01/99		01/06/99	1	91%	1	99%	1	99%	1	96%	1	1	1	1
	220512001	1	01/01/99		01/06/99	6	80%	6	100%	6	100%	6	100%	1	1	1	1
	220550005	1	01/01/99		01/03/99	3	97%	3	93%	3	97%	3	100%	1	1	1	
	220710010	1	01/01/99		01/06/99	3	97%	3	93%	3	100%	3	100%	1	1	1	1
	220710012	1	01/01/99		01/06/99	3	80%	3	87%	3	84%	3	80%	1	1	1	1
	220730004	1	01/01/99		01/06/99	3	83%	3	93%	3	87%	3	87%	1	1	1	1
	220790001	1	01/01/99		01/06/99	6	93%	6	93%	6	80%	6	100%	1	1	1	1
	221050001	1	01/01/99		01/06/99	6	93%	6	93%	6	93%	6	100%	1	1	1	1
	221210001	1	01/01/99		01/01/99	1	89%	1	91%	1	96%	1	86%	1	1	1	1
MAINE	**Total # of FRM Sites=13;**		**Number w/ Data=12;**		**Number Complete (75%+ in each Q)= 2;**				**Number w/ 50% in each Q=11;**				**Number w/ 11+ samples in each Q= 7**				
	230010011	1	01/01/99		01/24/99	3	50%	3	83%	3	84%	3	63%		1	1	
	230030013	1	01/01/99		01/21/99	3	70%	3	97%	3	97%	3	97%		1	1	
	230031011	1	10/01/97		01/21/99	3	63%	3	100%	3	100%	3	100%		1	1	
	230050015	1	01/01/99		01/24/99	6	67%	6	93%	6	93%	6	87%		1		
	230050026	1	01/01/99														
	230050027	1	01/01/99		01/24/99	3	57%	3	77%	3	94%	3	80%		1	1	
	230052003	1	01/01/99		01/24/99	6	60%	3	100%	3	94%	6	80%		1		
	230090103	1	01/01/99		01/24/99	6	67%	3	77%	3	91%	6	94%		1		
	230110016	1	01/01/99		02/05/99	6	53%	6	100%	6	100%	6	100%		1		
	230172011	1	12/01/98		01/24/99	6	80%	6	80%	6	100%	6	93%	1	1	1	
	230190002	1	01/01/99		01/27/99	3	57%	3	76%	3	88%	3	94%		1	1	
	230194003	1	01/01/99		01/24/99	6	80%	6	81%	6	87%	6	93%	1	1	1	
	230310008	1	01/12/99		01/24/99	6	33%	6	87%	6	93%	6	87%				
MARYLAND	**Total # of FRM Sites=18;**		**Number w/ Data=16;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**				**Number w/ 11+ samples in each Q= 0**				
	240030014	1	01/01/99		08/07/99					3	58%	3	80%				1
	240030019	1	01/01/99		08/13/99					3	45%	3	53%				1
	240031003	1	01/01/99														
	240032002	1	01/01/99		09/03/99					3	26%	3	43%				1
	240051007	1	01/01/99														
	240053001	1	01/01/99		08/04/99					3	42%	3	50%				1
	240150003	1	01/01/99		12/11/99							3	20%				
	240251001	1	01/01/99		08/04/99					3	35%	3	63%				1
	240313001	1	01/01/99		07/26/99					3	65%	3	67%				1
	240330001	1	01/01/99		08/01/99					3	58%	3	53%				1
	240338001	1	01/01/99		08/07/99					3	52%	3	67%				1
	240430009	1	04/01/99		12/17/99							3	17%				
	245100006	1	01/01/99		07/26/99					3	65%	3	60%				1
	245100007	1	01/01/99		07/29/99					3	35%	3	30%				1
	245100035	1	01/01/99		10/21/99							3	40%				1
	245100040	1	01/01/99		06/17/99			3	3%	3	58%	3	60%				1
	245100049	1	01/01/99		08/01/99					3	68%	3	10%				1
	245100052	1	01/01/99		05/12/99			6	20%	3	65%	3	67%				1
MASSACHUSETTS	**Total # of FRM Sites=18;**		**Number w/ Data=18;**		**Number Complete (75%+ in each Q)= 8;**				**Number w/ 50% in each Q=14;**				**Number w/ 11+ samples in each Q=16**				
	250035001	1	01/03/99		01/03/99	3	73%	3	87%	3	94%	3	83%		1	1	
	250052004	1	01/03/99		01/03/99	3	77%	3	100%	3	100%	3	93%	1	1	1	
	250053001	1	01/03/99		01/03/99	3	77%	3	100%	3	100%	3	93%	1	1	1	
	250092006	1	01/03/99		01/03/99	3	43%	3	97%	3	90%	3	97%			1	
	250095005	1	01/03/99		01/03/99	3	87%	3	93%	3	94%	3	70%		1	1	
	250096001	1	04/03/99		04/03/99			3	90%	3	69%	3	74%				
	250130008	1	01/01/99		01/01/99	1	57%	1	9%	1	37%	1	96%				
	250130016	1	01/03/99		01/03/99	3	97%	3	100%	3	100%	3	93%	1	1	1	1
	250132007	1	01/03/99		01/03/99	3	77%	3	93%	3	100%	3	93%	1	1	1	1
	250154002	1	01/03/99		01/03/99	3	97%	3	97%	3	90%	3	90%	1	1	1	
	250171102	1	01/03/99		01/03/99	3	77%	3	87%	3	87%	3	63%		1	1	
	250210007	1	01/03/99		01/03/99	3	83%	3	100%	3	97%	3	100%	1	1	1	
	250230004	1	01/03/99		01/03/99	3	83%	3	80%	3	100%	3	73%		1	1	
	250250002	1	01/03/99		01/03/99	3	73%	3	93%	3	97%	3	97%		1	1	1
	250250027	1	01/03/99		01/03/99	3	100%	3	83%	3	97%	3	87%	1	1	1	1
	250250042	1	03/20/99		03/20/99	1	13%	1	76%	1	62%	1	18%			1	
	250270020	1	01/03/99		01/03/99	3	90%	3	97%	3	100%	3	93%	1	1	1	
	250272004	1	01/03/99		01/03/99	3	80%	3	73%	3	84%	3	90%		1	1	
MICHIGAN	**Total # of FRM Sites=22;**		**Number w/ Data=22;**		**Number Complete (75%+ in each Q)= 5;**				**Number w/ 50% in each Q=10;**				**Number w/ 11+ samples in each Q=11**				
	260050003	1	10/31/98		01/03/99	1	77%	1	84%	1	99%	1	98%	1	1	1	
	260210014	1	11/07/98		01/03/99	3	90%	3	100%	3	97%	3	97%	1	1	1	

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	260490021	1	12/16/98		01/03/99	3	70%	3	77%	3	100%	3	83%		1	1	
	260550003	1	12/14/99		12/14/99							3	20%				
	260650012	1	11/07/98		02/06/99	1	28%	3	63%	3	90%	3	100%			1	
	260770008	1	11/19/98		01/03/99	3	77%	3	70%	3	65%	3	97%		1	1	1
	260810020	1	10/23/98		01/02/99	1	92%	1	96%	1	93%	1	95%	1	1	1	1
	260990009	1	12/22/98		01/03/99	3	83%	3	73%	3	100%	3	90%		1	1	
	261150005	1	12/17/99		12/17/99							3	17%				
	261210040	1	12/18/98		01/08/99	1	74%	3	94%	3	65%	3	80%		1	1	
	261250001	1	12/25/98		01/03/99	3	81%	3	60%	3	81%	3	87%		1	1	1
	261390005	1	11/07/98		01/03/99	3	93%	3	100%	3	94%	3	97%	1	1	1	
	261450018	1	02/23/99		03/04/99	3	30%	3	67%	3	87%	3	60%				
	261470005	1	01/03/99		01/03/99	3	80%	3	83%	3	90%	3	90%	1	1	1	
	261610005	1	03/28/99		06/26/99			6	13%	3	94%	3	90%				
	261610008	1	08/04/99		08/07/99					3	58%	3	93%				1
	261630001	1	05/12/99		05/12/99			1	53%	1	85%	1	90%				1
	261630015	1	02/26/99		02/26/99	3	30%	3	90%	3	81%	3	83%				1
	261630016	1	05/12/99		05/12/99			1	31%	1	86%	1	89%				1
	261630025	1	08/22/99		08/22/99					3	47%	3	61%				
	261630033	1	02/05/99		02/05/99	3	30%	3	87%	3	90%	3	97%				1
	261630036	1	02/20/99		02/20/99	3	27%	3	57%	3	84%	3	68%				1
MINNESOTA	**Total # of FRM Sites=21;**		**Number w/ Data=21;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**				**Number w/ 11+ samples in each Q= 0**				
	270376018	1	04/24/99		04/24/99			6	80%	6	80%	6	93%				
	270475401	1	10/01/99		11/08/99							6	60%				
	270530960	1	04/21/99		04/21/99			1	43%	1	32%	1	38%				
	270530961	1	04/12/99		04/12/99			6	87%	6	80%	6	100%				
	270531007	1	04/24/99		04/24/99			6	80%	6	100%	6	93%				
	270532006	1	04/24/99		04/24/99			6	73%	6	93%	6	60%				
	270757608	1	10/01/99		11/08/99							6	44%				
	270854301	1	10/01/99		11/08/99							6	33%				1
	270953051	1	12/06/99		12/08/99							6	27%				
	271112012	1	11/14/99		11/14/99							6	53%				
	271230021	1	04/21/99		04/21/99			1	47%	1	32%	1	34%				
	271230866	1	04/01/99		04/03/99			6	100%	6	87%	6	75%				
	271230868	1	03/31/99		03/31/99	6	7%	6	94%	6	93%	6	88%				
	271230871	1	04/24/99		04/24/99			6	80%	6	87%	6	93%				
	271230872	1	04/12/99		04/12/99			6	93%	6	87%	6	100%				
	271230873	1	04/21/99		04/21/99			1	48%	1	25%	1	32%				
	271377001	1	05/30/99		05/30/99			6	40%	6	87%	6	60%				
	271377550	1	05/06/99		05/06/99			6	60%	6	67%	6	73%				
	271453052	1	12/20/99		12/20/99							6	13%				
	271630301	1	10/01/99		11/26/99							6	40%				
	271713201	1	10/01/99		11/26/99							6	40%				
MISSISSIPPI	**Total # of FRM Sites=16;**		**Number w/ Data=16;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 6;**				**Number w/ 11+ samples in each Q= 6**				
	280010004	1	03/10/99		03/10/99	3	23%	3	73%	3	100%	3	100%				1
	280110001	1	05/21/99		05/21/99			3	43%	3	100%	3	93%				1
	280330002	1	02/14/99		02/14/99	3	53%	3	97%	3	100%	3	93%		1	1	1
	280350004	1	03/07/99		03/07/99	3	30%	3	93%	3	100%	3	100%				1
	280450001	1	02/14/99		02/14/99	3	53%	3	93%	3	97%	3	97%		1	1	1
	280470008	1	04/03/99		04/03/99			3	93%	3	100%	3	93%				1
	280490010	1	02/14/99		02/14/99	3	50%	3	87%	3	90%	3	97%		1	1	1
	280490018	1	02/14/99		02/14/99	3	53%	3	97%	3	90%	3	87%		1	1	1
	280590006	1	02/14/99		02/14/99	3	53%	3	100%	3	100%	3	100%		1	1	1
	280670002	1	03/07/99		03/07/99	3	30%	3	100%	3	97%	3	93%				1
	280750003	1	04/03/99		04/03/99			3	87%	3	94%	3	93%				1
	280810005	1	02/14/99		02/14/99	3	50%	3	97%	3	97%	3	93%		1	1	1
	280870001	1	03/07/99		03/07/99	3	27%	3	100%	3	94%	3	100%				1
	281210001	1	03/07/99		03/07/99	3	30%	3	100%	3	100%	3	97%				1
	281230001	1	08/22/99		08/22/99					3	45%	3	93%				1
	281490004	1	03/07/99		03/07/99	3	27%	3	93%	3	97%	3	93%				1
MISSOURI	**Total # of FRM Sites=20;**		**Number w/ Data=19;**		**Number Complete (75%+ in each Q)=13;**				**Number w/ 50% in each Q=17;**				**Number w/ 11+ samples in each Q=17**				
	290210010	1	12/15/98		01/03/99	3	83%	3	97%	3	100%	3	100%	1	1	1	
	290390001	1	01/01/99		01/03/99	3	97%	3	87%	3	90%	3	90%	1	1	1	
	290470005	1	01/01/99		01/03/99	3	77%	3	97%	3	84%	3	97%	1	1	1	
	290470026	1	01/01/99		01/01/99	1	68%	1	92%	1	93%	1	92%		1	1	
	290470041	1	01/01/99		01/02/99	1	82%	1	73%	1	97%	1	92%		1	1	
	290770032	1	01/03/99		01/03/99	3	100%	3	100%	3	100%	3	100%	1	1	1	
	290910003	1	01/01/99		01/03/99	3	90%	3	90%	3	87%	3	90%	1	1	1	
	290950036	1	01/03/99	03/12/00	01/03/99	3	90%	3	93%	3	97%	3	100%	1	1	1	
	290952002	1	01/03/99		01/03/99	3	80%	3	100%	3	100%	3	100%	1	1	1	1
	290970003	1	01/01/99		01/03/99	3	80%	3	97%	3	87%	3	93%	1	1	1	
	290990012	1	01/01/99		01/03/99	3	81%	3	93%	3	97%	3	97%	1	1	1	1
	291370001	1	01/01/99		02/05/99	3	53%	3	93%	3	100%	3	100%		1	1	

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	291831002	1	01/01/99		01/06/99	3	83%	3	90%	3	100%	3	97%	1	1	1	1
	291860006	1	01/01/99		01/08/99	3	87%	3	93%	3	94%	3	100%	1	1	1	1
	291892003	1	01/01/99		01/03/99	3	63%	3	97%	3	100%	3	100%		1	1	1
	291895001	1	01/01/99		01/03/99	3	87%	3	90%	3	97%	3	100%	1	1	1	1
	295100007	1	01/01/99														
	295100085	1	03/30/99		04/01/99			1	93%	1	97%	1	99%				1
	295100086	1	01/01/99		01/01/99	1	86%	1	98%	1	98%	1	93%	1	1	1	1
	295100087	1	11/06/99		11/06/99							1	60%				1
MONTANA	**Total # of FRM Sites= 9; Number w/ Data= 9; Number Complete (75%+ in each Q)= 1; Number w/ 50% in each Q= 5; Number w/ 11+ samples in each Q= 7**																
	300290039	1	01/01/99		01/03/99	3	40%	3	97%	3	71%	3	93%			1	
	300290043	1	01/01/99	06/24/99	01/03/99	3	73%	3	93%								
	300290047	1	06/26/99		06/26/99			3	7%	3	74%	3	97%				
	300490018	1	01/01/99		01/03/99	3	73%	3	87%	3	81%	3	93%		1	1	
	300530018	1	01/01/99		01/03/99	3	50%	3	70%	3	72%	3	93%		1	1	1
	300630024	1	01/01/99		01/03/99	3	63%	3	100%	3	84%	3	93%		1	1	
	300630031	1	01/01/99		01/03/99	3	60%	3	87%	3	55%	3	97%		1	1	
	300930005	1	02/11/99		02/11/99	3	47%	3	100%	3	90%	3	93%			1	
	301111065	1	01/01/99		01/03/99	3	77%	3	87%	3	94%	3	100%	1	1	1	
NEBRASKA	**Total # of FRM Sites=13; Number w/ Data=13; Number Complete (75%+ in each Q)= 1; Number w/ 50% in each Q= 1; Number w/ 11+ samples in each Q= 1**																
	310250002	1	03/01/99		03/04/99	3	33%	3	90%	3	81%	3	87%				
	310270001	1	09/21/99		09/21/99					3	13%						
	310310001	1	08/04/99		08/04/99					3	58%	3	87%				
	310490001	1	08/04/99		08/04/99					3	65%	3	77%				
	310550019	1	01/01/99		02/06/99	1	6%	1	19%	1	41%	1	46%				
	310550051	1	01/01/99		02/02/99	3	17%	3	20%	3	42%	3	66%				
	310550052	1	01/01/99		06/10/99			1	0%	1	36%	6	80%				
	310790003	1	03/01/99		03/07/99	3	20%	3	77%	3	61%	3	83%				1
	311090022	1	01/01/99		01/03/99	3	93%	3	90%	3	87%	3	90%	1	1	1	
	311111002	1	03/01/99		03/01/99	6	20%	3	70%	3	94%	3	100%				
	311530007	1	03/01/99		03/04/99	3	20%	3	57%	3	84%	3	87%				
	311570003	1	03/01/99		03/13/99	6	19%	3	67%	3	74%	3	90%				
	311770002	1	04/06/99		04/06/99			3	50%	3	65%	3	88%				
NEVADA	**Total # of FRM Sites= 7; Number w/ Data= 7; Number Complete (75%+ in each Q)= 2; Number w/ 50% in each Q= 3; Number w/ 11+ samples in each Q= 3**																
	320030022	1	01/01/99		01/03/99	3	100%	3	100%	3	97%	3	100%	1	1	1	
	320030560	1	01/01/99		01/14/99	1	72%	1	90%	1	96%	1	97%		1	1	
	320031019	1	01/01/99		01/03/99	3	83%	3	30%	3	94%	3	90%				
	320032002	1	01/01/99		01/03/99	3	80%	3	10%	3	90%	3	93%				
	320050008	1	12/23/99		12/23/99							3	10%				
	320310016	1	01/01/99		01/03/99	3	97%	3	100%	3	90%	3	100%	1	1	1	
	320312002	1	06/05/99		06/05/99			3	23%	3	87%	3	100%				
NEW HAMPSHIRE	**Total # of FRM Sites= 9; Number w/ Data= 0; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 0; Number w/ 11+ samples in each Q= 0**																
	330012003	1	01/01/99														
	330050007	1	01/01/99														
	330070014	1	01/01/99														
	330110019	1	08/01/99														
	330111007	1	01/01/99														
	330130003	1	01/01/99														
	330135001	1	01/01/99														
	330150009	1	01/01/99														
	330190003	1	01/01/99														
NEW JERSEY	**Total # of FRM Sites=19; Number w/ Data=19; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 2; Number w/ 11+ samples in each Q=11**																
	340030003	1	01/01/99		02/08/99	3	53%	3	97%	3	100%	3	93%		1	1	
	340070003	1	01/01/99		03/04/99	3	33%	3	100%	3	94%	3	83%				
	340071007	1	01/01/99		02/14/99	3	50%	3	90%	3	97%	3	83%		1	1	
	340130011	1	01/01/99		02/17/99	3	47%	3	77%	3	77%	3	33%				1
	340130015	1	04/21/99		04/21/99			3	60%	3	87%	3	70%				1
	340155001	1	09/03/99		10/06/99							3	93%				
	340171003	1	01/01/99		02/26/99	3	37%	3	83%	3	77%	3	97%			1	1
	340172002	1	01/01/99		08/04/99					3	58%	3	60%				1
	340210008	1	01/01/99		02/26/99	3	40%	3	100%	3	97%	3	100%			1	
	340218001	1	01/01/99		02/17/99	3	47%	3	94%	3	90%	3	90%			1	
	340230006	1	01/01/99		02/14/99	3	43%	3	93%	3	97%	3	77%			1	
	340270004	1	05/30/99		05/30/99			3	37%	3	97%	3	93%				1
	340273001	1	01/01/99		02/20/99	3	47%	3	87%	3	87%	3	93%			1	
	340292002	1	02/11/99		02/18/99	3	37%	3	63%	3	77%	3	68%			1	
	340310005	1	01/01/99		02/14/99	3	47%	3	87%	3	84%	3	83%			1	
	340390004	1	01/01/99		02/26/99	3	40%	3	93%	3	97%	3	97%			1	1
	340390006	1	01/01/99		02/20/99	3	47%	3	100%	3	97%	3	67%			1	1
	340392003	1	12/11/99		12/17/99							3	17%				1
	340410006	1	08/10/99		10/03/99							3	33%				
NEW MEXICO	**Total # of FRM Sites=13; Number w/ Data=10; Number Complete (75%+ in each Q)= 1; Number w/ 50% in each Q= 6; Number w/ 11+ samples in each Q=10**																
	350010023	1	03/03/99		03/03/99	1	27%	1	88%	1	90%	1	98%			1	

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	350010024	1	02/03/99		02/03/99	1	49%	1	93%	1	92%	1	91%			1	
	350050005	1	01/01/99		01/15/99	3	43%	3	88%	3	92%	3	94%			1	
	350130017	1	01/01/99		01/09/99	3	60%	3	94%	3	97%	3	94%		1	1	
	350131006	1	01/01/99		01/15/99	3	71%	3	91%	3	89%	3	97%		1	1	
	350171002	1	01/01/99		01/06/99	3	67%	3	74%	3	82%	1	34%			1	
	350250007	1	01/01/99		01/21/99	3	63%	3	82%	3	86%	3	89%		1	1	
	350431003	1	01/01/99		01/06/99	3	67%	3	91%	3	94%	3	89%		1	1	
	350439001	1	09/01/99														
	350439003	1	09/01/99														
	350450006	1	01/01/99		01/15/99	3	70%	3	94%	3	54%	3	94%		1	1	
	350490020	1	01/01/99		01/06/99	3	87%	3	94%	3	88%	3	97%	1	1	1	
	350499002	1	09/01/99														
NEW YORK	**Total # of FRM Sites=42;**		**Number w/ Data=33;**		**Number Complete (75%+ in each Q)= 0;**						**Number w/ 50% in each Q= 0;**		**Number w/ 11+ samples in each Q= 0**				
	360010005	1	01/01/99		07/02/99					3	45%	3	80%				
	360010012	1	01/01/99		07/02/99					3	19%	3	73%				
	360050073	1	01/01/99	07/15/99	07/01/99					1	12%						1
	360050080	1	01/01/99		07/02/99					3	52%	3	60%				1
	360050083	1	01/01/99		07/02/99					3	48%	3	73%				1
	360050110	1	09/15/99		09/15/99					1	1%	1	72%				
	360130011	1	01/01/99		07/02/99					3	55%	3	77%				
	360271004	1	07/01/99		07/02/99					3	74%	3	73%				
	360290002	1	01/01/99		07/02/99					3	77%	3	83%				
	360290005	1	01/01/99		07/02/99					3	74%	3	83%				1
	360291007	1	12/15/99		12/17/99							3	17%				
	360310003	1	07/01/99		07/02/99					1	48%	1	65%				
	360470011	1	01/01/99		07/02/99					3	58%	3	73%				1
	360470052	1	12/15/99														
	360470076	1	01/01/99		07/02/99					3	42%	3	57%				
	360470118	1	12/31/99														
	360551004	1	01/01/99	02/28/99													
	360552002	1	12/15/99														
	360556001	1	01/01/99		08/31/99					3	29%	3	73%				
	360590005	1	01/01/99		07/02/99					3	68%	3	83%				1
	360590008	1	01/01/99		07/02/99					3	48%	3	77%				
	360590011	1	01/01/99		07/02/99					3	65%	3	67%				1
	360610010	1	01/01/99		07/01/99					1	49%	1	60%				1
	360610056	1	01/01/99		07/02/99					3	61%	3	60%				1
	360610062	1	01/01/99		07/02/99					3	42%	3	80%				1
	360610115	1	12/31/99														
	360610117	1	12/31/99														
	360632008	1	01/01/99		07/02/99					3	61%	3	77%				1
	360652001	1	01/01/99		07/02/99					3	68%	3	93%				
	360670019	1	08/01/99		08/01/99					3	32%	3	87%				
	360671015	1	01/01/99		07/02/99					3	65%	3	83%				
	360710002	1	12/31/99														
	360810094	1	07/01/99		07/02/99					3	26%	3	77%				
	360810097	1	01/01/99		07/02/99					3	90%	3	77%				
	360810116	1	12/31/99														
	360850055	1	09/01/99		12/11/99							3	17%				
	360850067	1	01/01/99		07/02/99					3	58%	3	60%				
	360893001	1	10/01/99		10/12/99							3	77%				
	360930003	1	01/01/99		07/02/99					3	52%	3	87%				
	361010003	1	08/01/99		08/02/99					1	45%	1	73%				
	361030001	1	01/01/99		07/02/99					3	39%	3	60%				
	361030005	1	12/31/99														
NORTH CAROLINA	**Total # of FRM Sites=35;**		**Number w/ Data=35;**		**Number Complete (75%+ in each Q)=17;**						**Number w/ 50% in each Q=26;**		**Number w/ 11+ samples in each Q=28**				
	370010002	1	01/01/99		01/03/99	3	70%	3	90%	3	90%	3	77%		1	1	1
	370210034	1	01/01/99		01/03/99	3	87%	3	94%	3	97%	3	83%	1	1	1	1
	370250004	1	01/01/99		01/03/99	3	90%	3	97%	3	77%	3	100%	1	1	1	1
	370330001	1	01/01/99		01/03/99	3	60%	3	73%	3	84%	3	83%		1	1	1
	370350004	1	01/01/99		01/03/99	3	88%	3	97%	3	87%	3	93%	1	1	1	1
	370370004	1	01/01/99		01/03/99	3	73%	3	83%	3	94%	3	87%		1	1	1
	370510009	1	01/01/99		01/03/99	3	67%	3	83%	3	97%	3	93%		1	1	1
	370570002	1	01/01/99		01/03/99	3	73%	3	87%	3	97%	3	73%		1	1	1
	370610002	1	01/01/99		01/03/99	3	80%	3	93%	3	94%	3	97%	1	1	1	
	370630001	1	01/01/99		01/01/99	1	90%	1	90%	1	89%	1	91%	1	1	1	1
	370650003	1	03/01/99		03/01/99	3	20%	3	90%	3	65%	3	43%				1
	370670022	1	01/01/99		01/01/99	1	89%	1	86%	1	89%	1	89%	1	1	1	1
	370670024	1	01/01/99		01/03/99	3	100%	3	97%	3	68%	3	90%		1	1	1
	370710016	1	01/01/99		01/03/99	3	97%	3	90%	3	100%	3	90%	1	1	1	1
	370810009	1	01/01/99		01/01/99	1	80%	1	81%	1	80%	1	61%		1	1	1
	370811005	1	01/01/99		01/03/99	3	47%	3	35%	3	87%	3	70%			1	1

1999 PM2.5 Data Completeness, Routine FRM (as of AIRS 7/26/00)

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	370870010	1	01/01/99		01/03/99	3	77%	3	97%	3	94%	3	90%	1	1	1	1
	371070004	1	01/01/99		01/03/99	3	77%	3	80%	3	48%	3	93%			1	
	371110004	1	01/01/99		01/03/99	3	93%	3	87%	3	97%	3	93%	1	1	1	1
	371190010	1	01/01/99		01/01/99	1	94%	1	98%	1	100%	1	97%	1	1	1	1
	371190034	1	01/01/99		01/01/99	1	96%	1	99%	1	32%						1
	371190040	1	01/01/99		01/03/99	3	90%	3	93%	3	94%	3	100%	1	1	1	1
	371190041	1	07/30/99		07/30/99					1	68%	1	98%				1
	371210001	1	01/01/99		01/03/99	3	83%	3	90%	3	90%	3	100%	1	1	1	1
	371230001	1	07/16/99		07/17/99					3	68%	3	83%				1
	371290009	1	01/01/99		01/03/99	3	83%	3	90%	3	94%	3	100%	1	1	1	
	371330005	1	01/01/99		01/03/99	3	87%	3	93%	3	94%	3	93%	1	1	1	
	371350007	1	01/01/99		01/03/99	3	77%	3	90%	3	84%	3	97%	1	1	1	1
	371390002	1	04/28/99		04/30/99			3	57%	3	65%	3	83%				1
	371470005	1	03/01/99		03/01/99	3	10%	3	84%	3	74%	3	63%				1
	371550004	1	03/10/99		03/10/99	3	17%	3	100%	3	94%	3	90%				1
	371730002	1	01/01/99		01/03/99	3	90%	3	97%	3	97%	3	90%	1	1	1	1
	371830014	1	01/01/99		01/01/99	1	81%	1	88%	1	82%	1	97%	1	1	1	1
	371830015	1	01/01/99		01/03/99	3	77%	3	90%	3	74%	3	90%		1	1	1
	371910005	1	01/01/99		01/03/99	3	71%	3	87%	3	81%	3	73%		1	1	1
NORTH DAKOTA	**Total # of FRM Sites= 7;**		**Number w/ Data= 7;**		**Number Complete (75%+ in each Q)= 2;**				**Number w/ 50% in each Q= 3;**				**Number w/ 11+ samples in each Q= 5**				
	380130002	1	04/01/99		04/06/99			6	73%	6	73%	6	87%				
	380130003	1	09/03/99		09/03/99					6	20%	6	87%				
	380150003	1	01/01/99		01/03/99	3	47%	3	80%	3	81%	3	100%			1	
	380171004	1	01/01/99		01/03/99	3	70%	3	94%	3	90%	3	100%		1	1	
	380350004	1	01/01/99		01/03/99	3	43%	3	84%	3	87%	3	90%			1	
	380570004	1	01/01/99		01/05/99	6	94%	6	87%	6	93%	6	93%	1	1	1	
	380910001	1	01/01/99		01/06/99	6	93%	6	100%	6	93%	6	87%	1	1	1	
OHIO	**Total # of FRM Sites=37;**		**Number w/ Data=37;**		**Number Complete (75%+ in each Q)=12;**				**Number w/ 50% in each Q=26;**				**Number w/ 11+ samples in each Q=29**				
	390090003	1	01/03/99		01/03/99	3	57%	3	87%	3	100%	3	87%		1	1	1
	390170003	1	01/01/99		01/01/99	1	90%	1	99%	1	95%	1	35%			1	1
	390350013	1	01/29/99		01/29/99	3	70%	3	100%	3	97%	3	97%		1	1	1
	390350027	1	01/08/99		01/08/99	1	70%	1	87%	1	90%	1	86%		1	1	1
	390350038	1	01/08/99		01/08/99	1	84%	1	90%	1	84%	1	65%		1	1	1
	390350045	1	12/14/99		12/14/99							3	20%				1
	390350060	1	01/08/99		01/08/99	3	83%	3	97%	3	97%	3	100%	1	1	1	1
	390350065	1	01/29/99		01/29/99	3	70%	3	100%	3	100%	3	90%		1	1	1
	390350066	1	01/08/99		01/08/99	3	90%	3	87%	3	94%	3	97%	1	1	1	1
	390351002	1	01/08/99		01/08/99	3	87%	3	97%	3	100%	3	97%	1	1	1	1
	390490024	1	01/01/99		01/01/99	1	94%	1	70%	1	65%	1	53%		1	1	1
	390490025	1	01/01/99		01/01/99	1	76%	1	91%	1	82%	1	92%	1	1	1	1
	390490081	1	01/01/99		01/03/99	3	93%	3	73%	3	90%	3	97%		1	1	1
	390610014	1	01/01/99		01/01/99	1	69%	1	92%	1	95%	1	66%		1	1	1
	390610040	1	04/01/99		04/03/99			3	70%	3	45%	3	43%				1
	390610041	1	03/25/99		03/25/99	3	10%	3	97%	3	100%	3	100%				1
	390617001	1	01/30/99		01/30/99	1	63%	1	62%	1	86%	1	57%		1	1	1
	390618001	1	03/25/99		03/25/99	3	7%	3	7%	3	45%	3	83%				1
	390810016	1	01/21/99		01/21/99	3	70%	3	90%	3	90%	3	93%		1	1	1
	390811001	1	02/11/99		02/11/99	1	34%	1	78%	1	90%	1	67%			1	1
	390851001	1	01/03/99		01/03/99	3	90%	3	97%	3	97%	3	90%	1	1	1	1
	390870010	1	01/24/99		01/24/99	3	27%	3	0%	3	0%	3	90%				1
	390932003	1	01/01/99		01/03/99	3	97%	3	94%	3	84%	3	80%	1	1	1	1
	390950024	1	02/11/99		02/11/99	1	33%	1	55%	1	89%	1	88%			1	1
	390950025	1	03/01/99		03/01/99	3	17%	3	80%	3	100%	3	81%				
	390950026	1	05/29/99		05/29/99			1	32%	1	85%	1	84%				1
	390990005	1	01/01/99		01/01/99	1	86%	1	97%	1	91%	1	93%	1	1	1	1
	391130014	1	01/15/99		01/15/99	1	76%	1	92%	1	66%	1	55%		1	1	1
	391130031	1	01/14/99		01/14/99	1	54%	1	85%	1	72%	1	80%		1	1	1
	391330002	1	01/30/99		01/30/99	3	70%	3	93%	3	90%	3	83%		1	1	1
	391351001	1	01/21/99		01/21/99	3	68%	3	81%	3	91%	3	13%				1
	391450013	1	01/15/99		01/15/99	3	70%	3	77%	3	100%	3	93%		1	1	1
	391510017	1	01/03/99		01/03/99	3	83%	3	83%	3	87%	3	100%	1	1	1	1
	391510020	1	01/03/99		01/03/99	3	90%	3	83%	3	90%	3	100%	1	1	1	1
	391530017	1	01/01/99		01/01/99	1	83%	1	95%	1	92%	1	96%	1	1	1	1
	391530023	1	01/01/99		01/01/99	1	90%	1	96%	1	92%	1	97%	1	1	1	1
	391550007	1	01/01/99		01/01/99	1	92%	1	86%	1	93%	1	88%	1	1	1	1
OKLAHOMA	**Total # of FRM Sites=24;**		**Number w/ Data=19;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**				**Number w/ 11+ samples in each Q= 0**				
	400159008	1	11/01/99														
	400179001	1	07/01/99		08/16/99					6	33%	6	60%				
	400190294	1	02/04/99	11/05/99	04/24/99			6	13%	6	93%	6	27%				
	400190295	1	12/13/99		12/20/99							6	7%				
	400219002	1	07/01/99		08/22/99					6	33%	6	60%				
	400310648	1	02/04/99		04/06/99			6	73%	6	67%	6	80%				

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	400390852	1	01/01/99		04/06/99			6	60%	6	93%	6	93%				
	400470554	1	01/26/99		04/06/99			6	67%	6	87%	6	87%				
	400710602	1	03/01/99		05/06/99			6	40%	6	93%	6	93%				
	400719003	1	11/01/99														
	400819005	1	11/01/99														
	400970186	1	02/28/99		04/12/99			6	40%	6	53%	6	87%				
	401010169	1	01/25/99		04/06/99			6	33%	6	53%	6	93%				
	401090035	1	01/01/99		04/01/99			1	73%	1	35%	1	88%				
	401090038	1	01/20/99		04/06/99			3	60%	3	65%	3	73%				
	401091037	1	01/01/99		04/06/99			6	73%	6	47%	6	80%				
	401159004	1	07/01/99		08/16/99					6	40%	6	80%				
	401179007	1	11/01/99														
	401190614	1	01/29/99		04/06/99			6	73%	6	93%	6	93%				
	401210415	1	04/01/99		04/06/99			3	57%	3	45%	3	80%				
	401250054	1	01/23/99		04/06/99			6	67%	6	53%	6	100%				
	401339006	1	11/01/99														
	401430110	1	01/01/99		04/02/99			1	64%	1	34%	1	89%				
	401430131	1	01/01/99		04/03/99			3	57%	3	50%	3	90%				
OREGON	**Total # of FRM Sites=27;**		**Number w/ Data=27;**		**Number Complete (75%+ in each Q)=10;**					**Number w/ 50% in each Q=15;**		**Number w/ 11+ samples in each Q=15**					
	410030013	1	01/01/99		01/03/99	3	90%	3	87%	3	87%	3	93%	1	1	1	
	410090004	1	01/01/99		01/01/99	1	91%	1	93%	3	84%	3	90%	1	1	1	
	410170113	1	01/01/99		01/06/99	6	93%	6	94%	6	97%	1	96%	1	1	1	
	410290133	1	01/01/99		01/01/99	1	94%	1	74%	1	87%	1	100%		1	1	
	410291001	1	01/01/99		01/01/99	1	86%	1	96%	3	94%	3	87%	1	1	1	
	410292129	1	09/15/99		09/15/99					1	16%	1	99%				1
	410330107	1	01/01/99		08/31/99					3	29%	3	97%				
	410350004	1	01/01/99		01/06/99	6	100%	6	80%	6	97%	1	91%	1	1	1	
	410370001	1	01/01/99		01/06/99	6	100%	6	100%	6	100%	1	95%	1	1	1	
	410370003	1	09/09/99		09/09/99					6	27%	6	100%				
	410390060	1	01/01/99		01/01/99	1	92%	1	97%	1	98%	1	98%	1	1	1	
	410391007	1	01/01/99		02/02/99	3	67%	3	93%	3	87%	3	100%		1	1	
	410392013	1	01/01/99		01/01/99	1	92%	1	73%	1	91%	1	91%		1	1	
	410430009	1	10/27/99		10/27/99							3	73%				1
	410470040	1	01/01/99		01/09/99	3	93%	3	94%	3	87%	3	97%	1	1	1	
	410470109	1	01/01/99		01/01/99	1	96%	1	71%								
	410470110	1	06/17/99		07/29/99					3	58%	3	100%				
	410510080	1	01/01/99		01/01/99	1	91%	1	90%	1	97%	1	90%	1	1	1	
	410510244	1	12/17/98		01/01/99	1	88%	1	89%	1	95%	1	93%	1	1	1	
	410510246	1	08/27/99		08/27/99					1	37%	1	90%				
	410590121	1	01/01/99		01/06/99	6	73%	6	87%	6	100%	1	70%		1	1	
	410610006	1	01/01/99		01/06/99	6	93%	6	87%	6	80%						
	410610117	1	07/01/99		09/15/99					1	14%	1	90%				
	410619103	1	07/01/99		09/15/99					6	20%	6	93%				
	410650007	1	08/06/99		12/14/99							6	20%				
	410670111	1	01/01/99		01/01/99	1	94%	1	91%	1	74%	3	97%		1	1	
	410671003	1	08/20/99		09/15/99					3	13%	3	97%				
PENNSYLVANIA	**Total # of FRM Sites=37;**		**Number w/ Data=35;**		**Number Complete (75%+ in each Q)= 0;**					**Number w/ 50% in each Q=10;**		**Number w/ 11+ samples in each Q=21**					
	420010001	1	01/01/99		01/01/99	1	67%	1	86%	1	63%	1	78%		1	1	
	420030008	1	02/23/99		02/23/99	3	37%	3	10%	3	57%	1	45%				1
	420030021	1	02/14/99		02/14/99	3	33%	3	83%	3	69%	3	78%				1
	420030064	1	01/23/99		01/23/99	1	44%	1	58%	1	54%	1	51%			1	1
	420030067	1	04/12/99		04/12/99			3	70%	3	84%	3	73%				1
	420030093	1	03/25/99		03/25/99	6	7%	6	38%	6	33%	6	33%				
	420030095	1	01/30/99		01/30/99	6	38%	6	53%	6	67%	6	20%				1
	420030097	1	01/31/99		01/31/99	6	20%			6	33%	6	67%				1
	420030116	1	01/30/99		01/31/99	3	55%	3	56%	3	77%	3	71%		1	1	1
	420030131	1	02/05/99		02/05/99	6	31%	6	73%	6	40%	6	20%				1
	420031008	1	02/13/99		02/13/99	3	47%	3	87%	3	52%	3	74%			1	1
	420031301	1	01/30/99		01/30/99	6	33%	3	80%	3	74%	3	72%				1
	420039002	1	01/24/99		01/24/99	6	73%	6	87%	6	67%	6	60%		1		1
	420070014	1	12/01/99														
	420110009	1	01/01/99		01/30/99	3	43%	3	80%	3	90%	3	87%			1	1
	420170012	1	01/01/99		02/11/99	3	43%	3	57%	3	55%	3	67%			1	
	420210011	1	01/01/99		02/14/99	3	50%	3	73%	3	68%	3	73%		1	1	1
	420430401	1	01/01/99		01/01/99	1	66%	1	85%	1	85%	1	33%			1	1
	420450002	1	01/01/99		01/06/99	3	50%	3	83%	3	87%	3	90%		1	1	
	420490003	1	01/01/99		01/30/99	3	29%	3	33%	3	10%	3	53%				
	420692006	1	01/01/99		01/30/99	1	39%	1	78%	1	88%	1	78%			1	
	420710007	1	01/01/99		01/09/99	3	50%	3	93%	3	71%	3	80%		1	1	1
	420770004	1	01/01/99		01/30/99	1	20%	1	87%	1	24%	1	72%			1	
	420791101	1	01/01/99		01/05/99	1	50%	1	70%	1	84%	1	72%		1	1	
	420910013	1	01/01/99		02/14/99	3	50%	3	60%	3	65%	3	83%		1	1	

1999 PM2.5 Data Completeness, Routine FRM (as of AIRS 7/26/00)

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	420950025	1	01/01/99		01/05/99	1	20%	1	89%	1	34%	1	54%			1	
	420990301	1	12/01/99														
	421010004	1	01/01/99		02/04/99	1	39%	1	57%	1	83%	1	76%			1	1
	421010020	1	01/01/99		02/11/99	3	19%	3	61%	3	90%	3	93%				
	421010024	1	01/01/99		02/17/99	3	17%	3	20%	3	81%	3	93%				
	421010047	1	01/01/99		02/20/99	3	33%	3	43%	3	87%	3	87%				1
	421010136	1	01/01/99		02/04/99	1	33%	1	42%	1	29%	1	9%				1
	421250005	1	01/01/99		01/15/99	3	67%	3	70%	3	61%	3	43%			1	1
	421250200	1	01/01/99		01/18/99	3	63%	3	57%	3	84%	3	50%		1	1	1
	421255001	1	01/01/99		01/08/99	1	44%	1	79%	1	83%	1	79%			1	
	421290008	1	01/01/99		02/11/99	3	40%	3	67%	3	84%	3	37%			1	1
	421330008	1	01/01/99		01/09/99	3	70%	3	93%	3	71%	3	83%		1	1	1
PUERTO RICO	**Total # of FRM Sites= 9;**		**Number w/ Data= 9;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 5;**				**Number w/ 11+ samples in each Q= 6**				
	720210009	1	02/02/99		02/02/99	3	50%	3	73%	3	77%	3	71%		1	1	
	720530003	1	04/20/99		04/21/99			1	58%	1	83%	1	15%				
	720570008	1	01/15/99		01/24/99	3	60%	3	83%	3	81%	3	73%		1	1	
	720590016	1	01/15/99		01/24/99	3	63%	3	47%	3	77%	3	70%			1	
	720610005	1	01/15/99		01/23/99	1	66%	1	73%	1	65%	1	74%		1	1	
	720810001	1	01/15/99		01/21/99	3	53%	3	57%	3	32%	3	40%				
	720970003	1	01/24/99		01/24/99	3	65%	3	87%	3	68%	3	57%		1	1	
	721130004	1	01/15/99		01/24/99	3	63%	3	93%	3	65%	3	73%		1	1	
	721270003	1	03/21/99		03/21/99	1	10%	1	86%	1	86%	1	62%				
RHODE ISLAND	**Total # of FRM Sites= 7;**		**Number w/ Data= 7;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**				**Number w/ 11+ samples in each Q= 0**				
	440030002	1	01/06/99		01/06/99	3	0%	3	100%	3	100%	3	100%				
	440070020	1	01/06/99		01/06/99	6	0%	6	73%	6	93%	6	93%				1
	440070022	1	01/01/99		01/06/99	1	0%	1	87%	1	97%	1	96%				
	440070023	1	12/01/99		12/11/99							3	20%				
	440071005	1	01/06/99		01/06/99	3	0%	3	93%	3	100%	3	93%				
	440071010	1	01/06/99		01/06/99	1	0%	1	92%	1	98%	1	99%				
	440090007	1	01/01/99		01/06/99	3	0%	3	77%	3	100%	3	97%				
SOUTH CAROLINA	**Total # of FRM Sites=17;**		**Number w/ Data=17;**		**Number Complete (75%+ in each Q)= 7;**				**Number w/ 50% in each Q=11;**				**Number w/ 11+ samples in each Q=12**				
	450130007	1	03/25/99		03/25/99	3	0%	3	73%	3	94%	3	80%				
	450190046	1	01/15/99		01/15/99	3	87%	3	87%	3	87%	3	87%	1	1	1	
	450190048	1	04/15/99		04/15/99			1	76%	1	86%	1	99%				
	450190049	1	11/26/98		01/01/99	1	98%	1	98%	1	78%	1	80%	1	1	1	
	450290002	1	04/15/99		04/15/99			3	53%	3	77%	3	80%				1
	450370001	1	04/30/99		04/30/99			3	63%	3	94%	3	93%				1
	450410002	1	02/23/99		02/23/99	3	37%	3	84%	3	100%	3	87%			1	1
	450430009	1	01/15/99		01/15/99	3	83%	3	90%	3	81%	3	93%	1	1	1	1
	450450009	1	05/30/99		05/30/99			1	32%	1	86%	1	100%				1
	450470003	1	12/04/98		01/03/99	3	80%	3	100%	3	94%	3	63%		1	1	1
	450630005	1	11/19/98		01/03/99	3	87%	3	97%	3	100%	3	93%	1	1	1	1
	450630008	1	12/01/98		01/03/99	3	90%	3	87%	3	94%	3	97%	1	1	1	1
	450730001	1	12/31/98		01/03/99	3	77%	3	67%	3	78%	3	87%		1	1	
	450790007	1	11/01/98		01/03/99	3	68%	3	90%	3	81%	3	87%		1	1	1
	450790019	1	11/26/98		01/03/99	3	90%	3	97%	3	97%	3	90%	1	1	1	1
	450830010	1	11/13/98		01/01/99	1	82%	1	100%	1	76%	1	97%	1	1	1	1
	450910006	1	12/10/98		01/03/99	3	83%	3	50%	3	74%	3	87%		1	1	1
SOUTH DAKOTA	**Total # of FRM Sites= 8;**		**Number w/ Data= 8;**		**Number Complete (75%+ in each Q)= 1;**				**Number w/ 50% in each Q= 4;**				**Number w/ 11+ samples in each Q= 4**				
	460110002	1	01/01/99		04/03/99			3	77%	3	53%	3	87%				
	460990006	1	01/01/99		04/03/99			3	97%	3	90%	3	87%				
	460990007	1	01/01/99		01/03/99	3	63%	3	74%	3	63%	3	77%		1	1	
	461030014	1	12/31/98		01/03/99	3	80%	3	87%	3	77%	3	73%		1	1	
	461030015	1	01/01/99		01/03/99	3	80%	3	100%	3	87%	3	91%	1	1	1	
	461030016	1	01/01/99		01/03/99	3	63%	3	87%	3	94%	3	82%		1	1	
	461030017	1	01/01/99		04/03/99			3	87%	3	94%	3	74%				
	461031001	1	01/01/99		04/03/99			3	93%	3	97%	3	91%				
TENNESSEE	**Total # of FRM Sites=21;**		**Number w/ Data=12;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**				**Number w/ 11+ samples in each Q= 3**				
	470090005	1	10/01/98		01/03/99	3	43%	3	47%	3	87%	3	77%			1	1
	470370023	1	01/01/99														
	470450004	1	08/22/99		08/25/99					3	29%	3	63%				1
	470650031	1	05/06/99														
	470650032	1	06/05/99														
	470654002	1	01/01/99														
	470930028	1	01/01/99		01/03/99	3	80%	3	70%	3	52%	3	47%			1	1
	470931017	1	01/01/99		01/01/99	1	72%	1	49%	1	16%	1	14%			1	1
	470931020	1	01/01/99		01/01/99	1	0%	1	0%	1	0%	1	13%				1
	470990002	1	10/01/98		01/03/99	3	37%	3	30%	3	61%	3	63%				
	471130004	1	10/01/98		01/03/99	3	0%	3	13%	3	26%	3	90%				1
	471192007	1	12/25/98		01/06/99	3	50%	3	20%	3	74%	3	80%				1
	471251009	1	10/01/98		01/03/99	3	37%	3	27%	3	48%	3	73%				1
	471410001	1	12/25/98		09/15/99					3	13%	3	70%				

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	471450004	1	10/01/98														
	471570014	1	12/01/98														
	471570038	1	12/01/98														
	471570047	1	12/01/98														
	471571004	1	12/01/98														
	471631007	1	10/01/98		01/03/99	3	3%	3	20%	3	23%	3	40%				1
	471650007	1	10/01/98		01/03/99	3	40%	3	27%	3	55%	3	63%				1
TEXAS	**Total # of FRM Sites=47;**		**Number w/ Data=40;**		**Number Complete (75%+ in each Q)= 0;**				**Number w/ 50% in each Q= 0;**		**Number w/ 11+ samples in each Q= 4**						
	480290034	1	01/01/99	10/07/99	04/01/99			1	24%	1	4%	1	5%				
	480290052	1	01/01/99		03/31/99	1	1%	1	18%			1	23%				1
	480290053	1	10/06/99		10/06/99							3	23%				1
	480370004	1	01/06/99		02/17/99	6	53%	6	33%	6	47%	6	53%				1
	480391003	1	01/06/99		11/26/99							6	7%				
	480550062	1	01/03/99		03/31/99	3	3%	3	23%	3	3%	3	33%				
	480612002	1	01/03/99														
	480850005	1	01/06/99		03/13/99	6	13%	6	13%	6	33%	6	40%				
	481130020	1	01/01/99		03/11/99	1	9%	1	40%	1	35%	1	85%				1
	481130035	1	01/03/99		01/06/99	3	17%	3	30%	3	45%	3	57%				1
	481130050	1	01/01/99		01/01/99	1	13%	1	15%	1	70%	1	33%			1	1
	481130057	1	01/06/99		01/06/99	6	27%	6	7%	6	20%	6	67%				
	481130069	1	01/01/99		03/11/99	1	9%	1	35%	1	26%	1	97%				1
	481130087	1	01/03/99		01/03/99	3	17%	3	27%	3	29%	3	70%				1
	481350003	1	01/03/99		03/28/99	6	13%	3	23%	3	10%	3	80%				
	481410002	1	01/01/99		04/02/99			1	25%			1	35%				
	481410010	1	01/06/99		12/02/99							6	33%				
	481410037	1	01/01/99		01/30/99	1	40%	1	37%	1	25%	1	63%			1	
	481410038	1	01/06/99		12/14/99							6	13%				
	481410043	1	01/03/99	12/14/99	01/30/99	3	43%	3	30%	3	45%	3	60%				
	481410044	1	01/01/99		01/30/99	1	38%	1	53%	1	20%	1	71%			1	
	481410045	1	01/06/99		02/05/99	6	13%	6	40%	6	7%	6	53%				
	481670053	1	01/06/99		06/05/99			6	7%	6	7%	6	33%				1
	481671005	1	01/03/99		10/15/99							3	43%				1
	482010024	1	01/01/99														
	482010026	1	01/01/99		10/26/99							1	15%				1
	482010051	1	01/06/99		08/16/99					6	27%	6	40%				1
	482010058	1	01/06/99		08/16/99					6	13%	6	13%				
	482010062	1	01/06/99		04/06/99			6	13%	6	40%	6	53%				1
	482011035	1	01/01/99		04/01/99			1	15%	1	30%	1	77%				1
	482011037	1	01/03/99		08/28/99					3	35%	3	70%				1
	482011039	1	01/03/99		07/05/99					3	6%	3	7%				
	482150042	1	01/03/99														
	482150043	1	01/03/99														
	483030001	1	01/03/99		01/09/99	3	10%			3	10%	3	57%				
	483150050	1	01/03/99		02/14/99	3	33%	3	23%	3	35%	3	100%				
	483390089	1	11/05/99		11/26/99							6	13%				
	483550020	1	01/03/99														
	483550032	1	01/06/99														
	483750005	1	01/03/99														
	484390063	1	01/03/99		01/30/99	3	27%	3	23%	3	16%	3	83%				
	484391002	1	01/01/99		03/11/99	1	8%	1	7%	1	17%	1	98%				
	484391003	1	01/01/99		08/14/99					1	30%	1	76%				
	484393006	1	01/01/99		02/03/99	1	18%	1	26%	1	30%	1	99%			1	
	484530020	1	01/01/99		03/12/99	1	8%	1	16%	1	45%	1	87%				
	484530021	1	09/29/99		10/30/99							1	54%				
	484790016	1	01/06/99		08/10/99					6	13%	6	60%				
UTAH	**Total # of FRM Sites=11;**		**Number w/ Data=11;**		**Number Complete (75%+ in each Q)= 9;**				**Number w/ 50% in each Q=11;**		**Number w/ 11+ samples in each Q=11**						
	490110001	1	01/01/99		01/04/99	3	100%	3	93%	3	94%	3	100%	1	1	1	
	490350003	1	01/01/98		01/03/99	3	97%	3	100%	3	97%	3	100%	1	1	1	
	490350012	1	01/01/99		01/03/99	3	93%	3	93%	3	97%	3	97%	1	1	1	
	490353006	1	01/01/98		01/01/99	1	89%	1	92%	1	79%	1	85%	1	1	1	
	490353007	1	01/21/99		01/24/99	3	63%	3	100%	3	97%	3	80%		1	1	
	490450002	1	01/01/99		01/03/99	3	63%	3	81%	3	87%	3	94%		1	1	
	490490002	1	01/01/98		01/03/99	3	100%	3	100%	3	100%	3	100%	1	1	1	
	490494001	1	01/01/98		01/01/99	1	84%	1	90%	1	99%	1	92%	1	1	1	
	490495010	1	01/01/99		01/03/99	3	97%	3	83%	3	87%	3	97%	1	1	1	
	490570001	1	01/01/98		01/03/99	3	97%	3	100%	3	97%	3	87%	1	1	1	
	490570007	1	01/01/99		01/03/99	3	80%	3	93%	3	94%	3	80%	1	1	1	
VERMONT	**Total # of FRM Sites= 5;**		**Number w/ Data= 5;**		**Number Complete (75%+ in each Q)= 3;**				**Number w/ 50% in each Q= 4;**		**Number w/ 11+ samples in each Q= 4**						
	500030005	1	01/03/99		01/03/99	3	77%	3	100%	3	90%	3	100%	1	1	1	
	500070007	1	01/03/99		01/03/99	3	70%	3	87%	3	81%	3	93%		1	1	
	500070012	1	07/29/99		07/29/99					3	71%	3	87%				
	500210002	1	01/03/99		01/03/99	3	87%	3	81%	3	77%	3	97%	1	1	1	

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	500230005	1	01/12/99		01/12/99	3	87%	3	93%	3	94%	3	97%	1	1	1	
VIRGIN ISLANDS	**Total # of FRM Sites= 1; Number w/ Data= 1; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q= 0; Number w/ 11+ samples in each Q= 0**																
	780010012	1	01/12/99		01/12/99	6	60%	6	40%	6	33%	6	33%				
VIRGINIA	**Total # of FRM Sites=20; Number w/ Data=20; Number Complete (75%+ in each Q)= 0; Number w/ 50% in each Q=11; Number w/ 11+ samples in each Q=16**																
	510130020	1	01/01/99		01/29/99	3	57%	3	90%	3	97%	3	57%		1	1	1
	510360002	1	01/01/99		01/30/99	3	63%	3	77%	3	77%	3	50%		1	1	1
	510410003	1	01/01/99		02/02/99	3	20%	3	53%	3	81%	3	47%				1
	510590030	1	01/01/99		01/29/99	1	62%	1	84%	1	71%	1	47%			1	
	510591004	1	01/01/99		01/30/99	3	50%	3	100%	3	90%	3	43%			1	1
	510595001	1	01/01/99		01/30/99	3	57%	3	77%	3	97%	3	33%				1
	510870014	1	01/01/99		01/28/99	3	60%	3	70%	3	81%	3	50%		1	1	1
	510870015	1	01/01/99		01/28/99	3	67%	3	67%	3	77%	6	67%		1	1	
	511071005	1	01/01/99		02/05/99	3	63%	3	100%	3	97%	3	60%		1	1	
	511390004	1	10/01/99		11/23/99							3	23%				
	515200006	1	01/01/99		01/30/99	3	57%	3	80%	3	77%	3	87%		1	1	1
	515500012	1	01/01/99		01/31/99	1	59%	1	98%	1	88%	1	51%		1	1	
	516500004	1	01/01/99		01/30/99	3	70%	3	94%	3	97%	3	47%			1	
	516800014	1	01/01/99		01/28/99	3	47%	3	73%	3	55%	3	10%				1
	517000013	1	01/01/99		02/08/99	1	31%	3	94%	3	97%	3	53%			1	
	517100024	1	01/01/99		01/30/99	3	57%	3	87%	3	97%	3	47%			1	1
	517600020	1	01/01/99		01/27/99	1	61%	1	92%	1	93%	1	54%		1	1	1
	517700014	1	01/01/99		02/02/99	3	63%	3	90%	3	65%	3	67%		1	1	1
	517750010	1	01/01/99		01/30/99	3	63%	3	97%	3	74%	3	53%		1	1	1
	518100008	1	01/01/99		02/02/99	3	56%	3	94%	3	91%	3	53%		1	1	1
WASHINGTON	**Total # of FRM Sites=23; Number w/ Data=23; Number Complete (75%+ in each Q)= 9; Number w/ 50% in each Q=12; Number w/ 11+ samples in each Q=14**																
	530050002	1	12/16/98		02/28/99	3	40%	3	73%			3	75%				
	530090009	1	10/03/99		10/03/99							6	93%				
	530110013	1	11/19/98		01/09/99	3	87%	3	93%	3	39%	3	93%			1	
	530330004	1	12/07/98	10/03/99	01/03/99	3	93%	3	93%	3	87%						
	530330017	1	12/28/98		01/03/99	3	57%	3	60%	3	94%	3	93%		1	1	
	530330021	1	12/23/98		01/01/99	1	99%	1	99%	1	100%	1	93%	1	1	1	
	530330024	1	03/10/99		03/10/99	3	27%	3	100%	3	100%	3	90%				
	530330027	1	08/04/99		08/04/99					3	52%	3	97%				
	530330057	1	10/17/98		01/01/99	1	99%	1	100%	1	92%	1	90%	1	1	1	
	530330080	1	11/01/98		01/03/99	3	93%	3	93%	3	84%	3	95%	1	1	1	
	530332004	1	10/28/98		01/03/99	3	90%	3	100%	3	100%	3	97%	1	1	1	
	530530029	1	10/03/99		10/03/99							1	92%				1
	530530031	1	10/28/98		01/01/99	1	96%	1	100%	1	96%	1	96%	1	1	1	
	530531018	1	10/28/98		01/01/99	1	92%	1	100%	1	99%	1	97%	1	1	1	
	530570014	1	12/03/99		12/14/99							6	20%				
	530610005	1	10/03/99		10/03/99							3	100%				
	530611007	1	10/28/98		01/03/99	3	93%	3	100%	3	100%	3	93%	1	1	1	
	530630016	1	12/19/98		01/01/99	1	67%	1	76%	1	61%	1	57%		1	1	
	530630047	1	12/04/98		01/03/99	3	60%	3	94%	3	35%	3	61%			1	
	530639000	1	11/07/98		01/06/99	6	100%	6	100%	6	93%	6	93%	1	1	1	
	530670013	1	10/31/98		01/03/99	3	93%	3	97%	3	81%	3	90%	1	1	1	
	530730015	1	02/05/99		02/05/99	3	50%	3	97%	3	81%	3	93%		1	1	
	530770012	1	01/09/99	08/31/99	01/09/99	3	80%	3	70%	3	58%						
WEST VIRGINIA	**Total # of FRM Sites=14; Number w/ Data=14; Number Complete (75%+ in each Q)=10; Number w/ 50% in each Q=14; Number w/ 11+ samples in each Q=14**																
	540030003	1	02/14/99		02/14/99	3	50%	3	70%	3	87%	3	97%		1	1	1
	540090005	1	01/03/99		01/03/99	3	97%	3	90%	3	100%	3	87%	1	1	1	1
	540110006	1	01/03/99		01/03/99	3	93%	3	100%	3	100%	3	100%	1	1	1	1
	540290011	1	01/03/99		01/03/99	3	93%	3	100%	3	100%	3	97%	1	1	1	1
	540291004	1	01/03/99		01/03/99	3	73%	3	87%	3	77%	3	97%		1	1	1
	540330003	1	01/03/99		01/03/99	3	83%	3	100%	3	90%	3	93%	1	1	1	1
	540390009	1	01/03/99	05/09/00	01/03/99	3	87%	3	100%	3	100%	3	100%	1	1	1	1
	540391005	1	01/03/99		01/03/99	3	100%	3	87%	3	97%	3	97%	1	1	1	1
	540511002	1	01/03/99		01/03/99	3	100%	3	100%	3	100%	3	100%	1	1	1	1
	540610003	1	01/03/99		01/03/99	3	83%	3	100%	3	94%	3	97%	1	1	1	1
	540690008	1	01/03/99		01/03/99	3	97%	3	100%	3	87%	3	80%	1	1	1	1
	540810002	1	01/03/99		01/03/99	3	90%	3	100%	3	97%	3	93%	1	1	1	1
	540890001	1	01/03/99		01/03/99	3	57%	3	100%	3	84%	3	93%		1	1	
	541071002	1	01/03/99		01/03/99	3	73%	3	81%	3	90%	3	90%		1	1	1
WISCONSIN	**Total # of FRM Sites=28; Number w/ Data=28; Number Complete (75%+ in each Q)=18; Number w/ 50% in each Q=26; Number w/ 11+ samples in each Q=25**																
	550090005	1	01/01/99		01/21/99	3	74%	3	83%	3	97%	3	87%		1	1	
	550090025	1	01/01/99		01/03/99	3	83%	3	70%	3	94%	3	90%		1	1	
	550090026	1	01/01/99		01/03/99	3	71%	3	84%	3	90%	3	97%		1	1	
	550250025	1	01/03/99		01/03/99	3	97%	3	87%	3	81%	3	97%	1	1	1	
	550250047	1	01/03/99		01/16/99	3	72%	3	85%	3	94%	3	100%		1	1	
	550270007	1	01/06/99		01/06/99	6	100%	6	100%	3	94%	3	87%	1	1	1	
	550290004	1	01/01/99		01/03/99	3	84%	3	90%	3	94%	3	80%	1	1	1	
	550310025	1	01/01/99		01/03/99	3	90%	3	100%	3	94%	3	87%	1	1	1	

1999 PM2.5 Data Completeness, Routine FRM (as of AIRS 7/26/00)

STATE	SITE	POC	Date Sampling Began	Date Sampling Ended	Date of 1st FRM Data Pt	Q1 Freq.	Q1%	Q2 Freq.	Q2%	Q3 Freq.	Q3%	Q4 Freq.	Q4%	All 4 Q 75% complete	All 4 Q 50% complete	All 4 Q w/ 11 samples	1999 Annual Mean >= 13.5 ug/m3
	550430009	1	01/06/99		01/06/99	6	93%	6	80%	6	94%	6	100%	1	1	1	
	550550008	1	01/01/99		01/03/99	3	90%	3	93%	3	94%	3	78%	1	1	1	1
	550590019	3	12/25/98		01/03/99	3	97%	3	100%	3	97%	3	97%	1	1	1	
	550710007	1	01/01/99		01/03/99	3	90%	3	100%	3	81%	3	90%	1	1	1	
	550790010	2	01/01/99		01/05/99	1	92%	1	98%	1	95%	1	97%	1	1	1	1
	550790026	1	01/01/99		01/01/99	1	97%	1	99%	1	95%	1	90%	1	1	1	1
	550790043	1	01/12/99		01/21/99	3	70%	3	100%	3	97%	3	87%		1	1	1
	550790050	1	03/13/99		03/13/99	3	20%	3	91%	3	97%	3	100%				
	550790051	1	02/05/99		02/05/99	3	63%	3	100%	3	97%	3	93%		1	1	1
	550790059	2	12/25/98		01/03/99	3	80%	3	97%	3	100%	3	97%	1	1	1	1
	550790099	1	02/05/99		02/05/99	3	68%	3	100%	3	100%	3	100%		1	1	1
	550870009	1	01/01/99		01/03/99	3	93%	3	97%	3	90%	3	97%	1	1	1	
	550890008	1	03/19/99		03/25/99	6	13%	3	90%	3	97%	3	97%				
	551050002	1	01/03/99		01/03/99	3	100%	3	94%	3	97%	3	97%	1	1	1	1
	551091002	1	01/01/99		01/09/99	6	87%	6	67%	6	87%	6	93%		1		
	551250001	1	01/01/99		01/06/99	6	93%	6	100%	6	93%	6	94%	1	1	1	
	551330027	2	01/01/99		01/03/99	3	93%	3	100%	3	94%	3	97%	1	1	1	1
	551330034	1	01/21/99		01/21/99	3	77%	3	94%	3	100%	3	100%	1	1	1	
	551390011	1	01/01/99		01/03/99	3	93%	3	100%	3	97%	3	87%	1	1	1	
	551410016	1	01/03/99		01/03/99	3	93%	3	100%	3	94%	3	84%	1	1	1	
WYOMING	**Total # of FRM Sites= 3;**		**Number w/ Data= 3;**		**Number Complete (75%+ in each Q)= 3;**				**Number w/ 50% in each Q= 3;**				**Number w/ 11+ samples in each Q= 3**				
	560210001	1	10/15/98		01/03/99	3	90%	3	97%	3	77%	3	83%	1	1	1	
	560330001	1	10/01/98		01/03/99	3	100%	3	100%	3	87%	3	100%	1	1	1	
	560330002	1	10/01/98		01/03/99	3	100%	3	93%	3	100%	3	100%	1	1	1	

Attachment 2-2

Summary of PM2.5 Data Qualifiers Flags

The following attachments list the four types of data qualifiers used in the $PM_{2.5}$ Program. Definitions of the data qualifiers are provided below.

Null value codes- Code that replaces the actual routine value			
Code	**Explanation**	**Code**	**Explanation**
9967	Sample Pressure Out of Limits	9982	Vandalism
9968	Technician Unavailable	9983	Collection Error
9969	Construction/Repairs in Area	9984	Lab Error
9970	Shelter Storm Damage	9985	Poor Quality Assurance Results
9971	Shelter Temperature Outside Limits	9986	Calibration
9972	Scheduled But Not Collected	9987	Monitoring Waived
9973	Sample Time Out of Limits	9988	Power Failure (POWR)
9974	Sample Flow Rate Out of Limits	9989	Wildlife Damage
9975	Insufficient Data (Can't Calculate)	9991	Quality Control (QC) Control Points (zero/span)
9976	Filter Damage	9992	QC Audit
9977	Filter Leak	9993	Maintenance/Routine Repairs
9978	Voided by Operator	9994	Unable to Reach Site
9979	Miscellaneous Void	9995	Multi-point Calibration
9980	Machine Malfunction	9997	Building/Site Repair
9981	Bad Weather	9998	Precision/Zero/Span
Exceptional Events			
A	High Winds	L	Highway Construction
E	Forest Fire	P	Roofing Operation
J	Construction/Demolition	Q	Prescribed Burning
I	Unusual Traffic Congestion	U	Sahara Dust
Sampler Generated flags			
T	Multiple PM2.5 Validity Flags (W or X flag)	X	Filter Temperature difference out of spec
W	Flow rate average out of spec.	Y	Elapsed sample time out of Spec.
Data Qualifiers			
1	**Deviation from a CFR method requirement-**	4	**Lab Issue-** possible lab contamination
2	**Operational Deviations**- Out of some pre-defined threshold value.	5	**Outlier** -outside the normal/expected range of concentrations or fails various statistical or comparison tests
3	**Field Issue-** possible field contamination	6	**QAPP** - Data collection prior to QAPP approval

Summary of AIRS PM2.5 Data Flags by State

State	Total # Mon. with Data	Total # Values	Total # Flags	Flag % of Values	Data Qualifiers						Sampler Generated Flags				Exceptional Events						
					1	2	3	4	5	6	w	x	y	t	a	e	j	l	p	q	u
ALABAMA	20	574	5	0.9%								5									
ALASKA	7	451	8	1.8%								4		2		2					
ARIZONA	12	1685	401	23.8%		81	15					42	2	97	8	1	155				
ARKANSAS	22	773	0	0.0%																	
CALIFORNIA	88	8183	548	6.7%							2	446	11	14	16	41	6		3	9	
COLORADO	17	1122	63	5.6%								16	10	37							
CONNECTICUT	15	1248	79	6.3%	4	16			5		1	52	1								
DELAWARE	11	1121	309	27.6%	25	67	9	205				2		1							
DISTRICT OF COLUMBIA	5	667	66	9.9%							2	17	28	19							
FLORIDA	26	4578	0	0.0%																	
GEORGIA	26	2722	422	15.5%		59			351					12							
HAWAII	7	876	28	3.2%								5	10	13							
IDAHO	16	880	3	0.3%								3									
ILLINOIS	25	1389	0	0.0%																	
INDIANA	33	2477	71	2.9%	34							22	2	13							
IOWA	15	1370	54	3.9%								40	5	9							
KANSAS	17	1321	39	3.0%								37	2								
KENTUCKY	27	2546	74	2.9%							3	23	6	4		38					
LOUISIANA	18	2259	0	0.0%																	
MAINE	12	909	0	0.0%																	
MARYLAND	17	449	0	0.0%																	
MASSACHUSETTS	23	2415	2415	100.0%		2415															
MICHIGAN	28	2953	0	0.0%																	
MINNESOTA	24	810	181	22.3%								180	1								
MISSISSIPPI	16	1472	656	44.6%	656																
MISSOURI	19	2856	34	1.2%	4							30									
MONTANA	9	784	0	0.0%																	
NEBRASKA	17	958	13	1.4%								13									
NEVADA	8	864	91	10.5%								31	4	53		2				1	
NEW HAMPSHIRE	0	0	0	0.0%																	
NEW JERSEY	21	1509	0	0.0%																	
NEW MEXICO	10	1471	165	11.2%								163		2							
NEW YORK	43	1648	63	3.8%								63									
NORTH CAROLINA	42	4831	1197	24.8%	19						7	160	11	1000							
NORTH DAKOTA	7	457	0	0.0%																	
OHIO	37	6444	286	4.4%							4	122	42	118							
OKLAHOMA	24	936	3	0.3%									2	1							
OREGON	27	3946	9	0.2%								9									
PENNSYLVANIA	38	4095	141	3.4%	107							19	4	11							
PUERTO RICO	9	1098	222	20.2%														216			6
RHODE ISLAND	9	909	24	2.6%								22	2								
SOUTH CAROLINA	21	2574	93	3.6%							1	37	1	54							
SOUTH DAKOTA	8	716	593	82.8%								14		579							
TENNESSEE	15	804	541	67.3%		536						4		1							
TEXAS	40	2078	52	2.5%								36	13	3							
UTAH	11	1655	0	0.0%																	
VERMONT	6	574	0	0.0%																	
VIRGIN ISLANDS	1	25	2	8.0%																	2
VIRGINIA	20	2141	308	14.4%							48	193	2	65							
WASHINGTON	23	3010	93	3.1%								83	10								
WEST VIRGINIA	16	1764	83	4.7%								14	10	31		28					
WISCONSIN	28	3366	0	0.0%																	
WYOMING	3	341	0	0.0%																	
Totals	1039	97104	9435	9.7%	849	3174	24	205	356	0	68	1907	179	2139	24	112	161	216	3	10	8
		Percent of Flagged Values			9.0%	33.6%	0.3%	2.2%	3.8%	0.0%	0.7%	20.2%	1.9%	22.7%	0.3%	1.2%	1.7%	2.3%	0.0%	0.1%	0.1%
		Percent of Total Values			0.9%	3.3%	0.0%	0.2%	0.4%	0.0%	0.1%	2.0%	0.2%	2.2%	0.0%	0.1%	0.2%	0.2%	0.0%	0.0%	0.0%

Summary of AIRS PM2.5 Null Value Reason Codes by State

State	Total # Mon with Data	Total # AIRS Data Rcrds.	# of Null Data Pts.	Null % of Rcrds.	Null Value Reason Code																														
					9967	9968	9969	997	9971	9972	9973	9974	9975	9976	9977	9978	9979	9980	9981	9982	9983	9984	9985	9986	9987	9988	9989	9991	9992	9993	9994	9995	9997	9998
ALABAMA	20	718	144	20.1%						4	1		6			1	6	52			5	2	41			26								
ALASKA	7	451	0	0.0%																															
ARIZONA	12	1878	193	10.3%						25	8	9	2	11		6		109			7	1				6					9				
ARKANSAS	22	773	0	0.0%																															
CALIFORNIA	88	9304	1121	12.0%						199	38	21		25	2	19	26	338			163	65	125	2		9			7	39			43		
COLORADO	17	1474	352	23.9%						31	2			2		34	17	99			54					14							99		
CONNECTICUT	15	2130	882	41.4%					4	36	28	3		12	1		150	83	41	19	79	417			2	4	2		1						
DELAWARE	11	1390	269	19.4%							37			6			68	48	22			62				22				4					
DISTRICT OF COLUMBIA	5	668	1	0.1%														1																	
FLORIDA	26	4610	32	0.7%													32																		
GEORGIA	26	3265	543	16.6%		3	40			52	23			105		25	64	162			39	16				11			1	2					
HAWAII	7	945	69	7.3%						9	10						23	24				3													
IDAHO	16	880	0	0.0%																															
ILLINOIS	25	1389	0	0.0%																															
INDIANA	33	2481	4	0.2%							1			1				1			1														
IOWA	15	1443	73	5.1%										2				42			17	10	1			1									
KANSAS	17	1492	171	11.5%						18	35		41	5		8	10	29			4		13			8									
KENTUCKY	27	2840	294	10.4%		18			2	11	12	1	23	7		40	23	118			15	1			10	4				5	4				
LOUISIANA	18	2259	0	0.0%																															
MAINE	12	975	66	6.8%							7		1	9	1	5	1	27			1	4		1		3				6					
MARYLAND	17	449	0	0.0%																															
MASSACHUSETTS	23	3150	735	23.3%							5	1		1			13	484	10	1	93	98				11					13		5		
MICHIGAN	28	2953	0	0.0%																															
MINNESOTA	24	838	28	3.3%													28																		
MISSISSIPPI	16	1534	62	4.0%							4			1		1	15	36			1	3				1									
MISSOURI	19	2928	72	2.5%						1				5	1	5	6	46			5					3									
MONTANA	9	958	174	18.2%						38	26	35			2	1		28			23	21													
NEBRASKA	17	1124	166	14.8%	1						12		1	43			1	41			58	1				8									
NEVADA	8	920	56	6.1%							1	1					43	10					1												
NEW HAMPSHIRE	0	0	0	0.0%																															
NEW JERSEY	21	1509	0	0.0%																															
NEW MEXICO	10	1471	0	0.0%																															
NEW YORK	43	2600	952	36.6%		5	4			6	54	1		323	33		83	114			245	49			11	15				7	2				
NORTH CAROLINA	42	5601	770	13.7%			34	8		4	55	4	29	11		40	55	373	43	1	23	11	5	2		34			4	14	19		1		
NORTH DAKOTA	7	548	91	16.6%						15	6					5	2	55					5			3									
OHIO	37	7873	1429	18.2%						91	10	12	3	29	2	13	16	1027	7	1	29	19		9	3	67		2		15	8	5	60	1	
OKLAHOMA	24	936	0	0.0%																															
OREGON	27	3946	0	0.0%																															
PENNSYLVANIA	38	4534	439	9.7%					19			19				4	30	115			19	105	118							10					
PUERTO RICO	9	1098	0	0.0%																															
RHODE ISLAND	9	1268	359	28.3%							27					3	4	21			2		302												
SOUTH CAROLINA	21	2995	421	14.1%							9	2		7			3	194	12	4	56	84	20			28					2				
SOUTH DAKOTA	8	848	132	15.6%							9		4					118				1													
TENNESSEE	15	1962	1158	59.0%						45	9		1	1		16	483	226			6	2	1		352	16									
TEXAS	40	2078	0	0.0%																															
UTAH	11	1814	159	8.8%							2		6			33	50	56				7				3	1					1			
VERMONT	6	659	85	12.9%						2								58			9					16									
VIRGIN ISLANDS	1	54	29	53.7%			1				4			2			4	1	10							1				6					
VIRGINIA	20	2141	0	0.0%																															
WASHINGTON	23	3010	0	0.0%																															
WEST VIRGINIA	16	1924	160	8.3%						13				2			12	108			8	1	8			5	3								
WISCONSIN	28	3366	0	0.0%																															
WYOMING	3	362	21	5.8%						8	5			3			1	1			3														
Totals	1039	108816	11712	10.8%	1	26	79	8	25	608	440	109	117	613	42	259	1269	4245	145	26	965	983	640	14	378	319	6	2	13	108	57	6	208	1	
		Percent of Null Points			0.0%	0.2%	0.7%	0.1%	0.2%	5.2%	3.8%	0.9%	1.0%	5.2%	0.4%	2.2%	10.8%	36.2%	1.2%	0.2%	8.2%	8.4%	5.5%	0.1%	3.2%	2.7%	0.1%	0.0%	0.1%	0.9%	0.5%	0.1%	1.8%	0.0%	
		Percent of Total AIRS Records			0.0%	0.0%	0.1%	0.0%	0.0%	0.6%	0.4%	0.1%	0.1%	0.6%	0.0%	0.2%	1.2%	3.9%	0.1%	0.0%	0.9%	0.9%	0.6%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%	0.0%	

Attachment 2-3
PM2.5 Collocated Precision Data Completeness

1999 PM2.5 Data Completeness, Precision (as of AIRS 7/26/00)

STATE	SITE	1st Quarter # Precision*	1st Quarter Percent	2nd Quarter # Precision*	2nd Quarter Percent	3rd Quarter # Precision*	3rd Quarter Percent	4th Quarter # Precision*	4th Quarter Percent	All 4 Q's Complete	Number of Q w/ P data	'99 Mean >= 13.5
ALABAMA	**Total # Sites =19; (# w/ data =19); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 7; # w/ 4 Comp. Q Prec.Data = 0**											
	010730023	10 / 6	40%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
	010731005	1 / 1	7%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
	010732003	13 / 7	47%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
	010732006	1 / 1	7%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	
	010735002	1 / 1	7%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	
	010970002	17 / 12	80%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
	011010007	16 / 10	67%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
ALASKA	**Total # Sites = 7; (# w/ data = 7); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 0**											
	020200018	20 / 5	33%	0 / 0	0%	26 / 15	100%	14 / 9	60%		3	
	020900010	0 / 0	0%	0 / 0	0%	0 / 0	0%	4 / 4	27%		1	
	021100004			0 / 0	0%	9 / 9	60%	14 / 12	80%		2	
	021700008	8 / 6	40%	9 / 8	53%	11 / 10	67%	12 / 12	80%		4	
ARIZONA	**Total # Sites =10; (# w/ data =10); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 1**											
	040070008	8 / 8	53%	13 / 13	87%	15 / 15	100%	15 / 15	100%		4	
	040191028	0 / 0	0%	7 / 7	47%	6 / 6	40%	7 / 7	47%		3	
	040230004	15 / 15	100%	15 / 15	100%	15 / 15	100%	15 / 15	100%	1	4	
ARKANSAS	**Total # Sites =18; (# w/ data =17); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 5; # w/ 4 Comp. Q Prec.Data = 0**											
	050010001					13 / 13	87%	10 / 10	67%		2	1
	050310001					12 / 12	80%	9 / 9	60%		2	1
	051190007			0 / 0	0%	31 / 13	87%	13 / 13	87%		2	1
	051191008					5 / 4	27%	13 / 13	87%		2	1
	051310008					12 / 12	80%	12 / 12	80%		2	1
CALIFORNIA	**Total # Sites =76; (# w/ data =76); # where Prec. Required (25% of Tot.)=19; # w/ Prec. Data =13; # w/ 4 Comp. Q Prec.Data = 1**											
	060170011	14 / 13	87%	15 / 15	100%	15 / 15	100%	15 / 15	100%	1	4	
	060190008	18 / 13	87%	18 / 12	80%	14 / 13	87%	12 / 10	67%		4	1
	060250005	14 / 14	93%	12 / 12	80%	12 / 12	80%	5 / 5	33%		4	1
	060271003	14 / 14	93%	15 / 15	100%	15 / 14	93%	1 / 1	7%		4	
	060290014	6 / 6	40%	14 / 14	93%	12 / 12	80%	13 / 13	87%		4	1
	060450006	14 / 14	93%	14 / 14	93%	1 / 1	7%	0 / 0	0%		3	
	060571001	0 / 0	0%	0 / 0	0%	1 / 1	7%	11 / 11	73%		2	
	060670006	8 / 7	47%	13 / 13	87%	0 / 0	0%	10 / 10	67%		3	1
	060710014	6 / 6	40%	14 / 14	93%	12 / 12	80%	15 / 15	100%		4	
	060730006	12 / 12	80%	6 / 6	40%	3 / 3	20%	8 / 8	53%		4	1
	060798001	8 / 8	53%	9 / 9	60%	10 / 10	67%	12 / 12	80%		4	
	061010003	15 / 15	100%	9 / 7	47%	14 / 13	87%	11 / 10	67%		4	1
	061110007	12 / 12	80%	10 / 9	60%	12 / 12	80%	8 / 8	53%		4	
COLORADO	**Total # Sites =16; (# w/ data =14); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	080010001	3 / 2	13%	23 / 12	80%	13 / 13	87%	13 / 13	87%		4	
	080410011	3 / 2	13%	12 / 6	40%	5 / 4	27%	9 / 9	60%		4	
	080770003	14 / 7	47%	28 / 14	93%	11 / 10	67%	15 / 15	100%		4	
CONNECTICUT	**Total # Sites =11; (# w/ data =11); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 0**											
	090010010	6 / 4	27%	10 / 5	33%	19 / 10	67%	18 / 10	67%		4	
	090090018	5 / 3	20%	10 / 6	40%	24 / 14	93%	26 / 14	93%		4	1
	090091123	3 / 2	13%	6 / 4	27%	20 / 11	73%	22 / 12	80%		4	1
	090092123	3 / 2	13%	18 / 10	67%	17 / 10	67%	18 / 10	67%		4	
DELAWARE	**Total # Sites = 8; (# w/ data = 8); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	100031011	5 / 3	20%	15 / 8	53%	22 / 12	80%	13 / 7	47%		4	1
	100031012							6 / 3	20%		1	1
	100032004	10 / 7	47%	16 / 9	60%	23 / 12	80%	19 / 10	67%		4	1
DISTRICT OF COLUMBIA	**Total # Sites = 3; (# w/ data = 3); # where Prec. Required (25% of Tot.)= 1; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 0**											
	110010041	10 / 2	13%	0 / 0	0%	0 / 0	0%	0 / 0	0%		1	1
	110010043	12 / 3	20%	24 / 6	40%	4 / 1	7%	0 / 0	0%		3	1
FLORIDA	**Total # Sites =27; (# w/ data =26); # where Prec. Required (25% of Tot.)= 7; # w/ Prec. Data = 8; # w/ 4 Comp. Q Prec.Data = 2**											
	120010023	0 / 0	0%	0 / 0	0%	0 / 0	0%	14 / 14	93%		1	
	120111002	13 / 13	87%	11 / 11	73%	13 / 13	87%	15 / 15	100%	1	4	
	120330004	11 / 11	73%	10 / 10	67%	0 / 0	0%	0 / 0	0%		2	1
	120710005	4 / 4	27%	0 / 0	0%	0 / 0	0%	12 / 12	80%		2	
	120952002	0 / 0	0%	14 / 14	93%	0 / 0	0%	15 / 15	100%		2	
	121056006	4 / 4	27%	8 / 8	53%	9 / 9	60%	14 / 13	87%		4	
	121111002	13 / 13	87%	15 / 15	100%	11 / 11	73%	14 / 14	93%	1	4	
	121171002	0 / 0	0%	13 / 13	87%	11 / 11	73%	12 / 12	80%		3	
GEORGIA	**Total # Sites =24; (# w/ data =24); # where Prec. Required (25% of Tot.)= 6; # w/ Prec. Data = 6; # w/ 4 Comp. Q Prec.Data = 0**											
	130210007	9 / 5	33%	9 / 9	60%	12 / 12	80%	0 / 0	0%		3	1
	130510017	19 / 10	67%	10 / 7	47%	11 / 9	60%	0 / 0	0%		3	1
	130892001	12 / 7	47%	9 / 9	60%	11 / 10	67%	0 / 0	0%		3	1
	131210032	7 / 5	33%	7 / 7	47%	12 / 12	80%	0 / 0	0%		3	1
	132150001	4 / 2	13%	15 / 9	60%	11 / 11	73%	0 / 0	0%		3	1
	132450005	8 / 5	33%	11 / 11	73%	10 / 10	67%	0 / 0	0%		3	1
HAWAII	**Total # Sites = 5; (# w/ data = 5); # where Prec. Required (25% of Tot.)= 1; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 0**											
	150031001	13 / 13	87%	15 / 15	100%	13 / 13	87%	4 / 4	27%		4	
	150032004	13 / 13	87%	13 / 13	87%	13 / 12	80%	7 / 7	47%		4	
IDAHO	**Total # Sites =14; (# w/ data =13); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 7; # w/ 4 Comp. Q Prec.Data = 0**											
	160010011	13 / 13	87%	15 / 15	100%	3 / 3	20%	0 / 0	0%		3	
	160050015	13 / 12	80%	13 / 11	73%	2 / 2	13%	0 / 0	0%		3	
	160170001	15 / 15	100%	16 / 15	100%	2 / 2	13%	0 / 0	0%		3	
	160270004	0 / 0	0%	0 / 0	0%	9 / 9	60%	15 / 15	100%		2	
	160550006					10 / 8	53%	12 / 12	80%		2	
	160690009							11 / 11	73%		1	1
	160830010							3 / 3	20%		1	
ILLINOIS	**Total # Sites =25; (# w/ data =25); # where Prec. Required (25% of Tot.)= 6; # w/ Prec. Data = 0; # w/ 4 Comp. Q Prec.Data = 0**											
INDIANA	**Total # Sites =28; (# w/ data =26); # where Prec. Required (25% of Tot.)= 7; # w/ Prec. Data = 7; # w/ 4 Comp. Q Prec.Data = 0**											
	180431004	8 / 8	53%	4 / 4	27%	0 / 0	0%	0 / 0	0%		2	1
	180891016	4 / 4	27%	4 / 4	27%	0 / 0	0%	0 / 0	0%		2	1
	180950009	2 / 2	13%	5 / 5	33%	0 / 0	0%	0 / 0	0%		2	
	180970081	6 / 6	40%	14 / 14	93%	0 / 0	0%	0 / 0	0%		2	1
	180970083	9 / 9	60%	13 / 13	87%	0 / 0	0%	0 / 0	0%		2	1
	181411008			2 / 2	13%	0 / 0	0%	0 / 0	0%		1	

* Total number of precision records reported / Number reported on any 6-day schedule

1999 PM2.5 Data Completeness, Precision (as of AIRS 7/26/00)

STATE	SITE	1st Quarter # Precision*	1st Quarter Percent	2nd Quarter # Precision*	2nd Quarter Percent	3rd Quarter # Precision*	3rd Quarter Percent	4th Quarter # Precision*	4th Quarter Percent	All 4 Q's Complete	Number of Q w/ P data	'99 Mean >= 13.5
	181630006			3 / 3	20%	0 / 0	0%	0 / 0	0%		1	1
IOWA	**Total # Sites =15; (# w/ data =15); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 0**											
	191130037	11 / 6	40%	28 / 14	93%	29 / 16	100%	28 / 14	93%		4	
	191532520	7 / 5	33%	24 / 14	93%	30 / 15	100%	25 / 13	87%		4	
	191550009					19 / 10	67%	24 / 13	87%		2	
	191630015	18 / 10	67%	30 / 15	100%	31 / 16	100%	30 / 15	100%		4	
KANSAS	**Total # Sites =13; (# w/ data =13); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 0**											
	200910007	6 / 6	40%	11 / 11	73%	14 / 12	80%	14 / 14	93%		4	
	201070002	6 / 6	40%	8 / 8	53%	12 / 12	80%	13 / 13	87%		4	
	201730010	10 / 10	67%	12 / 12	80%	5 / 5	33%	13 / 13	87%		4	
	202090021			11 / 10	67%	15 / 15	100%	14 / 14	93%		3	1
KENTUCKY	**Total # Sites =21; (# w/ data =21); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 6; # w/ 4 Comp. Q Prec.Data = 0**											
	210190017	10 / 10	67%	8 / 7	47%	13 / 13	87%	13 / 13	87%		4	1
	210590014	8 / 8	53%	10 / 7	47%	11 / 11	73%	12 / 11	73%		4	1
	210670012	9 / 8	53%	14 / 14	93%	15 / 15	100%	12 / 12	80%		4	1
	211110043	12 / 8	53%	16 / 15	100%	14 / 9	60%	0 / 0	0%		3	1
	211950002	8 / 8	53%	13 / 13	87%	14 / 14	93%	9 / 9	60%		4	1
	212270007	10 / 10	67%	13 / 13	87%	13 / 13	87%	15 / 15	100%		4	1
LOUISIANA	**Total # Sites =18; (# w/ data =18); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 3**											
	220171002	13 / 13	87%	15 / 15	100%	15 / 15	100%	15 / 15	100%	1	4	1
	220330009	14 / 14	93%	15 / 14	93%	15 / 15	100%	14 / 14	93%	1	4	1
	220550005	13 / 13	87%	14 / 14	93%	15 / 15	100%	14 / 14	93%	1	4	
	220710012	12 / 12	80%	10 / 10	67%	9 / 9	60%	11 / 11	73%		4	1
MAINE	**Total # Sites =13; (# w/ data =12); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	230050027	5 / 5	33%	4 / 4	27%	12 / 12	80%	11 / 11	73%		4	
	230110016	7 / 7	47%	13 / 13	87%	14 / 14	93%	9 / 9	60%		4	
	230190002	0 / 0	0%	0 / 0	0%	0 / 0	0%	5 / 5	33%		1	
MARYLAND	**Total # Sites =18; (# w/ data =16); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 1; # w/ 4 Comp. Q Prec.Data = 0**											
	245100035							3 / 2	13%		1	1
MASSACHUSETTS	**Total # Sites =18; (# w/ data =18); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 5; # w/ 4 Comp. Q Prec.Data = 2**											
	250130016	20 / 11	73%	29 / 15	100%	27 / 14	93%	22 / 11	73%	1	4	1
	250210007	2 / 1	7%	0 / 0	0%	10 / 5	33%	26 / 14	93%		3	
	250230004	19 / 9	60%	23 / 12	80%	28 / 14	93%	13 / 8	53%		4	
	250250027	11 / 6	40%	15 / 8	53%	26 / 14	93%	11 / 6	40%		4	1
	250270020	24 / 14	93%	27 / 14	93%	27 / 14	93%	23 / 12	80%	1	4	
MICHIGAN	**Total # Sites =22; (# w/ data =22); # where Prec. Required (25% of Tot.)= 6; # w/ Prec. Data = 6; # w/ 4 Comp. Q Prec.Data = 0**											
	260650012	23 / 6	40%	17 / 9	60%	26 / 14	93%	29 / 15	100%		4	
	260770008	14 / 7	47%	21 / 11	73%	20 / 11	73%	28 / 15	100%		4	1
	260810020	24 / 11	73%	10 / 10	67%	13 / 13	87%	13 / 13	87%		4	1
	261210040	17 / 8	53%	10 / 10	67%	7 / 7	47%	11 / 11	73%		4	
	261450018	8 / 5	33%	16 / 8	53%	20 / 10	67%	11 / 6	40%		4	
	261630001			6 / 6	40%	11 / 11	73%	10 / 9	60%		3	1
MINNESOTA	**Total # Sites =21; (# w/ data =21); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	271230866			0 / 0	0%	13 / 13	87%	11 / 11	73%		2	
	271230868	0 / 0	0%	0 / 0	0%	10 / 10	67%	13 / 13	87%		2	
	271377550			5 / 5	33%	11 / 11	73%	11 / 11	73%		3	
MISSISSIPPI	**Total # Sites =16; (# w/ data =16); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	280330002	5 / 5	33%	13 / 13	87%	15 / 15	100%	0 / 0	0%		3	1
	280350004	4 / 4	27%	12 / 12	80%	11 / 11	73%	0 / 0	0%		3	1
	281210001	5 / 5	33%	11 / 10	67%	10 / 10	67%	0 / 0	0%		3	1
MISSOURI	**Total # Sites =20; (# w/ data =19); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 6; # w/ 4 Comp. Q Prec.Data = 1**											
	290210010	9 / 8	53%	23 / 12	80%	14 / 7	47%	28 / 14	93%		4	
	290470026	9 / 9	60%	11 / 11	73%	13 / 13	87%	15 / 15	100%		4	
	290770032	15 / 15	100%	15 / 15	100%	14 / 14	93%	15 / 15	100%	1	4	
	291831002	7 / 7	47%	25 / 13	87%	29 / 15	100%	29 / 15	100%		4	1
	291892003	0 / 0	0%	12 / 12	80%	0 / 0	0%	0 / 0	0%		1	1
	295100085			0 / 0	0%	70 / 15	100%	87 / 15	100%		2	1
MONTANA	**Total # Sites = 9; (# w/ data = 9); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 0**											
	300530018	0 / 0	0%	0 / 0	0%	0 / 0	0%	11 / 11	73%		1	1
	300630024	9 / 8	53%	15 / 15	100%	11 / 11	73%	12 / 12	80%		4	
NEBRASKA	**Total # Sites =13; (# w/ data =13); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 1**											
	310550019	0 / 0	0%	0 / 0	0%	5 / 5	33%	3 / 3	20%		2	
	310550052			0 / 0	0%	4 / 4	27%	11 / 11	73%		2	
	311090022	12 / 12	80%	12 / 12	80%	12 / 12	80%	11 / 11	73%	1	4	
	311530007	3 / 2	13%	9 / 9	60%	13 / 13	87%	12 / 12	80%		4	
NEVADA	**Total # Sites = 7; (# w/ data = 7); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 1; # w/ 4 Comp. Q Prec.Data = 1**											
	320310016	15 / 15	100%	15 / 15	100%	17 / 15	100%	16 / 15	100%	1	4	
NEW HAMPSHIRE	**Total # Sites = 9; (# w/ data = .); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 0; # w/ 4 Comp. Q Prec.Data = 0**											
NEW JERSEY	**Total # Sites =19; (# w/ data =19); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 0**											
	340070003	5 / 5	33%	15 / 15	100%	12 / 12	80%	10 / 10	67%		4	
	340390004	6 / 6	40%	5 / 5	33%	15 / 15	100%	15 / 15	100%		4	1
NEW MEXICO	**Total # Sites =13; (# w/ data =10); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 1**											
	350010023	0 / 0	0%	0 / 0	0%	13 / 4	27%	56 / 10	67%		2	
	350450006	16 / 8	53%	28 / 12	80%	19 / 8	53%	31 / 13	87%		4	
	350490020	22 / 11	73%	24 / 11	73%	29 / 13	87%	33 / 14	93%	1	4	
NEW YORK	**Total # Sites =42; (# w/ data =33); # where Prec. Required (25% of Tot.)=11; # w/ Prec. Data =10; # w/ 4 Comp. Q Prec.Data = 0**											
	360010005					31 / 16	100%	30 / 15	100%		2	
	360050073					5 / 3	20%	0 / 0	0%		1	1
	360050110					6 / 3	20%	30 / 15	100%		2	
	360470011					8 / 4	27%	0 / 0	0%		1	1
	360556001					11 / 6	40%	30 / 15	100%		2	
	360610056					31 / 16	100%	30 / 15	100%		2	1
	360610062					17 / 9	60%	30 / 15	100%		2	1
	360632008					31 / 16	100%	30 / 15	100%		2	1
	360671015					31 / 16	100%	30 / 15	100%		2	
	360810094					12 / 6	40%	30 / 15	100%		2	
NORTH CAROLINA	**Total # Sites =35; (# w/ data =35); # where Prec. Required (25% of Tot.)= 9; # w/ Prec. Data =11; # w/ 4 Comp. Q Prec.Data = 1**											
	370210034	12 / 12	80%	13 / 13	87%	14 / 14	93%	12 / 12	80%	1	4	1

* Total number of precision records reported / Number reported on any 6-day schedule

1999 PM2.5 Data Completeness, Precision (as of AIRS 7/26/00)

STATE	SITE	1st Quarter # Precision*	1st Quarter Percent	2nd Quarter # Precision*	2nd Quarter Percent	3rd Quarter # Precision*	3rd Quarter Percent	4th Quarter # Precision*	4th Quarter Percent	All 4 Q's Complete	Number of Q w/ P data	'99 Mean >= 13.5
	370510009	0 / 0	0%	0 / 0	0%	10 / 10	67%	13 / 13	87%		2	1
	370670024	14 / 13	87%	15 / 14	93%	10 / 10	67%	14 / 8	53%		4	1
	370710016	0 / 0	0%	0 / 0	0%	14 / 14	93%	13 / 13	87%		2	1
	370810009	0 / 0	0%	0 / 0	0%	0 / 0	0%	3 / 3	20%		1	1
	371190034	13 / 13	87%	14 / 13	87%	4 / 4	27%	0 / 0	0%		3	1
	371190040	0 / 0	0%	0 / 0	0%	8 / 8	53%	10 / 10	67%		2	1
	371210001	0 / 0	0%	0 / 0	0%	12 / 12	80%	12 / 12	80%		2	1
	371290009	0 / 0	0%	0 / 0	0%	11 / 11	73%	13 / 13	87%		2	
	371470005	0 / 0	0%	0 / 0	0%	13 / 12	80%	7 / 7	47%		2	1
	371830014	0 / 0	0%	0 / 0	0%	8 / 8	53%	13 / 13	87%		2	1
NORTH DAKOTA	**Total # Sites = 7; (# w/ data = 7); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 1**											
	380171004	12 / 7	47%	18 / 10	67%	25 / 13	87%	30 / 15	100%		4	
	380570004	15 / 12	80%	11 / 11	73%	13 / 13	87%	14 / 14	93%	1	4	
OHIO	**Total # Sites =37; (# w/ data =37); # where Prec. Required (25% of Tot.)= 9; # w/ Prec. Data = 5; # w/ 4 Comp. Q Prec.Data = 0**											
	390170003	14 / 14	93%	15 / 15	100%	15 / 15	100%	9 / 9	60%		4	1
	390610014	8 / 8	53%	15 / 14	93%	15 / 14	93%	11 / 11	73%		4	1
	390610041	2 / 2	13%	15 / 15	100%	15 / 15	100%	14 / 14	93%		4	1
	390811001	0 / 0	0%	0 / 0	0%	11 / 11	73%	5 / 5	33%		2	1
	391530017	13 / 13	87%	15 / 15	100%	15 / 15	100%	6 / 6	40%		4	1
OKLAHOMA	**Total # Sites =24; (# w/ data =19); # where Prec. Required (25% of Tot.)= 6; # w/ Prec. Data = 5; # w/ 4 Comp. Q Prec.Data = 0**											
	400219002					5 / 5	33%	7 / 7	47%		2	
	400310648			0 / 0	0%	5 / 5	33%	0 / 0	0%		1	
	400470554			0 / 0	0%	10 / 10	67%	0 / 0	0%		1	
	401090035			0 / 0	0%	5 / 5	33%	0 / 0	0%		1	
	401430110			0 / 0	0%	5 / 5	33%	0 / 0	0%		1	
OREGON	**Total # Sites =27; (# w/ data =27); # where Prec. Required (25% of Tot.)= 7; # w/ Prec. Data = 7; # w/ 4 Comp. Q Prec.Data = 0**											
	410290133	0 / 0	0%	21 / 13	87%	13 / 13	87%	15 / 15	100%		3	
	410330107					0 / 0	0%	13 / 13	87%		1	
	410370001	0 / 0	0%	0 / 0	0%	0 / 0	0%	15 / 15	100%		1	
	410390060	0 / 0	0%	26 / 13	87%	24 / 12	80%	28 / 15	100%		3	
	410510080	0 / 0	0%	27 / 14	93%	14 / 14	93%	13 / 12	80%		3	
	410650007							2 / 2	13%		1	
	410671003					1 / 1	7%	14 / 14	93%		2	
PENNSYLVANIA	**Total # Sites =37; (# w/ data =35); # where Prec. Required (25% of Tot.)= 9; # w/ Prec. Data = 9; # w/ 4 Comp. Q Prec.Data = 0**											
	420030008	0 / 0	0%	0 / 0	0%	1 / 1	7%	10 / 2	13%		2	1
	420030064	7 / 3	20%	11 / 3	20%	14 / 3	20%	10 / 2	13%		4	1
	420031301	0 / 0	0%	3 / 3	20%	4 / 4	27%	13 / 10	67%		3	1
	420450002	6 / 6	40%	12 / 12	80%	13 / 13	87%	13 / 13	87%		4	
	420692006	6 / 6	40%	7 / 7	47%	10 / 10	67%	12 / 12	80%		4	
	420710007	5 / 5	33%	10 / 10	67%	6 / 6	40%	12 / 12	80%		4	1
	421010004	5 / 3	20%	5 / 5	33%	9 / 9	60%	13 / 12	80%		4	1
	421250005	9 / 9	60%	8 / 8	53%	0 / 0	0%	6 / 6	40%		3	1
	421330008	5 / 5	33%	11 / 11	73%	5 / 5	33%	13 / 13	87%		4	1
PUERTO RICO	**Total # Sites = 9; (# w/ data = 9); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 0; # w/ 4 Comp. Q Prec.Data = 0**											
RHODE ISLAND	**Total # Sites = 7; (# w/ data = 7); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 2**											
	440070022	15 / 15	100%	15 / 15	100%	15 / 15	100%	15 / 15	100%	1	4	
	440071010	15 / 15	100%	15 / 15	100%	15 / 14	93%	15 / 15	100%	1	4	
SOUTH CAROLINA	**Total # Sites =17; (# w/ data =17); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 4; # w/ 4 Comp. Q Prec.Data = 1**											
	450190048			10 / 10	67%	13 / 13	87%	14 / 14	93%		3	
	450430009	21 / 11	73%	24 / 13	87%	21 / 11	73%	26 / 13	87%	1	4	1
	450450009			2 / 2	13%	8 / 8	53%	13 / 13	87%		3	1
	450790019	0 / 0	0%	18 / 9	60%	30 / 16	100%	21 / 11	73%		3	1
SOUTH DAKOTA	**Total # Sites = 8; (# w/ data = 8); # where Prec. Required (25% of Tot.)= 2; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 0**											
	460990006			0 / 0	0%	12 / 11	73%	14 / 14	93%		2	
	461031001			0 / 0	0%	23 / 10	67%	14 / 7	47%		2	
TENNESSEE	**Total # Sites =21; (# w/ data =12); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 2**											
	470931017	14 / 14	93%	15 / 15	100%	15 / 15	100%	14 / 14	93%	1	4	1
	471130004	0 / 0	0%	0 / 0	0%	12 / 6	40%	29 / 15	100%		2	1
	471650007	28 / 14	93%	30 / 15	100%	31 / 16	100%	30 / 15	100%	1	4	1
TEXAS	**Total # Sites =47; (# w/ data =40); # where Prec. Required (25% of Tot.)=12; # w/ Prec. Data =10; # w/ 4 Comp. Q Prec.Data = 0**											
	480290034	1 / 1	7%	3 / 3	20%	0 / 0	0%	0 / 0	0%		2	
	481130050	0 / 0	0%	0 / 0	0%	0 / 0	0%	3 / 3	20%		1	1
	481130069	1 / 1	7%	3 / 3	20%	0 / 0	0%	12 / 12	80%		3	1
	481410010							4 / 4	27%		1	
	481410044	6 / 6	40%	8 / 8	53%	0 / 0	0%	10 / 10	67%		3	
	481671005							1 / 1	7%		1	1
	482011035			1 / 1	7%	0 / 0	0%	7 / 7	47%		2	1
	484391002	0 / 0	0%	0 / 0	0%	0 / 0	0%	3 / 3	20%		1	
	484393006	3 / 3	20%	4 / 4	27%	0 / 0	0%	13 / 13	87%		3	
	484530020	2 / 2	13%	3 / 3	20%	0 / 0	0%	8 / 8	53%		3	
UTAH	**Total # Sites =11; (# w/ data =11); # where Prec. Required (25% of Tot.)= 3; # w/ Prec. Data = 1; # w/ 4 Comp. Q Prec.Data = 0**											
	490494001	0 / 0	0%	14 / 14	93%	12 / 11	73%	13 / 13	87%		3	
VERMONT	**Total # Sites = 5; (# w/ data = 5); # where Prec. Required (25% of Tot.)= 1; # w/ Prec. Data = 0; # w/ 4 Comp. Q Prec.Data = 0**											
VIRGIN ISLANDS	**Total # Sites = 1; (# w/ data = 1); # where Prec. Required (25% of Tot.)= 1; # w/ Prec. Data = 0; # w/ 4 Comp. Q Prec.Data = 0**											
VIRGINIA	**Total # Sites =20; (# w/ data =20); # where Prec. Required (25% of Tot.)= 5; # w/ Prec. Data = 3; # w/ 4 Comp. Q Prec.Data = 0**											
	510130020	15 / 7	47%	26 / 13	87%	30 / 16	100%	16 / 8	53%		4	1
	517100024	16 / 8	53%	23 / 12	80%	30 / 16	100%	11 / 7	47%		4	1
	517600020	19 / 9	60%	28 / 14	93%	28 / 14	93%	16 / 8	53%		4	1
WASHINGTON	**Total # Sites =23; (# w/ data =23); # where Prec. Required (25% of Tot.)= 6; # w/ Prec. Data = 5; # w/ 4 Comp. Q Prec.Data = 1**											
	530330057	12 / 12	80%	14 / 14	93%	11 / 11	73%	13 / 11	73%	1	4	
	530530031	13 / 13	87%	13 / 12	80%	13 / 13	87%	11 / 10	67%		4	
	530630016	6 / 5	33%	10 / 9	60%	8 / 7	47%	8 / 4	27%		4	
	530730015	6 / 6	40%	12 / 12	80%	5 / 5	33%	8 / 8	53%		4	
	530770012	10 / 9	60%	10 / 10	67%	9 / 9	60%	0 / 0	0%		3	
WEST VIRGINIA	**Total # Sites =14; (# w/ data =14); # where Prec. Required (25% of Tot.)= 4; # w/ Prec. Data = 2; # w/ 4 Comp. Q Prec.Data = 2**											
	540290011	25 / 13	87%	26 / 13	87%	26 / 14	93%	29 / 15	100%	1	4	1
	540391005	29 / 15	100%	21 / 11	73%	28 / 14	93%	23 / 12	80%	1	4	1
WISCONSIN	**Total # Sites =28; (# w/ data =28); # where Prec. Required (25% of Tot.)= 7; # w/ Prec. Data = 7; # w/ 4 Comp. Q Prec.Data = 1**											

* Total number of precision records reported / Number reported on any 6-day schedule

1999 PM2.5 Data Completeness, Precision (as of AIRS 7/26/00)

STATE	SITE	1st Quarter # Precision*	1st Quarter Percent	2nd Quarter # Precision*	2nd Quarter Percent	3rd Quarter # Precision*	3rd Quarter Percent	4th Quarter # Precision*	4th Quarter Percent	All 4 Q's Complete	Number of Q w/ P data	'99 Mean >= 13.5
	550090005	18 / 10	67%	21 / 11	73%	28 / 14	93%	22 / 11	73%		4	
	550250025	28 / 14	93%	26 / 13	87%	23 / 11	73%	19 / 10	67%		4	
	550310025	26 / 13	87%	28 / 14	93%	30 / 15	100%	22 / 12	80%	1	4	
	550790026	12 / 10	67%	14 / 11	73%	15 / 15	100%	13 / 11	73%		4	1
	550790059	5 / 4	27%	0 / 0	0%	10 / 10	67%	11 / 11	73%		3	1
	551091002	0 / 0	0%	0 / 0	0%	4 / 4	27%	11 / 11	73%		2	
	551330027	9 / 8	53%	15 / 15	100%	12 / 12	80%	15 / 14	93%		4	1
WYOMING	**Total # Sites = 3; (# w/ data = 3); # where Prec. Required (25% of Tot.)= 1; # w/ Prec. Data = 1; # w/ 4 Comp. Q Prec.Data = 1**											
	560330002	14 / 14	93%	14 / 14	93%	15 / 15	100%	13 / 13	87%	1	4	
US TOTAL	**Total # Sites =979; (# w/ data = 924); # where Precision Required (25% of Tot.)= 245; # w/ Precision Data = 220; # w/ 4 Complete Q Prec. Data = 25**											

* Total number of precision records reported / Number reported on any 6-day schedule

Attachment 2-4
PM2.5 Flow Rate Audit Data Completeness

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
ALABAMA	Total # Sites =19; (# w/ data =19); # where Acc. Reqrd (All)=19; # w/ Accuracy Data = 5; # w/ 4 Q Acc.= 0						
	010270001	0	0	0	0	0	
	010331002	0	0	0	0	0	
	010491003	0	0	0	0	0	
	010690002	0	0	0	0	0	
	010730023	1	0	0	0	1	
	010731005	1	0	0	0	1	
	010732003	1	0	0	0	1	
	010732006	1	0	0	0	1	
	010735002	1	0	0	0	1	
	010970002	0	0	0	0	0	
	010972005	0	0	0	0	0	
	011010007	0	0	0	0	0	
	011030010	0	0	0	0	0	
	011130001	0	0	0	0	0	
	011170006	0	0	0	0	0	
	011190002	0	0	0	0	0	
	011210002	0	0	0	0	0	
	011250003	0	0	0	0	0	
	011270002	0	0	0	0	0	
ALASKA	Total # Sites = 7; (# w/ data = 7); # where Acc. Reqrd (All)= 7; # w/ Accuracy Data = 6; # w/ 4 Q Acc.= 2						
	020200018	1	1	1	0	3	
	020200044		0	1	1	2	
	020900010	1	1	1	1	4	1
	021100004	1	1	1	1	4	1
	021100026				0	0	
	021300008				1	1	
	021700008	1	1	0	1	3	
ARIZONA	Total # Sites =10; (# w/ data =10); # where Acc. Reqrd (All)=10; # w/ Accuracy Data = 1; # w/ 4 Q Acc.= 0						
	040031005	0	0	0	0	0	
	040051008	0	0	0	0	0	
	040070008	0	0	0	0	0	
	040139990	0	0	0	0	0	
	040139991	0	0	0	0	0	
	040139992	0	0	0	0	0	
	040139997	0	0	0	0	0	
	040190011	0	0	0	0	0	
	040191028	0	0	0	1	1	
	040230004	0	0	0	0	0	
ARKANSAS	Total # Sites =18; (# w/ data =17); # where Acc. Reqrd (All)=18; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0						
	050010001			0	0	0	
	050030003			0	0	0	
	050310001			0	0	0	
	050350004			0	0	0	
	050510002			0	0	0	
	050690005			0	0	0	
	050890001			0	0	0	
	050910001					0	
	050910004			0	0	0	
	051070001			0	0	0	
	051130002			0	0	0	
	051150003			0	0	0	
	051190003			0	0	0	
	051190007		0	0	0	0	
	051191008			0	0	0	
	051310008			0	0	0	
	051390004			0	0	0	
	051430003			0	0	0	
CALIFORNIA	Total # Sites =76; (# w/ data =76); # where Acc. Reqrd (All)=76; # w/ Accuracy Data =30; # w/ 4 Q Acc.= 0						
	060010007				0	0	
	060011001	0	0	1	0	1	
	060070002	0	0	1	0	1	
	060090001	0	0	1	0	1	
	060111002	0	0	0	0	0	
	060130002	0	0	1	0	1	

STATE	SITE	# of Accuracy Records				# Q's w/ Accuracy	Accuracy in All 4 Q
		Q1	Q2	Q3	Q4		
	060170011	0	0	1	0	1	
	060190008	0	0	0	0	0	
	060195001	0	0	0	0	0	
	060231002	0	0	0	0	0	
	060250003	0	0	0	0	0	
	060250005	1	0	0	0	1	
	060251003	0	0	0	0	0	
	060271003	0	0	0	1	1	
	060290010	0	0	0	0	0	
	060290011	0	0	0	0	0	
	060290012		0	0	1	1	
	060290014	1	0	0	0	1	
	060310004	0	0	0	0	0	
	060333001	0	0	0	1	1	
	060370002	0	1	1	0	2	
	060371002	0	0	0	0	0	
	060371103	0	0	0	0	0	
	060371201	0	0	0	0	0	
	060371301	0	0	0	0	0	
	060371601	0	0	0	0	0	
	060372005	0	0	0	0	0	
	060374002	0	0	0	0	0	
	060379002	0	0	0	0	0	
	060450006	0	0	0	0	0	
	060472510		0	0	0	0	
	060490001	0	0	0	0	0	
	060531002	1	0	0	0	1	
	060570005	0	0	1	0	1	
	060571001	0	0	1	0	1	
	060590001	0	0	0	0	0	
	060592022		0	0	0	0	
	060610006	0	0	0	0	0	
	060631006	0	0	1	0	1	
	060631008	0	0	0	0	0	
	060651003	0	0	0	0	0	
	060652002	0	0	0	0	0	
	060658001	0	0	0	0	0	
	060670006	0	0	1	0	1	
	060670010	0	0	0	0	0	
	060674001	0	0	0	0	0	
	060710014	1	0	0	0	1	
	060710025	0	0	0	0	0	
	060712002	0	0	0	0	0	
	060718001	0	0	0	0	0	
	060719004	0	0	0	0	0	
	060730001	0	0	0	0	0	
	060730003	1	0	0	1	2	
	060730006	1	0	1	0	2	
	060731002	1	0	0	0	1	
	060731007	1	0	0	0	1	
	060750005	0	0	1	0	1	
	060771002	0	0	0	0	0	
	060792002	0	0	0	0	0	
	060798001	0	0	0	0	0	
	060811001	0	0	1	0	1	
	060830010	0	0	0	0	0	
	060831007				0	0	
	060850004	0	0	1	0	1	
	060852003	0	0	1	0	1	
	060870007	1	0	0	0	1	
	060890004	0	0	0	0	0	
	060950004	0	0	1	0	1	
	060970003	0	0	1	0	1	
	060990005	0	0	0	0	0	
	061010003	0	0	1	0	1	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	061072002	0	0	0	0	0	
	061110007	0	0	0	0	0	
	061112002	0	0	0	0	0	
	061113001	0	0	0	0	0	
	061131003	1	0	0	0	1	
COLORADO	**Total # Sites =16; (# w/ data =14); # where Acc. Reqrd (All)=16; # w/ Accuracy Data =14; # w/ 4 Q Acc.= 9**						
	080010001	1	1	1	1	4	1
	080050005	1	1	1	1	4	1
	080130003	1	1	1	1	4	1
	080130012	1	1	1	1	4	1
	080310002	1	1	0	0	2	
	080310013					0	
	080310017					0	
	080390001		0	1	1	2	
	080410008	1	1	1	1	4	1
	080410011	1	1	1	1	4	1
	080690009			1	1	2	
	080770003	1	1	1	1	4	1
	081010012	1	1	1	1	4	1
	081070003		0	1	1	2	
	081230006	1	1	1	1	4	1
	081230008			1	1	2	
CONNECTICUT	**Total # Sites =11; (# w/ data =11); # where Acc. Reqrd (All)=11; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	090010010	0	0	0	0	0	
	090011123	0	0	0	0	0	
	090012124	0	0	0	0	0	
	090019003	0	0	0	0	0	
	090031003	0	0	0	0	0	
	090031018	0	0	0	0	0	
	090090018	0	0	0	0	0	
	090091123	0	0	0	0	0	
	090092123	0	0	0	0	0	
	090099005	0	0	0	0	0	
	090113002	0	0	0	0	0	
DELAWARE	**Total # Sites = 8; (# w/ data = 8); # where Acc. Reqrd (All)= 8; # w/ Accuracy Data = 7; # w/ 4 Q Acc.= 4**						
	100010002	1	1	1	1	4	1
	100010003	1	1	0	1	3	
	100031003	1	1	1	1	4	1
	100031007	1	1	1	1	4	1
	100031011	0	1	1	1	3	
	100031012				0	0	
	100032004	0	1	1	1	3	
	100051002	1	1	1	1	4	1
DISTRICT OF COLUMBI	**Total # Sites = 3; (# w/ data = 3); # where Acc. Reqrd (All)= 3; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	110010041	0	0	0	0	0	
	110010042	0	0	0	0	0	
	110010043	0	0	0	0	0	
FLORIDA	**Total # Sites =27; (# w/ data =26); # where Acc. Reqrd (All)=27; # w/ Accuracy Data =25; # w/ 4 Q Acc.=13**						
	120010023	1	1	1	1	4	1
	120111002	1	1	1	1	4	1
	120112004		1	1	1	3	
	120113002		1	1	1	3	
	120170005					0	
	120251016	0	2	1	1	3	
	120256001	0	1	1	1	3	
	120310098		0	1	0	1	
	120310099		0	1	0	1	
	120330004	1	1	1	1	4	1
	120570030	1	1	1	1	4	1
	120571075	1	1	1	1	4	1
	120710005	1	1	1	1	4	1
	120730012	0	0	0	0	0	
	120814012	1	1	1	0	3	
	120830003	1	1	1	0	3	
	120951004	1	1	1	0	3	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	120952002	1	1	1	0	3	
	120990009				0	0	
	120991004				1	1	
	120992003	1	1	1	1	4	1
	121030018	1	1	1	1	4	1
	121031008	1	1	1	1	4	1
	121056006	1	1	1	1	4	1
	121111002	1	1	1	1	4	1
	121150013	1	1	1	1	4	1
	121171002	1	1	1	1	4	1
	121275002	1	1	1	0	3	
GEORGIA	**Total # Sites =24; (# w/ data =24); # where Acc. Reqrd (All)=24; # w/ Accuracy Data =22; # w/ 4 Q Acc.= 0**						
	130210007	0	1	0	1	2	
	130210012	0	1	0	1	2	
	130510017	0	0	0	1	1	
	130510091	0	1	0	1	2	
	130590001	0	1	0	0	1	
	130630091	1	1	0	1	3	
	130670003	0	1	0	1	2	
	130890002	0	0	0	1	1	
	130892001	1	1	0	1	3	
	130950007	0	1	0	1	2	
	131150005	1	1	0	1	3	
	131210032	0	1	0	1	2	
	131210039	0	1	0	1	2	
	131211001	0	1	0	1	2	
	131270004	0	0	0	0	0	
	131270006			0	0	0	
	131390003	0	1	0	1	2	
	132150001	1	1	0	1	3	
	132150011	1	1	0	1	3	
	132230003	0	1	0	1	2	
	132450005	0	1	0	1	2	
	132450091	1	1	0	1	3	
	133030001	0	1	0	1	2	
	133190001		0	0	1	1	
HAWAII	**Total # Sites = 5; (# w/ data = 5); # where Acc. Reqrd (All)= 5; # w/ Accuracy Data = 5; # w/ 4 Q Acc.= 0**						
	150030010	0	3	4	0	2	
	150031001	0	1	3	3	3	
	150031004				3	1	
	150032004	0	4	3	1	3	
	150090006	0	0	1	3	2	
IDAHO	**Total # Sites =14; (# w/ data =13); # where Acc. Reqrd (All)=14; # w/ Accuracy Data =12; # w/ 4 Q Acc.= 6**						
	160010011	3	3	1	0	3	
	160010017	2	1	2	1	4	1
	160050006	1	1	1	1	4	1
	160050015	6	0	1	1	3	
	160170001	3	3	1	1	4	1
	160190010			0	1	1	
	160210001					0	
	160270004	2	2	3	1	4	1
	160270005	1	1	2	1	4	1
	160550006			2	1	2	
	160690009				1	1	
	160790017			1	1	2	
	160830006	1	1	1	1	4	1
	160830010				0	0	
ILLINOIS	**Total # Sites =25; (# w/ data =25); # where Acc. Reqrd (All)=25; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	170191001	0	0	0	0	0	
	170310014	0	0	0	0	0	
	170310022	0	0	0	0	0	
	170310050	0	0	0	0	0	
	170310052	0	0	0	0	0	
	170311016	0	0	0	0	0	
	170311701	0	0	0	0	0	

STATE	SITE	# of Accuracy Records				# Q's w/ Accuracy	Accuracy in All 4 Q
		Q1	Q2	Q3	Q4		
	170312001	0	0	0	0	0	
	170313301	0	0	0	0	0	
	170314006	0	0	0	0	0	
	170314201	0	0	0	0	0	
	170434002	0	0	0	0	0	
	171150013	0	0	0	0	0	
	171170002	0	0	0	0	0	
	171190023	0	0	0	0	0	
	171191007	0	0	0	0	0	
	171193007	0	0	0	0	0	
	171430037	0	0	0	0	0	
	171570001	0	0	0	0	0	
	171610003	0	0	0	0	0	
	171630010	0	0	0	0	0	
	171670012	0	0	0	0	0	
	171971002	0	0	0	0	0	
	171971011	0	0	0	0	0	
	172010010	0	0	0	0	0	
INDIANA	**Total # Sites =28; (# w/ data =26); # where Acc. Reqrd (All)=28; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	180030004	0	0	0	0	0	
	180190005	0	0	0	0	0	
	180390003		0	0	0	0	
	180431004	0	0	0	0	0	
	180670003		0	0	0	0	
	180890006	0	0	0	0	0	
	180890022	0	0	0	0	0	
	180891003	0	0	0	0	0	
	180891016	0	0	0	0	0	
	180892004	0	0	0	0	0	
	180892010	0	0	0	0	0	
	180950009	0	0	0	0	0	
	180970042					0	
	180970043	0	0	0	0	0	
	180970066	0	0	0	0	0	
	180970078	0	0	0	0	0	
	180970079					0	
	180970081	0	0	0	0	0	
	180970083	0	0	0	0	0	
	181270020	0	0	0	0	0	
	181270024	0	0	0	0	0	
	181411008		0	0	0	0	
	181412004		0	0	0	0	
	181570007		0	0	0	0	
	181630006		0	0	0	0	
	181630012		0	0	0	0	
	181630016		0	0	0	0	
	181670018	0	0	0	0	0	
IOWA	**Total # Sites =15; (# w/ data =15); # where Acc. Reqrd (All)=15; # w/ Accuracy Data =15; # w/ 4 Q Acc.= 6**						
	190130008	1	1	1	2	4	1
	190330019			1	1	2	
	190450021	0	2	2	1	3	
	191032001	0	1	1	1	3	
	191130036	1	1	1	1	4	1
	191130037	1	1	1	1	4	1
	191390016	0	1	1	1	3	
	191530059				1	1	
	191532510	1	1	1	1	4	1
	191532520	1	1	1	1	4	1
	191550009			1	1	2	
	191630015	0	1	1	1	3	
	191630018			1	1	2	
	191692530	1	1	1	1	4	1
	191930017	0	2	1	1	3	
KANSAS	**Total # Sites =13; (# w/ data =13); # where Acc. Reqrd (All)=13; # w/ Accuracy Data =13; # w/ 4 Q Acc.= 0**						
	200910007	0	1	1	1	3	

STATE	SITE	# of Accuracy Records				# Q's w/ Accuracy	Accuracy in All 4 Q
		Q1	Q2	Q3	Q4		
	200910008	0	1	1	1	3	
	200910009	0	1	1	1	3	
	201070002	0	1	1	2	3	
	201730008	0	0	1	1	2	
	201730009	0	0	1	1	2	
	201730010	0	0	1	1	2	
	201770010	0	1	1	1	3	
	201770011	0	1	1	1	3	
	201770012		1	1	1	3	
	201910002				1	1	
	202090021		1	1	2	3	
	202090022		1	1	1	3	
KENTUCKY	**Total # Sites =21; (# w/ data =21); # where Acc. Reqrd (All)=21; # w/ Accuracy Data =20; # w/ 4 Q Acc.= 0**						
	210130002			0	0	0	
	210190017	0	1	1	1	3	
	210290006	0	1	0	0	1	
	210370003	1	1	1	0	3	
	210430500	0	0	1	0	1	
	210470006	0	1	1	0	2	
	210590014	0	1	1	0	2	
	210670012	0	1	1	1	3	
	210670014	0	1	1	1	3	
	210730006	0	1	1	0	2	
	210930005	0	1	0	0	1	
	211010006	0	1	1	0	2	
	211110043	1	1	1	0	3	
	211110044	1	1	1	0	3	
	211110048	1	1	1	0	3	
	211110051	1	1	1	0	3	
	211170007	1	0	1	0	2	
	211451004	0	1	1	1	3	
	211510003	0	1	0	0	1	
	211950002	0	1	0	0	1	
	212270007	0	1	1	1	3	
LOUISIANA	**Total # Sites =18; (# w/ data =18); # where Acc. Reqrd (All)=18; # w/ Accuracy Data =18; # w/ 4 Q Acc.= 5**						
	220171002	0	1	1	1	3	
	220190009	0	1	1	1	3	
	220190010	1	1	1	1	4	1
	220290002	0	1	1	1	3	
	220330002	0	1	1	1	3	
	220330009	1	1	1	1	4	1
	220331001	0	1	1	1	3	
	220470005	0	1	1	1	3	
	220470009	0	1	1	2	3	
	220511001	1	0	1	1	3	
	220512001	0	1	1	1	3	
	220550005	0	1	1	1	3	
	220710010	1	1	1	1	4	1
	220710012	0	1	1	1	3	
	220730004	0	1	1	1	3	
	220790001	0	1	1	1	3	
	221050001	1	1	1	1	4	1
	221210001	1	1	2	1	4	1
MAINE	**Total # Sites =13; (# w/ data =12); # where Acc. Reqrd (All)=13; # w/ Accuracy Data = 6; # w/ 4 Q Acc.= 0**						
	230010011	0	0	0	0	0	
	230030013	0	0	0	0	0	
	230031011	0	0	0	0	0	
	230050015	0	0	0	1	1	
	230050026					0	
	230050027	0	0	0	1	1	
	230052003	0	0	0	1	1	
	230090103	0	0	0	1	1	
	230110016	0	0	0	0	0	
	230172011	0	0	0	0	0	
	230190002	0	0	0	2	1	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	230194003	0	0	0	1	1	
	230310008	0	0	0	0	0	
MARYLAND	**Total # Sites =18; (# w/ data =16); # where Acc. Reqrd (All)=18; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	240030014			0	0	0	
	240030019			0	0	0	
	240031003					0	
	240032002			0	0	0	
	240051007					0	
	240053001			0	0	0	
	240150003				0	0	
	240251001			0	0	0	
	240313001			0	0	0	
	240330001			0	0	0	
	240338001			0	0	0	
	240430009				0	0	
	245100006			0	0	0	
	245100007			0	0	0	
	245100035				0	0	
	245100040		0	0	0	0	
	245100049			0	0	0	
	245100052		0	0	0	0	
MASSACHUSETTS	**Total # Sites =18; (# w/ data =18); # where Acc. Reqrd (All)=18; # w/ Accuracy Data =18; # w/ 4 Q Acc.=13**						
	250035001	1	1	1	1	4	1
	250052004	1	1	1	1	4	1
	250053001	1	1	1	1	4	1
	250092006	1	1	1	1	4	1
	250095005	1	1	1	1	4	1
	250096001		1	1	1	3	
	250130008	1	0	1	1	3	
	250130016	1	1	1	1	4	1
	250132007	0	1	1	1	3	
	250154002	1	1	1	1	4	1
	250171102	1	1	1	1	4	1
	250210007	1	1	1	1	4	1
	250230004	0	1	1	1	3	
	250250002	1	1	1	1	4	1
	250250027	1	1	1	1	4	1
	250250042	1	1	1	0	3	
	250270020	1	1	1	1	4	1
	250272004	1	1	1	1	4	1
MICHIGAN	**Total # Sites =22; (# w/ data =22); # where Acc. Reqrd (All)=22; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	260050003	0	0	0	0	0	
	260210014	0	0	0	0	0	
	260490021	0	0	0	0	0	
	260550003				0	0	
	260650012	0	0	0	0	0	
	260770008	0	0	0	0	0	
	260810020	0	0	0	0	0	
	260990009	0	0	0	0	0	
	261150005				0	0	
	261210040	0	0	0	0	0	
	261250001	0	0	0	0	0	
	261390005	0	0	0	0	0	
	261450018	0	0	0	0	0	
	261470005	0	0	0	0	0	
	261610005		0	0	0	0	
	261610008			0	0	0	
	261630001		0	0	0	0	
	261630015	0	0	0	0	0	
	261630016		0	0	0	0	
	261630025			0	0	0	
	261630033	0	0	0	0	0	
	261630036	0	0	0	0	0	
MINNESOTA	**Total # Sites =21; (# w/ data =21); # where Acc. Reqrd (All)=21; # w/ Accuracy Data =11; # w/ 4 Q Acc.= 0**						
	270376018		0	1	1	2	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	270475401				0	0	
	270530960		0	1	1	2	
	270530961		0	1	1	2	
	270531007		0	1	0	1	
	270532006		0	1	1	2	
	270757608				0	0	
	270854301				0	0	
	270953051				0	0	
	271112012				0	0	
	271230021		1	1	1	3	
	271230866		0	1	1	2	
	271230868	0	1	1	1	3	
	271230871		0	1	1	2	
	271230872		0	1	0	1	
	271230873		1	1	0	2	
	271377001		0	0	0	0	
	271377550		0	0	0	0	
	271453052				0	0	
	271630301				0	0	
	271713201				0	0	
MISSISSIPPI	Total # Sites =16; (# w/ data =16); # where Acc. Reqrd (All)=16; # w/ Accuracy Data =16; # w/ 4 Q Acc.= 0						
	280010004	0	1	1	0	2	
	280110001		1	0	0	1	
	280330002	0	1	1	0	2	
	280350004	0	1	1	0	2	
	280450001	0	1	1	0	2	
	280470008		0	1	0	1	
	280490010	0	1	1	0	2	
	280490018	0	1	1	0	2	
	280590006	0	0	1	0	1	
	280670002	0	1	1	0	2	
	280750003		1	1	0	2	
	280810005	0	1	1	0	2	
	280870001	0	1	1	0	2	
	281210001	0	1	1	0	2	
	281230001			1	0	1	
	281490004	0	1	1	0	2	
MISSOURI	Total # Sites =20; (# w/ data =19); # where Acc. Reqrd (All)=20; # w/ Accuracy Data =16; # w/ 4 Q Acc.=10						
	290210010	1	1	1	1	4	1
	290390001	1	1	1	1	4	1
	290470005	1	1	1	1	4	1
	290470026	1	1	1	1	4	1
	290470041	1	1	1	1	4	1
	290770032	2	2	2	2	4	1
	290910003	1	1	1	1	4	1
	290950036	0	0	0	0	0	
	290952002	0	0	0	0	0	
	290970003	1	1	1	1	4	1
	290990012	1	0	1	1	3	
	291370001	1	1	1	1	4	1
	291831002	1	1	1	1	4	1
	291860006	1	0	1	1	3	
	291892003	2	2	2	0	3	
	291895001	1	1	1	0	3	
	295100007					0	
	295100085		0	1	1	2	
	295100086	0	0	1	1	2	
	295100087				0	0	
MONTANA	Total # Sites = 9; (# w/ data = 9); # where Acc. Reqrd (All)= 9; # w/ Accuracy Data = 9; # w/ 4 Q Acc.= 2						
	300290039	1	1	1	1	4	1
	300290043	1	1	0	0	2	
	300290047		0	1	1	2	
	300490018	1	0	1	1	3	
	300530018	1	0	1	1	3	
	300630024	1	0	1	1	3	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	300630031	1	1	1	1	4	1
	300930005	1	0	1	1	3	
	301111065	1	0	1	1	3	
NEBRASKA	**Total # Sites =13; (# w/ data =13); # where Acc. Reqrd (All)=13; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	310250002	0	0	0	0	0	
	310270001			0	0	0	
	310310001			0	0	0	
	310490001			0	0	0	
	310550019	0	0	0	0	0	
	310550051	0	0	0	0	0	
	310550052		0	0	0	0	
	310790003	0	0	0	0	0	
	311090022	0	0	0	0	0	
	311111002	0	0	0	0	0	
	311530007	0	0	0	0	0	
	311570003	0	0	0	0	0	
	311770002		0	0	0	0	
NEVADA	**Total # Sites = 7; (# w/ data = 7); # where Acc. Reqrd (All)= 7; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	320030022	0	0	0	0	0	
	320030560	0	0	0	0	0	
	320031019	0	0	0	0	0	
	320032002	0	0	0	0	0	
	320050008				0	0	
	320310016	0	0	0	0	0	
	320312002		0	0	0	0	
NEW HAMPSHIRE	**Total # Sites = 9; (# w/ data = 0); # where Acc. Reqrd (All)= 9; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	330012003					0	
	330050007					0	
	330070014					0	
	330110019					0	
	330111007					0	
	330130003					0	
	330135001					0	
	330150009					0	
	330190003					0	
NEW JERSEY	**Total # Sites =19; (# w/ data =19); # where Acc. Reqrd (All)=19; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	340030003	0	0	0	0	0	
	340070003	0	0	0	0	0	
	340071007	0	0	0	0	0	
	340130011	0	0	0	0	0	
	340130015		0	0	0	0	
	340155001				0	0	
	340171003	0	0	0	0	0	
	340172002			0	0	0	
	340210008	0	0	0	0	0	
	340218001	0	0	0	0	0	
	340230006	0	0	0	0	0	
	340270004		0	0	0	0	
	340273001	0	0	0	0	0	
	340292002	0	0	0	0	0	
	340310005	0	0	0	0	0	
	340390004	0	0	0	0	0	
	340390006	0	0	0	0	0	
	340392003				0	0	
	340410006				0	0	
NEW MEXICO	**Total # Sites =13; (# w/ data =10); # where Acc. Reqrd (All)=13; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	350010023	0	0	0	0	0	
	350010024	0	0	0	0	0	
	350050005	0	0	0	0	0	
	350130017	0	0	0	0	0	
	350131006	0	0	0	0	0	
	350171002	0	0	0	0	0	
	350250007	0	0	0	0	0	
	350431003	0	0	0	0	0	
	350439001					0	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	350439003					0	
	350450006	0	0	0	0	0	
	350490020	0	0	0	0	0	
	350499002					0	
NEW YORK	**Total # Sites =42; (# w/ data =33); # where Acc. Reqrd (All)=42; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	360010005			0	0	0	
	360010012			0	0	0	
	360050073			0	0	0	
	360050080			0	0	0	
	360050083			0	0	0	
	360050110			0	0	0	
	360130011			0	0	0	
	360271004			0	0	0	
	360290002			0	0	0	
	360290005			0	0	0	
	360291007				0	0	
	360310003			0	0	0	
	360470011			0	0	0	
	360470052					0	
	360470076			0	0	0	
	360470118					0	
	360551004					0	
	360552002					0	
	360556001			0	0	0	
	360590005			0	0	0	
	360590008			0	0	0	
	360590011			0	0	0	
	360610010			0	0	0	
	360610056			0	0	0	
	360610062			0	0	0	
	360610115					0	
	360610117					0	
	360632008			0	0	0	
	360652001			0	0	0	
	360670019			0	0	0	
	360671015			0	0	0	
	360710002					0	
	360810094			0	0	0	
	360810097			0	0	0	
	360810116					0	
	360850055				0	0	
	360850067			0	0	0	
	360893001				0	0	
	360930003			0	0	0	
	361010003			0	0	0	
	361030001			0	0	0	
	361030005					0	
NORTH CAROLINA	**Total # Sites =35; (# w/ data =35); # where Acc. Reqrd (All)=35; # w/ Accuracy Data =35; # w/ 4 Q Acc.= 7**						
	370010002	0	0	1	2	2	
	370210034	1	1	1	0	3	
	370250004	0	1	1	1	3	
	370330001	0	0	1	2	2	
	370350004	0	1	0	1	2	
	370370004	0	0	1	1	2	
	370510009	0	0	1	1	2	
	370570002	0	0	1	2	2	
	370610002	0	0	1	1	2	
	370630001	0	0	1	1	2	
	370650003	0	0	1	1	2	
	370670022	1	1	1	1	4	1
	370670024	1	1	1	1	4	1
	370710016	0	1	1	1	3	
	370810009	0	0	1	2	2	
	370811005	0	0	1	2	2	
	370870010	1	1	1	0	3	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	371070004	0	0	1	1	2	
	371110004	1	1	1	1	4	1
	371190010	1	1	1	1	4	1
	371190034	1	1	0	0	2	
	371190040	1	1	1	1	4	1
	371190041			1	1	2	
	371210001	1	1	1	1	4	1
	371230001			0	1	1	
	371290009	0	0	1	1	2	
	371330005	0	0	1	1	2	
	371350007	0	0	1	1	2	
	371390002		0	1	2	2	
	371470005	2	3	0	2	3	
	371550004	0	0	1	1	2	
	371730002	1	1	1	1	4	1
	371830014	0	0	1	1	2	
	371830015	0	0	1	1	2	
	371910005	1	3	0	2	3	
NORTH DAKOTA	**Total # Sites = 7; (# w/ data = 7); # where Acc. Reqrd (All)= 7; # w/ Accuracy Data = 7; # w/ 4 Q Acc.= 3**						
	380130002		0	1	1	2	
	380130003			0	2	1	
	380150003	1	1	1	1	4	1
	380171004	1	1	1	1	4	1
	380350004	1	0	1	1	3	
	380570004	1	2	1	1	4	1
	380910001	1	0	1	1	3	
OHIO	**Total # Sites =37; (# w/ data =37); # where Acc. Reqrd (All)=37; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	390090003	0	0	0	0	0	
	390170003	0	0	0	0	0	
	390350013	0	0	0	0	0	
	390350027	0	0	0	0	0	
	390350038	0	0	0	0	0	
	390350045				0	0	
	390350060	0	0	0	0	0	
	390350065	0	0	0	0	0	
	390350066	0	0	0	0	0	
	390351002	0	0	0	0	0	
	390490024	0	0	0	0	0	
	390490025	0	0	0	0	0	
	390490081	0	0	0	0	0	
	390610014	0	0	0	0	0	
	390610040		0	0	0	0	
	390610041	0	0	0	0	0	
	390617001	0	0	0	0	0	
	390618001	0	0	0	0	0	
	390810016	0	0	0	0	0	
	390811001	0	0	0	0	0	
	390851001	0	0	0	0	0	
	390870010	0	0	0	0	0	
	390932003	0	0	0	0	0	
	390950024	0	0	0	0	0	
	390950025	0	0	0	0	0	
	390950026		0	0	0	0	
	390990005	0	0	0	0	0	
	391130014	0	0	0	0	0	
	391130031	0	0	0	0	0	
	391330002	0	0	0	0	0	
	391351001	0	0	0	0	0	
	391450013	0	0	0	0	0	
	391510017	0	0	0	0	0	
	391510020	0	0	0	0	0	
	391530017	0	0	0	0	0	
	391530023	0	0	0	0	0	
	391550007	0	0	0	0	0	
OKLAHOMA	**Total # Sites =24; (# w/ data =19); # where Acc. Reqrd (All)=24; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	400159008					0	
	400179001			0	0	0	
	400190294		0	0	0	0	
	400190295				0	0	
	400219002			0	0	0	
	400310648		0	0	0	0	
	400390852		0	0	0	0	
	400470554		0	0	0	0	
	400710602		0	0	0	0	
	400719003					0	
	400819005					0	
	400970186		0	0	0	0	
	401010169		0	0	0	0	
	401090035		0	0	0	0	
	401090038		0	0	0	0	
	401091037		0	0	0	0	
	401159004			0	0	0	
	401179007					0	
	401190614		0	0	0	0	
	401210415		0	0	0	0	
	401250054		0	0	0	0	
	401339006					0	
	401430110		0	0	0	0	
	401430131		0	0	0	0	
OREGON	**Total # Sites =27; (# w/ data =27); # where Acc. Reqrd (All)=27; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	410030013	0	0	0	0	0	
	410090004	0	0	0	0	0	
	410170113	0	0	0	0	0	
	410290133	0	0	0	0	0	
	410291001	0	0	0	0	0	
	410292129			0	0	0	
	410330107			0	0	0	
	410350004	0	0	0	0	0	
	410370001	0	0	0	0	0	
	410370003			0	0	0	
	410390060	0	0	0	0	0	
	410391007	0	0	0	0	0	
	410392013	0	0	0	0	0	
	410430009				0	0	
	410470040	0	0	0	0	0	
	410470109	0	0	0	0	0	
	410470110			0	0	0	
	410510080	0	0	0	0	0	
	410510244	0	0	0	0	0	
	410510246			0	0	0	
	410590121	0	0	0	0	0	
	410610006	0	0	0	0	0	
	410610117			0	0	0	
	410619103			0	0	0	
	410650007				0	0	
	410670111	0	0	0	0	0	
	410671003			0	0	0	
PENNSYLVANIA	**Total # Sites =37; (# w/ data =35); # where Acc. Reqrd (All)=37; # w/ Accuracy Data =23; # w/ 4 Q Acc.=23**						
	420010001	1	1	1	1	4	1
	420030008	0	0	0	0	0	
	420030021	0	0	0	0	0	
	420030064	0	0	0	0	0	
	420030067		0	0	0	0	
	420030093	0	0	0	0	0	
	420030095	0	0	0	0	0	
	420030097	0	0	0	0	0	
	420030116	0	0	0	0	0	
	420030131	0	0	0	0	0	
	420031008	0	0	0	0	0	
	420031301	0	0	0	0	0	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	420039002	0	0	0	0	0	
	420070014					0	
	420110009	1	1	1	1	4	1
	420170012	1	1	1	1	4	1
	420210011	1	1	1	1	4	1
	420430401	1	1	1	1	4	1
	420450002	1	1	1	1	4	1
	420490003	1	1	1	1	4	1
	420692006	1	1	1	1	4	1
	420710007	1	1	1	1	4	1
	420770004	1	1	1	1	4	1
	420791101	1	1	1	1	4	1
	420910013	1	1	1	1	4	1
	420950025	1	1	1	1	4	1
	420990301					0	
	421010004	1	1	1	1	4	1
	421010020	1	1	1	1	4	1
	421010024	1	1	1	1	4	1
	421010047	1	1	1	1	4	1
	421010136	1	1	1	1	4	1
	421250005	1	1	1	1	4	1
	421250200	1	1	1	1	4	1
	421255001	1	1	1	1	4	1
	421290008	1	1	1	1	4	1
	421330008	1	1	1	1	4	1
PUERTO RICO	**Total # Sites = 9; (# w/ data = 9); # where Acc. Reqrd (All)= 9; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	720210009	0	0	0	0	0	
	720530003		0	0	0	0	
	720570008	0	0	0	0	0	
	720590016	0	0	0	0	0	
	720610005	0	0	0	0	0	
	720810001	0	0	0	0	0	
	720970003	0	0	0	0	0	
	721130004	0	0	0	0	0	
	721270003	0	0	0	0	0	
RHODE ISLAND	**Total # Sites = 7; (# w/ data = 7); # where Acc. Reqrd (All)= 7; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	440030002	0	0	0	0	0	
	440070020	0	0	0	0	0	
	440070022	0	0	0	0	0	
	440070023				0	0	
	440071005	0	0	0	0	0	
	440071010	0	0	0	0	0	
	440090007	0	0	0	0	0	
SOUTH CAROLINA	**Total # Sites =17; (# w/ data =17); # where Acc. Reqrd (All)=17; # w/ Accuracy Data =17; # w/ 4 Q Acc.=10**						
	450130007	0	5	7	6	3	
	450190046	4	7	6	7	4	1
	450190048		6	5	7	3	
	450190049	7	5	6	6	4	1
	450290002		0	0	6	1	
	450370001		0	6	6	2	
	450410002	2	6	6	6	4	1
	450430009	5	6	3	7	4	1
	450450009		2	6	6	3	
	450470003	2	6	7	6	4	1
	450630005	0	3	7	5	3	
	450630008	6	8	4	8	4	1
	450730001	6	6	5	7	4	1
	450790007	5	6	6	6	4	1
	450790019	4	6	6	7	4	1
	450830010	7	6	6	6	4	1
	450910006	7	0	7	5	3	
SOUTH DAKOTA	**Total # Sites = 8; (# w/ data = 8); # where Acc. Reqrd (All)= 8; # w/ Accuracy Data = 8; # w/ 4 Q Acc.= 5**						
	460110002		1	1	1	3	
	460990006		1	1	1	3	
	460990007	1	1	1	1	4	1

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	461030014	1	1	1	1	4	1
	461030015	1	1	1	1	4	1
	461030016	1	1	1	1	4	1
	461030017	1	1	1	1	4	1
	461031001		2	1	1	3	
TENNESSEE	**Total # Sites =21; (# w/ data =12); # where Acc. Reqrd (All)=21; # w/ Accuracy Data = 3; # w/ 4 Q Acc.= 0**						
	470090005	0	0	0	0	0	
	470370023					0	
	470450004			0	0	0	
	470650031					0	
	470650032					0	
	470654002					0	
	470930028	0	0	1	1	2	
	470931017	1	1	0	0	2	
	470931020	0	0	0	1	1	
	470990002	0	0	0	0	0	
	471130004	0	0	0	0	0	
	471192007	0	0	0	0	0	
	471251009	0	0	0	0	0	
	471410001			0	0	0	
	471450004					0	
	471570014					0	
	471570038					0	
	471570047					0	
	471571004					0	
	471631007	0	0	0	0	0	
	471650007	0	0	0	0	0	
TEXAS	**Total # Sites =47; (# w/ data =40); # where Acc. Reqrd (All)=47; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0**						
	480290034		0	0	0	0	
	480290052	0	0	0	0	0	
	480290053				0	0	
	480370004	0	0	0	0	0	
	480391003				0	0	
	480550062	0	0	0	0	0	
	480612002					0	
	480850005	0	0	0	0	0	
	481130020	0	0	0	0	0	
	481130035	0	0	0	0	0	
	481130050	0	0	0	0	0	
	481130057	0	0	0	0	0	
	481130069	0	0	0	0	0	
	481130087	0	0	0	0	0	
	481350003	0	0	0	0	0	
	481410002		0	0	0	0	
	481410010				0	0	
	481410037	0	0	0	0	0	
	481410038				0	0	
	481410043	0	0	0	0	0	
	481410044	0	0	0	0	0	
	481410045	0	0	0	0	0	
	481670053		0	0	0	0	
	481671005				0	0	
	482010024					0	
	482010026				0	0	
	482010051			0	0	0	
	482010058			0	0	0	
	482010062		0	0	0	0	
	482011035		0	0	0	0	
	482011037			0	0	0	
	482011039			0	0	0	
	482150042					0	
	482150043					0	
	483030001	0	0	0	0	0	
	483150050	0	0	0	0	0	
	483390089				0	0	

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	483550020					0	
	483550032					0	
	483750005					0	
	484390063	0	0	0	0	0	
	484391002	0	0	0	0	0	
	484391003			0	0	0	
	484393006	0	0	0	0	0	
	484530020	0	0	0	0	0	
	484530021				0	0	
	484790016			0	0	0	
UTAH	Total # Sites =11; (# w/ data =11); # where Acc. Reqrd (All)=11; # w/ Accuracy Data =11; # w/ 4 Q Acc.= 9						
	490110001	1	2	2	1	4	1
	490350003	0	1	1	1	3	
	490350012	1	1	1	1	4	1
	490353006	1	1	1	1	4	1
	490353007	2	1	1	0	3	
	490450002	2	2	1	1	4	1
	490490002	1	1	1	1	4	1
	490494001	1	1	1	1	4	1
	490495010	1	1	1	1	4	1
	490570001	1	1	1	1	4	1
	490570007	1	1	1	2	4	1
VERMONT	Total # Sites = 5; (# w/ data = 5); # where Acc. Reqrd (All)= 5; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0						
	500030005	0	0	0	0	0	
	500070007	0	0	0	0	0	
	500070012			0	0	0	
	500210002	0	0	0	0	0	
	500230005	0	0	0	0	0	
VIRGIN ISLANDS	Total # Sites = 1; (# w/ data = 1); # where Acc. Reqrd (All)= 1; # w/ Accuracy Data = 0; # w/ 4 Q Acc.= 0						
	780010012	0	0	0	0	0	
VIRGINIA	Total # Sites =20; (# w/ data =20); # where Acc. Reqrd (All)=20; # w/ Accuracy Data =19; # w/ 4 Q Acc.=19						
	510130020	1	1	1	1	4	1
	510360002	1	1	1	1	4	1
	510410003	1	1	1	1	4	1
	510590030	1	1	1	1	4	1
	510591004	1	1	1	1	4	1
	510595001	1	1	1	1	4	1
	510870014	1	1	1	1	4	1
	510870015	1	1	1	1	4	1
	511071005	1	1	1	1	4	1
	511390004				0	0	
	515200006	1	1	1	1	4	1
	515500012	1	1	1	1	4	1
	516500004	1	1	1	1	4	1
	516800014	1	1	1	1	4	1
	517000013	1	1	1	1	4	1
	517100024	1	1	1	1	4	1
	517600020	1	1	1	1	4	1
	517700014	1	1	1	1	4	1
	517750010	1	1	1	1	4	1
	518100008	1	1	1	1	4	1
WASHINGTON	Total # Sites =23; (# w/ data =23); # where Acc. Reqrd (All)=23; # w/ Accuracy Data =21; # w/ 4 Q Acc.=12						
	530050002	1	1	0	1	3	
	530090009				0	0	
	530110013	1	1	1	1	4	1
	530330004	1	1	1	0	3	
	530330017	0	1	1	1	3	
	530330021	1	1	1	1	4	1
	530330024	1	1	1	1	4	1
	530330027			1	1	2	
	530330057	0	2	1	1	3	
	530330080	1	1	1	1	4	1
	530332004	1	1	1	1	4	1
	530530029				1	1	
	530530031	1	1	1	1	4	1

STATE	SITE	# of Accuracy Records Q1	Q2	Q3	Q4	# Q's w/ Accuracy	Accuracy in All 4 Q
	530531018	1	1	1	1	4	1
	530570014				0	0	
	530610005				1	1	
	530611007	1	1	1	1	4	1
	530630016	1	1	1	1	4	1
	530630047	1	1	1	1	4	1
	530639000	0	1	1	1	3	
	530670013	1	1	1	1	4	1
	530730015	1	1	1	1	4	1
	530770012	1	1	2	0	3	
WEST VIRGINIA	**Total # Sites =14; (# w/ data =14); # where Acc. Reqrd (All)=14; # w/ Accuracy Data =14; # w/ 4 Q Acc.=10**						
	540030003	0	3	3	3	3	
	540090005	1	4	3	3	4	1
	540110006	2	2	4	3	4	1
	540290011	1	4	3	3	4	1
	540291004	1	4	3	3	4	1
	540330003	0	3	3	2	3	
	540390009	1	2	2	5	4	1
	540391005	1	3	3	3	4	1
	540511002	1	4	3	3	4	1
	540610003	0	3	3	3	3	
	540690008	1	4	3	3	4	1
	540810002	2	3	2	3	4	1
	540890001	2	3	1	5	4	1
	541071002	0	3	3	3	3	
WISCONSIN	**Total # Sites =28; (# w/ data =28); # where Acc. Reqrd (All)=28; # w/ Accuracy Data =27; # w/ 4 Q Acc.= 6**						
	550090005	1	1	1	1	4	1
	550090025	1	1	1	1	4	1
	550090026	1	1	1	1	4	1
	550250025	0	0	1	0	1	
	550250047	0	1	1	0	2	
	550270007	0	1	1	0	2	
	550290004	1	1	1	1	4	1
	550310025	2	0	1	1	3	
	550430009	1	0	1	0	2	
	550550008	0	0	1	0	1	
	550590019	0	0	0	1	1	
	550710007	1	1	1	1	4	1
	550790010	0	0	0	0	0	
	550790026	1	0	0	0	1	
	550790043	0	0	1	0	1	
	550790050	0	0	1	0	1	
	550790051	0	0	1	0	1	
	550790059	0	0	0	1	1	
	550790099	0	0	1	0	1	
	550870009	0	2	1	1	3	
	550890008	0	1	0	0	1	
	551050002	0	1	0	0	1	
	551091002	0	1	1	1	3	
	551250001	1	1	1	1	4	1
	551330027	0	0	0	1	1	
	551330034	0	0	0	1	1	
	551390011	0	2	1	1	3	
	551410016	0	0	0	1	1	
WYOMING	**Total # Sites = 3; (# w/ data = 3); # where Acc. Reqrd (All)= 3; # w/ Accuracy Data = 2; # w/ 4 Q Acc.= 2**						
	560210001	0	0	0	0	0	
	560330001	6	2	2	4	4	1
	560330002	9	3	3	6	4	1
US TOTAL	**Total # Sites = 979; (# w/ data = 924); # where Acc. Reqrd (All)= 979; # w/ Accuracy Data = 456; # w/ 4 Q Acc.= 176**						

Attachment 2-5

Performance Evaluation Program Site/Days without a Routine Data Value Match

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
AK	020200009	04/09/1999
	020200009	07/14/1999
	020900010	07/10/1999
AL	010730023	06/17/1999
	010730023	08/10/1999
	010730023	12/02/1999
	011010007	05/18/1999
	011010007	07/20/1999
	011010007	11/02/1999
	011170006	05/18/1999
	011170006	07/20/1999
	011170006	11/02/1999
	011250003	06/17/1999
	011250003	08/10/1999
	011250003	12/02/1999
	011270002	06/17/1999
	011270002	08/10/1999
	011270002	12/02/1999
AR	050510002	05/12/1999
	050510002	06/23/1999
	051190003	05/12/1999
	051190003	06/23/1999
	051310008	05/12/1999
	051310008	06/23/1999
	051430003	05/13/1999
	051430003	06/26/1999
AZ	040190011	05/27/1999
CA	060270002	02/10/1999
	060370002	05/19/1999
	060370002	05/26/1999
	060531002	09/21/1999
	060531002	12/08/1999
	060670010	01/07/1999
	060731007	11/14/1999
CO	080010001	01/24/1999
	080410011	02/02/1999
	080410011	07/27/1999
DE	100031007	11/25/1999
FL	120251016	02/17/1999
	121030018	12/08/1999
	123456789	08/22/1999
GA	131270004	10/21/1999

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
ID	160830006	03/26/1999
IL	170310014	05/15/1999
	170310014	10/12/1999
	170311016	02/14/1999
	170311016	10/12/1999
	170311701	01/27/1999
	170311701	05/09/1999
	170311701	09/06/1999
	170311701	11/11/1999
	170312001	01/27/1999
	170312001	05/09/1999
	170312001	09/06/1999
	170312001	11/11/1999
	170313301	10/12/1999
	170314201	02/14/1999
	170314201	10/12/1999
	171430024	03/16/1999
	171430024	05/24/1999
	171430024	07/29/1999
	171430024	11/08/1999
IN	180431004	12/02/1999
	180891003	07/17/1999
	180892004	06/14/1999
	180970043	02/17/1999
	180970043	08/04/1999
	180970043	11/20/1999
	180970081	08/04/1999
	180970081	11/20/1999
LA	220191002	02/11/1999
	220191002	04/15/1999
	220191002	07/08/1999
	220191002	12/02/1999
MD	240030019	02/25/1999
	240030019	04/25/1999
	240030019	07/20/1999
	240330001	04/25/1999
	240330001	07/20/1999
	240330001	12/14/1999
	245100038	02/23/1999
	245100038	04/21/1999
	245100038	07/23/1999
	245100038	12/20/1999
	245100040	04/21/1999
	245100040	07/23/1999
	245100040	12/26/1999

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
MI	261470005	08/19/1999
	261630015	10/06/1999
	261630036	03/25/1999
	261630036	08/04/1999
MN	271230047	04/06/1999
	271230047	07/08/1999
	271230047	10/06/1999
	271230868	07/08/1999
MO	291831002	05/11/1999
MT	300360024	12/08/1999
ND	380570003	06/17/1999
NE	310050019	06/23/1999
	310050019	09/09/1999
	310550019	06/06/1999
	310550019	10/21/1999
NH	330050007	08/10/1999
	330050007	12/08/1999
	330050007	12/14/1999
	330111007	08/10/1999
	330111007	12/08/1999
	330111007	12/14/1999
	330130003	06/17/1999
	330130003	08/16/1999
	330130003	12/11/1999
NJ	340030003	01/30/1999
	340070003	01/30/1999
	340130004	04/24/1999
	340130011	01/21/1999
	340130011	01/24/1999
	340130011	01/30/1999
	340130011	07/20/1999
	340390004	01/21/1999
	340390004	01/24/1999
NM	350010023	03/20/1999
	350010024	03/20/1999
	350130017	03/19/1999
	350350060	11/20/1999
	350430004	03/22/1999
	350430004	06/08/1999
	350430004	08/25/1999
	350430004	10/24/1999
NY	360050083	03/04/1999
	360050083	05/12/1999

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
NY	360290005	05/18/1999
	360470011	03/01/1999
	360470011	05/06/1999
	360671015	05/18/1999
	360810094	03/04/1999
	360810094	05/12/1999
	360850067	03/01/1999
	360850067	05/06/1999
	360850067	05/09/1999
OH	390950008	03/10/1999
	390950008	04/21/1999
	390950008	07/14/1999
	390950025	11/11/1999
OK	400310648	02/23/1999
	400310648	06/23/1999
	401090035	02/23/1999
	401210415	02/17/1999
	401210415	06/23/1999
	401210415	09/15/1999
	401430110	02/17/1999
OR	410330107	03/04/1999
	410330107	05/09/1999
	410330107	08/07/1999
	410330107	11/08/1999
PA	420030290	03/18/1999
	420031301	12/29/1999
	420170012	03/20/1999
	420170012	08/31/1999
	420430401	12/08/1999
	420590121	09/21/1999
	420950025	03/20/1999
	420950025	12/02/1999
	421290008	06/17/1999
	421330008	09/15/1999
PR	720610013	04/07/1999
	720610013	06/13/1999
	720610013	09/22/1999
	720610013	12/15/1999
	721270003	06/10/1999
	721270003	09/22/1999
SD	461030016	08/31/1999
TN	471570014	03/10/1999
	471570014	04/21/1999
	471570014	08/04/1999
	471570014	10/27/1999

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
TN	471570047	03/10/1999
	471570047	04/21/1999
	471570047	08/04/1999
	471570047	10/27/1999
	471630007	03/04/1999
	471630007	06/26/1999
	471630007	08/31/1999
	471630007	11/20/1999
TX	480290034	07/22/1999
	481130035	05/27/1999
	481130050	03/03/1999
	481130050	05/26/1999
	481130050	07/07/1999
	481410002	03/17/1999
	481410002	06/06/1999
	481410002	08/18/1999
	481410002	10/05/1999
	481410037	06/08/1999
	481410037	08/18/1999
	481410037	10/05/1999
	481410044	06/08/1999
	481410044	08/20/1999
	481671005	04/27/1999
	481671005	04/29/1999
	481671005	05/18/1999
	481671005	07/20/1999
	482010024	04/27/1999
	482010024	04/29/1999
	482010024	07/14/1999
	482010024	10/13/1999
	482010026	04/27/1999
	482010026	07/13/1999
	482010026	10/13/1999
	482010026	10/15/1999
	482011035	04/28/1999
	482011035	07/13/1999
	482011039	04/27/1999
	482011039	07/17/1999
	482011039	11/17/1999
	484393006	03/02/1999
	484393006	05/26/1999
	484393006	07/07/1999
	484530020	02/17/1999
	484530020	04/20/1999
	484530020	10/06/1999
VA	511071005	11/11/1999
	517750010	03/11/1999
	517750010	08/13/1999
	518100008	03/09/1999

Site/Days where Performance Evaluation Performed
but No Matching AIRS Value Exists

State	AIRS Site	Date
VI	780010012	06/19/1999
VT	500070003	09/30/1999
	500070011	09/09/1999
	500070011	10/30/1999
	500070011	12/02/1999
WA	530670013	07/29/1999
WI	550790043	03/01/1999
	550790043	10/27/1999
	550790044	05/03/1999
WV	540390004	05/15/1999
	540390004	08/19/1999
	540390004	10/30/1999

Attachment 2-6

Collocated Precision Data with Percent Differences > +/- 50%

Percent Differences > 50% or < -50%

based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
AK	020	020200018	118	8.10	22.60	94.46	*		01/01/99
			118	4.40	19.70	126.97	*	*	01/02/99
			118	5.00	11.60	79.52	*	*	03/03/99
			118	6.00	2.90	-69.66	*	*	03/08/99
AK	020	021100004	117	4.10	0.60	-148.94	*	*	07/17/99
			117	1.90	0.30	-145.45	*	*	09/03/99
			117	1.90	3.40	56.60	*	*	09/15/99
			118	2.10	14.70	150.00	*	*	10/09/99
AK	020	021700008	117	5.10	3.00	-51.85	*	*	05/21/99
			117	1.30	2.80	73.17	*	*	06/17/99
			117	0.70	0.20	-111.11	*	*	09/12/99
AL	011	011010007	120	14.04	30.00	72.48	*		01/30/99
			120	12.81	1.50	-158.07	*	*	03/07/99
AR	001	050010001	117	7.80	14.70	61.33	*		12/26/99
AR	001	051190007	118	31.60	13.90	-77.80	*		07/17/99
			118	16.50	3.50	-130.00	*	*	07/23/99
			118	20.20	11.60	-54.09	*		08/16/99
			118	10.30	18.20	55.44	*		11/08/99
AR	001	051191008	118	15.40	28.00	58.06	*		07/26/99
			118	20.70	9.00	-78.79	*		12/26/99
AZ	100	040070008	120	13.10	25.80	65.30	*		03/01/99
AZ	300	040191028	120	8.80	18.60	71.53	*		12/08/99
CA	001	060190008	120	13.00	23.00	55.56	*		09/21/99
CA	001	061010003	117	16.00	9.00	-56.00	*		07/11/99
			117	56.00	7.00	-155.56	*		10/15/99
			117	1.00	36.00	189.19	*	*	11/14/99
CA	004	060450006	120	3.40	7.00	69.23	*	*	03/13/99
			120	1.00	13.30	172.03	*	*	03/19/99
			120	5.30	2.20	-82.67	*	*	07/02/99
CA	019	060271003	120	2.83	9.12	105.23	*	*	01/24/99
			120	16.64	9.58	-53.82	*		01/30/99
			120	6.00	3.00	-66.67	*	*	07/29/99
			120	4.00	2.00	-66.67	*	*	10/09/99
CA	036	060250005	119	9.71	0.00	-200.00	*	*	06/05/99
CA	036	060710014	119	15.06	77.80	135.13	*		01/12/99
			119	8.05	14.55	57.52	*		01/24/99
			119	11.89	22.94	63.45	*		05/30/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
CA	036	060710014	119	15.77	4.21	-115.72	*	*	06/29/99
			119	6.00	11.00	58.82	*		07/29/99
CA	036	060730006	119	7.21	2.04	-111.78	*	*	03/25/99
CO	001	080010001	118	12.60	6.29	-66.81	*		03/13/99
CO	001	080410011	118	3.40	0.70	-131.71	*	*	04/26/99
			118	8.60	2.50	-109.91	*	*	04/30/99
			118	2.20	4.00	58.06	*	*	05/06/99
			118	0.50	5.40	166.10	*	*	06/02/99
			118	0.00	7.20	200.00	*	*	06/05/99
			118	4.99	1.25	-119.87	*	*	07/29/99
			118	1.25	7.07	139.90	*	*	08/13/99
			118	1.25	6.24	133.24	*	*	08/22/99
			118	7.10	0.70	-164.10	*	*	10/09/99
			118	4.30	0.60	-151.02	*	*	12/26/99
CT	001	090091123	118	19.00	9.40	-67.61	*		08/13/99
DC	001	110010043	120	12.40	6.30	-65.24	*		04/15/99
			120	8.80	1.00	-159.18	*	*	05/04/99
			120	1.00	19.60	180.58	*	*	05/07/99
			120	1.10	11.30	164.52	*	*	05/26/99
			120	3.30	7.90	82.14	*	*	06/18/99
DE	001	100031011	120	13.50	7.80	-53.52	*		03/31/99
FL	001	120330004	118	1.16	0.25	-129.08	*	*	02/05/99
FL	002	120010023	118	4.00	18.00	127.27	*	*	11/20/99
FL	004	121056006	118	1.00	8.00	155.56	*	*	03/01/99
			118	5.30	9.30	54.79	*	*	04/30/99
FL	005	120710005	118	5.50	14.40	89.45	*	*	03/01/99
FL	017	120111002	118	4.40	7.50	52.10	*	*	01/18/99
			118	48.40	6.00	-155.88	*	*	12/14/99
FL	020	120952002	118	9.04	19.83	74.75	*		05/30/99
GA	010	130892001	120	49.00	17.00	-96.97	*		01/15/99
			120	26.00	13.00	-66.67	*		03/13/99
GA	010	132450005	120	17.00	10.00	-51.85	*		09/21/99
HI	120	150031001	120	17.20	6.70	-87.87	*		01/18/99
			120	7.70	0.90	-158.14	*	*	02/23/99
			120	7.90	0.70	-167.44	*	*	03/01/99
			120	0.50	6.40	171.01	*	*	03/19/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
HI	120	150031001	120	3.00	1.10	-92.68	*	*	04/12/99
			120	4.20	0.70	-142.86	*	*	04/24/99
			120	7.00	13.50	63.41	*		05/30/99
			120	2.40	0.90	-90.91	*	*	06/11/99
			120	3.50	0.60	-141.46	*	*	06/17/99
HI	120	150032004	120	5.70	10.60	60.12	*	*	05/12/99
			120	0.80	2.30	96.77	*	*	10/03/99
IA	001	191532520	118	4.30	0.20	-182.22	*	*	04/06/99
IA	002	191130037	118	7.60	14.50	62.44	*		04/15/99
			118	6.00	2.20	-92.68	*	*	11/02/99
IA	003	191550009	118	5.10	3.00	-51.85	*	*	08/13/99
ID	001	160550006	118	2.60	0.20	-171.43	*	*	12/02/99
IN	001	180431004	118	6.40	16.00	85.71	*		02/11/99
			118	2.90	6.60	77.89	*	*	04/30/99
IN	001	180950009	118	1.10	13.40	169.66	*	*	04/18/99
IN	008	180970083	118	25.80	8.80	-98.27	*		05/18/99
KS	001	200910007	118	2.10	6.80	105.62	*	*	03/16/99
			118	15.00	7.10	-71.49	*		04/09/99
			118	6.70	16.50	84.48	*		06/14/99
			118	18.00	1.10	-176.96	*	*	07/08/99
KS	001	201730010	118	48.20	20.70	-79.83	*		03/07/99
			118	8.90	22.00	84.79	*		03/19/99
			118	8.70	1.30	-148.00	*	*	04/06/99
			118	0.70	7.30	165.00	*	*	05/24/99
			118	7.20	0.50	-174.03	*	*	06/23/99
			118	7.30	2.50	-97.96	*	*	07/11/99
KS	001	202090021	118	8.00	2.50	-104.76	*	*	05/24/99
KY	001	210190017	118	1.70	11.60	148.87	*	*	02/23/99
			118	3.20	6.90	73.27	*	*	04/06/99
			118	1.90	9.60	133.91	*	*	05/24/99
KY	001	210590014	118	8.30	23.10	94.27	*		02/05/99
			118	15.50	3.40	-128.04	*	*	02/11/99
			118	13.70	2.40	-140.37	*	*	02/17/99
			118	16.00	1.10	-174.27	*	*	02/23/99
			118	10.40	2.40	-125.00	*	*	03/01/99
			118	2.50	11.70	129.58	*	*	04/24/99
KY	001	210670012	118	1.50	6.70	126.83	*	*	04/24/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
KY	001	210670012	118	1.20	11.30	161.60	*	*	05/18/99
KY	001	211950002	118	3.20	6.20	63.83	*	*	03/07/99
			118	7.10	19.20	92.02	*		05/18/99
KY	001	212270007	118	14.40	8.40	-52.63	*		04/18/99
			118	21.00	10.90	-63.32	*		05/18/99
			118	15.70	9.10	-53.23	*		06/05/99
KY	002	211110043	118	16.00	8.40	-62.30	*		01/18/99
LA	001	220330009	118	27.30	13.20	-69.63	*		01/18/99
			118	9.90	17.10	53.33	*		09/09/99
LA	001	220550005	118	22.30	10.00	-76.16	*		06/23/99
LA	001	220710012	118	22.40	12.20	-58.96	*		03/01/99
MA	001	250130016	120	47.60	6.00	-155.22	*	*	03/04/99
			120	8.60	2.30	-115.60	*	*	06/17/99
			120	11.80	20.90	55.66	*		06/20/99
			120	15.20	27.70	58.28	*		06/29/99
			120	14.40	7.30	-65.44	*		08/19/99
			120	16.70	5.30	-103.64	*	*	08/22/99
			120	11.30	6.00	-61.27	*	*	08/31/99
			120	1.10	13.50	169.86	*	*	12/08/99
MA	001	250230004	120	12.50	27.00	73.42	*		01/03/99
MA	001	250250027	120	14.00	5.60	-85.71	*	*	08/19/99
MA	001	250270020	120	7.90	4.00	-65.55	*	*	03/10/99
			120	6.70	11.30	51.11	*		03/16/99
			120	7.60	22.10	97.64	*		04/18/99
			120	7.80	3.50	-76.11	*	*	04/24/99
			120	9.10	17.00	60.54	*		04/30/99
			120	10.30	5.00	-69.28	*	*	05/27/99
			120	13.60	6.80	-66.67	*		07/08/99
			120	1.90	8.40	126.21	*	*	08/16/99
ME	001	230110016	117	9.50	16.80	55.51	*		02/11/99
MI	001	260810020	118	1.70	3.70	74.07	*	*	06/29/99
MN	001	271377550	120	1.50	0.80	-60.87	*	*	09/09/99
			120	0.00	5.00	200.00	*	*	10/03/99
			120	0.90	8.50	161.70	*	*	10/09/99
MO	003	295100085	118	12.50	3.40	-114.47	*	*	10/01/99
			118	34.20	17.20	-66.15	*		10/05/99
			118	3.80	1.30	-98.04	*	*	11/02/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
MO	003	295100085	118	21.80	8.70	-85.90	*		11/09/99
			118	9.30	21.80	80.39	*		11/10/99
			118	9.70	5.80	-50.32	*	*	12/04/99
			118	4.40	12.80	97.67	*	*	12/10/99
			118	5.10	23.60	128.92	*	*	12/29/99
MS	100	281210001	118	7.80	18.60	81.82	*		03/25/99
MT	001	300630024	116	13.00	6.60	-65.31	*		04/12/99
			116	8.70	4.30	-67.69	*	*	08/16/99
NC	001	371210001	118	7.00	12.40	55.67	*		12/14/99
NC	001	371830014	118	12.90	0.20	-193.89	*	*	11/08/99
ND	001	380171004	118	6.00	3.30	-58.06	*	*	04/12/99
ND	001	380570004	117	15.30	8.00	-62.66	*		02/23/99
			117	6.50	3.50	-60.00	*	*	03/01/99
			117	8.50	4.30	-65.63	*	*	04/12/99
			117	2.00	5.10	87.32	*	*	05/18/99
			117	6.30	2.60	-83.15	*	*	05/24/99
			117	2.30	4.00	53.97	*	*	06/11/99
			117	5.30	3.00	-55.42	*	*	07/17/99
NE	001	311090022	118	1.10	9.90	160.00	*	*	10/27/99
			118	2.20	6.10	93.98	*	*	12/26/99
NE	003	310550019	118	3.80	0.50	-153.49	*	*	09/09/99
NE	003	310550052	118	7.90	1.80	-125.77	*	*	10/03/99
NJ	001	340070003	117	9.60	3.30	-97.67	*	*	06/17/99
			117	18.80	8.70	-73.45	*		06/23/99
			117	29.90	12.90	-79.44	*		07/17/99
			117	12.10	3.00	-120.53	*	*	11/02/99
NJ	001	340390004	117	2.90	23.70	156.39	*	*	07/11/99
NM	001	350490020	118	7.30	4.00	-58.41	*	*	01/18/99
			118	3.50	7.60	73.87	*	*	03/01/99
			118	3.20	0.20	-176.47	*	*	08/01/99
NV	200	320310016	120	1.90	3.20	50.98	*	*	03/31/99
NY	001	360610056	118	4.60	1.10	-122.81	*	*	07/11/99
NY	001	360671015	118	5.90	2.80	-71.26	*	*	12/11/99
OH	008	390170003	120	35.30	20.20	-54.41	*		09/27/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
OH	008	390610014	120	14.00	2.00	-150.00	*	*	03/25/99
OK	101	401090035	118	9.20	4.20	-74.63	*	*	09/21/99
OK	106	400219002	118	4.60	1.90	-83.08	*	*	09/21/99
OR	001	410370001	118	1.40	0.80	-54.55	*	*	11/08/99
OR	001	410390060	118	3.30	13.70	122.35	*	*	04/09/99
			118	9.10	0.00	-200.00	*	*	05/27/99
			118	12.60	0.00	-200.00	*	*	09/15/99
SD	001	460990006	119	12.50	21.10	51.19	*		08/28/99
			119	4.50	1.90	-81.25	*	*	09/16/99
			119	1.50	3.70	84.62	*	*	12/26/99
SD	001	461031001	120	8.40	4.70	-56.49	*	*	07/26/99
			120	1.60	6.30	118.99	*	*	09/27/99
			120	3.60	1.10	-106.38	*	*	10/30/99
			120	14.60	6.20	-80.77	*		12/23/99
TN	001	471650007	118	22.20	13.20	-50.85	*		12/29/99
TN	004	470931017	120	11.80	21.40	57.83	*		04/18/99
			120	9.20	37.50	121.20	*		04/30/99
TX	001	481130069	118	8.50	14.60	52.81	*		12/26/99
TX	001	482011035	118	17.40	8.70	-66.67	*		10/27/99
UT	001	490494001	118	5.70	13.70	82.47	*	*	06/29/99
			118	14.10	5.70	-84.85	*	*	07/05/99
			118	6.20	12.10	64.48	*		10/09/99
VA	001	517100024	118	5.60	9.40	50.67	*	*	02/14/99
VA	001	517600020	118	12.80	6.10	-70.90	*		03/13/99
			118	10.80	6.00	-57.14	*	*	12/17/99
WA	001	530530031	118	26.80	14.50	-59.56	*		09/03/99
			118	2.60	1.40	-60.00	*	*	12/14/99
WA	001	530770012	118	6.90	13.70	66.02	*		02/23/99
WI	001	550250025	118	6.20	21.40	110.14	*		04/21/99
			118	5.20	1.20	-125.00	*	*	08/04/99
			118	2.90	5.20	56.79	*	*	09/30/99
WI	001	550310025	118	14.40	7.30	-65.44	*		12/23/99
			118	2.40	0.60	-120.00	*	*	12/26/99

Percent Differences > 50% or < -50%
based on collocated samplers (AIRS extraction dated 7/26/00)

State	REPTORG	AIRS Site	Method	Prim. Conc	Colo. Conc	Percent Difference	Diff > 50%?	Conc <= 6?	Date
WI	001	550790026	118	23.20	42.00	57.67	*		01/30/99
			118	5.70	3.30	-53.33	*	*	10/03/99
WI	001	550790059	118	27.30	7.50	-113.79	*		02/08/99
			118	8.70	15.20	54.39	*		10/15/99
WV	001	540391005	118	0.90	12.50	173.13	*	*	02/20/99
			118	7.50	15.00	66.67	*		10/06/99
			118	7.90	2.70	-98.11	*	*	10/18/99
WV	002	540290011	118	17.20	0.50	-188.70	*	*	07/26/99
			118	2.30	4.50	64.71	*	*	09/21/99
			118	8.10	15.80	64.44	*		09/27/99
			118	3.40	1.40	-83.33	*	*	10/24/99
			118	4.60	20.30	126.10	*	*	11/05/99
			118	3.80	6.80	56.60	*	*	11/17/99
WY	001	560330002	117	12.20	4.30	-95.76	*	*	03/13/99
			117	4.70	7.90	50.79	*	*	03/25/99
			117	10.00	5.80	-53.16	*	*	04/30/99
			117	5.00	1.60	-103.03	*	*	06/11/99
			117	1.70	5.30	102.86	*	*	06/23/99

Attachment 2-7

Collocated Precision Data Aggregated by Reporting Organizations

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=AK REPORTING ORGANIZATION=020 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
021700008	1	3.6 (2.2, 10.4)*	3	1	2.9 (-1.2, 7.1)
020200018	3	2.2 (1.3, 9.6)	2	1	1.4 (-9.3, 12.0)
021100004	3	2.8 (1.4, 44.2)*	1	1	2.8
021700008	3	2.2 (1.1, 35.1)*	1	1	-2.2
020200018	4	2.1 (1.3, 4.9)	4	1	1.8 (0.5, 3.1)
020900010	4	4.4 (2.9, 10.5)*	4	1	1.6 (-4.0, 7.2)
021100004	4	4.7 (3.2, 9.8)	5	1	3.1 (-0.7, 6.9)
021700008	4	3.0 (2.2, 5.1)	8	1	-2.1 (-3.6, -0.6)
A	1	3.6 (2.2, 10.4)*	3	1	
A	3	2.3 (1.5, 5.6)	4	3	
A	4	3.6 (2.9, 4.9)	21	4	
A	A	3.5 (2.9, 4.5)	28	8	

---------- STATE=AK REPORTING ORGANIZATION=020 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
020200018	1	24.6 (17.6, 42.0)*	8	1	6.8 (-10.1, 23.7)
020200018	4	2.4 (1.5, 7.0)	3	1	-1.4 (-5.4, 2.7)
A	1	24.6 (17.6, 42.0)*	8	1	
A	4	2.4 (1.5, 7.0)	3	1	
A	A	21.0 (15.7, 32.5)*	11	2	

---------- STATE=AL REPORTING ORGANIZATION=011 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
010970002	1	11.0 (8.2, 17.1)*	11	1	-0.8 (-7.1, 5.5)
011010007	1	19.8 (15.2, 28.9)*	14	1	10.5 (2.2, 18.7)
A	1	16.5 (13.5, 21.6)*	25	2	
A	A	16.5 (13.5, 21.6)*	25	2	

---------- STATE=AL REPORTING ORGANIZATION=012 METHOD=116 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
010730023	1	10.5 (7.8, 16.8)*	10	1	1.6 (-4.7, 8.0)
010731005	1	1.9 (1.0, 30.2)*	1	1	-1.9
010732003	1	8.3 (6.4, 12.4)*	13	1	-0.3 (-4.5, 4.0)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=AL REPORTING ORGANIZATION=012 METHOD=116 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
010732006	1	8.5 (4.3, 135.6)*	1	1	8.5
010735002	1	2.8 (1.4, 44.5)*	1	1	-2.8
A	1	9.0 (7.3, 11.7)*	26	5	
A	A	9.0 (7.3, 11.7)*	26	5	

---------- STATE=AR REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
050010001	3	2.0 (1.5, 3.0)	13	1	-0.6 (-1.6, 0.4)
050310001	3	5.7 (4.3, 8.6)	12	1	0.2 (-2.9, 3.2)
050010001	4	15.4 (11.4, 24.5)*	10	1	3.6 (-5.6, 12.7)
050310001	4	9.0 (6.4, 15.3)*	8	1	-3.1 (-9.1, 2.9)
A	3	4.2 (3.4, 5.5)	25	2	
A	4	12.9 (10.2, 17.9)*	18	2	
A	A	8.9 (7.6, 10.9)*	43	4	

---------- STATE=AR REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
051190007	3	16.1 (13.2, 20.9)*	27	1	-3.1 (-8.4, 2.2)
051191008	3	21.8 (14.6, 45.5)*	5	1	8.8 (-12.5, 30.0)
051310008	3	9.0 (6.7, 14.4)*	10	1	-0.4 (-5.9, 5.1)
051190007	4	15.5 (11.7, 23.5)*	12	1	1.2 (-7.2, 9.6)
051191008	4	19.5 (14.7, 29.5)*	12	1	-8.6 (-18.0, 0.9)
051310008	4	4.0 (3.0, 6.2)	11	1	0.2 (-2.0, 2.5)
A	3	15.6 (13.3, 19.1)*	42	3	
A	4	14.7 (12.4, 18.4)*	35	3	
A	A	15.2 (13.5, 17.6)*	77	6	

---------- STATE=AZ REPORTING ORGANIZATION=100 METHOD=119 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
040230004	1	9.1 (6.9, 13.5)*	13	1	2.5 (-2.0, 7.0)
040230004	2	11.0 (8.0, 18.1)*	9	1	2.7 (-4.3, 9.7)
040230004	3	4.5 (3.1, 8.7)	6	1	-1.0 (-5.0, 3.0)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=AZ REPORTING ORGANIZATION=100 METHOD=119 ----------
(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
040230004	4	11.0 (8.4, 16.0)*	14	1	5.2 (0.4, 9.9)
A	1	9.1 (6.9, 13.5)*	13	1	
A	2	11.0 (8.0, 18.1)*	9	1	
A	3	4.5 (3.1, 8.7)	6	1	
A	4	11.0 (8.4, 16.0)*	14	1	
A	A	9.7 (8.3, 11.9)*	42	4	

---------- STATE=AZ REPORTING ORGANIZATION=100 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
040070008	1	23.8 (16.8, 42.7)*	7	1	15.4 (1.0, 29.8)
040070008	2	8.8 (6.2, 15.8)*	7	1	2.3 (-4.4, 9.0)
040070008	4	8.6 (6.1, 15.4)*	7	1	-1.3 (-8.0, 5.5)
A	1	23.8 (16.8, 42.7)*	7	1	
A	2	8.8 (6.2, 15.8)*	7	1	
A	4	8.6 (6.1, 15.4)*	7	1	
A	A	15.5 (12.4, 20.8)*	21	3	

---------- STATE=AZ REPORTING ORGANIZATION=300 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
040191028	2	1.3 (0.7, 5.7)	2	1	-0.2 (-8.2, 7.7)
040191028	3	5.2 (2.7, 83.5)*	1	1	-5.2
040191028	4	21.0 (14.5, 40.3)*	6	1	11.5 (-4.4, 27.4)
A	2	1.3 (0.7, 5.7)	2	1	
A	3	5.2 (2.7, 83.5)*	1	1	
A	4	21.0 (14.5, 40.3)*	6	1	
A	A	17.3 (12.6, 28.4)*	9	3	

---------- STATE=CA REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060170011	1	4.5 (3.0, 9.4)	5	1	-2.8 (-6.6, 1.0)
061010003	1	6.4 (4.8, 10.0)	11	1	1.2 (-2.4, 4.8)
060170011	2	6.1 (4.5, 10.1)*	9	1	-2.0 (-5.8, 1.8)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=CA REPORTING ORGANIZATION=001 METHOD=117 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
061010003	2	8.5 (6.1, 14.6)*	8	1	-5.8 (-10.3, -1.2)
060170011	3	3.9 (2.9, 6.5)	9	1	0.0 (-2.6, 2.6)
061010003	3	12.8 (9.8, 19.0)*	13	1	-7.7 (-13.0, -2.4)
060170011	4	4.0 (3.0, 6.4)	10	1	-2.2 (-4.3, -0.1)
061010003	4	36.4 (26.9, 58.0)*	10	1	-15.6 (-35.7, 4.5)
A	1	5.9 (4.6, 8.3)	16	2	
A	2	7.3 (5.8, 10.3)*	17	2	
A	3	10.2 (8.2, 13.6)*	22	2	
A	4	25.9 (20.7, 35.2)*	20	2	
A	A	15.1 (13.4, 17.5)*	75	8	

---------- STATE=CA REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060190008	1	6.0 (4.7, 8.4)	17	1	-0.4 (-3.0, 2.3)
060670006	1	8.6 (5.8, 18.1)*	5	1	-3.8 (-12.1, 4.5)
060190008	2	3.0 (2.3, 4.3)	14	1	0.3 (-1.2, 1.7)
060670006	2	9.8 (7.2, 15.5)*	10	1	-2.9 (-8.6, 2.7)
060190008	3	11.9 (9.0, 18.1)*	12	1	1.0 (-5.5, 7.4)
060190008	4	6.4 (4.9, 9.8)	12	1	-3.1 (-6.2, -0.1)
060571001	4	8.5 (6.1, 14.6)*	8	1	-1.2 (-7.2, 4.9)
060670006	4	6.3 (4.6, 10.0)	10	1	-0.4 (-4.2, 3.4)
A	1	6.7 (5.4, 8.9)	22	2	
A	2	6.7 (5.4, 8.8)	24	2	
A	3	11.9 (9.0, 18.1)*	12	1	
A	4	7.0 (5.8, 8.9)	30	3	
A	A	7.7 (6.9, 8.8)	88	8	

---------- STATE=CA REPORTING ORGANIZATION=004 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060450006	1	6.9 (4.9, 12.4)*	7	1	2.5 (-2.6, 7.6)
060450006	2	4.5 (2.9, 10.6)*	4	1	0.3 (-5.8, 6.3)
A	1	6.9 (4.9, 12.4)*	7	1	
A	2	4.5 (2.9, 10.6)*	4	1	
A	A	6.1 (4.6, 9.5)	11	2	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=CA REPORTING ORGANIZATION=019 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060798001	1	3.8 (2.7, 6.5)	8	1	-3.1 (-4.7, -1.5)
060798001	2	3.0 (2.2, 5.0)	9	1	0.5 (-1.4, 2.5)
060798001	3	1.9 (1.4, 3.1)	9	1	-1.0 (-2.1, 0.1)
060798001	4	2.0 (1.5, 3.0)	12	1	-0.0 (-1.1, 1.1)
A	1	3.8 (2.7, 6.5)	8	1	
A	2	3.0 (2.2, 5.0)	9	1	
A	3	1.9 (1.4, 3.1)	9	1	
A	4	2.0 (1.5, 3.0)	12	1	
A	A	2.7 (2.3, 3.4)	38	4	

---------- STATE=CA REPORTING ORGANIZATION=019 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060271003	1	18.9 (12.7, 39.5)*	5	1	-3.8 (-23.6, 15.9)
060290014	1	7.6 (5.2, 14.5)*	6	1	2.6 (-3.7, 9.0)
061110007	1	6.3 (4.7, 9.7)	11	1	3.1 (-0.1, 6.2)
060271003	2	1.2 (0.8, 3.6)	3	1	0.3 (-2.2, 2.8)
060290014	2	4.9 (3.7, 7.2)	13	1	1.1 (-1.3, 3.6)
061110007	2	2.3 (1.7, 3.7)	10	1	0.6 (-0.8, 2.0)
060271003	3	8.4 (5.2, 24.6)*	3	1	2.9 (-13.5, 19.2)
060290014	3	4.3 (3.3, 6.6)	12	1	1.7 (-0.5, 3.9)
061110007	3	3.8 (2.9, 5.8)	12	1	2.3 (0.7, 3.9)
060290014	4	10.0 (7.7, 14.9)*	13	1	-3.2 (-8.1, 1.7)
061110007	4	9.1 (6.5, 15.5)*	8	1	5.4 (0.1, 10.6)
A	1	10.8 (8.7, 14.4)*	22	3	
A	2	3.7 (3.1, 4.9)	26	3	
A	3	4.8 (3.9, 6.2)	27	3	
A	4	9.7 (7.8, 13.0)*	21	2	
A	A	7.6 (6.8, 8.6)	96	11	

---------- STATE=CA REPORTING ORGANIZATION=036 METHOD=119 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060250005	1	4.8 (3.7, 7.0)	14	1	2.0 (-0.2, 4.1)
060710014	1	43.7 (30.1, 83.6)*	6	1	20.4 (-14.4, 55.2)
060730006	1	9.8 (7.3, 15.6)*	10	1	1.5 (-4.4, 7.5)
060250005	2	11.7 (8.6, 18.6)*	10	1	-3.9 (-10.6, 2.8)
060710014	2	14.3 (10.8, 21.7)*	12	1	5.3 (-1.9, 12.5)
060730006	2	5.5 (3.7, 11.6)*	5	1	-3.3 (-8.1, 1.4)
060250005	3	5.3 (4.0, 8.3)	11	1	0.3 (-2.8, 3.4)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=CA REPORTING ORGANIZATION=036 METHOD=119 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
060710014	3	15.8 (11.8, 24.4)*	11	1	3.8 (-5.0, 12.5)
060730006	3	4.7 (2.9, 13.9)*	3	1	0.7 (-9.0, 10.4)
060250005	4	2.4 (1.6, 5.0)	5	1	1.7 (-0.1, 3.5)
060710014	4	5.2 (4.1, 7.5)	15	1	-1.7 (-4.0, 0.6)
060730006	4	4.8 (3.4, 8.6)	7	1	1.5 (-2.2, 5.1)
A	1	20.6 (17.0, 26.2)*	30	3	
A	2	12.1 (10.0, 15.7)*	27	3	
A	3	11.2 (9.1, 14.6)*	25	3	
A	4	4.7 (3.9, 6.1)	27	3	
A	A	13.7 (12.3, 15.4)*	109	12	

---------- STATE=CO REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
080010001	1	27.6 (17.1, 80.5)*	3	1	-14.1 (-63.0, 34.9)
080410011	1	4.7 (2.9, 13.7)*	3	1	4.0 (-1.3, 9.2)
080770003	1	2.7 (2.1, 3.9)	14	1	-0.1 (-1.5, 1.2)
080010001	2	10.2 (7.5, 16.2)*	10	1	-4.3 (-9.9, 1.3)
080410011	2	17.8 (10.3, 78.8)*	2	1	15.1 (-45.4, 75.5)
080770003	2	13.0 (6.7, 207.9)*	1	1	-13.0
080010001	3	2.1 (1.6, 3.3)	11	1	0.8 (-0.4, 1.9)
080410011	3	12.8 (7.4, 56.6)*	2	1	9.0 (-48.5, 66.6)
080770003	3	6.2 (4.0, 14.8)*	4	1	4.4 (-1.6, 10.4)
080010001	4	1.6 (1.2, 2.5)	11	1	-0.3 (-1.3, 0.6)
080410011	4	14.3 (9.6, 29.9)*	5	1	-6.6 (-20.1, 7.0)
080770003	4	4.4 (3.3, 6.8)	11	1	-0.4 (-2.9, 2.0)
A	1	11.1 (8.8, 15.0)*	20	3	
A	2	11.9 (9.1, 17.7)*	13	3	
A	3	5.6 (4.4, 7.8)	17	3	
A	4	6.8 (5.6, 8.8)	27	3	
A	A	8.9 (7.9, 10.3)*	77	12	

---------- STATE=CT REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
090010010	1	4.2 (2.9, 8.0)	6	1	1.8 (-1.5, 5.2)
090090018	1	14.0 (9.4, 29.3)*	5	1	8.5 (-3.4, 20.4)
090091123	1	6.9 (4.3, 20.1)*	3	1	5.7 (-2.1, 13.6)
090092123	1	1.6 (1.0, 4.8)	3	1	-0.1 (-3.4, 3.3)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=CT REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
090010010	2	4.0 (3.0, 6.4)	10	1	2.7 (0.9, 4.5)
090090018	2	3.8 (2.8, 6.1)	10	1	-3.1 (-4.5, -1.7)
090091123	2	4.6 (3.1, 8.7)	6	1	3.1 (0.1, 6.1)
090092123	2	3.3 (2.6, 4.7)	17	1	0.8 (-0.6, 2.2)
090010010	3	8.7 (6.9, 11.9)*	19	1	5.2 (2.3, 8.0)
090090018	3	3.2 (2.6, 4.2)	24	1	-2.0 (-2.9, -1.1)
090091123	3	11.4 (9.1, 15.6)*	19	1	-2.6 (-7.2, 1.9)
090092123	3	3.8 (2.9, 5.3)	17	1	1.5 (0.0, 3.0)
090010010	4	3.3 (2.6, 4.6)	18	1	0.1 (-1.3, 1.6)
090090018	4	1.8 (1.5, 2.3)	26	1	-0.7 (-1.3, -0.2)
090091123	4	3.1 (2.5, 4.1)	22	1	-0.2 (-1.3, 1.0)
090092123	4	2.8 (2.2, 3.9)	18	1	0.1 (-1.1, 1.3)
A	1	8.5 (6.7, 11.9)*	17	4	
A	2	3.8 (3.2, 4.6)	43	4	
A	3	7.4 (6.6, 8.6)	79	4	
A	4	2.7 (2.4, 3.2)	84	4	
A	A	5.6 (5.2, 6.0)	223	16	

---------- STATE=DC REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
110010041	1	13.1 (9.4, 22.3)*	8	1	2.4 (-6.7, 11.6)
110010043	1	8.8 (6.5, 13.9)*	10	1	-0.5 (-5.8, 4.9)
110010043	2	15.6 (12.2, 21.8)*	17	1	-2.0 (-8.7, 4.8)
110010043	3	7.8 (5.1, 18.6)*	4	1	3.8 (-5.6, 13.1)
A	1	10.9 (8.6, 15.1)*	18	2	
A	2	15.6 (12.2, 21.8)*	17	1	
A	3	7.8 (5.1, 18.6)*	4	1	
A	A	12.9 (10.9, 15.9)*	39	4	

---------- STATE=DE REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
100031011	1	21.0 (14.1, 43.8)*	5	1	-15.6 (-30.5, -0.7)
100032004	1	8.7 (6.4, 14.3)*	9	1	-3.4 (-8.7, 1.8)
100031011	2	13.3 (10.3, 19.1)*	15	1	4.5 (-1.3, 10.4)
100032004	2	12.4 (9.7, 17.6)*	16	1	-1.0 (-6.6, 4.6)
100031011	3	3.5 (2.8, 4.7)	21	1	0.4 (-1.0, 1.7)
100032004	3	7.2 (5.8, 9.5)	23	1	-0.2 (-2.8, 2.4)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=DE REPORTING ORGANIZATION=001 METHOD=120 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
100031011	4	2.9 (2.2, 4.3)	13	1	-1.3 (-2.6, 0.1)
100031012	4	4.1 (2.8, 8.6)	5	1	-1.1 (-5.3, 3.1)
100032004	4	4.8 (3.8, 6.6)	18	1	-1.0 (-3.0, 0.9)
A	1	14.3 (11.0, 20.9)*	14	2	
A	2	12.9 (10.7, 16.3)*	31	2	
A	3	5.7 (4.9, 6.9)	44	2	
A	4	4.1 (3.4, 5.1)	36	3	
A	A	9.0 (8.1, 10.0)*	125	9	

---------- STATE=FL REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120330004	2	12.8 (9.3, 21.0)*	9	1	0.9 (-7.5, 9.3)
A	2	12.8 (9.3, 21.0)*	9	1	

---------- STATE=FL REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120010023	4	5.3 (4.0, 8.1)	12	1	-0.9 (-3.7, 2.0)
A	4	5.3 (4.0, 8.1)	12	1	

---------- STATE=FL REPORTING ORGANIZATION=003 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
121171002	2	6.3 (4.8, 9.6)	12	1	3.8 (1.1, 6.6)
121171002	3	3.1 (2.2, 5.2)	8	1	0.4 (-1.8, 2.6)
121171002	4	3.0 (2.2, 4.9)	9	1	2.3 (1.0, 3.6)
A	2	6.3 (4.8, 9.6)	12	1	
A	3	3.1 (2.2, 5.2)	8	1	
A	4	3.0 (2.2, 4.9)	9	1	
A	A	4.7 (3.9, 6.0)	29	3	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=FL REPORTING ORGANIZATION=004 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
121056006	1	6.4 (3.7, 28.3)*	2	1	5.5 (-15.4, 26.4)
121056006	2	8.8 (6.2, 15.9)*	7	1	2.7 (-4.0, 9.3)
121056006	3	5.1 (3.6, 9.2)	7	1	-3.1 (-6.3, 0.2)
121056006	4	4.8 (3.5, 7.9)	9	1	3.8 (1.9, 5.7)
A	1	6.4 (3.7, 28.3)*	2	1	
A	2	8.8 (6.2, 15.9)*	7	1	
A	3	5.1 (3.6, 9.2)	7	1	
A	4	4.8 (3.5, 7.9)	9	1	
A	A	6.4 (5.2, 8.3)	25	4	

---------- STATE=FL REPORTING ORGANIZATION=005 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120710005	1	3.7 (2.2, 16.5)*	2	1	3.4 (-6.5, 13.3)
120710005	4	3.9 (2.8, 6.7)	8	1	-1.0 (-3.7, 1.8)
A	1	3.7 (2.2, 16.5)*	2	1	
A	4	3.9 (2.8, 6.7)	8	1	
A	A	3.9 (2.9, 6.2)	10	2	

---------- STATE=FL REPORTING ORGANIZATION=006 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
121111002	1	5.7 (4.3, 8.6)	12	1	2.9 (0.2, 5.5)
121111002	2	3.2 (2.4, 4.9)	11	1	1.1 (-0.6, 2.8)
121111002	3	4.7 (3.2, 9.8)	5	1	3.0 (-0.9, 6.9)
121111002	4	3.0 (2.1, 5.1)	8	1	-0.7 (-2.8, 1.4)
A	1	5.7 (4.3, 8.6)	12	1	
A	2	3.2 (2.4, 4.9)	11	1	
A	3	4.7 (3.2, 9.8)	5	1	
A	4	3.0 (2.1, 5.1)	8	1	
A	A	4.4 (3.7, 5.4)	36	4	

---------- STATE=FL REPORTING ORGANIZATION=017 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120111002	1	11.4 (8.4, 18.2)*	10	1	4.2 (-2.3, 10.7)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=FL REPORTING ORGANIZATION=017 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120111002	2	12.4 (9.1, 19.7)*	10	1	6.8 (0.5, 13.1)
120111002	3	4.0 (2.8, 7.2)	7	1	0.8 (-2.3, 3.9)
120111002	4	3.2 (2.2, 6.8)	5	1	-1.5 (-4.6, 1.5)
A	1	11.4 (8.4, 18.2)*	10	1	
A	2	12.4 (9.1, 19.7)*	10	1	
A	3	4.0 (2.8, 7.2)	7	1	
A	4	3.2 (2.2, 6.8)	5	1	
A	A	9.7 (8.1, 12.2)*	32	4	

---------- STATE=FL REPORTING ORGANIZATION=020 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
120952002	2	15.7 (12.1, 23.0)*	14	1	2.5 (-5.1, 10.2)
120952002	4	11.0 (8.3, 16.7)*	12	1	-3.8 (-9.4, 1.8)
A	2	15.7 (12.1, 23.0)*	14	1	
A	4	11.0 (8.3, 16.7)*	12	1	
A	A	13.8 (11.3, 17.9)*	26	2	

---------- STATE=GA REPORTING ORGANIZATION=010 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
130210007	1	10.0 (7.3, 16.5)*	9	1	-0.7 (-7.3, 5.8)
130510017	1	6.3 (5.0, 8.7)	19	1	-1.4 (-4.0, 1.1)
130892001	1	24.7 (18.6, 37.4)*	12	1	-12.1 (-23.7, -0.4)
131210032	1	13.5 (9.5, 24.3)*	7	1	1.6 (-9.0, 12.3)
132150001	1	3.2 (2.1, 7.5)	4	1	2.2 (-0.8, 5.3)
132450005	1	3.6 (2.6, 6.1)	8	1	1.7 (-0.5, 4.0)
130210007	2	4.1 (3.0, 6.8)	9	1	0.5 (-2.2, 3.2)
130510017	2	8.2 (6.0, 13.0)*	10	1	-5.0 (-8.9, -1.0)
130892001	2	6.2 (4.6, 10.3)*	9	1	-0.5 (-4.6, 3.5)
131210032	2	8.5 (6.0, 15.3)*	7	1	-0.4 (-7.1, 6.4)
132150001	2	9.7 (7.5, 13.9)*	15	1	2.2 (-2.2, 6.6)
132450005	2	8.4 (6.3, 13.1)*	11	1	4.9 (0.9, 8.8)
130210007	3	11.1 (8.4, 16.8)*	12	1	-1.1 (-7.1, 4.9)
130510017	3	6.7 (5.0, 10.7)*	10	1	-1.6 (-5.6, 2.4)
130892001	3	8.7 (6.5, 13.6)*	11	1	-0.8 (-5.8, 4.2)
131210032	3	5.3 (4.0, 8.0)	12	1	-3.0 (-5.3, -0.6)
132150001	3	6.8 (5.1, 10.6)*	11	1	1.9 (-1.8, 5.7)
132450005	3	12.8 (9.4, 20.3)*	10	1	-3.2 (-10.8, 4.4)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=GA REPORTING ORGANIZATION=010 METHOD=120 ----------
(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	1	13.3 (11.5, 15.7)*	59	6	
A	2	8.0 (6.9, 9.4)	61	6	
A	3	8.9 (7.8, 10.4)*	66	6	
A	A	10.2 (9.4, 11.2)*	186	18	

---------- STATE=HI REPORTING ORGANIZATION=120 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
150031001	1	26.7 (18.4, 51.1)*	6	1	-7.9 (-30.9, 15.1)
150032004	1	13.2 (9.3, 23.7)*	7	1	-1.4 (-11.8, 9.0)
150031001	2	24.9 (16.2, 59.1)*	4	1	20.3 (0.6, 39.9)
150032004	2	12.9 (8.4, 30.7)*	4	1	-3.6 (-20.5, 13.3)
A	1	20.6 (15.7, 30.5)*	13	2	
A	2	19.8 (14.3, 33.9)*	8	2	
A	A	20.3 (16.3, 27.3)*	21	4	

---------- STATE=IA REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
191532520	1	5.3 (3.7, 9.5)	7	1	0.1 (-4.0, 4.3)
191532520	2	3.1 (2.4, 4.6)	13	1	-1.1 (-2.6, 0.4)
191532520	3	2.1 (1.7, 2.9)	20	1	-0.8 (-1.6, -0.1)
191532520	4	2.6 (2.1, 3.6)	20	1	-1.1 (-2.1, -0.2)
A	1	5.3 (3.7, 9.5)	7	1	
A	2	3.1 (2.4, 4.6)	13	1	
A	3	2.1 (1.7, 2.9)	20	1	
A	4	2.6 (2.1, 3.6)	20	1	
A	A	3.0 (2.6, 3.6)	60	4	

---------- STATE=IA REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
191130037	1	4.2 (3.0, 7.2)	8	1	-0.1 (-3.2, 2.9)
191130037	2	11.3 (8.9, 15.7)*	18	1	3.4 (-1.2, 7.9)
191130037	3	2.3 (1.8, 3.2)	19	1	-0.1 (-1.0, 0.9)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=IA REPORTING ORGANIZATION=002 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
191130037	4	2.4 (1.9, 3.2)	19	1	1.0 (0.2, 1.9)
A	1	4.2 (3.0, 7.2)	8	1	
A	2	11.3 (8.9, 15.7)*	18	1	
A	3	2.3 (1.8, 3.2)	19	1	
A	4	2.4 (1.9, 3.2)	19	1	
A	A	6.4 (5.6, 7.5)	64	4	

---------- STATE=IA REPORTING ORGANIZATION=003 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
191630015	1	4.0 (3.1, 5.6)	17	1	0.9 (-0.8, 2.6)
191630015	2	4.8 (3.9, 6.5)	22	1	2.2 (0.6, 3.8)
191550009	3	2.9 (2.2, 4.4)	12	1	1.2 (-0.3, 2.6)
191630015	3	1.9 (1.5, 2.4)	24	1	1.3 (0.9, 1.8)
191550009	4	4.8 (3.8, 6.5)	20	1	0.7 (-1.1, 2.6)
191630015	4	2.4 (1.9, 3.1)	25	1	0.7 (-0.1, 1.5)
A	1	4.0 (3.1, 5.6)	17	1	
A	2	4.8 (3.9, 6.5)	22	1	
A	3	2.2 (1.9, 2.8)	36	2	
A	4	3.6 (3.1, 4.4)	45	2	
A	A	3.6 (3.3, 4.0)	120	6	

---------- STATE=ID REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
160010011	1	9.0 (6.2, 17.3)*	6	1	-2.1 (-10.0, 5.8)
160050015	1	6.3 (4.2, 13.1)*	5	1	0.3 (-6.4, 7.0)
160170001	1	5.2 (4.0, 7.7)	13	1	-2.4 (-4.7, 0.0)
160010011	2	1.2 (0.8, 2.9)	4	1	-0.4 (-2.0, 1.1)
160050015	2	7.7 (5.2, 16.1)*	5	1	-7.0 (-10.5, -3.5)
160170001	2	3.0 (2.2, 5.0)	9	1	0.1 (-1.9, 2.1)
160010011	3	4.0 (2.5, 11.8)*	3	1	-1.6 (-9.3, 6.1)
160170001	3	2.1 (1.2, 9.3)	2	1	-1.5 (-10.8, 7.9)
160270004	3	1.3 (0.9, 2.8)	5	1	-0.7 (-1.9, 0.5)
160270004	4	3.4 (2.4, 6.1)	7	1	0.9 (-1.7, 3.5)
160690009	4	2.3 (1.6, 4.1)	7	1	1.6 (0.3, 2.9)
160830010	4	1.0 (0.5, 15.7)*	1	1	1.0
A	1	6.6 (5.3, 8.7)	24	3	
A	2	4.6 (3.7, 6.4)	18	3	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=ID REPORTING ORGANIZATION=001 METHOD=117 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	3	2.6 (1.9, 4.1)	10	3	
A	4	2.8 (2.2, 4.0)	15	3	
A	A	4.9 (4.3, 5.7)	67	12	

---------- STATE=ID REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
160550006	3	4.1 (2.7, 8.5)	5	1	0.7 (-3.6, 4.9)
160550006	4	1.8 (1.2, 3.4)	6	1	-1.2 (-2.4, 0.0)
A	3	4.1 (2.7, 8.5)	5	1	
A	4	1.8 (1.2, 3.4)	6	1	
A	A	3.0 (2.3, 4.7)	11	2	

---------- STATE=IN REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
180431004	1	23.0 (16.2, 41.4)*	7	1	9.2 (-7.6, 25.9)
180891016	1	11.5 (7.4, 27.2)*	4	1	2.8 (-12.3, 17.9)
180950009	1	2.8 (1.6, 12.4)*	2	1	1.7 (-12.7, 16.0)
180431004	2	5.5 (3.4, 16.0)*	3	1	2.8 (-7.0, 12.5)
180891016	2	2.7 (1.7, 7.9)	3	1	0.4 (-5.1, 5.9)
180950009	2	4.1 (2.1, 65.4)*	1	1	-4.1
181411008	2	7.4 (3.8, 118.7)*	1	1	7.4
181630006	2	4.5 (2.8, 13.1)*	3	1	0.9 (-8.1, 10.0)
A	1	18.1 (13.8, 26.9)*	13	3	
A	2	4.7 (3.5, 7.3)	11	5	
A	A	13.7 (11.1, 18.0)*	24	8	

---------- STATE=IN REPORTING ORGANIZATION=008 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
180970081	1	5.3 (3.6, 10.1)*	6	1	-2.8 (-6.8, 1.2)
180970083	1	5.7 (4.2, 9.4)	9	1	0.5 (-3.3, 4.2)
180970081	2	3.7 (2.8, 5.7)	12	1	-0.7 (-2.7, 1.3)
180970083	2	22.2 (16.4, 35.3)*	10	1	-6.9 (-19.7, 6.0)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=IN REPORTING ORGANIZATION=008 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	1	5.5 (4.3, 8.0)	15	2	
A	2	15.2 (12.2, 20.3)*	22	2	
A	A	12.2 (10.3, 15.2)*	37	4	

---------- STATE=KS REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
200910007	1	7.1 (4.8, 14.8)*	5	1	2.2 (-4.9, 9.4)
201070002	1	3.7 (2.6, 7.1)	6	1	1.8 (-1.2, 4.7)
201730010	1	27.0 (19.9, 42.9)*	10	1	2.4 (-14.0, 18.8)
200910007	2	28.6 (20.8, 47.0)*	9	1	1.3 (-17.5, 20.0)
201070002	2	13.2 (9.1, 25.2)*	6	1	6.7 (-3.5, 16.9)
201730010	2	13.9 (10.0, 23.7)*	8	1	-4.7 (-14.0, 4.7)
202090021	2	11.0 (8.0, 18.0)*	9	1	3.9 (-2.8, 10.6)
200910007	3	5.8 (4.3, 9.3)	10	1	-3.0 (-6.1, 0.0)
201070002	3	7.8 (5.7, 12.9)*	9	1	-2.6 (-7.5, 2.2)
201730010	3	3.4 (2.2, 8.2)	4	1	1.4 (-2.9, 5.7)
202090021	3	6.8 (5.2, 10.1)*	13	1	-2.3 (-5.6, 1.0)
200910007	4	9.7 (7.2, 15.4)*	10	1	-2.0 (-7.8, 3.8)
201070002	4	4.5 (3.2, 7.6)	8	1	-0.1 (-3.3, 3.1)
201730010	4	6.5 (4.8, 10.3)*	10	1	3.0 (-0.5, 6.5)
202090021	4	3.7 (2.7, 5.7)	11	1	-2.6 (-4.1, -1.1)
A	1	19.0 (15.3, 25.6)*	21	3	
A	2	18.5 (15.4, 23.4)*	32	4	
A	3	6.5 (5.5, 8.1)	36	4	
A	4	6.5 (5.5, 8.1)	39	4	
A	A	13.0 (11.8, 14.6)*	128	15	

---------- STATE=KY REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
210190017	1	10.4 (7.6, 17.2)*	9	1	-2.9 (-9.5, 3.7)
210590014	1	34.5 (22.4, 81.9)*	4	1	13.9 (-29.0, 56.9)
210670012	1	10.0 (7.0, 18.0)*	7	1	1.4 (-6.4, 9.3)
211950002	1	9.9 (7.0, 17.8)*	7	1	2.0 (-5.8, 9.7)
212270007	1	15.0 (10.9, 24.6)*	9	1	9.4 (1.7, 17.0)
210190017	2	6.4 (4.4, 12.2)*	6	1	-3.5 (-8.3, 1.2)
210590014	2	6.2 (4.6, 10.3)*	9	1	0.6 (-3.5, 4.7)
210670012	2	13.0 (9.8, 20.2)*	11	1	-1.2 (-8.6, 6.3)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=KY REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
211950002	2	20.7 (15.8, 30.7)*	13	1	9.3 (-0.2, 18.8)
212270007	2	22.2 (16.9, 32.9)*	13	1	-10.9 (-20.8, -1.0)
210190017	3	3.1 (2.4, 4.6)	13	1	0.6 (-1.0, 2.1)
210590014	3	4.7 (3.5, 7.3)	11	1	-1.0 (-3.6, 1.7)
210670012	3	2.6 (2.0, 3.7)	15	1	2.0 (1.2, 2.8)
211950002	3	3.5 (2.7, 5.1)	14	1	0.7 (-0.9, 2.4)
212270007	3	4.6 (3.5, 6.9)	13	1	1.4 (-0.9, 3.7)
210190017	4	5.2 (3.9, 8.1)	11	1	-1.0 (-3.9, 2.0)
210590014	4	2.5 (1.9, 3.8)	12	1	-0.1 (-1.4, 1.3)
210670012	4	4.0 (3.0, 6.1)	12	1	0.8 (-1.3, 2.9)
211950002	4	2.2 (1.5, 3.9)	7	1	1.9 (1.1, 2.7)
212270007	4	2.0 (1.5, 2.9)	14	1	0.9 (0.0, 1.8)
A	1	15.9 (13.4, 19.8)*	36	5	
A	2	16.6 (14.4, 19.9)*	52	5	
A	3	3.7 (3.3, 4.4)	66	5	
A	4	3.4 (3.0, 4.1)	56	5	
A	A	10.9 (10.1, 11.9)*	210	20	

---------- STATE=KY REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
211110043	1	19.3 (14.4, 29.9)*	11	1	-2.5 (-13.5, 8.4)
211110043	2	4.1 (3.2, 5.8)	16	1	-0.1 (-2.0, 1.7)
211110043	3	5.3 (4.0, 7.8)	13	1	1.2 (-1.5, 3.8)
A	1	19.3 (14.4, 29.9)*	11	1	
A	2	4.1 (3.2, 5.8)	16	1	
A	3	5.3 (4.0, 7.8)	13	1	
A	A	10.9 (9.2, 13.3)*	40	3	

---------- STATE=LA REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
220171002	1	8.6 (6.4, 13.3)*	11	1	-3.5 (-8.0, 1.0)
220330009	1	14.2 (10.9, 20.7)*	14	1	-0.3 (-7.2, 6.7)
220550005	1	7.3 (5.6, 10.8)*	13	1	0.2 (-3.5, 4.0)
220710012	1	15.9 (12.0, 24.2)*	12	1	-7.7 (-15.3, -0.1)
220171002	2	5.2 (4.0, 7.6)	14	1	2.5 (0.2, 4.8)
220330009	2	5.5 (4.3, 7.9)	15	1	3.7 (1.8, 5.6)
220550005	2	15.9 (12.0, 24.2)*	12	1	-5.2 (-13.3, 3.0)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=LA REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
220171002	3	5.3 (4.1, 7.6)	15	1	2.8 (0.8, 4.9)
220330009	3	10.8 (8.3, 15.8)*	14	1	5.9 (1.5, 10.4)
220550005	3	5.2 (3.9, 7.8)	12	1	0.4 (-2.4, 3.2)
220710012	3	2.1 (1.5, 3.5)	8	1	-1.3 (-2.4, -0.2)
220171002	4	3.4 (2.6, 4.9)	14	1	1.3 (-0.2, 2.8)
220330009	4	3.3 (2.5, 4.9)	13	1	0.3 (-1.5, 2.0)
220550005	4	7.8 (5.9, 11.6)*	13	1	-0.3 (-4.3, 3.7)
220710012	4	2.6 (1.9, 4.1)	10	1	-0.8 (-2.3, 0.7)
A	1	12.1 (10.4, 14.6)*	50	4	
A	2	9.7 (8.3, 11.9)*	41	3	
A	3	7.0 (6.0, 8.4)	49	4	
A	4	4.8 (4.1, 5.8)	50	4	
A	A	8.8 (8.1, 9.6)	190	15	

---------- STATE=MA REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
250130016	1	11.1 (8.7, 15.5)*	17	1	-1.2 (-6.0, 3.6)
250210007	1	7.7 (4.4, 33.8)*	2	1	-5.4 (-39.6, 28.8)
250230004	1	16.3 (12.7, 23.2)*	16	1	8.6 (2.4, 14.9)
250250027	1	11.9 (8.9, 18.4)*	11	1	-2.1 (-8.8, 4.6)
250270020	1	11.2 (9.0, 15.1)*	21	1	2.7 (-1.5, 6.9)
250130016	2	13.8 (11.3, 17.9)*	26	1	4.6 (0.2, 9.0)
250230004	2	13.3 (10.3, 19.1)*	15	1	5.9 (0.3, 11.5)
250250027	2	11.9 (9.1, 17.7)*	13	1	2.1 (-4.0, 8.1)
250270020	2	19.3 (15.6, 25.6)*	23	1	9.1 (2.9, 15.4)
250130016	3	13.8 (11.1, 18.5)*	22	1	-1.8 (-7.0, 3.3)
250210007	3	5.0 (3.4, 10.5)*	5	1	-2.9 (-7.3, 1.5)
250230004	3	10.2 (8.2, 13.7)*	21	1	-2.4 (-6.2, 1.4)
250250027	3	8.4 (6.8, 11.2)*	23	1	1.0 (-2.1, 4.1)
250270020	3	13.1 (10.5, 17.5)*	22	1	-7.0 (-11.2, -2.9)
250130016	4	7.6 (6.1, 10.3)*	20	1	2.7 (-0.2, 5.5)
250210007	4	4.7 (3.7, 6.4)	19	1	0.3 (-1.7, 2.2)
250230004	4	4.9 (3.6, 8.1)	9	1	-2.7 (-5.4, -0.0)
250250027	4	5.7 (4.2, 9.0)	10	1	2.3 (-0.8, 5.5)
250270020	4	7.0 (5.5, 9.7)	17	1	-2.7 (-5.5, 0.1)
A	1	12.6 (11.1, 14.7)*	67	5	
A	2	15.3 (13.5, 17.7)*	77	4	
A	3	11.3 (10.1, 12.9)*	93	5	
A	4	6.3 (5.5, 7.2)	75	5	
A	A	11.8 (11.1, 12.7)*	312	19	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=MD REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
245100035	4	6.6 (4.1, 19.1)*	3	1	0.4 (-13.2, 13.9)
A	4	6.6 (4.1, 19.1)*	3	1	

---------- STATE=ME REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
230110016	1	17.6 (11.8, 36.8)*	5	1	7.7 (-9.1, 24.6)
230110016	2	2.9 (2.1, 5.3)	7	1	1.1 (-1.1, 3.2)
230110016	3	6.0 (4.5, 9.3)	11	1	-0.6 (-4.0, 2.9)
230110016	4	1.7 (1.2, 2.9)	8	1	0.1 (-1.1, 1.3)
A	1	17.6 (11.8, 36.8)*	5	1	
A	2	2.9 (2.1, 5.3)	7	1	
A	3	6.0 (4.5, 9.3)	11	1	
A	4	1.7 (1.2, 2.9)	8	1	
A	A	8.1 (6.7, 10.2)*	31	4	

---------- STATE=ME REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
230050027	1	5.5 (3.4, 16.1)*	3	1	-5.4 (-8.1, -2.6)
230050027	2	8.4 (4.3, 134.4)*	1	1	8.4
230050027	3	2.7 (2.0, 4.0)	12	1	0.8 (-0.6, 2.2)
230050027	4	2.7 (1.9, 4.4)	9	1	1.0 (-0.6, 2.6)
230190002	4	5.8 (3.6, 16.9)*	3	1	4.8 (-2.0, 11.5)
A	1	5.5 (3.4, 16.1)*	3	1	
A	2	8.4 (4.3, 134.4)*	1	1	
A	3	2.7 (2.0, 4.0)	12	1	
A	4	3.7 (2.8, 5.6)	12	2	
A	A	3.8 (3.2, 4.9)	28	5	

---------- STATE=MI REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
260650012	1	2.9 (2.3, 4.1)	16	1	-1.0 (-2.2, 0.3)
260770008	1	4.6 (3.5, 7.2)	11	1	-3.4 (-5.2, -1.6)
260810020	1	5.4 (4.3, 7.3)	21	1	0.1 (-2.0, 2.2)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=MI REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
261210040	1	4.4 (3.2, 7.3)	9	1	2.3 (-0.2, 4.8)
261450018	1	1.3 (0.7, 5.6)	2	1	1.3 (0.7, 1.8)
260650012	2	9.8 (7.4, 14.8)*	12	1	2.6 (-2.5, 7.7)
260770008	2	6.0 (4.6, 8.6)	15	1	-0.7 (-3.5, 2.0)
260810020	2	5.1 (3.4, 10.6)*	5	1	0.5 (-4.8, 5.9)
261210040	2	5.4 (3.8, 9.6)	7	1	1.9 (-2.1, 5.8)
261450018	2	3.0 (2.2, 4.8)	10	1	1.4 (-0.2, 3.1)
261630001	2	4.8 (3.3, 9.1)	6	1	-3.9 (-6.4, -1.5)
260650012	3	5.0 (4.0, 6.6)	22	1	2.6 (1.0, 4.2)
260770008	3	3.5 (2.8, 4.8)	19	1	-0.7 (-2.1, 0.7)
260810020	3	4.3 (3.3, 6.3)	13	1	-0.3 (-2.5, 1.9)
261210040	3	3.7 (2.5, 7.7)	5	1	3.3 (1.5, 5.1)
261450018	3	4.4 (3.5, 6.3)	16	1	-0.9 (-2.9, 1.1)
261630001	3	6.7 (5.0, 10.7)*	10	1	0.1 (-4.0, 4.2)
260650012	4	2.3 (1.8, 3.1)	20	1	0.4 (-0.5, 1.3)
260770008	4	2.7 (2.2, 3.5)	25	1	-0.9 (-1.7, 0.0)
260810020	4	4.0 (2.9, 6.3)	10	1	1.9 (-0.3, 4.0)
261210040	4	3.1 (2.3, 5.0)	10	1	-2.5 (-3.7, -1.3)
261450018	4	2.3 (1.6, 4.4)	6	1	-0.9 (-2.8, 1.0)
261630001	4	5.1 (3.8, 8.5)	9	1	2.8 (-0.1, 5.6)
A	1	4.4 (3.9, 5.2)	59	5	
A	2	6.4 (5.5, 7.6)	55	6	
A	3	4.7 (4.1, 5.3)	85	6	
A	4	3.2 (2.8, 3.7)	80	6	
A	A	4.7 (4.4, 5.0)	279	23	

---------- STATE=MN REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
271377550	2	4.2 (2.4, 18.4)*	2	1	3.6 (-10.1, 17.2)
271230866	3	4.1 (3.0, 6.8)	9	1	-0.2 (-2.9, 2.5)
271230868	3	9.3 (6.7, 15.9)*	8	1	-5.5 (-10.8, -0.1)
271377550	3	3.9 (2.4, 11.4)*	3	1	1.0 (-6.8, 8.8)
271230866	4	7.2 (5.2, 11.8)*	9	1	6.4 (4.4, 8.5)
271230868	4	3.3 (2.5, 5.3)	10	1	-0.3 (-2.4, 1.7)
271377550	4	5.0 (3.2, 11.8)*	4	1	1.6 (-4.8, 8.0)
A	2	4.2 (2.4, 18.4)*	2	1	
A	3	6.7 (5.3, 9.0)	20	3	
A	4	5.4 (4.4, 7.2)	23	3	
A	A	6.0 (5.1, 7.2)	45	7	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=MO REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
290210010	1	2.2 (1.6, 3.7)	9	1	0.4 (-1.0, 1.9)
290470026	1	2.5 (1.8, 4.2)	9	1	0.4 (-1.2, 2.0)
291831002	1	2.7 (1.9, 4.8)	7	1	-1.3 (-3.1, 0.6)
290210010	2	6.5 (5.0, 9.2)	16	1	1.3 (-1.6, 4.1)
290470026	2	2.9 (2.1, 4.9)	8	1	1.2 (-0.7, 3.0)
291831002	2	2.3 (1.8, 3.1)	20	1	-0.7 (-1.6, 0.1)
290210010	3	3.3 (2.5, 5.1)	11	1	1.9 (0.3, 3.4)
290470026	3	2.1 (1.5, 3.3)	10	1	0.8 (-0.4, 1.9)
291831002	3	2.3 (1.8, 3.0)	24	1	-0.3 (-1.1, 0.5)
290210010	4	2.0 (1.6, 2.6)	23	1	0.7 (-0.0, 1.4)
290470026	4	3.5 (2.6, 5.4)	11	1	0.2 (-1.8, 2.2)
291831002	4	2.1 (1.7, 2.7)	24	1	0.3 (-0.4, 1.0)
A	1	2.5 (2.0, 3.2)	25	3	
A	2	4.4 (3.7, 5.3)	44	3	
A	3	2.5 (2.2, 3.1)	45	3	
A	4	2.4 (2.1, 2.8)	58	3	
A	A	3.1 (2.8, 3.4)	172	12	

---------- STATE=MO REPORTING ORGANIZATION=002 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
291892003	2	3.8 (2.8, 6.3)	9	1	0.1 (-2.4, 2.7)
A	2	3.8 (2.8, 6.3)	9	1	

---------- STATE=MO REPORTING ORGANIZATION=003 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
295100085	3	3.5 (3.1, 4.1)	66	1	-0.6 (-1.3, 0.1)
295100085	4	14.6 (12.9, 16.8)*	77	1	-0.8 (-3.6, 1.9)
A	3	3.5 (3.1, 4.1)	66	1	
A	4	14.6 (12.9, 16.8)*	77	1	
A	A	10.9 (10.0, 12.1)*	143	2	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=MO REPORTING ORGANIZATION=005 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
290770032	1	4.4 (3.4, 6.4)	14	1	2.9 (1.3, 4.5)
290770032	2	3.7 (2.7, 5.8)	10	1	2.0 (0.1, 3.9)
290770032	3	3.4 (2.5, 5.3)	11	1	1.9 (0.3, 3.5)
290770032	4	2.6 (2.0, 4.1)	11	1	0.3 (-1.2, 1.8)
A	1	4.4 (3.4, 6.4)	14	1	
A	2	3.7 (2.7, 5.8)	10	1	
A	3	3.4 (2.5, 5.3)	11	1	
A	4	2.6 (2.0, 4.1)	11	1	
A	A	3.6 (3.1, 4.4)	46	4	

---------- STATE=MS REPORTING ORGANIZATION=100 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
280330002	1	6.3 (4.2, 13.2)*	5	1	4.8 (0.5, 9.2)
280350004	1	7.2 (4.7, 17.1)*	4	1	3.7 (-4.8, 12.1)
281210001	1	28.4 (19.1, 59.4)*	5	1	17.5 (-6.5, 41.4)
280330002	2	15.2 (11.5, 23.0)*	12	1	2.3 (-5.8, 10.4)
280350004	2	6.3 (4.8, 9.6)	12	1	1.0 (-2.4, 4.4)
281210001	2	15.6 (11.7, 24.2)*	11	1	6.3 (-1.9, 14.5)
280330002	3	5.3 (4.1, 7.6)	15	1	1.6 (-0.8, 3.9)
280350004	3	6.4 (4.8, 10.0)	11	1	1.1 (-2.5, 4.8)
281210001	3	12.9 (9.5, 20.5)*	10	1	-4.3 (-11.7, 3.2)
A	1	17.8 (13.7, 26.0)*	14	3	
A	2	13.0 (10.9, 16.3)*	35	3	
A	3	8.4 (7.0, 10.4)*	36	3	
A	A	12.3 (11.0, 14.1)*	85	9	

---------- STATE=MT REPORTING ORGANIZATION=001 METHOD=116 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
300630024	1	9.1 (6.4, 16.3)*	7	1	4.8 (-1.3, 10.9)
300630024	2	18.9 (13.1, 36.2)*	6	1	-6.9 (-22.8, 8.9)
300630024	3	3.3 (2.3, 6.0)	7	1	1.3 (-1.1, 3.8)
300530018	4	1.8 (1.3, 2.7)	11	1	0.8 (-0.1, 1.7)
300630024	4	1.3 (0.9, 2.3)	7	1	-0.3 (-1.3, 0.7)
A	1	9.1 (6.4, 16.3)*	7	1	
A	2	18.9 (13.1, 36.2)*	6	1	
A	3	3.3 (2.3, 6.0)	7	1	
A	4	1.6 (1.3, 2.2)	18	2	
A	A	8.6 (7.3, 10.7)*	38	5	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=NC REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
370510009	3	3.4 (2.4, 5.8)	8	1	-1.5 (-3.7, 0.7)
370710016	3	2.1 (1.6, 3.1)	13	1	1.1 (0.2, 2.1)
371210001	3	2.8 (2.1, 4.2)	12	1	0.5 (-1.0, 2.0)
371290009	3	4.5 (3.3, 7.4)	9	1	0.6 (-2.3, 3.6)
371470005	3	4.0 (3.1, 6.1)	12	1	2.2 (0.4, 4.0)
371830014	3	2.8 (2.0, 4.8)	8	1	0.6 (-1.3, 2.6)
370510009	4	5.5 (4.1, 8.6)	11	1	-4.3 (-6.3, -2.3)
370710016	4	1.7 (1.3, 2.7)	11	1	0.9 (0.1, 1.8)
370810009	4	8.8 (5.4, 25.6)*	3	1	-2.4 (-19.8, 15.0)
371210001	4	12.6 (9.3, 20.1)*	10	1	5.2 (-1.8, 12.2)
371290009	4	1.9 (1.4, 3.2)	8	1	0.6 (-0.7, 1.9)
371470005	4	12.9 (8.9, 24.7)*	6	1	3.9 (-7.1, 15.0)
371830014	4	5.5 (4.1, 8.7)	10	1	0.4 (-2.9, 3.8)
A	3	3.3 (2.9, 3.9)	62	6	
A	4	7.7 (6.7, 9.1)	59	7	
A	A	5.9 (5.3, 6.6)	121	13	

---------- STATE=NC REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
370670024	1	5.3 (4.0, 8.3)	11	1	0.4 (-2.7, 3.4)
370670024	2	7.0 (5.4, 10.2)*	14	1	-2.0 (-5.3, 1.3)
370670024	3	5.4 (4.0, 8.6)	10	1	0.1 (-3.2, 3.4)
370670024	4	3.6 (2.7, 5.5)	12	1	-2.1 (-3.7, -0.5)
A	1	5.3 (4.0, 8.3)	11	1	
A	2	7.0 (5.4, 10.2)*	14	1	
A	3	5.4 (4.0, 8.6)	10	1	
A	4	3.6 (2.7, 5.5)	12	1	
A	A	5.6 (4.8, 6.7)	47	4	

---------- STATE=NC REPORTING ORGANIZATION=003 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
371190034	1	6.2 (4.7, 9.5)	12	1	1.0 (-2.3, 4.3)
371190034	2	4.7 (3.6, 7.0)	13	1	-1.4 (-3.7, 0.9)
371190034	3	1.8 (1.1, 4.2)	4	1	-0.8 (-2.9, 1.3)
371190040	3	2.3 (1.6, 3.9)	8	1	-0.0 (-1.7, 1.6)
371190040	4	1.6 (1.2, 2.5)	10	1	-0.0 (-1.0, 0.9)
A	1	6.2 (4.7, 9.5)	12	1	
A	2	4.7 (3.6, 7.0)	13	1	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=NC REPORTING ORGANIZATION=003 METHOD=118 ----------
(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	3	2.1 (1.6, 3.2)	12	2	
A	4	1.6 (1.2, 2.5)	10	1	
A	A	4.2 (3.6, 5.1)	47	5	

---------- STATE=NC REPORTING ORGANIZATION=004 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
370210034	1	7.5 (5.5, 11.9)*	10	1	3.6 (-0.4, 7.6)
370210034	2	7.4 (5.5, 11.5)*	11	1	1.0 (-3.3, 5.2)
370210034	3	2.6 (2.0, 3.8)	13	1	1.3 (0.2, 2.5)
370210034	4	6.6 (4.9, 10.5)*	10	1	-1.6 (-5.5, 2.4)
A	1	7.5 (5.5, 11.9)*	10	1	
A	2	7.4 (5.5, 11.5)*	11	1	
A	3	2.6 (2.0, 3.8)	13	1	
A	4	6.6 (4.9, 10.5)*	10	1	
A	A	6.2 (5.3, 7.5)	44	4	

---------- STATE=ND REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
380570004	1	17.0 (12.8, 25.7)*	12	1	-4.3 (-13.2, 4.6)
380570004	2	15.7 (8.0, 250.6)*	1	1	15.7
380570004	3	14.3 (9.9, 27.3)*	6	1	6.3 (-5.2, 17.9)
380570004	4	7.4 (4.6, 21.7)*	3	1	-2.8 (-17.0, 11.4)
A	1	17.0 (12.8, 25.7)*	12	1	
A	2	15.7 (8.0, 250.6)*	1	1	
A	3	14.3 (9.9, 27.3)*	6	1	
A	4	7.4 (4.6, 21.7)*	3	1	
A	A	15.2 (12.3, 20.3)*	22	4	

---------- STATE=ND REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
380171004	1	5.9 (4.4, 9.2)	11	1	-0.8 (-4.2, 2.6)
380171004	2	11.9 (8.7, 19.5)*	9	1	3.8 (-3.6, 11.2)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=ND REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
380171004	3	4.3 (3.3, 6.5)	12	1	0.2 (-2.1, 2.6)
380171004	4	4.0 (3.2, 5.4)	21	1	-0.6 (-2.2, 0.9)
A	1	5.9 (4.4, 9.2)	11	1	
A	2	11.9 (8.7, 19.5)*	9	1	
A	3	4.3 (3.3, 6.5)	12	1	
A	4	4.0 (3.2, 5.4)	21	1	
A	A	6.5 (5.6, 7.7)	53	4	

---------- STATE=NE REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
311090022	1	4.4 (3.3, 7.0)	10	1	0.8 (-1.9, 3.4)
311530007	1	25.1 (14.5, 110.7)*	2	1	20.4 (-71.6, 112.4)
311090022	2	4.8 (3.2, 10.1)*	5	1	-0.5 (-5.6, 4.6)
311530007	2	5.7 (3.9, 12.0)*	5	1	4.0 (-0.5, 8.4)
311090022	3	4.6 (3.3, 7.5)	9	1	2.0 (-0.7, 4.7)
311530007	3	8.7 (6.4, 14.3)*	9	1	7.5 (4.5, 10.4)
311090022	4	4.1 (2.9, 7.5)	7	1	0.4 (-2.8, 3.7)
311530007	4	6.9 (5.1, 11.4)*	9	1	-0.8 (-5.3, 3.8)
A	1	11.0 (8.3, 16.7)*	12	2	
A	2	5.3 (3.9, 8.4)	10	2	
A	3	7.0 (5.5, 9.6)	18	2	
A	4	5.9 (4.6, 8.3)	16	2	
A	A	7.5 (6.5, 8.9)	56	8	

---------- STATE=NE REPORTING ORGANIZATION=003 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
310550019	3	7.2 (4.4, 20.9)*	3	1	-2.4 (-16.3, 11.6)
310550052	3	9.8 (5.0, 156.2)*	1	1	9.8
310550019	4	12.2 (7.0, 53.8)*	2	1	12.1 (5.6, 18.7)
310550052	4	4.7 (3.4, 8.5)	7	1	1.0 (-2.7, 4.7)
A	3	7.9 (5.1, 18.7)*	4	2	
A	4	7.1 (5.2, 11.7)*	9	2	
A	A	7.4 (5.6, 10.9)*	13	4	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=NJ REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
340070003	1	0.6 (0.4, 1.8)	3	1	0.5 (-0.3, 1.3)
340390004	1	6.8 (4.2, 19.7)*	3	1	4.6 (-5.7, 14.8)
340070003	2	17.3 (13.1, 26.3)*	12	1	-1.9 (-11.2, 7.4)
340390004	2	8.5 (5.7, 17.7)*	5	1	-0.1 (-9.1, 8.9)
340070003	3	19.2 (14.4, 29.8)*	11	1	-1.1 (-12.1, 9.9)
340390004	3	2.7 (2.0, 4.0)	13	1	-1.4 (-2.5, -0.2)
340070003	4	10.3 (7.5, 16.9)*	9	1	4.9 (-1.0, 10.9)
340390004	4	5.7 (4.4, 8.2)	15	1	-2.2 (-4.7, 0.2)
A	1	4.8 (3.3, 9.2)	6	2	
A	2	15.3 (12.0, 21.4)*	17	2	
A	3	13.2 (10.7, 17.3)*	24	2	
A	4	7.7 (6.3, 10.2)*	24	2	
A	A	11.7 (10.3, 13.6)*	71	8	

---------- STATE=NM REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
350450006	1	3.2 (2.3, 5.4)	8	1	-0.3 (-2.6, 2.0)
350490020	1	2.8 (1.8, 6.7)	4	1	-1.5 (-4.7, 1.8)
350450006	2	0.9 (0.5, 14.9)*	1	1	-0.9
350450006	3	2.3 (1.3, 10.3)*	2	1	-1.6 (-12.0, 8.7)
350490020	3	5.0 (3.1, 14.5)*	3	1	-2.1 (-11.4, 7.1)
350450006	4	3.5 (2.9, 4.6)	25	1	-0.2 (-1.4, 1.0)
350490020	4	1.8 (1.3, 3.1)	8	1	-0.2 (-1.5, 1.1)
A	1	3.1 (2.3, 4.6)	12	2	
A	2	0.9 (0.5, 14.9)*	1	1	
A	3	4.1 (2.8, 8.6)	5	2	
A	4	3.2 (2.7, 4.0)	33	2	
A	A	3.2 (2.8, 3.9)	51	7	

---------- STATE=NM REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
350010023	3	4.6 (3.5, 6.9)	13	1	0.0 (-2.4, 2.4)
350010023	4	4.6 (4.0, 5.5)	55	1	-2.0 (-2.9, -1.0)
A	3	4.6 (3.5, 6.9)	13	1	
A	4	4.6 (4.0, 5.5)	55	1	
A	A	4.6 (4.0, 5.4)	68	2	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=NV REPORTING ORGANIZATION=200 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
320310016	1	4.6 (3.3, 8.3)	7	1	-1.2 (-4.7, 2.4)
320310016	2	3.9 (2.9, 6.3)	10	1	1.3 (-1.0, 3.6)
320310016	3	2.4 (1.7, 4.1)	8	1	0.9 (-0.7, 2.5)
320310016	4	2.8 (2.2, 4.1)	15	1	0.1 (-1.3, 1.4)
A	1	4.6 (3.3, 8.3)	7	1	
A	2	3.9 (2.9, 6.3)	10	1	
A	3	2.4 (1.7, 4.1)	8	1	
A	4	2.8 (2.2, 4.1)	15	1	
A	A	3.4 (2.9, 4.2)	40	4	

---------- STATE=NY REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
360010005	3	3.7 (2.5, 7.0)	6	1	1.0 (-2.1, 4.2)
360050073	3	7.7 (4.8, 22.5)*	3	1	-7.4 (-11.5, -3.4)
360470011	3	3.3 (1.7, 53.1)*	1	1	3.3
360556001	3	5.1 (3.6, 9.2)	7	1	-4.4 (-6.5, -2.3)
360610056	3	5.2 (3.7, 8.8)	8	1	3.6 (1.0, 6.2)
360610062	3	3.6 (2.7, 5.4)	12	1	1.2 (-0.6, 3.0)
360632008	3	6.4 (5.0, 9.0)	16	1	-0.6 (-3.5, 2.2)
360671015	3	4.4 (3.2, 7.2)	9	1	-1.6 (-4.3, 1.1)
360810094	3	2.7 (1.6, 12.0)*	2	1	2.0 (-9.3, 13.4)
360010005	4	1.9 (1.3, 3.9)	5	1	1.5 (0.3, 2.7)
360050110	4	5.3 (4.0, 8.2)	11	1	2.6 (-0.1, 5.2)
360556001	4	3.2 (2.4, 5.0)	11	1	-1.6 (-3.2, 0.0)
360610056	4	2.4 (1.7, 4.7)	6	1	0.9 (-1.1, 3.0)
360610062	4	2.4 (1.9, 3.5)	16	1	-0.1 (-1.2, 1.1)
360632008	4	3.0 (2.4, 4.1)	18	1	0.9 (-0.3, 2.1)
360671015	4	4.9 (3.6, 7.7)	10	1	-1.7 (-4.5, 1.1)
360810094	4	7.4 (5.8, 10.5)*	16	1	1.2 (-2.1, 4.5)
A	3	5.1 (4.4, 6.0)	64	9	
A	4	4.4 (4.0, 5.1)	93	8	
A	A	4.7 (4.3, 5.2)	157	17	

---------- STATE=OH REPORTING ORGANIZATION=004 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
390811001	3	3.0 (2.2, 4.6)	11	1	-0.9 (-2.6, 0.7)
390811001	4	1.8 (1.2, 3.8)	5	1	0.9 (-0.8, 2.6)
A	3	3.0 (2.2, 4.6)	11	1	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=OH REPORTING ORGANIZATION=004 METHOD=120 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	4	1.8 (1.2, 3.8)	5	1	
A	A	2.7 (2.1, 3.8)	16	2	

---------- STATE=OH REPORTING ORGANIZATION=006 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
391530017	1	7.7 (5.8, 11.4)*	13	1	-2.0 (-5.8, 1.8)
391530017	2	7.8 (6.0, 11.6)*	13	1	-3.5 (-7.1, 0.1)
391530017	3	4.4 (3.4, 6.6)	13	1	0.2 (-2.1, 2.5)
391530017	4	2.8 (1.9, 5.4)	6	1	1.7 (-0.3, 3.7)
A	1	7.7 (5.8, 11.4)*	13	1	
A	2	7.8 (6.0, 11.6)*	13	1	
A	3	4.4 (3.4, 6.6)	13	1	
A	4	2.8 (1.9, 5.4)	6	1	
A	A	6.4 (5.5, 7.8)	45	4	

---------- STATE=OH REPORTING ORGANIZATION=008 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
390170003	1	8.7 (6.5, 13.1)*	12	1	0.3 (-4.4, 5.0)
390610014	1	6.9 (4.8, 13.2)*	6	1	-1.9 (-7.9, 4.1)
390610041	1	4.2 (2.4, 18.7)*	2	1	-1.2 (-26.8, 24.5)
390170003	2	5.5 (4.2, 8.1)	13	1	0.7 (-2.1, 3.4)
390610014	2	4.5 (3.4, 6.9)	12	1	0.4 (-2.0, 2.9)
390610041	2	7.4 (5.6, 11.2)*	12	1	-0.7 (-4.7, 3.3)
390170003	3	11.4 (8.7, 16.6)*	14	1	-3.4 (-8.8, 1.9)
390610014	3	1.3 (1.0, 2.0)	11	1	-0.3 (-1.0, 0.4)
390610041	3	3.2 (2.5, 4.7)	14	1	-2.0 (-3.2, -0.7)
390170003	4	8.3 (5.6, 17.3)*	5	1	-5.7 (-12.1, 0.8)
390610014	4	4.4 (3.3, 6.8)	11	1	-0.8 (-3.3, 1.7)
390610041	4	5.1 (3.9, 7.5)	13	1	-4.4 (-5.7, -3.0)
A	1	7.8 (6.2, 10.6)*	20	3	
A	2	5.9 (5.0, 7.3)	37	3	
A	3	7.1 (6.0, 8.8)	39	3	
A	4	5.5 (4.6, 7.1)	29	3	
A	A	6.6 (5.9, 7.3)	125	12	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=OK REPORTING ORGANIZATION=101 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
400310648	3	1.6 (1.0, 3.8)	4	1	-0.5 (-2.6, 1.6)
400470554	3	1.5 (1.1, 2.5)	9	1	-0.4 (-1.4, 0.6)
401090035	3	3.0 (1.9, 8.8)	3	1	2.8 (0.7, 5.0)
401430110	3	5.8 (3.6, 17.0)*	3	1	4.3 (-3.9, 12.4)
A	3	2.9 (2.3, 4.0)	19	4	
A	A	2.9 (2.3, 4.0)	19	4	

---------- STATE=OK REPORTING ORGANIZATION=106 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
400219002	3	10.2 (6.7, 24.3)*	4	1	-8.2 (-16.6, 0.2)
400219002	4	3.1 (2.1, 5.9)	6	1	-0.7 (-3.4, 2.0)
A	3	10.2 (6.7, 24.3)*	4	1	
A	4	3.1 (2.1, 5.9)	6	1	
A	A	6.9 (5.1, 11.0)*	10	2	

---------- STATE=OR REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
410650007	4	5.2 (3.0, 22.8)*	2	1	-5.1 (-9.4, -0.9)
A	4	5.2 (3.0, 22.8)*	2	1	

---------- STATE=OR REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
410290133	2	2.9 (2.1, 5.0)	8	1	1.7 (-0.0, 3.4)
410390060	2	4.5 (3.0, 9.4)	5	1	-2.5 (-6.5, 1.4)
410510080	2	2.2 (1.7, 3.4)	12	1	1.2 (0.2, 2.2)
410290133	3	4.6 (3.4, 7.6)	9	1	1.3 (-1.6, 4.2)
410390060	3	3.2 (2.4, 4.7)	13	1	1.4 (-0.1, 2.8)
410510080	3	2.6 (2.0, 3.9)	12	1	1.1 (-0.2, 2.3)
410671003	3	6.1 (3.1, 96.7)*	1	1	6.1
410290133	4	4.0 (3.0, 5.9)	13	1	3.6 (2.6, 4.5)
410330107	4	3.1 (2.3, 4.8)	11	1	2.5 (1.5, 3.5)
410370001	4	3.3 (2.3, 5.9)	7	1	-0.6 (-3.2, 1.9)
410390060	4	1.9 (1.6, 2.6)	20	1	1.1 (0.4, 1.7)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=OR REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
410510080	4	4.4 (3.2, 7.3)	9	1	2.7 (0.5, 5.0)
410671003	4	2.5 (1.9, 4.0)	10	1	1.0 (-0.4, 2.4)
A	2	3.0 (2.5, 4.0)	25	3	
A	3	3.5 (3.0, 4.4)	35	4	
A	4	3.2 (2.8, 3.7)	70	6	
A	A	3.2 (2.9, 3.6)	130	13	

---------- STATE=PA REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
420450002	1	1.8 (1.1, 5.3)	3	1	-0.1 (-3.9, 3.7)
420692006	1	3.7 (2.1, 16.3)*	2	1	2.1 (-17.2, 21.3)
420710007	1	2.5 (1.6, 5.9)	4	1	0.7 (-2.6, 4.0)
421250005	1	3.9 (2.7, 6.9)	7	1	0.6 (-2.4, 3.6)
421330008	1	3.8 (2.4, 11.1)*	3	1	3.0 (-1.7, 7.8)
420450002	2	4.2 (3.2, 6.6)	11	1	1.6 (-0.7, 3.8)
420692006	2	2.6 (1.7, 6.1)	4	1	1.8 (-0.7, 4.3)
420710007	2	4.0 (2.9, 6.5)	9	1	1.0 (-1.5, 3.5)
421250005	2	5.0 (3.5, 8.9)	7	1	3.1 (0.1, 6.2)
421330008	2	4.6 (3.4, 7.3)	10	1	-2.3 (-4.7, 0.1)
420450002	3	3.1 (2.4, 4.7)	12	1	-0.0 (-1.7, 1.7)
420692006	3	4.1 (2.9, 7.3)	7	1	2.2 (-0.5, 4.9)
420710007	3	2.4 (1.7, 4.7)	6	1	-0.0 (-2.2, 2.1)
421330008	3	1.9 (1.3, 4.0)	5	1	-0.1 (-2.1, 2.0)
420450002	4	1.8 (1.4, 2.7)	13	1	-0.9 (-1.7, -0.1)
420692006	4	2.5 (1.8, 4.1)	9	1	-0.7 (-2.3, 0.9)
420710007	4	4.7 (3.6, 7.2)	12	1	-1.8 (-4.2, 0.6)
421250005	4	1.7 (1.2, 3.3)	6	1	0.1 (-1.4, 1.7)
421330008	4	3.7 (2.8, 5.4)	13	1	-1.6 (-3.3, 0.1)
A	1	3.3 (2.6, 4.6)	19	5	
A	2	4.3 (3.6, 5.2)	41	5	
A	3	3.1 (2.6, 3.9)	30	4	
A	4	3.3 (2.8, 3.9)	53	5	
A	A	3.6 (3.2, 3.9)	143	19	

---------- STATE=PA REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
420030064	1	8.9 (6.2, 17.1)*	6	1	4.2 (-2.9, 11.3)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=PA REPORTING ORGANIZATION=002 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
420030064	2	11.9 (8.9, 18.4)*	11	1	1.9 (-4.8, 8.6)
420031301	2	0.9 (0.5, 2.5)	3	1	0.8 (0.2, 1.4)
420030008	3	1.8 (0.9, 29.4)*	1	1	-1.8
420030064	3	5.5 (4.2, 8.2)	13	1	3.2 (0.9, 5.5)
420031301	3	0.9 (0.5, 2.5)	3	1	-0.5 (-1.9, 0.9)
420030008	4	7.0 (5.0, 11.9)*	8	1	-4.4 (-8.2, -0.5)
420030064	4	1.7 (1.2, 2.9)	8	1	0.5 (-0.7, 1.7)
420031301	4	3.1 (2.3, 4.5)	13	1	1.1 (-0.3, 2.6)
A	1	8.9 (6.2, 17.1)*	6	1	
A	2	10.6 (8.1, 15.4)*	14	2	
A	3	4.8 (3.8, 6.8)	17	3	
A	4	4.3 (3.5, 5.5)	29	3	
A	A	6.7 (5.9, 7.8)	66	9	

---------- STATE=PA REPORTING ORGANIZATION=003 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
421010004	1	7.6 (4.9, 17.9)*	4	1	-2.7 (-12.3, 6.9)
421010004	2	11.2 (6.9, 32.6)*	3	1	-3.1 (-25.3, 19.1)
421010004	3	5.4 (4.0, 9.0)	9	1	3.6 (0.9, 6.3)
421010004	4	9.1 (7.0, 13.5)*	13	1	-0.5 (-5.2, 4.1)
A	1	7.6 (4.9, 17.9)*	4	1	
A	2	11.2 (6.9, 32.6)*	3	1	
A	3	5.4 (4.0, 9.0)	9	1	
A	4	9.1 (7.0, 13.5)*	13	1	
A	A	8.2 (6.8, 10.5)*	29	4	

---------- STATE=RI REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
440070022	2	5.2 (3.7, 8.9)	8	1	3.8 (1.2, 6.3)
440071010	2	8.6 (6.5, 13.1)*	12	1	2.4 (-2.1, 6.8)
440070022	3	5.4 (4.1, 8.2)	12	1	0.1 (-2.9, 3.0)
440071010	3	6.8 (5.1, 10.5)*	11	1	-1.8 (-5.5, 2.0)
440070022	4	3.8 (2.9, 5.9)	11	1	0.2 (-2.0, 2.4)
440071010	4	2.5 (1.9, 3.7)	12	1	-0.0 (-1.3, 1.3)
A	2	7.4 (5.9, 10.1)*	20	2	
A	3	6.1 (4.9, 8.1)	23	2	
A	4	3.2 (2.6, 4.2)	23	2	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=RI REPORTING ORGANIZATION=001 METHOD=120 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	A	5.8 (5.1, 6.7)	66	6	

---------- STATE=SC REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
450430009	1	3.4 (2.7, 4.6)	21	1	0.6 (-0.7, 1.9)
450190048	2	3.9 (2.8, 6.7)	8	1	-1.4 (-4.0, 1.2)
450430009	2	3.9 (3.2, 5.2)	23	1	0.3 (-1.1, 1.7)
450450009	2	1.3 (0.8, 5.9)	2	1	-1.3 (-4.4, 1.9)
450790019	2	2.3 (1.8, 3.3)	16	1	0.1 (-1.0, 1.1)
450190048	3	9.0 (6.4, 15.3)*	8	1	-1.1 (-7.5, 5.2)
450430009	3	3.0 (2.3, 4.1)	18	1	1.1 (-0.0, 2.3)
450450009	3	2.2 (1.5, 3.7)	8	1	-1.8 (-2.6, -0.9)
450790019	3	2.5 (2.0, 3.2)	28	1	2.2 (1.8, 2.6)
450190048	4	2.5 (1.9, 3.9)	11	1	0.6 (-0.7, 2.0)
450430009	4	3.5 (2.8, 4.6)	23	1	-0.6 (-1.9, 0.7)
450450009	4	2.6 (1.9, 3.9)	12	1	-2.0 (-2.9, -1.1)
450790019	4	2.8 (2.2, 3.7)	21	1	0.3 (-0.8, 1.3)
A	1	3.4 (2.7, 4.6)	21	1	
A	2	3.4 (2.9, 4.1)	49	4	
A	3	4.0 (3.5, 4.7)	62	4	
A	4	3.0 (2.6, 3.5)	67	4	
A	A	3.5 (3.2, 3.8)	199	13	

---------- STATE=SD REPORTING ORGANIZATION=001 METHOD=119 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
460990006	3	13.5 (10.0, 21.5)*	10	1	9.1 (3.1, 15.2)
460990006	4	11.8 (8.7, 18.8)*	10	1	-0.6 (-7.8, 6.6)
A	3	13.5 (10.0, 21.5)*	10	1	
A	4	11.8 (8.7, 18.8)*	10	1	
A	A	12.7 (10.1, 17.3)*	20	2	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=SD REPORTING ORGANIZATION=001 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
461031001	3	7.9 (6.2, 11.2)*	16	1	0.2 (-3.4, 3.8)
461031001	4	25.1 (17.3, 48.1)*	6	1	-7.1 (-28.8, 14.6)
A	3	7.9 (6.2, 11.2)*	16	1	
A	4	25.1 (17.3, 48.1)*	6	1	
A	A	14.7 (11.9, 19.7)*	22	2	

---------- STATE=TN REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
471650007	1	12.1 (9.1, 18.3)*	12	1	-8.6 (-13.2, -4.0)
471650007	2	15.0 (10.8, 25.7)*	8	1	3.8 (-6.6, 14.2)
471130004	3	3.5 (2.5, 6.0)	8	1	-2.8 (-4.3, -1.4)
471650007	3	3.0 (2.3, 4.2)	17	1	0.8 (-0.5, 2.0)
471130004	4	3.5 (2.8, 4.5)	25	1	-1.4 (-2.5, -0.2)
471650007	4	12.1 (9.5, 17.0)*	17	1	-0.9 (-6.2, 4.4)
A	1	12.1 (9.1, 18.3)*	12	1	
A	2	15.0 (10.8, 25.7)*	8	1	
A	3	3.1 (2.6, 4.1)	25	2	
A	4	8.2 (6.9, 10.0)	42	2	
A	A	8.7 (7.8, 10.0)	87	6	

---------- STATE=TN REPORTING ORGANIZATION=004 METHOD=120 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
470931017	1	11.3 (8.2, 18.5)*	9	1	6.2 (0.0, 12.4)
470931017	2	33.2 (24.2, 54.6)*	9	1	17.1 (-1.7, 35.8)
470931017	3	3.0 (2.3, 4.3)	14	1	0.6 (-0.8, 2.0)
470931017	4	3.3 (2.5, 5.0)	13	1	-0.2 (-1.9, 1.6)
A	1	11.3 (8.2, 18.5)*	9	1	
A	2	33.2 (24.2, 54.6)*	9	1	
A	3	3.0 (2.3, 4.3)	14	1	
A	4	3.3 (2.5, 5.0)	13	1	
A	A	15.9 (13.6, 19.2)*	45	4	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=TX REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
480290034	1	10.3 (5.3, 165.0)*	1	1	10.3
481130069	1	0.3 (0.2, 5.2)	1	1	-0.3
481410044	1	4.7 (3.1, 9.7)	5	1	1.3 (-3.5, 6.1)
484393006	1	4.5 (2.6, 20.0)*	2	1	4.4 (-1.0, 9.9)
484530020	1	4.3 (2.2, 68.8)*	1	1	4.3
480290034	2	8.4 (5.2, 24.4)*	3	1	-5.6 (-18.4, 7.1)
481130069	2	2.0 (1.2, 8.9)	2	1	2.0 (-0.4, 4.4)
481410044	2	6.5 (4.6, 11.6)*	7	1	3.5 (-0.8, 7.8)
482011035	2	12.0 (6.1, 191.1)*	1	1	-12.0
484393006	2	4.7 (3.1, 11.2)*	4	1	3.4 (-1.1, 7.8)
484530020	2	1.7 (1.0, 7.6)	2	1	1.7 (-0.6, 4.0)
481130050	4	3.3 (2.0, 9.6)	3	1	-1.2 (-7.6, 5.1)
481130069	4	11.4 (8.5, 17.7)*	11	1	3.2 (-3.1, 9.4)
481410010	4	2.8 (1.4, 44.2)*	1	1	-2.8
481410044	4	11.9 (8.7, 19.6)*	9	1	7.4 (1.2, 13.6)
481671005	4	27.1 (13.8, 432.1)*	1	1	27.1
482011035	4	18.5 (13.0, 33.2)*	7	1	-4.7 (-18.9, 9.5)
484391002	4	1.7 (0.9, 27.8)*	1	1	-1.7
484393006	4	10.3 (7.7, 16.0)*	11	1	4.0 (-1.4, 9.5)
484530020	4	4.0 (2.7, 7.6)	6	1	2.7 (0.2, 5.3)
A	1	5.2 (3.9, 8.4)	10	5	
A	2	6.3 (5.0, 8.6)	19	6	
A	4	12.0 (10.3, 14.3)*	50	9	
A	A	10.2 (9.0, 11.7)*	79	20	

---------- STATE=UT REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
490494001	2	10.2 (7.1, 19.6)*	6	1	-0.7 (-9.9, 8.5)
490494001	3	3.0 (2.0, 7.2)	4	1	1.6 (-1.8, 5.1)
490494001	4	14.4 (10.9, 21.8)*	12	1	2.1 (-5.6, 9.8)
A	2	10.2 (7.1, 19.6)*	6	1	
A	3	3.0 (2.0, 7.2)	4	1	
A	4	14.4 (10.9, 21.8)*	12	1	
A	A	12.0 (9.6, 16.0)*	22	3	

---------- STATE=VA REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
510130020	1	3.0 (2.3, 4.5)	12	1	0.4 (-1.2, 2.0)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=VA REPORTING ORGANIZATION=001 METHOD=118 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
517100024	1	4.4 (3.3, 6.5)	13	1	2.0 (-0.0, 4.0)
517600020	1	13.5 (10.5, 19.1)*	16	1	-1.6 (-7.6, 4.5)
510130020	2	2.5 (2.0, 3.3)	22	1	0.3 (-0.6, 1.2)
517100024	2	2.7 (2.1, 3.7)	18	1	-0.8 (-1.8, 0.3)
517600020	2	3.8 (3.1, 5.0)	25	1	1.5 (0.3, 2.8)
510130020	3	5.9 (4.9, 7.5)	29	1	-0.5 (-2.4, 1.4)
517100024	3	3.2 (2.6, 4.2)	24	1	-0.7 (-1.8, 0.4)
517600020	3	3.6 (2.9, 4.7)	25	1	0.4 (-0.9, 1.6)
510130020	4	6.7 (5.2, 9.8)	14	1	-2.8 (-5.8, 0.2)
517100024	4	3.0 (2.2, 4.9)	9	1	0.5 (-1.4, 2.4)
517600020	4	2.7 (2.1, 3.9)	14	1	-0.1 (-1.4, 1.2)
A	1	8.9 (7.6, 10.9)*	41	3	
A	2	3.1 (2.7, 3.6)	65	3	
A	3	4.5 (4.0, 5.2)	78	3	
A	4	4.7 (4.0, 5.8)	37	3	
A	A	5.3 (4.9, 5.8)	221	12	

---------- STATE=WA REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
530330057	1	2.4 (1.8, 3.7)	12	1	0.8 (-0.4, 2.0)
530530031	1	3.4 (2.5, 5.6)	9	1	2.2 (0.5, 3.9)
530630016	1	8.5 (5.7, 17.8)*	5	1	2.4 (-6.3, 11.1)
530730015	1	19.6 (12.2, 57.3)*	3	1	-17.0 (-37.2, 3.2)
530770012	1	18.8 (13.7, 31.0)*	9	1	7.2 (-4.2, 18.6)
530330057	2	4.6 (3.5, 6.9)	13	1	1.4 (-0.9, 3.6)
530530031	2	2.0 (1.4, 3.3)	9	1	0.6 (-0.7, 1.8)
530630016	2	2.3 (1.5, 4.8)	5	1	-1.0 (-3.2, 1.2)
530730015	2	7.6 (5.3, 14.6)*	6	1	4.4 (-1.2, 10.0)
530770012	2	3.9 (2.7, 7.5)	6	1	3.4 (1.7, 5.2)
530330057	3	9.1 (6.8, 14.0)*	11	1	0.2 (-5.0, 5.4)
530530031	3	12.8 (9.7, 19.5)*	12	1	-3.6 (-10.3, 3.1)
530630016	3	5.0 (3.5, 9.0)	7	1	1.8 (-1.9, 5.5)
530730015	3	2.8 (1.7, 8.0)	3	1	2.7 (1.5, 3.9)
530770012	3	6.4 (4.3, 13.3)*	5	1	3.6 (-2.1, 9.2)
530330057	4	3.9 (2.9, 5.8)	12	1	-1.4 (-3.3, 0.6)
530530031	4	2.4 (1.8, 3.9)	10	1	1.8 (0.9, 2.8)
530630016	4	4.6 (3.2, 8.9)	6	1	0.9 (-3.1, 5.0)
530730015	4	1.8 (1.3, 3.1)	8	1	0.0 (-1.3, 1.3)
A	1	11.3 (9.6, 14.0)*	38	5	
A	2	4.5 (3.8, 5.5)	39	5	
A	3	9.3 (7.8, 11.5)*	38	5	
A	4	3.3 (2.8, 4.1)	36	4	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=WA REPORTING ORGANIZATION=001 METHOD=118 ----------
(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	A	7.9 (7.2, 8.7)	151	19	

---------- STATE=WI REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
551091002	3	3.1 (1.6, 48.8)*	1	1	3.1
551091002	4	2.2 (1.5, 4.6)	5	1	0.2 (-2.2, 2.6)
A	3	3.1 (1.6, 48.8)*	1	1	
A	4	2.2 (1.5, 4.6)	5	1	
A	A	2.4 (1.6, 4.6)	6	2	

---------- STATE=WI REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
550090005	1	6.1 (4.6, 9.5)	11	1	-3.6 (-6.5, -0.8)
550250025	1	4.2 (3.4, 5.6)	22	1	-1.4 (-2.9, 0.0)
550310025	1	7.2 (5.7, 9.6)	21	1	-1.1 (-3.9, 1.6)
550790026	1	16.1 (11.8, 26.5)*	9	1	9.6 (1.0, 18.1)
550790059	1	37.2 (25.0, 77.6)*	5	1	-21.3 (-53.8, 11.1)
551330027	1	5.5 (4.0, 9.0)	9	1	0.8 (-2.8, 4.3)
550090005	2	6.0 (4.7, 8.7)	15	1	2.8 (0.3, 5.3)
550250025	2	19.7 (15.5, 27.6)*	17	1	1.4 (-7.2, 10.0)
550310025	2	6.9 (5.2, 10.7)*	11	1	-4.3 (-7.4, -1.2)
550790026	2	6.4 (4.6, 10.9)*	8	1	1.3 (-3.2, 5.8)
551330027	2	2.8 (2.1, 4.3)	12	1	-0.3 (-1.8, 1.2)
550090005	3	11.9 (9.4, 16.3)*	19	1	0.7 (-4.1, 5.6)
550250025	3	4.8 (3.7, 6.9)	15	1	1.1 (-1.1, 3.3)
550310025	3	3.4 (2.5, 5.2)	11	1	0.8 (-1.1, 2.6)
550790026	3	10.3 (7.8, 15.6)*	12	1	5.5 (0.8, 10.2)
550790059	3	3.6 (2.6, 6.0)	9	1	0.5 (-1.8, 2.9)
551330027	3	3.5 (2.6, 5.6)	10	1	-0.7 (-2.8, 1.4)
550090005	4	3.5 (2.7, 5.0)	15	1	2.4 (1.3, 3.6)
550250025	4	2.7 (2.1, 3.9)	14	1	1.6 (0.5, 2.6)
550310025	4	13.3 (10.3, 19.2)*	15	1	-5.5 (-11.2, 0.2)
550790026	4	14.1 (10.4, 22.5)*	10	1	7.9 (0.7, 15.1)
550790059	4	13.9 (10.0, 23.8)*	8	1	5.6 (-3.5, 14.7)
551330027	4	6.4 (4.8, 9.7)	12	1	-1.4 (-4.8, 2.0)
A	1	12.2 (10.8, 14.0)*	77	6	
A	2	11.3 (9.9, 13.3)*	63	5	

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=WI REPORTING ORGANIZATION=001 METHOD=118 ----------
(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
A	3	7.8 (6.9, 9.1)	76	6	
A	4	9.7 (8.6, 11.2)*	74	6	
A	A	10.4 (9.7, 11.1)*	290	23	

---------- STATE=WV REPORTING ORGANIZATION=001 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
540391005	1	4.5 (3.7, 5.8)	26	1	0.7 (-0.8, 2.3)
540391005	2	8.2 (6.6, 11.1)*	21	1	1.0 (-2.1, 4.2)
540391005	3	5.9 (4.8, 7.6)	28	1	2.3 (0.5, 4.1)
540391005	4	12.4 (10.0, 16.6)*	22	1	5.5 (1.3, 9.6)
A	1	4.5 (3.7, 5.8)	26	1	
A	2	8.2 (6.6, 11.1)*	21	1	
A	3	5.9 (4.8, 7.6)	28	1	
A	4	12.4 (10.0, 16.6)*	22	1	
A	A	8.1 (7.2, 9.1)	97	4	

---------- STATE=WV REPORTING ORGANIZATION=002 METHOD=118 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
540290011	1	8.6 (6.9, 11.4)*	23	1	-4.5 (-7.2, -1.9)
540290011	2	7.5 (6.1, 9.8)	25	1	-0.5 (-3.1, 2.1)
540290011	3	12.3 (9.9, 16.3)*	23	1	-0.4 (-4.9, 4.1)
540290011	4	7.4 (6.0, 9.8)	23	1	0.3 (-2.4, 3.0)
A	1	8.6 (6.9, 11.4)*	23	1	
A	2	7.5 (6.1, 9.8)	25	1	
A	3	12.3 (9.9, 16.3)*	23	1	
A	4	7.4 (6.0, 9.8)	23	1	
A	A	9.1 (8.1, 10.4)*	94	4	

---------- STATE=WY REPORTING ORGANIZATION=001 METHOD=117 ----------

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
560330002	1	11.9 (8.8, 18.9)*	10	1	0.2 (-7.0, 7.5)
560330002	2	10.5 (7.3, 20.1)*	6	1	-1.2 (-10.6, 8.2)

* INDICATES UPPER BOUND OF ESTIMATED 90% CONFIDENCE INTERVAL > 10%

---------- STATE=WY REPORTING ORGANIZATION=001 METHOD=117 ----------

(continued)

AIRS ID	QUARTER	EST. REL. RMSE (90% CONF. INTERVAL)	NO. OF OBSERVATIONS	NO. OF SAMPLER QUARTERS	EST. REL. BIAS (90% CONF. INTERVAL)
560330002	3	6.9 (5.1, 11.0)*	10	1	1.8 (-2.2, 5.9)
560330002	4	3.1 (2.2, 5.1)	9	1	0.1 (-1.9, 2.2)
A	1	11.9 (8.8, 18.9)*	10	1	
A	2	10.5 (7.3, 20.1)*	6	1	
A	3	6.9 (5.1, 11.0)*	10	1	
A	4	3.1 (2.2, 5.1)	9	1	
A	A	8.7 (7.3, 10.8)*	35	4	

Attachment 2-8
Routine and Performance Evaluation Program Pairs
with Accuracy > +/- 50%

based on 7/26/00 extractions from AIRS and PEDs

Method	AIRS Site	State	Prim. Conc.	PE Conc.	Bias (%)	Bias > 50%?	Conc <= 6?	Quarter	Date
118	081230006	CO	0.30	6.20	-95.2	*	*	2	05/24/1999
118	180190005	IN	24.10	5.99	302.1	*	*	1	03/31/1999
118	180431004	IN	6.40	3.67	74.6	*	*	3	09/09/1999
118	180891003	IN	1.50	15.28	-90.2	*	*	4	12/11/1999
118	201730010	KS	10.30	6.70	53.7	*		2	04/27/1999
118	211950002	KY	7.00	18.80	-62.8	*		2	05/18/1999
118	230050027	ME	12.70	8.16	55.7	*		2	06/11/1999
118	280010004	MS	25.20	11.69	115.6	*		2	06/02/1999
118	290952002	MO	13.20	8.61	53.3	*		2	06/17/1999
118	340130011	NJ	5.40	3.42	58.1	*	*	2	04/24/1999
118	360810094	NY	34.10	13.34	155.7	*		4	11/02/1999
118	410390060	OR	1.90	4.78	-60.3	*	*	1	02/18/1999
118	450630008	SC	20.40	12.44	64.0	*		2	04/06/1999
118	490494001	UT	17.20	5.28	225.6	*	*	2	04/20/1999
			4.80	12.40	-61.3	*	*	3	08/10/1999
118	490570001	UT	0.00	6.99	-100.0	*	*	3	08/10/1999
118	518100008	VA	5.90	12.15	-51.4	*	*	3	08/04/1999
118	550790059	WI	16.00	8.07	98.2	*		4	10/18/1999
120	040139997	AZ	16.40	6.53	151.1	*		1	02/23/1999
			10.20	6.12	66.7	*		3	08/22/1999
120	040190011	AZ	15.40	7.95	93.8	*		1	02/24/1999
			12.10	7.70	57.1	*		3	08/31/1999
120	060271003	CA	3.00	0.75	300.5	*	*	4	10/31/1999
120	060590001	CA	10.80	6.53	65.3	*		1	02/10/1999
120	110010043	DC	13.20	7.29	81.0	*		1	03/02/1999
120	250230004	MA	7.40	4.24	74.4	*	*	3	08/19/1999
120	390350066	OH	7.20	4.66	54.5	*	*	1	03/10/1999
120	391530023	OH	1.20	8.15	-85.3	*	*	4	11/17/1999
120	461030016	SD	12.80	6.99	83.1	*		1	03/16/1999
120	470930028	TN	13.80	8.32	65.8	*		1	03/04/1999

TECHNICAL REPORT DATA

(Please read Instructions on reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-454/R-00-041		

4. TITLE AND SUBTITLE	5. REPORT DATE
Quality Assurance Report: Calendar Year 1999, The PM2.5 Ambient Air Monitoring Program	12/00
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Michael Papp. Shelly Eberly, Mark Schmidt, Tim Hanley	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, NC 27711	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AND PERIOD COVERED
Director Office of Air Quality Planning and Standards Office of Air and Radiation U.S. Environmental Protection Agency Research Triangle Park, NC 27711	14. SPONSORING AGENCY CODE EPA/200/04

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The report documents the quality assurance activities that were undertaken for the $PM_{2.5}$ environmental data operations for the calendar year January 1, 1999 to December 31, 1999 (CY99), which was the first year of implementation the $PM_{2.5}$ monitoring program. The QA Report evaluates the adherence to the quality assurance requirements described in *40 CFR 58 App. A* and evaluates the data quality indicators of precision, accuracy, bias, completeness, comparability and detectabilty.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Quality Assurance	Air Pollution control	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(Report)*	21. NO. OF PAGES
Release Unlimited	Unclassified	
	20. SECURITY CLASS *(Page)* Unclassified	22. PRICE