
# FEDERAL REGISTER

Vol. 79 Thursday,
No. 176 September 11, 2014

Part II

## Environmental Protection Agency

40 CFR Part 58
Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Proposed Rule

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 58

**[EPA–HQ–OAR–2013–0619; FRL–9915–16–OAR]**

**RIN 2060–AR59**

## Revisions to Ambient Monitoring Quality Assurance and Other Requirements

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** This action proposes revisions to ambient air monitoring requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks. This proposal focuses on reorganizing and clarifying quality assurance requirements, simplifying and reducing data reporting and certification requirements, clarifying the annual monitoring network plan public notice requirements, revising certain network design criteria for nonsource lead monitoring, and addressing other issues in part 58 Ambient Air Quality Surveillance Requirements.

**DATES:** Comments must be received on or before November 10, 2014.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2013–0619, by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- Email: *A-and-R-Docket@epa.gov.* Include docket ID No. EPA–HQ–OAR–2013–0619 in the subject line of the message.
- Fax: (202) 566–9744
- Mail: Environmental Protection Agency, Mail code 28221T, Attention Docket No. EPA–HQ–OAR–2013–0619, 1200 Pennsylvania Ave. NW., Washington, DC 20460. Please include a total of two copies.
- Hand/Courier Delivery: EPA Docket Center, Room 3334, EPA WJC West Building, 1301 Constitution Ave. NW., Washington, DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

*Instructions:* Direct your comments to Docket ID No. EPA–HQ–OAR–2013–0619. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or email. The *www.regulations.gov* Web site is an ''anonymous access'' system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *http://www.regulations.gov,* your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm.*

*Docket:* All documents in the docket are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, Room 3334, WJC West Building, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744 and the telephone number for the Air and Radiation Docket and Information Center is (202) 566–1742.

**FOR FURTHER INFORMATION CONTACT:** Mr. Lewis Weinstock, Air Quality Assessment Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail code C304–06, Research Triangle Park, NC 27711; telephone: (919) 541–3661; fax: (919) 541–1903; email: *Weinstock.lewis@epa.gov.*

**SUPPLEMENTARY INFORMATION:**

### A. Does this action apply to me?

This action applies to state, territorial, and local air quality management programs that are responsible for ambient air monitoring under 40 CFR part 58. Categories and entities potentially regulated by this action include:

| Category | NAICS [a] code |
|---|---|
| State/territorial/local/tribal government. | 924110 |

[a] North American Industry Classification System.

### B. What should I consider as I prepare my comments for the EPA?

1. *Submitting CBI.* Do not submit this information to the EPA through *http://www.regulations.gov* or email. Clearly mark any of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to the EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for preparing your comments.* When submitting comments, remember to:

- Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

• Make sure to submit your comments by the comment period deadline identified.

**C. Where can I get a copy of this document?**

In addition to being available in the docket, an electronic copy of this proposed rule will also be available on the Worldwide Web (WWW) through the Technology Transfer Network (TTN). Following signature, a copy of this proposed rule will be posted on the TTN's policy and guidance page for newly proposed or promulgated rules at the following address: *http://www.epa.gov/ttn/oarpg/*. The TTN provides information and technology exchange in various areas of air pollution control. A redline/strikeout document comparing the proposed revisions to the appropriate sections of the current rules is located in the docket.

**Table of Contents**

The following topics are discussed in this preamble:



## I. Background

The EPA is proposing revisions to ambient air requirements for criteria pollutants to provide clarifications to existing requirements to reduce the compliance burden of monitoring agencies operating ambient networks. This proposal focuses on ambient monitoring requirements that are found in 40 CFR part 58 and the associated appendices (A, D, and new Appendix B), including issues such as operating schedules, the development of annual monitoring network plans, data reporting and certification requirements, and the operation of the required quality assurance (QA) program.

The EPA last completed a comprehensive revision of ambient air monitoring regulations in a final rule published on October 17, 2006 (see 71 FR 61236). Minor revisions were completed in a direct final rule published on June 12, 2007 (see 72 FR 32193). Periodic pollutant-specific monitoring updates have occurred in conjunction with revisions to the National Ambient Air Quality Standards (NAAQS). In such cases, the monitoring revisions were typically finalized as part of the NAAQS final rules.[1]

## II. Proposed Changes to the Ambient Monitoring Requirements

### *A. General Information*

The following proposed changes to monitoring requirements impact these subparts of part 58—Ambient Air Quality Surveillance: Subpart A—General Provisions, and Subpart B—Monitoring Network. Specific proposed changes to these subparts are described below.

### *B. Definitions*

The EPA proposes to add and revise several terms to ensure consistent interpretation within the monitoring regulations and to harmonize usage of terms with the definition of key metadata fields that are important components of the Air Quality System (AQS).[2]

The EPA proposes to add the term ''Certifying Agency'' to the list of definitions. The certifying agency field was added to AQS in 2013 as part of the development of a revised process for states and the EPA Regions to meet the data certification requirements described in 40 CFR 58.15. The new term specifically describes any monitoring agency that is responsible for meeting data certification requirements for a set of monitors. In practice, certifying agencies are typically a state, local, or tribal agency depending on the particular data reporting arrangements that have been approved by an EPA regional office for a given state. A list of certifying agencies by individual monitor is available on the AQS–TTN Web site.[3]

The term ''Chemical Speciation Network'' or CSN is being proposed for addition to the definition list. The CSN network has been functionally defined as being comprised of the Speciation Trends Network sites and the supplemental speciation sites that are collectively operated by monitoring agencies to obtain $PM_{2.5}$ chemical species data.

The term ''Implementation Plan'' is being proposed for addition to provide more specificity to current definitions that reference the word ''plan'' in their description. The EPA wishes to ensure that references to State Implementation Plans (SIPs) are not confused with references to Annual Monitoring Network Plans that are described in 40 CFR 58.10.

The term ''Local Agency'' is being proposed for revision to clarify that such organizations are responsible for implementing portions of annual monitoring network plans. The current definition refers to the carrying out of a plan which is not specifically defined, leading to possible confusion with SIPs.

The term ''meteorological measurements'' is being proposed for clarification that such measurements refer to required parameters at NCore and photochemical assessment monitoring stations (PAMS).

[1] Links to the NAAQS final rules are available at: *http://www.epa.gov/air/criteria.html.*

[2] The AQS is the EPA's repository of ambient air quality data. The AQS stores data from over 10,000 monitors, 5,000 of which are currently active. State, local and tribal agencies collect the data and submit it to the AQS on a periodic basis. See *http://www.epa.gov/ttn/airs/airsaqs/* for additional information.

[3] *http://www.epa.gov/ttn/airs/airsaqs/memos/criteria_monitor_list_by_certifying_agency_and_PQAO.xls.*

The terms ''Monitoring Agency'' and ''Monitoring Organization'' are being proposed for clarification to include tribal monitoring agencies and to simplify the monitoring organization definition to reference the aforementioned monitoring agency definition.

The term ''NCore'' is being proposed for revision to remove nitrogen dioxide ($NO_2$) and lead in $PM_{10}$ (Pb-$PM_{10}$) as a required measurement and to expand the definition of basic meteorology to specifically reference the required measurements: Wind speed, wind direction, temperature, and relative humidity. The EPA clarifies that $NO_2$ was never a required NCore measurement and that the current definition was erroneous on this issue. Additionally, the requirement to measure Pb-$PM_{10}$ at NCore sites in areas over 500,000 population is being proposed for elimination in the rule.

The term ''Near-road $NO_2$ Monitor'' is being proposed for revision to ''Near-road Monitor.'' This revision is being made to broaden the definition of near-road monitors to include all such monitors operating under the specific requirements described in 40 CFR part 58, appendix D (sections 4.2.1, 4.3.2, 4.7.1(b)(2)) and appendix E (section 6.4(a), Table E–4) for near-road measurement of $PM_{2.5}$ and carbon monoxide (CO) in addition to $NO_2$.

The term ''Network Plan'' is being proposed for addition to clarify that any such references in 40 CFR part 58 refer to the annual monitoring network plan required in 40 CFR 58.10.

The term ''Plan'' is being proposed for deletion as its usage has been replaced with more specific references to either the annual monitoring network plan required in 40 CFR 58.10 or the SIP approved or promulgated pursuant to section 110 of the Clean Air Act.

The term ''Population-oriented Monitoring (or sites)'' is being proposed for deletion. This term along with the related usage of the concept of population-oriented monitoring was deleted from 40 CFR part 58 in the 2013 $PM_{2.5}$ NAAQS final rule (see 78 FR 3235–3236). As explained in that rule, the action was taken to ensure consistency with the longstanding definition of ambient air applied to the other NAAQS pollutants.

The term ''Primary Monitor'' is being proposed for addition to the definition list. The usage of this term has become important in AQS to better define the processes used to calculate design values when more than one monitor is being operated by a monitoring agency for a given pollutant. This term identifies the primary monitor used as the default data source in AQS for creating a combined site record.

The term ''Primary Quality Assurance Organization'' is being proposed for revision to include the usage of the acronym, ''PQAO.''

The terms ''PSD Monitoring Organization'' and ''PSD Monitoring Network'' are being added to support the proposed new appendix B that will pertain specifically to QA requirements for prevention of significant deterioration (PSD) networks.

The term ''PSD Reviewing Authority'' is being added to support the addition of appendix B to the part 58 appendices and to clarify the identification of the lead authority in determining the applicability of QA requirements for PSD monitoring projects.

The term ''Reporting Organization'' is being proposed for revision to clarify that the term refers specifically to the reporting of data as defined in AQS. The AQS does allow the distinct designation of agency roles that include analyzing, certifying, collecting, reporting, and PQAO.

The term ''SLAMS'' (state and local air monitoring stations) is being proposed for clarification to clearly indicate that the designation of a monitor as SLAMS refers to a monitor required under appendix D of part 58. The SLAMS monitors make up networks that include NCore, PAMS, CSN, and other state or local agency sites that have been so designated in annual monitoring network plans.

The terms ''State Agency'' and ''STN'' are proposed for minor wording changes for purposes of clarity only.

The term ''State Speciation Site'' is being proposed for deletion in lieu of the proposed addition of ''Supplemental Speciation Station'' to better describe the distinct elements of the CSN network which includes the Speciation Trends Network Stations that are required under section 4.7.4 of appendix D of part 58 and supplemental speciation stations which are operated for specific monitoring agency needs and are not considered to be required monitors under appendix D.

### *C. Annual Monitoring Network Plan and Periodic Network Assessment*

The EPA finalized the current Annual Monitoring Network Plan requirement as part of the 2006 amendments to the ambient monitoring requirements (see 71 FR 61247–61249). The revised requirements were intended to consolidate separate network plan requirements that existed for SLAMS and national air monitoring stations (NAMS) networks, clarify processes for providing public input in the network plans and obtaining formal EPA Regional Office review, and revise the required plan elements to address other changes that had occurred in part 58. Since 2006, further revisions to the annual monitoring network plan requirements have occurred to address new requirements for monitoring networks including the NCore multi-pollutant network, source-oriented lead (Pb), near-road monitoring for $NO_2$, CO and $PM_{2.5}$, other required NAAQS monitoring, and data quality requirements for continuous $PM_{2.5}$ Federal Equivalent Methods (FEMs).

The current Annual Monitoring Network Plan requirements state that plans must be made available for public inspection for at least 30 days prior to submission to the EPA. Additionally, any plans that propose SLAMS network modifications are subject to EPA Regional Administrator approval, and either the monitoring agency or the EPA Regional Office must provide an opportunity for public comment. This process to improve transparency pertaining to the planning of ambient monitoring networks has been successful and the EPA believes that state and local agencies are increasingly receiving public comments on these plans.[4] To aid in the visibility of these plans, the EPA hosts an annual monitoring network plan summary page on its Ambient Monitoring Technical Information Center (AMTIC) Web site.[5]

Since the revision of the annual monitoring network plan process in 2006, the EPA has received feedback from its regional offices as well as some states that the regulatory language pertaining to public involvement has been unclear. Areas of confusion include determining the difference between the process of obtaining public inspection versus comment, the responsibility of monitoring agencies to respond to public comment in their submitted plans, and the responsibility of the EPA regional offices to obtain public comment depending on a monitoring agency's prior action as well as whether the annual monitoring network plan was modified based on discussions with the monitoring agency following plan submission.

The EPA believes that the intent of the 2006 revision to these requirements was to support wider public involvement in the planning and implementation of air monitoring

[4] The EPA notes that there is no specified process for obtaining public input into draft annual monitoring network plans although the typical process is to post the plans on state or local Web sites along with an on-line process to obtain public comments.

[5] See *http://www.epa.gov/ttn/amtic/plans.html.*

networks, and, to that extent, the solicitation of public comments prior to the submission of the annual monitoring network plan to the EPA regional office is a desirable part of the process. Indeed, the EPA stated in the preamble to the 2006 amendments that ''Although the public inspection requirement does not specifically require states to obtain and respond to received comments, such a process is encouraged with the subsequent transmission of comments to the appropriate EPA regional office for review'' (see 71 FR 61248).

Given the heightened interest and visibility of the annual monitoring network plan process since 2006, the EPA believes that it is appropriate to propose that the public inspection aspect of this requirement contained in 40 CFR 58.10(a)(1) be revised to clearly indicate that obtaining public comment is a required part of the process, and that plans that are submitted to the EPA regional offices should address such comments that were received during the public notice period. The EPA understands that this proposed change in process could increase burden for those monitoring agencies that have not routinely incorporated public comments into their annual monitoring network plan process. However, we believe that these efforts will increase the transparency of the current process and potentially reduce questions and adverse comment from stakeholders who have not been included in annual monitoring network plan discussions prior to submission to the EPA. For those monitoring agencies that already have been posting plans for public comment, this proposed change should have no net effect on workload.

A related part of the annual monitoring network plan process is described in 40 CFR 58.10(a)(2) with the distinction that this section pertains specifically to plans that propose SLAMS modifications and thereby also require specific approval from the EPA Regional Administrator. Similar to the public comment issue described above, the process of obtaining such comment for plans that contain network modifications was not clearly described, with the regulatory text initially placing the responsibility on the EPA regional offices to obtain public comment, but then providing monitoring agencies with the option of obtaining public comment, which consequently would relieve the EPA regional office from having to do so. Consistent with the proposed change to the comment process described above, the EPA is proposing changes to the text in 40 CFR 58.10(a)(2) to reflect the fact that public comments will have been required to be obtained by monitoring agencies prior to submission and that the role of the EPA regional office will be to review the submitted plan together with public comments and any modifications to the plan based on these comments. On an overall basis, the EPA believes that this proposed change to clearly place the responsibility for obtaining public comment on monitoring agencies makes sense since these organizations are, in effect, closer to their stakeholders and in a better position to notify the public about the availability and key issues contained in annual monitoring network plans, compared with similar efforts by the EPA regions that oversee many such agencies.

On a related note, the EPA emphasizes the value of the partnership between monitoring agencies and their respective EPA regional offices, and encourages an active dialogue between these parties during the development and review of annual monitoring network plans. Although the monitoring regulations only require that the EPA Regional Administrators approve annual monitoring network plans that propose changes to SLAMS stations, the EPA encourages monitoring agencies to seek formal approval of submitted plans regardless of whether SLAMS changes are proposed or not. Such a process would ensure that not only plans with proposed modifications are formally approved, but also that plans where potential network changes are indeed appropriate but not proposed, would be subject to discussion. Although the EPA is not proposing that annual monitoring network plans that do not propose changes to SLAMS should also be subject to the EPA Regional Administrator's approval, we support close working relationships between monitoring agencies and the EPA regions and see value in having a formal review of all such plans, regardless of whether network modifications are proposed.

Another aspect of the annual monitoring network plan requirements is the listing of required information for each proposed and existing site as described in 40 CFR 58.10(b). The EPA is proposing to add two elements to this list as described below.

First, the EPA is proposing to require that a PAMS network description be specifically included as a part of the annual monitoring network plan for any monitoring agencies affected by PAMS requirements. The requirements for such a plan are already referenced in appendix D, sections 5.2 and 5.4 of this part. In fact, the requirement for an ''approved PAMS network description provided by the state'' is already specified in section 5.4. Accordingly, the EPA is proposing that a PAMS network description be a required element in annual monitoring network plans for affected monitoring agencies, and that any such plans already developed for PAMS networks in accordance with section 5 of appendix D could be used to meet this proposed requirement. The EPA believes that the burden impact of this proposed change should be minimal, as a review of archived 2012 annual monitoring network plans posted on the EPA's AMTIC Web page shows that many such plans already include references to PAMS stations. For purposes of consistency and clarity, however, the EPA believes there is merit for proposing this revision to the annual monitoring network plan requirements so that stakeholders interested in the operation of PAMS stations can find the relevant information in one place.

Second, the EPA is proposing language that affects ''long-term'' Special Purpose Monitors (SPMs), i.e., those SPMs operating for longer than 24 months whose data could be used to calculate design values for NAAQS pollutants in cases where the EPA approved methods are being employed. As long as such monitors are classified as SPMs, their operation can be discontinued without EPA approval per 40 CFR 58.20(f). While such operational flexibility is a key component of special purpose monitoring, the issue can become more complex when longer-term SPMs measure elevated levels of criteria pollutants and potentially become design value monitors for a region. In such cases, the EPA is faced with scenarios where key monitors that can impact the attainment status of a region can potentially be discontinued without prior notification or approval. Given the important regulatory implications of such monitoring network decisions, the EPA believes that it is important that the ongoing operation and treatment of such SPMs be specifically called out and discussed in annual monitoring network plans. Therefore, the EPA is proposing that a new required element be added to the annual monitoring network plan requirements. Specifically, the EPA is proposing that such long-term SPMs be identified in the plans along with a discussion of the rationale for keeping the monitor(s) as SPMs or potentially reclassifying to SLAMS. The EPA is not proposing that such monitors must become SLAMS, only that the ongoing operation of such monitors and the rationale for retaining them as SPMs be explicitly discussed to avoid confusion

and the potential for unintended complexities in the designations process if any design value SPMs would be discontinued without adequate discussion.

The EPA is proposing minor edits to the annual monitoring network plan requirements to revise terminology referring to $PM_{2.5}$ speciation monitoring, to note the proposed addition of appendix B to the QA requirements (see section III.B of this preamble), and to clarify that annual monitoring network plans should include statements addressing whether the operation of each monitor meets the requirements of the associated appendices in part 58.

Finally, the issue has arisen concerning the flexibility that the EPA Regional Administrators have with reference to the approvals that are required within 120 days of annual monitoring network plan approval, for example, in the situation where the majority of the submitted plan is acceptable but one or more of the required elements is problematic. In these situations, which we believe to be infrequent, the existing regulatory language provides sufficient flexibility for such situations to be handled on a case-by-case basis, for example, through the use of a partial approval process where the Regional Administrator's approval decision letter specifies what elements of the submitted plan are approved and what elements are not. Alternatively, if the plan satisfies the requirements for network adequacy under appendix D and the monitors are suitable for regulatory decisions (consistent with the requirements of appendix A), the Regional Administrator has the discretion to approve the plan, while noting technical deficiencies to be corrected. We would expect that the resolution of the specific items under discussion would be documented through follow-up communications with the submitting monitoring agency to ensure that a complete record exists for the basis of the annual monitoring network plan approval.

The EPA solicits comments on all of the proposed changes to annual monitoring network plans requirements contained in 40 CFR 58.10.

*D. Network Technical Requirements*

The EPA is proposing to revise the language in 40 CFR 58.11(a)(3) to note the proposed revisions to appendix B to the QA requirements (see section III.B of this preamble) that would pertain to PSD monitoring sites.

*E. Operating Schedules*

The operating schedule requirements described in 40 CFR 58.12 pertain to the minimum required frequency of sampling for continuous analyzers (for example, hourly averages) and manual methods for particulate matter (PM) and Pb sampling (typically 24-hour averages for manual methods). The EPA is proposing to revise these requirements in three ways: By proposing added flexibility in the minimum required sampling for $PM_{2.5}$ mass sampling and for $PM_{2.5}$ speciation sampling; by modifying language pertaining to continuous mass monitoring to reflect revisions in regulatory language that were finalized in the 2013 p.m. NAAQS final rule; and by clarifying the applicability of certain criteria that can lead to an increase in the required sampling frequency, for example, to a daily schedule.

With regard to the minimum required sampling frequency for manual $PM_{2.5}$ samplers, current requirements state that at least a 1-in-3 day frequency is mandated for required SLAMS monitors without a collocated continuous monitor. For the majority of such manual $PM_{2.5}$ samplers, the EPA continues to believe that a 1-in-3 day sampling frequency is appropriate to meet the data quality objectives that support the $PM_{2.5}$ NAAQS.[6] For a subset of these monitors, however, the EPA believes that some regulatory flexibility may be appropriate in situations where a particular monitor is highly unlikely to record a violation of the $PM_{2.5}$ NAAQS. Such situations might occur in areas with very low $PM_{2.5}$ concentrations relative to the NAAQS and/or in urban areas with many more monitors than are required by appendix D and a subset of those monitors are reading lower than other monitors in the area. In these situations, the EPA believes it is appropriate to propose that the required sampling frequency could be reduced to 1-in-6 day sampling or another alternate schedule through a case-by-case approval by the EPA Regional Administrator. Such approvals could be based on factors that are already described in 40 CFR 58.12(d)(1)(ii) such as historical $PM_{2.5}$ data assessments, the attainment status of the area, the location of design value sites, and the presence of continuous $PM_{2.5}$ monitors at nearby locations. The EPA envisions that the request for such reductions in sampling frequency would occur during the annual monitoring network plan process as operating schedules are a required part of the plans as stated in 40 CFR 58.10(b)(4).

For sites with a collocated continuous monitor, the EPA also believes that the current regulatory flexibility to reduce to 1-in-6 day sampling or a seasonal sampling schedule is appropriate based on factors described above, and in certain cases, may also be applicable to lower reading SLAMS sites without a collocated continuous monitor, for example, to reduce frequency from 1-in-6 day sampling to a seasonal schedule. Accordingly, we have proposed such flexibility through changes in the regulatory language in 40 CFR 58.12(d)(1)(i) and (ii).

The EPA also believes that some flexibility for sampling frequency is appropriate to propose for $PM_{2.5}$ Chemical Speciation Stations, specifically the Speciation Trends Network (STN) sites that are at approximately 53 locations.[7] The STN stations are currently required to sample on at least a 1-in-3 day frequency with no opportunity for flexibility. While the EPA firmly believes in the long-term importance of the STN stations to support the development of SIPs, modeling exercises, health studies, and the investigation of air pollution episodes and exceptional events, we do not believe that the current inflexibility with regard to sampling frequency is in the best interests of monitoring agencies, the EPA, or stakeholders. For the past several years, the EPA has been investigating alternative monitoring technologies such as continuous $PM_{2.5}$ speciation methods that can supplement or potentially even replace manual $PM_{2.5}$ speciation methods.[8] As these methods become more refined, the EPA may wish to selectively reduce sampling frequency at manual samplers for one or more channels to conserve resources for reinvestment in other needs within the CSN network. Additionally, the EPA is currently conducting an assessment of the entire CSN network to evaluate the long-term viability of the program in the context of changes in air quality, the recently revised PM NAAQS, rising analytical costs, and flat or declining resources. Accordingly, for the reasons mentioned above, the EPA is proposing that a reduction in sampling frequency from 1-in-3 day be permissible for manual $PM_{2.5}$ samplers at STN stations. The approval for such changes at STN stations, on a case by case basis, would be made by the EPA Administrator as the authority for changes to STN has

[6] According to a retrieval from AQS dated 12–23–2013, approximately 65% of primary $PM_{2.5}$ samplers (those monitors with a parameter occurrence code of ''1'') operated on a 1-in-3 day sampling frequency.

[7] *http://www.epa.gov/ttn/amtic/specgen.html.*

[8] *http://www.epa.gov/ttnamti1/spesunset.html.*

been retained at the Administrator level per appendix D of this part, section 4.7.4. Factors that would be considered as part of the decision would include an area's design value, the role of the particular site in national health studies, the correlation of the site's species data with nearby sites, and presence of other leveraged measurements. In practice, we would expect a close working relationship with the EPA regional offices and monitoring agencies to consider such changes to STN, preferably as part of the annual monitoring network plan process, taking into account the findings of the CSN assessment process that is expected to be completed later in 2014, as well as a parallel effort being undertaken for the Interagency Monitoring of Protected Visual Environments (IMPROVE) network.[9]

The EPA is proposing editorial revisions to 40 CFR 58.12(d)(1)(ii) to harmonize the language regarding the use of continuous FEM or approved regional methods (ARM) monitors to support sampling frequency flexibility for manual $PM_{2.5}$ samplers with the current language in 40 CFR 58.12(d)(1)(iii) that was revised as part of 2013 PM NAAQS final rule. Specifically, the phrase ''unless it is identified in the monitoring agency's annual monitoring network plan as not appropriate for comparison to the NAAQS and the EPA Regional Administrator has approved that the data from that monitor may be excluded from comparison to the NAAQS'' is being proposed for appending to the current regulatory language. This change reflects the new process that was finalized in the 2013 PM NAAQS final rule that allows monitoring agencies to request that continuous $PM_{2.5}$ FEM data be excluded from NAAQS comparison based on technical criteria described in 40 CFR 58.11(e) (see 78 FR 3241–3244). If such requests are made by monitoring agencies and subsequently approved by the EPA regional offices as part of the annual monitoring plan process, it follows that the data from these continuous $PM_{2.5}$ FEMs would also not be of sufficient quality to support a request for sampling reduction for a collocated manual $PM_{2.5}$ sampler. The EPA revised the relevant language in one section of 40 CFR 58.12 during the 2013 PM rulemaking but failed to revise a similar phrase in another section of 40 CFR 58.12. Accordingly, the EPA is proposing the change to ensure consistent regulatory language throughout 40 CFR 58.12. Within these editorial changes, we are also proposing the addition of the phrase ''and the EPA Regional Administrator has approved that the data from that monitor may be excluded from comparison to the NAAQS'' to the revisions that were made with the 2013 PM NAAQS. This revision is being proposed to clearly indicate that two distinct actions are necessary for the data from a continuous $PM_{2.5}$ FEM to be considered not comparable to the NAAQS; first, the identification of the relevant monitor(s) in an agency's annual monitoring network plan, and, second, the approval by the EPA Regional Administrator of that request to exclude data. The language used by the EPA in the relevant sections of 40 CFR 58.12 related to the initial request by monitoring agencies but did not specifically address the needed approval by the EPA.

Finally, the EPA is clarifying the applicability of statements in 40 CFR 58.12(d)(1)(ii) and (iii) that reference the relationship of sampling frequency to site design values. Specifically, we are proposing clarifications and revisions affecting the following statements: (1) ''Required SLAMS stations whose measurements determine the design value for their area and that are within ±10 percent of the NAAQS; and all required sites where one or more 24-hour values have exceeded the NAAQS each year for a consecutive period of at least 3 years are required to maintain at least a 1-in-3 day sampling frequency,'' and (2) ''Required SLAMS stations whose measurements determine the 24-hour design value for their area and whose data are within ±5 percent of the level of the 24-hour $PM_{2.5}$ NAAQS must have a Federal Reference Method (FRM) or FEM operate on a daily schedule if that area's design value for the annual NAAQS is less than the level of the annual $PM_{2.5}$ standard.'' Since these provisions were finalized in 2006, there has been some confusion among monitoring agencies and regional offices concerning the applicability of the sampling frequency adjustments since design values are recalculated annually and, in some situations, such revised design values can either fall below the comparative criteria or rise above the criteria. For example, if according to 40 CFR 58.12(d)(1)(iii) a sampler must be on a daily sampling schedule because its design value is within ±5 percent of the 24-hour NAAQS and it meets the other listed criteria, how and when should the sampling frequency be revised if the referenced 24-hour design value falls out of the ±5 percent criteria the following year? In an extreme example, what would happen if the 24-hour design value changed each year to be alternately within the 5 percent criteria and then not within the criteria?

It was not the EPA's intention in the 2006 monitoring revisions to create scenarios in which the required sampling frequencies for individual samplers would be ''chasing'' annual changes in design values. Such a framework would be difficult to implement for both monitoring agencies and regional offices for logistical reasons including the scheduling of operators and the availability of $PM_{2.5}$ filters, and also because of the time lag involved with reporting and certifying data and the validation of revised design values, which typically does not occur until the summer following the completion of each calendar year's sampling. To provide some clarity to this situation as well as to provide a framework where changes in sampling frequency occur on a more consistent and predictable basis, the EPA is proposing that design value-driven sampling frequency changes be maintained for a minimum 3-year period once such a change is triggered. Additionally, such changes in sampling frequency would be required to be implemented no later than January 1 of the year which followed the recalculation and certification of a triggering design value. For example, if a triggering design value that required a change to daily sampling frequency was calculated in the summer of 2014 based on 2011–2013 certified data, then the affected sampler would be required to have an increased sampling frequency no later than January 1, 2015, and would maintain that daily frequency through at least 2017, regardless of changes to the triggering design value in the intervening years.

To accomplish these proposed changes, the EPA is proposing changes in the 40 CFR 58.12 regulatory text to clarify that sampling frequency changes that are triggered by design values must be maintained until the triggering design value site no longer meets the criteria for at least 3 consecutive years. Specifically, these changes include the insertion of the phrase ''until the design value no longer meets these criteria for 3 consecutive years'' into 40 CFR 58.12(d)(1)(ii) and the sentence ''The daily schedule must be maintained until the referenced design values no longer meet these criteria for 3 consecutive years'' into 40 CFR 58.12(d)(1)(iii). The EPA notes that where a design value is based on 3 years of data, 3 consecutive years of design values would require 5 years of data (e.g., 2010–2012, 2011–2013, 2012–2014). New regulatory

[9] *http://vista.cira.colostate.edu/improve/Default.htm.*

language has been proposed in 40 CFR 58.12(d)(1)(iv) to document the timing of when design value-driven changes in sampling frequency must be implemented.

On balance, the EPA believes that the overall impact of proposed changes to the operating schedule requirements will be a modest reduction in the burden for monitoring agencies. We believe that the number of $PM_{2.5}$ FRM and CSN samplers impacted by these proposed changes will be relatively small, but where they occur will provide some logistical relief for sites that are less critical in terms of NAAQS implementation and other key objectives. The EPA solicits comment on all of these proposed changes to 40 CFR 58.12 requirements.

*F. System Modification*

In the 2006 monitoring amendments, the EPA finalized a requirement in 40 CFR 58.14(a) for monitoring agencies to ''develop and implement a plan and schedule to modify the ambient air quality network that complies with the finding of the network assessments required every 5 years by 58.10(e).'' The remainder of the associated regulatory language reads very much like the required procedure for making annual monitoring network plans available for public inspection, comment, and the EPA Regional Administrator's approval as described in 40 CFR 58.10(a)(1) and (2). Since 2006, there has been confusion between the EPA and the monitoring agencies as to whether a separate plan was required to be submitted by 40 CFR 58.14(a) relative to the annual monitoring network plan, with that separate plan devoted specifically to discussing the results of the 5-year network assessment.

A review of the 2006 monitoring proposal and final rule reveals no specific discussion concerning the submission of a distinct plan devoted specifically to the implementation of the 5-year network assessment. While the EPA continues to support the importance of the network assessment requirement,[10] there appears to be no specific benefit to the requirement for a distinct plan to discuss the 5-year network assessments, and the inference of the need for such a plan may be attributable to some redundancy in the aforementioned requirements when the regulatory language was revised in 2006. Monitoring agencies, for example, could include a specific section or attachment to the annual monitoring network plan that fulfilled all the requirements described in 40 CFR 58.14(a) including how each agency would implement the findings of the assessment and the schedule for doing so. By including such information in the annual monitoring network plans, the implied need to develop a separate plan with the attendant burden of public posting, obtaining public comment, and the EPA Regional Administrator's review and approval can be avoided, reducing the burden on all parties.

In terms of timing, these specific sections or attachments referring to the 5-year network assessments could be required either in the year when the assessment is due (e.g., 2015) or in the year following when the assessment is due (e.g., 2016). The submission in the year following the network assessment would allow more time for monitoring agencies to fully consider the results of the 5-year assessment and would also allow the public more time to review and comment on the recommendations.

Accordingly, the EPA is proposing to revise the regulatory language in 40 CFR 58.14(a) to clearly indicate that a separate plan is not needed to account for the findings of the 5-year network assessment, and that the information concerning the implementation of the 5-year assessment, referred to in the proposed regulatory language as a ''network modification plan,'' shall be submitted as part of the annual monitoring network plan that is no later than the year after the network assessment is due.[11] According to the proposed schedule, the annual monitoring network plans that are due in 2016, 2021, etc., would contain the information referencing the network assessments.

The EPA is also proposing to revise an incorrect cross-reference in the current text of 40 CFR 58.14(a) in which the network assessment requirement is noted as being contained in 58.10(e) when the correct cross-reference is 58.10(d).

*G. Annual Air Monitoring Data Certification*

The data certification requirement is intended to provide ambient air quality data users with an indication that all required validation and reporting steps have been completed, and that the certified data sets are now considered final and appropriate for all uses including the calculation of design values and the determination of NAAQS attainment status. The formal certification process currently involves the transmission of a data certification letter to the EPA signed by a senior monitoring agency official that references the list of monitors being certified. The letter is accompanied by required AQS reports that summarize the data being certified and the accompanying QA data that support the validation of the referenced list of monitors. Once the letter and required reports are submitted to the EPA, the data certification requirement has been fulfilled. In practice, the EPA has provided an additional discretionary review of the data certification submissions by monitoring agencies to make sure the submissions are complete and that the EPA agrees that the referenced data are of appropriate quality. When these reviews have been completed, the EPA's review has been documented by the presence of a specific AQS flag for each monitor-year of data that has been certified and reviewed.

The actual breadth of data certification requirements has not materially changed since the original requirements were finalized in 1979 as part of the requirement for monitoring agencies to submit an annual SLAMS summary report (see 44 FR 27573). Data certification requirements were last revised in 2006 when the deadline for certification was changed to May 1 from July 1 for most measurements.

Current requirements include the certification of data collected at all SLAMS and SPMs using FRM, FEM, or ARM methods. In practice, this requirement includes a very wide range of measurements that are not limited to criteria pollutants but also extend to non-criteria pollutant measurements at PAMS stations, meteorological measurements at PAMS and NCore stations, and $PM_{2.5}$ chemical speciation parameters. For monitoring agencies operating these complex stations, this places an additional burden on the data review and validation process in addition to the routine procedures already in place to validate and report data as required by 40 CFR 58.16. For example, current PAMS requirements include the reporting of approximately 54 individual ''target list'' volatile organic compounds per station while many dozens of $PM_{2.5}$ species are reported at CSN stations.

None of these specialized monitoring programs were in place when the data certification requirements were originally promulgated and the large number of measurements being obtained

[10] The next 5-year network assessment will be due no later than July 1, 2015, according to the schedule established by 40 CFR 58.10(d).

[11] Monitoring agencies, at their discretion, could submit the network modification plan in the year that the assessment is due if sufficient feedback had been received. On balance, EPA believes that the extra year following the completion of the network assessment would be valuable to assure a productive outcome from the assessment process.

in typical modern-day monitoring networks has resulted in a burden overload that has threatened the viability of the data certification process. For example, monitoring agencies have struggled with the availability of specific QA checks that can be used to meet the certification requirements for PAMS and CSN data, and the EPA's discretionary review of data certification submissions have become increasingly incomplete or delayed due to the enormous number of monitors being submitted for certification under the current requirements.

The EPA believes that the data certification requirements need to be revised to streamline the associated workload for monitoring agencies as well as the EPA so that the process can be focused on those measurements that have greatest impacts on state programs, namely the criteria pollutants that support the calculation of annual design values and the mandatory designations process. By focusing the data certification process on the NAAQS, the greatest value will be derived from the certification process and both the monitoring agencies and the EPA will be able to devote scarce resources to the most critical of ambient monitoring objectives. The EPA is not implying that the need for thorough data validation processes is unimportant for non-criteria pollutants. However we believe that existing QA plans and standard operating procedures, together with the regulatory language in 40 CFR 58.16(c) to edit and report validated data, is sufficient to assure the quality of non-criteria pollutant measurements being reported to AQS.

Accordingly, the EPA is proposing several changes in the data certification requirements to accomplish a streamlining of this important process. First, to support the focus on certification of criteria pollutant measurements, the EPA is proposing to revise relevant sections of 40 CFR 58.15 to focus the requirement on FRM, FEM, and ARM monitors at SLAMS and at SPM stations rather than at all SLAMS which also include PAMS and CSN measurements that may not utilize federally approved methods. This proposed wording change limits the data certification requirement to criteria pollutants since the EPA approved methods do not exist for non-criteria measurements. Second, the EPA is also proposing that the required AQS reports be submitted to the Regional Administrator rather than through the Regional Administrator to the Administrator as is currently required. From a process standpoint, this proposed change effectively places each EPA regional office in charge of the entire data certification process (including the discretionary review) versus the EPA headquarters where the discretionary reviews have taken place in the past. This delegation of responsibility for the discretionary review will allow this important part of the certification process to be shared among the ten EPA regional offices, and result in a more timely review of certification results and the posting of appropriate certification status flags in AQS. The EPA notes that significant progress has already been made in revising this part of the certification process and that a new AQS report, the AMP 600, has been developed to more efficiently support the sharing of relevant information between certifying agencies and the EPA regional offices.[12]

Additionally, minor editorial changes are being proposed in 40 CFR 58.15 to generalize the title of the official responsible for data certification (senior official versus senior air pollution control officer) and to remove an outdated reference to the former due date for the data certification letter (July 1 versus the current due date of May 1).

*H. Data Submittal and Archiving Requirements*

The requirements described in 40 CFR 58.16 address the specific measurements that must be reported to AQS as well as the relevant schedule for doing so. Required measurements include criteria pollutants in support of NAAQS monitoring objectives as well as public reporting, specific ozone ($O_3$) and $PM_{2.5}$ precursor measurements such as those obtained at PAMS, NCore, and CSN stations, selected meteorological measurements at PAMS and NCore stations, and associated QA data that support the assessment of precision and bias.

In 1997, an additional set of required supplemental measurements was added to 40 CFR 58.16 in support of the newly promulgated FRM for $PM_{2.5}$, described in 40 CFR part 50, appendix L. These measurements included maximum, minimum, and average ambient temperature; maximum, minimum, and average ambient pressure; flow rate coefficient of variation (CV); total sample volume; and elapsed sample time. In the 2006 monitoring amendments, many of these supplemental measurements were removed from the requirements based on the EPA's confidence that the $PM_{2.5}$ FRM was meeting data quality objectives (see 71 FR 2748). At that time, reporting requirements were retained for average daily ambient temperature and average daily ambient pressure, as well as any applicable sampler flags, in addition to $PM_{2.5}$ mass and field blank mass. Given the additional years of data supporting the performance of the $PM_{2.5}$ FRM as well as the near ubiquitous availability of meteorological data available from sources such as the National Weather Service automated surface observing system [13] in addition to air quality networks, the EPA believes that it is no longer necessary to require agencies to report the average daily temperature and average daily pressure from manual $PM_{2.5}$ samplers, thereby providing some modest relief from the associated reporting burden. Accordingly, the EPA is proposing to remove AQS reporting requirements for average daily temperature and average daily pressure as related to $PM_{2.5}$ measurements with the expectation that monitoring agencies will retain such measurements as needed to support data validation needs as well as to fulfill requirements in associated QA project plans and standard operating procedures. The EPA is also proposing to remove similar language referenced elsewhere in 40 CFR 58.16 that pertains to measurements at Pb sites as well as to other average temperature and average pressure measurements recorded by samplers or from nearby airports. For the reasons noted above, the EPA believes that meteorological data are more than adequately available from a number of sources, and that the removal of specific requirements for such data to be reported to AQS represents an opportunity for burden reduction. The EPA notes that the requirement to report specific meteorological data for NCore and PAMS stations remains unchanged.

The EPA is also proposing a change to the data reporting schedule described in 40 CFR 58.16(b) and (d) to provide additional flexibility for reporting $PM_{2.5}$ chemical speciation data measured at CSN stations. Specifically, we are proposing that such data be required to be reported to AQS within 6 months following the end of each quarterly reporting period, as is presently required for certain PAMS measurements such as volatile organic compounds. This change would provide an additional 90 days for $PM_{2.5}$ chemical speciation data to be reported compared with the current requirement of reporting 90 days after the end of each

[12] Note relevant training material available on the AQS TTN Web site: *http://www.epa.gov/ttn/airs/airsaqs/training/2013_Q2_Webinar_Final.pdf.*

[13] See *http://www.nws.noaa.gov/ost/asostech.html.*

quarterly reporting period. This change is being proposed to provide both the EPA and monitoring agencies with potential data reporting flexibility as technological and procedural revisions are considered for the national analytical frameworks that support the CSN network. Given that the primary objectives of the CSN (and IMPROVE) programs are to support long-term needs such as SIP development, modeling, and health studies, the EPA believes that such programs would not be negatively impacted by the revised reporting requirements and that potential contractual efficiencies could be realized by allowing more time for analytical laboratories to complete their QA reviews and report their results to AQS.

*I. Network Design Criteria (Appendix D)*

The EPA is proposing two changes that affect the required suite of measurements in the NCore network. This multi-pollutant network became operational on January 1, 2011, and includes approximately 80 stations that are located in both urban and rural areas.[14]

The EPA is proposing a minor change to section 3 of appendix D to part 58, the design criteria for NCore sites. Specifically, we are proposing to delete the requirement to measure speciated $PM_{10-2.5}$ from the list of measurements in section 3(b). An identical revision was finalized in the text of 40 CFR 58.16(a) in the 2013 p.m. NAAQS final rule (see 78 FR 3244). At that time, we noted the lack of consensus on appropriate sampling and analytical techniques for speciated $PM_{10-2.5}$, and the pending analysis of data from a pilot project that examined these issues. Based on the supportive comments received from monitoring agencies and multi-state organizations, the EPA deleted the requirement for speciated $PM_{10-2.5}$ from 40 CFR 58.16(a). During this process, the EPA inadvertently failed to complete a similar change that was required in the language of section 3 of appendix D. Accordingly we are proposing this change to align the NCore monitoring requirements between the two sections noted above.

The EPA is also proposing to delete the requirement to measure Pb at urban NCore sites, either as Pb in Total Suspended Particles (Pb–TSP) or as Pb–$PM_{10}$. This requirement was finalized as part of the reconsideration of Pb monitoring requirements that occurred in 2010 (see 75 FR 81126). At that time, we noted that monitoring of Pb at such nonsource locations at NCore sites would support the characterization of typical neighborhood-scale Pb concentrations in urban areas to assist with the understanding of the risk posed by Pb to the general population. We also noted that such information could assist with the determination of nonattainment boundaries and support the development of long-term trends.

Since this requirement was finalized in late 2010, nonsource lead data has been measured at 50 urban NCore sites, with the majority of sites having already collected at least 2 years of data. In all cases, valid ambient Pb readings have been low, with maximum 3-month rolling averages typically reading around 0.01 micrograms per cubic meter as compared to the NAAQS level of 0.15 micrograms per cubic meter.[15] We expect the majority of sites to have the 3 years necessary to calculate a design value following the completion of monitoring in 2014. Given the uniformly low readings being measured at these NCore sites, we believe it is appropriate to consider eliminating this requirement. As noted in the associated docket memo, nonsource Pb data will continue to be measured (as Pb–$PM_{10}$) at the 27 National Air Toxics Trends Sites (NATTS) and at hundreds of $PM_{2.5}$ speciation stations that comprise the CSN and IMPROVE networks. The EPA believes that these ongoing networks adequately support the nonsource monitoring objectives articulated in the 2010 Pb monitoring reconsideration.

Accordingly, the EPA is proposing to delete the requirement to monitor for nonsource Pb at NCore sites from appendix D of 40 CFR part 58.[16] Given the requirement to collect a minimum of 3 years of Pb data in order to support the calculation of design values, the EPA proposes that monitoring agencies would be able to request permission to discontinue nonsource monitoring following the collection of at least 3 years of data at each urban NCore site.[17] Affected monitoring agencies should work closely with their respective EPA regional offices to ensure coordination of these changes to the network.

The EPA solicits comments on these proposed changes to Pb monitoring requirements.

## III. Proposed Changes to Quality Assurance Requirements

*A. Quality Assurance Requirements for Monitors Used in Evaluations for National Ambient Air Quality Standards—Appendix A*

1. General Information

The following proposed changes to monitoring requirements impact these subparts of part 58—Ambient Air Quality Surveillance; appendix A—Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring. Changes that affect the overall appendix follow while those specific to the various sections of the appendix will be addressed under a specific section heading. The EPA notes that the entire regulatory text section for appendix A is being reprinted with this proposal since this section is being reorganized for clarity as well as being selectively revised as described in detail below. Likewise, although the EPA is proposing a new appendix B to apply to PSD monitors, much of the content of appendix B is taken directly from the existing requirements for these monitors set forth in appendix A. The EPA is soliciting comment on the specific provisions of appendices A and B that are being proposed for revision. However, there are a number of provisions that are being reprinted in the regulatory text solely for clarity to assist the public in understanding the changes being proposed; the EPA is not soliciting comment on those provisions and considers changes to those provisions to be beyond the scope of this rulemaking.

The QA requirements in appendix A have been developed for measuring the criteria pollutants of $O_3$, $NO_2$, sulfur dioxide ($SO_2$), CO, Pb and PM ($PM_{10}$ and $PM_{2.5}$) and are minimum requirements for monitoring these ambient air pollutants for use in NAAQS attainment demonstrations. To emphasize the objective of this appendix, the EPA proposes to change the title of appendix A to ''Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards,'' and remove the terms SLAMS and SPMs from the title. We do, however, in the applicability paragraph, indicate that any monitor identified as SLAMS must meet the appendix A criteria in order to avoid any confusion about SLAMS monitors measuring criteria pollutants.

[14] See *http://www.epa.gov/ttn/amtic/ncore/index.html* for more information.

[15] See supporting information for reconsideration of existing requirements to monitor for lead at urban NCore site, Kevin Cavender, Docket number EPA–HQ–OAR–2013–0619.

[16] Specific revisions are proposed in 40 CFR part 58, appendix D, section 3(b) and sections 4.5(b) and 4.5(c).

[17] The EPA will review requests for shutdown under the provisions of 40 CFR 58.14. Although EPA anticipates that these nonsource monitors will have design values well below the NAAQS and will be eligible to be discontinued after three years of data have been collected, in the event that a monitor records levels approaching the NAAQS it may not qualify to be discontinued.

Special purpose monitors may in fact be monitoring for a criteria pollutant for other objectives than NAAQS determinations. Therefore, appendix A attempts to clarify in the title and the applicability section that the QA requirements specified in this appendix are for criteria pollutant monitors that are designated, through the part 58 ambient air regulations and monitoring organization annual monitoring network plans, as eligible to be used for NAAQS evaluation purposes. The applicability section also provides a reporting mechanism in AQS to identify any criteria pollutant monitors that are not used for NAAQS evaluations. The criteria pollutants identified for NAAQS exclusion will require review and approval by the EPA regional offices and will increase transparency and efficiencies in the NAAQS designation, data quality evaluation and data certification processes.

The current appendix A regulation has separate sections for automated (continuous) and manual method types. Since there are continuous and manual methods for measuring PM which have different quality control (QC) requirements, monitoring organizations have found it difficult to navigate the current appendix A requirements. The EPA proposes to reformat the document by pollutant rather than by method type. The four gaseous pollutants (CO, $NO_2$, $SO_2$ and $O_3$) will be contained in one section since the QC requirements are very similar, and separate sections will be provided for $PM_{10}$, $PM_{2.5}$, and Pb.

In the 2006 monitoring rule revisions, the PSD QA requirements, which were previously in appendix B, were added to appendix A and appendix B was reserved. The PSD requirements, in most cases, mimicked appendix A in structure but because PSD monitoring is often only for a period of one year, some of the frequencies of implementation of the PSD requirements are higher than the appendix A requirements. In addition, the agencies governing the implementation, assessment and approval of the QA requirements are different for PSD and ambient air monitoring for NAAQS decisions (i.e., the EPA regions for appendix A versus reviewing authorities for PSD). The combined regulations have caused confusion among monitoring organizations and those implementing PSD requirements, and the EPA proposes that the PSD requirements be moved back to a separate appendix B. This change would also provide more flexibility for revision if changes in either appendix are needed. Details of this proposed change will follow in Section III.B.

Finally, the EPA proposes that the appendix A regulation emphasize the use of PQAO and moved the definition and explanation to the beginning of the regulation in order to ensure that the application and use of PQAO in appendix A is clearly understood. The definition for PQAO is not being proposed for change. Since the PQAO can be a consolidation of a number of local monitoring organizations, the EPA proposes to add a sentence clarifying that the agency identified as the PQAO (usually the state agency) will be responsible for overseeing that the appendix A requirements are being met by all consolidated local agencies within the PQAO. Current appendix A regulation requires PQAOs to be approved by the EPA regions during network reviews or audits. The EPA believes this approval can occur at any time and proposes to eliminate the wording that suggests that PQAO approvals can only occur during events like network reviews or audits.

2. Quality System Requirements

The EPA proposes to remove the QA requirements for $PM_{10-2.5}$ (see current sections 3.2.6, 3.2.8, 3.3.6, 3.3.8, 4.3). Appendix A has traditionally been used to describe the QA requirements of the criteria pollutants used in making NAAQS attainment decisions. While the 40 CFR part 58 Ambient Air Monitoring regulation requires monitoring for the CSN, PAMS, and total oxides of Nitrogen ($NO_y$) for NCore, the QA requirements for these networks are found in technical assistance documents and not in appendix A. In 2006, the EPA proposed a $PM_{10-2.5}$ NAAQS along with requisite QA requirements in appendix A. While the $PM_{10-2.5}$ NAAQS was not promulgated, $PM_{10-2.5}$ monitoring was required to be performed at NCore sites and the EPA proposed requisite QA requirements in appendix A. Some of the PM QC requirements, like collocation for precision and the performance evaluation programs for bias, are accomplished on a percentage of monitoring sites within a PQAO. For example, collocated sampling for $PM_{2.5}$ and $PM_{10}$ is required at approximately 15 percent of the monitoring sites within a PQAO. Since virtually every NCore site is the responsibility of a different PQAO, the appendix A requirements for $PM_{10-2.5}$, if implemented at the PQAO level, would have been required to be implemented at almost every NCore site, which would have been expensive and an unintended burden. Therefore, the EPA required the implementation of the $PM_{10-2.5}$ QC requirements at a national level and worked with the EPA regions and monitoring organizations to identify the sites that would implement the requirements. The implementation of the $PM_{10-2.5}$ QC requirements at NCore sites fundamentally changed how QC is implemented in appendix A and has been a cause of confusion with these parties. Since $PM_{10-2.5}$ is not a NAAQS pollutant and the QC requirements cannot be cost-effectively implemented at a PQAO level, the EPA is proposing to eliminate the $PM_{10-2.5}$ requirements including flow rate verifications, semi-annual flow rate audits, collocated sampling procedures, and the $PM_{10-2.5}$ Performance Evaluation Program (PEP). Similar to the technical assistance documents associated for the CSN [18] and PAMS [19] networks, the EPA will develop QA guidance for the $PM_{10-2.5}$ network which will afford more flexibility for implementation and revision of QC activities for $PM_{10-2.5}$.

The EPA proposes that the QA Pb requirements of collocated sampling (see current section 3.3.4.3) and Pb performance evaluation procedures (see current section 3.3.4.4) for non-source NCore sites be eliminated. The 2010 Pb rule in 40 CFR part 58, appendix D, section 4.5(b), added a requirement to conduct non-source oriented Pb monitoring at each NCore site in a core based statistical area (CBSA) with a population of 500,000 or more. This requirement had some monitoring organizations implementing Pb monitoring at only one site, the NCore site. Since the appendix A requirements are focused on PQAOs, the QC requirements would increase at PQAOs who were required to implement Pb monitoring at NCore. Similar to the $PM_{10-2.5}$ QA requirements, the requirement for Pb at NCore sites forced the EPA away from a focus on PQAOs to working with the EPA regions and monitoring organizations for implementation of the Pb Performance Evaluation Program (Pb-PEP) at national levels. Therefore, the EPA is proposing to eliminate the collocation requirement and the Pb-PEP requirements while retaining the requirements for flow rate verifications and flow rate audits which do not require additional monitors or independent sampling and analysis. Similar to the CSN and PAMS programs, the EPA will develop QA guidance for the Pb NCore network which will afford more flexibility for change/revision to accommodate Pb monitoring at non-source NCore sites. Additionally, the

[18] See *http://www.epa.gov/ttn/amtic/specguid.html* for CSN quality assurance project plan.

[19] See *http://www.epa.gov/ttn/amtic/pamsguidance.html* for PAMS technical assistance document.

EPA is proposing to delete the requirement to measure Pb at these specific NCore sites, either as Pb-TSP or as Pb-$PM_{10}$ (see section II.I of this rule). If that proposed change is finalized, it will eliminate the need for any associated QA requirements including collocation, Pb-PEP or any QC requirements for these monitors. If the proposed change to NCore Pb requirements is not finalized, then the EPA will consider the proposed revision to QA requirements as described above on its own merits.

The EPA proposes that quality management plan (QMP) (current section 2.1.1) and quality assurance project plan (QAPP) (current section 2.1.2) submission and approval dates be reported by monitoring organizations and the EPA. This will allow for timely and accurate reporting of this information. Since 2007, the EPA has been tracking the submission and approval of QMPs and QAPPs by polling the EPA regions each year and updating a spreadsheet to the AMTIC Web site. The development of the annual spreadsheet is time consuming on the part of monitoring organizations and the EPA. It is expected that simplified reporting at the monitoring organization and the EPA regional office level to AQS will reduce entry errors and the burden of incorporating this information into annual spreadsheets, and increase transparency of this important quality system documentation. In order to reduce the initial burden of this data entry activity, the EPA has populated AQS with the last set of updated QMP and QAPP data from the annual spreadsheet review cycle. If this portion of the proposal is finalized, monitoring organizations will only need to update AQS as necessary.

In addition, some monitoring organizations have received delegation of authority to approve their QAPP through the monitoring organization's own QA organization. The EPA proposes that if a PQAO or monitoring organization has been delegated authority to review and approve their QAPP, an electronic copy must be submitted to the EPA regional office at the time it is submitted to the PQAO/monitoring organization's QAPP approving authority. Submission of an electronic version to the EPA at the time of completion is not considered an added burden on the monitoring organization because such submission is already a standard practice as part of the review process for technical systems audits.

The EPA proposes to add some clarifying language to the section describing the National Performance Evaluation Program (NPEP) (current section 2.4) explaining self-implementation of the performance evaluation by the monitoring organization. The clarification also adds the definition of independent assessment which is included in the PEP ($PM_{2.5}$-PEP, Pb-PEP and National Performance Audit Program (NPAP)) QAPPs and guidance and is included in the self-implementation memo sent to the monitoring organizations on an annual basis and posted on the AMTIC Web site [20]. The clarification is not a new requirement but provides a better reference for this information in addition to the annual memo sent to the monitoring organizations.

The EPA proposes to add some clarifying language to the technical systems audits (TSA) section (current section 2.4). The current TSA requirements are performed at the monitoring organization level. Since the EPA is revising the language in appendix A to focus on PQAOs instead of monitoring organizations, this may have an effect on those EPA Regions that want to perform TSA on monitoring organizations within a PQAO (a PQAO can be a single monitoring organization or a consolidation of a number of local monitoring organizations). The EPA proposes a TSA frequency of 3 years for each PQAO, but includes language that if a PQAO is made up of a number of monitoring organizations, all monitoring organizations within the PQAO be audited within 6 years. This proposed language maintains the every 3 years TSA requirement as it applies to PQAOs but provides additional flexibility for the EPA regions to audit every monitoring organization within the PQAO every 6 years. This change does not materially affect the burden on monitoring organizations.

The EPA proposes to require monitoring organizations to complete an annual survey for the Ambient Air Protocol Gas Verification Program (AA–PGVP) (current section 2.6.1). Since 2009, the EPA has had a separate information collection request (ICR) requiring monitoring organizations to complete an annual survey of the producers that supply their gas standards (for calibrations and QC) in order to be able to select standards from these producers for verification. The survey generally takes less than 10 minutes to complete. The EPA proposes to add the requirement to appendix A. In addition, the EPA proposes to add language that monitoring organizations participate, at the request of the EPA, in the AA–PGVP by sending a gas standard to one of the verification laboratories every 5 years. Since many monitoring organizations already volunteer to send in cylinders, this proposed new requirement may not materially affect most agencies and will not affect those agencies not using gas standards.

3. Quality Control Checks for Gases

The EPA proposes to lower the audit concentrations (current section 3.2.1) of the one-point QC checks to 0.005 and 0.08 parts per million (ppm) for $SO_2$, $NO_2$, and $O_3$ (currently 0.01 to 0.1 ppm), and to between 0.5 and 5 ppm for CO monitors (currently 1 and 10 ppm). With the development of more sensitive monitoring instruments with lower detection limits, technical improvements in calibrators, and lower ambient air concentrations in general, the EPA feels this revision will better reflect the precision and bias of the data. Since the audit concentrations are selected using the mean or median concentration of typical ambient air concentrations (guidance on this is provided in the QA Handbook [21]), the EPA is proposing to add some clarification to the current language by requiring monitoring organizations to select either the highest or lowest concentration in the ranges identified if their mean or median concentrations are above or below the prescribed range. There is no additional burden to this requirement since the frequency is the same and the audit concentrations are not so low as to make them unachievable to generate or measure.

The EPA proposes to remove reference to zero and span adjustments (current section 3.2.1.1) and revise the one-point QC language to simply require that the QC check be conducted before any calibration or adjustment to the monitor. Recent revisions of the QA Handbook discourage the implementation of frequent span adjustments so the proposed language helps to clarify that no adjustment be made prior to implementation of the one-point QC check.

The EPA proposes to remove the requirement (current section 3.2.2) to implement an annual performance evaluation for one monitor in each calendar quarter when monitoring organizations have less than four monitoring instruments. The minimum requirement for the annual performance evaluation for the primary monitor at a site is one per year. The current regulation requires evaluation of the

[20] See *http://www.epa.gov/ttn/amtic/npepqa.html.*

[21] QA Handbook for Air Pollution Measurement Vol. II, Ambient Air Quality Monitoring Program at: *http://www.epa.gov/ttn/amtic/qalist.html.*

monitors at 25 percent per quarter so that the performance evaluations are performed in all four quarters. There are cases where some monitoring organizations have less than four primary monitors for a gaseous pollutant, and the current language suggests that a monitor already receiving a performance evaluation be re-audited to provide for performance evaluations in all four quarters. This is a burden reduction for monitoring agencies operating smaller networks and does not change the requirement of an annual performance evaluation for each primary monitor.

The current annual performance evaluation language (current section 3.2.2.1) requires that the audits be conducted by selecting three consecutive audit levels (currently five audit levels are provided in appendix A). Due to the implementation of the NCore network, the inception of trace gas monitors, and lower ambient air concentrations being measured under typical circumstances, there is a need for audit levels at lower concentrations to more accurately represent the uncertainties present in much of the ambient data. The EPA proposes to expand the audit levels from five to ten and remove the requirement to audit three consecutive levels. The current regulation also requires that the three audit levels should bracket 80 percent of the ambient air concentrations measured by the analyzer. This current language has caused some confusion and monitoring organizations have requested the use of an audit point to establish monitor accuracy around the NAAQS levels. Therefore, the EPA is proposing to revise the language so that two of the audits levels selected represent 10–80 percent of routinely-collected ambient concentrations either measured by the monitor or in the PQAOs network of monitors. The proposed revision allows the third point to be selected at the NAAQS level (e.g., 75 ppb for $SO_2$) or above the highest 3-year routine hourly concentration, whichever is greater.

The EPA proposes to revise the language (current section 3.2.2.2(a)) addressing the limits on excess nitric oxide (NO) that must be followed during gas phase titration (GPT) procedures involving $NO_2$ audits. The current NO limit (maintaining at least 0.08 ppm) is very restrictive and requires auditors to make numerous mid-audit adjustments during a GPT that result in making the $NO_2$ audit a very time consuming procedure. Monitoring agency staff have advised us that the observance of such excess NO limits has no apparent effect on $NO_2$ calibrations being conducted with modern-day GPT capable calibration equipment and, therefore, that the requirement in the context of performing audits is unnecessary.[22] We also note the increasing availability of the EPA approved direct $NO_2$ methods that do not utilize converters, rendering the use of GPT techniques that require the output of NO and $NO_X$ to be a potentially diminishingly used procedure in the future. Accordingly, we have proposed a more general statement regarding GPT that acknowledges the ongoing usage of monitoring agency procedures and guidance documents that have successfully supported $NO_2$ calibration activities. The EPA believes that if such procedures have been successfully used during calibrations when instrument adjustments are potentially being made, then such procedures are appropriate for audit use when instruments are not subject to adjustment. The EPA solicits comment on this proposed generalization of the GPT requirements, including whether a more specific set of requirements similar to the current excess NO levels can be developed based on operational experience and/or peer reviewed literature.

The EPA proposes to remove language (current section 3.2.2.2(b)) in the annual performance evaluation section that requires regional approval for audit gases for any monitors operating at ranges higher that 1.0 ppm for $O_3$, $SO_2$ and $NO_2$ and greater than 50 ppm for CO. The EPA does not need to approve a monitoring organization's use of audit gases to audit above proposed concentration levels. There should be very few cases where a performance evaluation needs to be performed above level 10, but there may be some legitimate instances (e.g., $SO_2$ audits in areas impacted by volcanic emissions). Since data reported to AQS above the highest level may be flagged or rejected, the EPA proposes that PQAOs notify the EPA regions of sites auditing at concentrations above level 10 so that reporting accommodations can be made.

The EPA proposes to provide additional explanatory language in appendix A to describe the NPAP (current section 2.4). The NPAP has been a long standing program for the ambient air monitoring community. The NPAP is a performance evaluation which is a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument or laboratory. It has been briefly mentioned in section 2.4 of the current appendix A requirements. Since 2007, the EPA has distributed a memo to all monitoring organizations in order to determine whether the monitoring organization plans to self-implement the NPAP program or utilize the federally implemented program. In order to make this decision, the NPAP adequacy and independence requirements are described in the memo. The EPA proposes to include these same requirements in appendix A in a separate section for NPAP. In addition, the memo currently states that 20 percent of the sites would be audited each year and, therefore, all sites would be audited in a 5-year period. Since there is a possibility that monitoring organizations may want some higher priority sites audited more frequently, the EPA is proposing to revise the language to require all sites to be audited within a 6-year period to provide more flexibility and discretion for monitoring agencies. This revision does not change the number of sites audited in any given year, but allows for increased frequency of sites deemed as high priority.

4. Quality Control Checks for Particulate Monitors

The EPA proposes to require that flow rate verifications (current section 3.2.3) be reported to AQS. Particulate matter concentrations (e.g., $PM_{2.5}$, $PM_{10}$, Pb) are reported in mass per unit of volume (e.g., $\mu g/m^3$). Flow rate verifications are implemented at required frequencies in order to ensure that the PM sampler is providing an accurate and repeatable measure of volume which is critical for the determination of concentration. If a given flow rate verification does not meet acceptance criteria, the EPA guidance suggests that data may be invalidated back to the most recent acceptable verification which is why these checks are performed at higher frequencies. Implementation of the flow rate verification is currently a requirement, but the reporting to AQS has only been a requirement for $PM_{10}$ continuous instruments. This is the only QC requirement in appendix A that was not fully required for reporting for all pollutants and has been a cause of confusion. When performing TSAs, the EPA regions review the flow rate verification information. There are cases where it is difficult to find the flow rate verification information to ascertain completeness, data quality and whether corrective actions have been implemented in the case of flow rate verification failures. In addition, the EPA regions have mentioned that some of the monitoring organizations have

[22] See supporting information in Excess NO Issue paper, Mike Papp and Lewis Weinstock, Docket number EPA–HQ–OAR–2013–0619.

been reporting this data to AQS in an effort to increase transparency and reliability in data quality. In a recent review of 2012 data, out of the 1,110 SLAMS $PM_{2.5}$ samplers providing flow rate audit data (which are required to be reported), flow rate verification data was also reported for 543 samplers or about 49 percent for the samplers with flow rate audit data. With the development of a new QA transaction in AQS, we believe that the reporting of flow rate verification data would improve the evaluation of data quality for data certification and at national levels, provide consistent interpretation in the regulation for all PM pollutants without being overly burdensome (approximately 12 per sampler per year).

In addition, the flow rate verification requirements for all the particulate monitors suggest randomization of the implementation of flow rate verifications with respect to time of day, day of the week and routine service and adjustments. Since this is a suggestion, the EPA proposes to remove this language from the regulation and instead include it in QA guidance.

The EPA proposes to add clarifying language to the $PM_{2.5}$ collocation requirements (current section 3.2.5) that a site can only count for the collocation of the method designation of the primary monitor at that site. Precision is estimated at the PQAO level and at 15 percent of the sites for each method designation that is designated as a primary monitor. When developing the collocation requirements, the EPA intended to have the collocated monitors distributed to as many sites as possible in order to capture as much of the temporal and spatial variability in the PQAO. Therefore, since there can be only one primary monitor at a site for any given time period, it was originally intended that the primary monitor and the QA collocated monitor (for the primary) at a monitoring site count as one collocation. There have been some cases where multiple monitoring methods have been placed at a single site to fulfill multiple collocation requirements, which is not the intent of the current requirement. For example, a site (Site A) may have a primary monitor that is designated as a FRM (FRM A). This site may also have a FEM (FEM B) at the site that is not the primary monitor. If this site was selected for collocation, then the QA collocated monitor must be the same method designation as the primary, so the site would be collocated with another FRM A monitor. For primary monitors that are FEMs, the current requirement calls for the first QA collocated monitor of a FEM primary monitor be a FRM monitor. Some monitoring organizations have been using the collocated FRM monitors at Site A to satisfy the collocation requirements for other sites (e.g., Sites B, C, D) that have a FEM (FEM B or other FEM) as the primary monitor rather than placing a QA collocated FRM monitor at Site B (C or D). This was not the intent of the original regulation and the EPA provided additional guidance to monitoring organizations in 2010 [23] on the correct (intended) interpretation. This revision does not change the current regulation and does not increase or decrease burden, but is intended to provide clarity on how the PQAO identifies the number and types of monitors needed to achieve the collocation requirements.

The EPA proposes to provide more flexibility to monitoring organizations when selecting sites for collocation. Appendix A currently (current section 3.2.5.3) requires 80 percent of the collocated monitors be deployed at sites within ±20 percent of the NAAQS and if the monitoring organization does not have sites within that range, then 60 percent of the sites are to be deployed among the highest 25 percent of all sites within the network. Monitoring organizations have found this difficult to achieve. Some monitoring organizations do not have many sites and, at times, due to permission, access and limited space issues, the requirement was not always achievable. Realizing that the collocated monitors provide precision estimates for the PQAO (since only 15 percent of the sites are collocated), while also acknowledging that sites that measure concentrations close to the NAAQS are important, the EPA proposes to require that 50 percent (reduction from 80 percent) of the collocated monitors be deployed at sites within ±20 percent of the NAAQS, and if the monitoring organization does not have sites within that range, then 50 percent of the sites are to be deployed among the highest sites within the network. Although this requirement does not change the number of sites requiring collocation, it does provide the monitoring organizations additional flexibility in its choice of collocated sites.

5. Calculations for Data Quality Assessment

In order to provide reasonable estimates of data quality, the EPA uses data above an established threshold concentration usually related to the detection limits of the measurement. Measurement pairs are selected for use in the precision and bias calculations only when both measurements are above a threshold concentration.

For many years, the threshold concentration for Pb precision and bias data was 0.02 ug/$m^3$. The EPA promulgated a new Pb FRM (see 78 FR 40000) utilizing the Inductively Coupled Plasma Mass Spectrometry (ICP–MS) analysis technique in 2013 as a revision to appendix G of 40 CFR part 50 [24]. This new FRM demonstrated method detection limits (MDLs) [25] below 0.0002 µg/$m^3$, which is well below the EPA requirement of five percent of the current Pb NAAQS level of 0.15 µg/$m^3$ or 0.0075 µg/$m^3$. As a result of the increased sensitivity inherent in this new FRM, the EPA proposes to lower the acceptable Pb concentration (current section 4) from the current value of 0.02 ug/$m^3$ to 0.002 µg/$m^3$ for measurements obtained using the new Pb FRM and other more recently approved equivalent methods that have the requisite increased sensitivity.[26] The current 0.02 ug/$m^3$ value will be retained for the previous Pb FRM that has subsequently been re-designated as Federal Equivalent Method EQLA–0813–803, as well as older equivalent methods that were approved prior to the more recent work on developing more sensitive methods. Since ambient Pb concentrations are lower and methods more sensitive, lowering the threshold concentration will allow much more collocated information to be evaluated which will provide more representative estimates of precision and bias.

The EPA also proposes to remove the total suspended particulate (TSP) threshold concentration for precision and bias since TSP is no longer a NAAQS required pollutant and the EPA no longer has QC requirements for it.

The EPA proposes to remove the statistical check currently described in section 4.1.5 of appendix A. The check was developed to perform a comparison of the one-point QC checks and the annual performance evaluation data performed by the same PQAO. The section suggests that 95 percent of all the bias estimates from the annual performance evaluation (reported as a

[23] QA EYE Issue 9 Page 3 at: *http://www.epa.gov/ttn/amtic/qanews.html.*

[24] See 78 FR 40000, July 3, 2013.

[25] MDL is described as the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero.

[26] FEMS approved on or after March 4, 2010, have the required sensitivity to utilize the 0.002 µg/$m^3$ reporting limit with the exception of manual equivalent method EQLA–0813–803, the previous FRM based on flame atomic absorption spectroscopy.

percent difference) should fall within the 95 percent probability interval developed using the one-point QC checks. The problem with this check is that PQAOs with very good repeatability on the one-point QC check data had a hard time meeting this requirement since the probability interval became very tight, making it more difficult for better performing PQAOs to meet the requirement. Separate statistics to evaluate the one-point QC checks and the performance evaluations are already promulgated, so the removal of this check does not affect data quality assessments.

Similar to the statistical comparison of performance evaluations data, the EPA proposes to remove the statistical check (current section 4.2.4) to compare the flow rate audit data and flow rate verification data. The existing language suggests that 95 percent of all the flow rate audit data results (reported as percent difference) should fall within the 95 percent probability interval developed from the flow rate verification data for the PQAO. The problem, as with the one-point QC check, was that monitoring organizations with very good repeatability on the flow rate verifications had a hard time meeting this requirement since the probability interval became very tight, making it difficult for better performing PQAOs to meet the requirement. Separate statistics to evaluate the flow rate verifications and flow rate audits are already promulgated, so the removal of this check does not affect data quality assessments.

*B. Quality Assurance Requirements for Monitors Used in Evaluations of Prevention of Significant Deterioration Projects-Appendix B*

1. General Information

The following proposed changes to monitoring requirements impact these subparts of part 58—Ambient Air Quality Surveillance; appendix B—Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring. Changes that affect the overall appendix follow while those specific to the various sections of the appendix will be addressed under specific section headings. Since the PSD QA have been included in appendix A since 2006, section headings refer to the current appendix A sections.

The quality assurance requirements in appendix B have been developed for measuring the criteria pollutants of $O_3$, $NO_2$, $SO_2$, CO, $PM_{2.5}$, $PM_{10}$ and Pb and are minimum QA requirements for the control and assessment of the quality of the PSD ambient air monitoring data submitted to the PSD reviewing authority [27] or the EPA by an organization operating a network of PSD stations.

In the 2006 monitoring rule revisions, the PSD QA requirements, which were previously in appendix B, were consolidated with appendix A and appendix B was held in reserve. The PSD requirements, in most cases, parallel appendix A in structure and content but because PSD monitoring is only required for a period of one year or less, some of the frequencies of implementation of the QC requirements for PSD are higher than the corresponding appendix A requirements. In addition, the agencies governing the implementation, assessment and approval of the QA requirements are different; the reviewing authorities for PSD monitoring and the EPA regions for ambient air monitoring for NAAQS decisions. The combined regulations have caused confusion or misinterpretations of the regulations among the public and monitoring organizations implementing NAAQS or PSD requirements, and have resulted in failure, in some cases, to perform the necessary QC requirements. Accordingly, the EPA proposes that the PSD QA requirements be removed from appendix A and returned to appendix B which is currently reserved. Separating the two sets of QA requirements would clearly distinguish the PSD QA requirements and allow more flexibility for future revisions to either monitoring program.

With this proposed rule, the EPA would not change most of the QC requirements for PSD. Therefore, the discussion that follows will cover those sections of the PSD requirements that the EPA proposes to change from the current appendix A requirements.

The applicability section of appendix B clarifies that the PSD QA requirements are not assumed to be minimum requirements for data used in NAAQS decisions. One reason for this distinction is in the flexibility allowed in PSD monitoring for the NPEP (current appendix A section 2.4). The proposed PSD requirements allow the PSD reviewing authority to decide whether implementation of the NPEP will be performed. The NPEP, which is described in appendix A, includes the NPAP, $PM_{2.5}$ Performance Evaluation Program ($PM_{2.5}$-PEP), and the Pb-PEP. Accordingly, under the proposed rule, if a PSD reviewing authority were to have the intent of using PSD data for any official comparison to the NAAQS beyond the permitting application, such as for attainment/nonattainment designations or clean data determinations, then all requirements in appendix B including implementation of the NPEP would apply. In this case, monitoring would more closely conform to the appendix A requirements. The EPA proposes this flexibility for PSD because the NPEP requires either federal implementation or implementation by a qualified individual, group or organization that is not part of the organization directly performing and accountable for the work being assessed. The NPEP may require specialized equipment, certified auditors and a number of activities which are enumerated in the sections associated with these programs. Arranging this type of support service may be more difficult for the operator of a single or small number of PSD monitoring stations operating for only a year or less.

The EPA cannot accept funding from private contractors or industry, and federal implementation of the NPEP for PSD would face several funding and logistical hurdles. This creates an inequity in the NPEP implementation options available to the PSD monitoring organizations compared to the state/local/tribal monitoring organization monitoring for NAAQS compliance. The EPA has had success in training and certifying private contractors in various categories of performance evaluations conducted under NPEP, but many have not made the necessary investments in capital equipment to implement all categories of the performance evaluations. Since the monitoring objectives for the collection of data for PSD are not necessarily the same as those for NAAQS evaluations, the EPA proposes to allow the PSD reviewing authority to determine whether a PSD monitoring project must implement the NPEP.

The EPA proposes to clarify the definition of PSD PQAO. The PQAO was first defined in appendix A in 2006 (current appendix A section 3.1.1) when the PSD requirements were combined with appendix A. The definition is not substantially changed for PSD, but the EPA proposes to clarify that a PSD PQAO can only be associated with one PSD reviewing authority. Distinguishing among the PSD PQAOs that coordinate with a PSD reviewing authority would be consistent with discrete jurisdictions for PSD permitting, and it would simplify oversight of the QA requirements for each PSD network.

[27] Permitting authority and reviewing authority are often used synonymously in PSD permitting. Since reviewing authority has been defined in 40 CFR 51.166(b), it is used throughout appendix B.

Given that companies may apply for PSD permits throughout the United States, it is expected that some PSD monitoring organizations will work with multiple reviewing authorities. The PSD PQAO code which may appear in the AQS data base and other records defines the PSD monitoring organization or a coordinated aggregation of such organizations that is responsible for a set of stations within one PSD reviewing authority that monitors the same pollutant and for which data quality assessments will be pooled. The PSD monitoring organizations that work with multiple PSD reviewing authorities would have individual PSD PQAO codes for each PSD reviewing authority. This approach will allow for the flexibility to develop appropriate quality systems for each PSD reviewing authority.

The EPA proposes to add definitions of ''PSD monitoring organization'' and ''PSD monitoring network'' to 40 CFR 58.1. The definitions have been developed to improve understanding of the appendix B regulations.

Since the EPA uses the term ''monitoring organization'' quite frequently in the NAAQS associated ambient air regulations, the EPA wants to provide a better definition of the term in the PSD QA requirements. Therefore, the EPA proposes the term ''PSD monitoring organization'' to identify ''a source owner/operator, a government agency, or its contractor that operates an ambient air pollution monitoring network for PSD purposes.''

The EPA also proposes to define ''PSD monitoring network'' in order to distinguish ''a set of monitors that provide concentration information for a specific PSD permit.'' The EPA will place both definitions in 40 CFR 58.1.

2. Quality System Requirements

The EPA proposes to remove the $PM_{10-2.5}$ requirements for flow rate verifications, semi-annual flow rate audits, collocated sampling procedures and $PM_{10-2.5}$ Performance Evaluation Program from appendix B (current appendix A sections 3.2.6, 3.2.8, 3.3.6, 3.3.8, 4.3). In 2006, the EPA proposed a $PM_{10-2.5}$ NAAQS along with requisite QA requirements in appendix A. While the $PM_{10-2.5}$ NAAQS was not promulgated, $PM_{10-2.5}$ monitoring was required to be performed at NCore sites and the EPA proposed requisite QA requirements in appendix A. Since PSD monitoring is distinct from monitoring at NCore sites and $PM_{10-2.5}$ is not a criteria pollutant, it will be removed from the PSD QA requirements.

The EPA proposes that the Pb QA requirements of collocated sampling (current appendix A section 3.3.4.3) and Pb performance evaluation procedures (current appendix A section 3.3.4.4) for non-source oriented NCore sites be eliminated for PSD. The 2010 Pb rule in 40 CFR part 58, appendix D, section 4.5(b), added a requirement to conduct non-source oriented Pb monitoring at each NCore site in a CBSA with a population of 500,000 or more. Since PSD does not implement NCore sites, the EPA proposes to eliminate the Pb QA language specific to non-source NCore sites from PSD while retaining the PSD QA requirements for routine Pb monitoring.

The EPA proposes that elements of QMPs and QAPPs which are separate documents and are described in appendix A, sections 2.1.1 and 2.1.2, can be combined into a single document for PSD monitoring networks. The QMP provides a ''blueprint'' of a PSD monitoring organization's quality system. It includes quality policies and describes how the organization as a whole manages and implements its quality system regardless of what monitoring is being performed. The QAPP includes details for implementing a specific PSD monitoring activity. For PSD monitoring, the EPA believes the project-specific QAPP takes priority but there are important aspects of the QMP that could be incorporated into the QAPP. The current appendix A requirements allow smaller organizations or organizations that do infrequent work with EPA to combine the QMP with the QAPP based on negotiations with the funding agency and provided guidance [28] on a graded approach to developing these documents. In the case of PSD QMPs and QAPPs, the EPA proposes that the PSD reviewing authority, which has the approval authority for these documents, also have the flexibility for allowing the PSD PQAO to combine pertinent elements of the QMP into the QAPP rather than requiring the submission of both QMP and QAPP documents separately.

The EPA proposes to add language to the appendix B version of the data quality objectives (DQO) section (current appendix A section 2.3.1) which allows flexibility for the PSD reviewing authority and the PSD monitoring organization to determine if adherence to the DQOs specified in appendix A, which are the DQO goals for NAAQS decisions, are appropriate or whether project-specific goals are necessary. Allowing the PSD reviewing authority and the PSD monitoring organization flexibility to change the DQOs does not change the implementation requirements for the types and frequency of the QC checks in appendix B, but does give some flexibility in the acceptance of data for use in specific projects for which the PSD data are collected. As an example, the goal for acceptable measurement uncertainty for the collection of $O_3$ data for NAAQS determinations is defined for precision as an upper 90 percent confidence limit for CV of seven percent and for bias as an upper 95 percent confidence limit for the absolute bias of seven percent. The precision and bias estimates are made with 3 years of one-point QC check data. A single or a few one-point QC checks over seven percent would not have a significant effect on meeting the DQO goal. The PSD monitoring DQO, depending on the objectives of the PSD monitoring network, may require a stricter DQO goal or one less restrictive. Since PSD monitoring covers a period of 1 year or less, one-point QC checks over seven percent will increase the likelihood of failing to meet the DQO goal since there would be fewer QC checks available in the monitoring period to estimate precision and bias. With fewer checks, any individual check will statistically have more influence over the precision or bias estimate. Realizing that PSD monitoring may have different monitoring objectives, the EPA proposes to add language that would allow decisions on data quality objectives to be determined through consultation between the appropriate PSD reviewing authority and PSD monitoring organization.

The EPA proposes to add some clarifying language to the section describing the NPEP (current appendix A section 2.4) to explain self-implementation of the performance evaluation by the PSD monitoring organization. Self-implementation of NPEP has always been an option for monitoring organizations but the requirements for self-implementation were described in the technical implementation documents (i.e., implementation plans and QAPPs) for the program and in an annual self-implementation decision memo that is distributed to monitoring organizations.[29] These major requirements for self-implementation are proposed to be included in the appendix B sections pertaining to the NPEP program (NPAP, $PM_{2.5}$-PEP and Pb-PEP).

The NPEP clarification also adds a definition of ''independent assessment.''

[28] Graded approach to Tribal QAPP and QMPs *http://www.epa.gov/ttn/amtic/cpreldoc.html.*

[29] *http://www.epa.gov/ttn/amtic/npepqa.html.*

The proposed definition is derived from the NPEP (NPAP, $PM_{2.5}$-PEP, and Pb-PEP) QAPPs and guidance; it also appears in the annual self-implementation memo described above. The clarification is not a new requirement but consolidates this information.

The EPA proposes to require PSD PQAOs to provide information to the PSD reviewing authority on the vendors of gas standards that they use (or will use) for the duration of the PSD monitoring project. A QAPP or monitoring plan may incorporate this information; however, that document must then be updated if there is a change in the vendor used. The current regulation (current appendix A section 2.6.1) requires any gas vendor advertising and distributing ''EPA Protocol Gas'' to participate in the AA–PGVP. The EPA posts a list of these vendors on the AMTIC Web site.[30] This is not expected to be a burden since information of this type is normally included in a QAPP or standard operating procedure for a monitoring activity.

3. Quality Control Checks for Gases

The EPA proposes to lower the audit concentrations (current appendix A section 3.2.1) of the one-point QC checks to 0.005 and 0.08 ppm for $SO_2$, $NO_2$, and $O_3$ (currently 0.01 to 0.1 ppm), and to between 0.5 and 5 ppm for CO monitors (currently 1 and 10 ppm). With the development of more sensitive monitoring instruments with lower detection limits, technical improvements in calibrators, and lower ambient air concentrations in general, the EPA believes this revision will better reflect the precision and bias of the routinely-collected ambient air data. Since the audit concentrations are selected using the mean or median concentration of typical ambient air data (guidance on this is provided in the QA Handbook [31]), the EPA is proposing to add some clarification to the current language by requiring PSD monitoring organizations to select either the highest or lowest concentration in the ranges identified if the mean or median values of the routinely-collected concentrations are above or below the prescribed range. There is no additional burden added by this requirement since the frequency is the same and the audit concentrations are not so low as to make them unachievable to generate or measure.

The EPA proposes to remove the existing reference to zero and span adjustments (current appendix A, section 3.2.1.1) and to revise the one-point QC language to simply require that the QC check be conducted before making any calibration or adjustment to the monitor. Recent revisions of the QA Handbook discourage the practice of making frequent span adjustments so the proposed language helps to clarify that no adjustment be made prior to implementation of the one-point QC check.

The current annual performance evaluation language (current appendix A, section 3.2.2.1) requires that the audits be conducted by selecting three consecutive audit levels (currently appendix A recognizes five audit levels). Due to the implementation of the NCore network, the inception of trace gas monitors, and lower ambient air concentrations being measured under typical circumstances, there is a need for audit levels at lower concentrations to more accurately represent the uncertainties present in the ambient air data. The EPA proposes to expand the audit levels from five to ten and remove the requirement to audit three consecutive levels. The current regulation also requires that the three audit levels should bracket 80 percent of the ambient air concentrations measured by the analyzer. This current ''bracketing language'' has caused some confusion and monitoring organizations have requested the use of an audit point to establish monitor accuracy around the NAAQS levels. Therefore, the EPA is proposing to revise the language so that two of the audit levels selected represent 10 to 80 percent of routinely-collected ambient concentrations either measured by the monitor or in the PSD PQAOs network of monitors. The proposed revision allows the third point to be selected at a concentration that is consistent with PSD-specific DQOs (e.g., the 75 ppb NAAQS level for $SO_2$).

The EPA proposes to revise the language (current appendix A, section 3.2.2.2(a)) addressing the limits on excess NO that must be followed during GPT procedures involving $NO_2$ audits. The current NO limit (maintaining at least 0.08 ppm) is very restrictive and requires auditors to make numerous mid-audit adjustments during a GPT that result in making the $NO_2$ audit a very time consuming procedure. Monitoring agency staff have advised us that the observance of such excess NO limits has no apparent effect on $NO_2$ calibrations being conducted with modern-day GPT-capable calibration equipment and, therefore, that the requirements in the context of performing audits is unnecessary.[32] We also note the increasing availability of the EPA-approved direct $NO_2$ methods that do not utilize converters, rendering the use of GPT techniques that require the output of NO and $NO_X$ to be a potentially diminishingly used procedure in the future. Accordingly, we have proposed a more general statement regarding GPT that acknowledges the ongoing usage of monitoring agency procedures and guidance documents that have successfully supported $NO_2$ calibration activities. The EPA believes that if such procedures have been successfully used during calibrations when instrument adjustments are potentially being made, than such procedures are appropriate for audit use when instruments are not subject to adjustment. The EPA solicits comment on this proposed generalization of the GPT requirements, including whether a more specific set of requirements similar to the current excess NO levels can be developed based on operational experience and/or peer reviewed literature.

The EPA proposes to remove language (current appendix A section 3.2.2.2(b)) in the annual performance evaluation section that requires regional approval for audit gases for any monitors operating at ranges higher that 1.0 ppm for $O_3$, $SO_2$ and $NO_2$ and greater than 50 ppm for CO. The EPA does not need to approve a monitoring organization's use of audit gases to audit above proposed concentration levels since the EPA has identified the requirements for all audit gases used in the program in current appendix A, section 2.6.1. There should be very few cases where a performance evaluation needs to be performed above level 10 but there may be some legitimate instances (e.g., an $SO_2$ audit in areas impacted by volcanic emissions). Since data reported to AQS above the highest level may be rejected (if PSD PE data are reported to AQS), the EPA proposes that PQAOs notify the PSD reviewing authority of sites auditing at concentrations above level 10 so that reporting accommodations can be made.

The EPA proposes to describe the NPAP (current appendix A, section 2.4) in more detail. The NPAP is a long-standing program for the ambient air monitoring community. The NPAP is a performance evaluation which is a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument or laboratory.

[30] *http://www.epa.gov/ttn/amtic/aapgvp.html.*

[31] QA Handbook for Air Pollution Measurement Vol. II Ambient Air Quality Monitoring Program at: *http://www.epa.gov/ttn/amtic/qalist.html.*

[32] See supporting information in Excess NO Issue paper, Mike Papp and Lewis Weinstock, Docket number EPA–HQ–OAR–2013–0619.

This program has been briefly mentioned in section 2.4 of the current appendix A requirements. In appendix A, the EPA is proposing to add language consistent with an annual decision memorandum [33] distributed to all state and local monitoring organizations in order to determine whether the monitoring organization plans to self-implement the NPAP program or utilize the federally implemented program. In order to make this decision, the NPAP adequacy and independence requirements are described in the decision memorandum. The EPA proposes to include these same requirements in appendix B in a separate section for NPAP. As described in the applicability section, the implementation of NPAP is at the discretion of the PSD reviewing authority but must be implemented if data are used in any NAAQS determinations. Since PSD monitoring is implemented at shorter intervals (usually a year) and with fewer monitors, if NPAP is performed, it is required to be performed annually on each monitor operated in the PSD network.

4. Quality Control Checks for Particulate Monitors

The EPA proposes to have one flow rate verification frequency requirement for all PM PSD monitors. The current regulations (current appendix A, table A–2) provides for monthly flow rate verifications for most samplers used to monitor $PM_{2.5}$, $PM_{10}$ and Pb and quarterly flow rate verifications for high-volume $PM_{10}$ or TSP samplers (for Pb). With longer duration NAAQS monitoring, the quarterly verification frequencies are adequate for these high-volume $PM_{10}$ or TSP samplers. However, with the short duration of PSD monitoring, the EPA believes that monthly flow rate verifications are more appropriate to ensure that any sampler flow rate problems are identified more quickly and to reduce the potential for a significant amount of data invalidation that could extend monitoring activities.

The EPA proposes to grant more flexibility to PSD monitoring organizations when selecting $PM_{2.5}$ method designations for sites that require collocation. Appendix A currently (current appendix A, section 3.2.5.2(b)) requires that if a primary monitor is a FEM, then the first QC collocated monitor must be a FRM monitor. Most of the FEM monitors are continuous monitors while the FRM monitors are filter-based. Continuous monitors (which are all FEMs) may be advantageous for use at the more remote PSD monitoring locations, since the site operator would not need to visit a site as often to retrieve filters (current FRMs are filter-based). The current collocation requirements for FEMs require a filter-based FRM for collocation which would mean a visit to retrieve the FRM filters at least one week after the QC collocated monitor operated. Therefore, the EPA proposes that the FRM be selected as the QC collocated monitor unless the PSD PQAO submits a waiver request to allow for collocation with a FEM to the PSD reviewing authority. If the request for a waiver is approved, then the QC monitor must be the same method designation as the primary FEM monitor.

The EPA proposes to allow the PSD reviewing authority to waive the $PM_{2.5}$ 3 $\mu g/m^3$ concentration validity threshold for implementation of the $PM_{2.5}$-PEP in the last quarter of PSD monitoring. The $PM_{2.5}$-PEP (current appendix A section 3.2.7) requires five valid $PM_{2.5}$-PEP audits per year for $PM_{2.5}$ monitoring networks with less than or equal to five sites and eight valid $PM_{2.5}$-PEP audits per year with $PM_{2.5}$ monitoring networks greater than five sites. Any PEP sample collected with a concentration less than 3 $\mu g/m^3$ are not considered valid, since they cannot be used for bias estimates, and re-sampling is required at a later date. With NAAQS related monitoring, which aggregates the $PM_{2.5}$-PEP data over a 3-year period, re-sampling is easily accomplished. Due to the relatively short-term nature of most PSD monitoring, the likelihood of measuring low concentrations in many areas attaining the $PM_{2.5}$ standard and the time required to weigh filters collected in performance evaluations, a PSD monitoring organization's QAPP may contain a provision to waive the 3 $\mu g/m^3$ threshold for validity of performance evaluations conducted in the last quarter of monitoring, subject to approval by the PSD reviewing authority.

5. Calculations for Data Quality Assessment

In order to allow reasonable estimates of data quality, the EPA uses data above an established threshold concentration usually related to the detection limits of the measurement method. Measurement pairs are selected for use in the precision and bias calculations only when both measurements are above a threshold concentration.

For many years, the threshold concentration for Pb precision and bias data has been 0.02 $ug/m^3$. The EPA promulgated a new Pb FRM utilizing the ICP–MS analysis technique in 2013 as a revision to appendix G of 40 CFR part 50.[34] This new FRM demonstrated MDLs [35] below 0.0002 $\mu g/m^3$ which is well below the EPA requirement of five percent of the current Pb NAAQS level of 0.15 $\mu g/m^3$ or 0.0075 $\mu g/m^3$. As a result of the increased sensitivity inherent in this new FRM, the EPA proposes to lower the acceptable Pb concentration (current section 4) from the current value of 0.02 $ug/m^3$ to 0.002 $\mu g/m^3$ for measurements obtained using the new Pb FRM and other more recently approved equivalent methods that have the requisite increased sensitivity.[36] The current 0.02 $ug/m^3$ value will be retained for the previous Pb FRM that has subsequently been redesignated as Federal Equivalent Method EQLA–0813–803 as well as older equivalent methods that were approved prior to the more recent work on developing more sensitive methods. Since ambient Pb concentrations are lower and methods more sensitive, lowering the threshold concentration will allow much more collocated information to be evaluated, which will provide more representative estimates of precision and bias.

The EPA also proposes to remove the TSP threshold concentration since TSP is no longer an ambient indicator of PM NAAQS required pollutant and the EPA no longer applies QC requirements for it.

The EPA proposes to remove the statistical check currently described in section 4.1.5 of appendix A. The check was developed to perform a comparison of the one-point QC checks and the annual performance evaluation data performed by the same PQAO. The section suggests that 95 percent of all the bias estimates of the annual performance evaluations (reported as a percent difference) should fall within the 95 percent probability interval developed using the one-point QC checks. The problem with this check is that PQAOs with very good repeatability on the one-point QC check data had a hard time meeting this requirement since the probability interval became very tight, making it more difficult for better performing PQAOs to meet the requirement. Separate statistics to

[33] *http://www.epa.gov/ttn/amtic/files/ambient/pm25/qa/npappep2014.pdf.*

[34] See 78 FR 40000, July 3, 2013.

[35] MDL is described as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.

[36] FEMs approved on or after March 4, 2010, have the required sensitivity to utilize the 0.002 $\mu g/m^3$ reporting limit with the exception of manual equivalent method EQLA–0813–803, the previous FRM based on flame atomic absorption spectroscopy.

evaluate the one-point QC checks and the performance evaluations are already promulgated, so the removal of this check does not affect data quality assessments.

Similar to the statistical comparison of performance evaluation data, the EPA proposes to remove the statistical check (current appendix A, section 4.2.4) to compare the flow rate audit data and flow rate verification data. The existing language suggests that 95 percent of all the flow rate audit data (reported as percent difference) should fall within the 95 percent probability interval developed from the flow rate verification data for the PQAO. The problem, as with the one-point QC check, was that monitoring organizations with very good repeatability on the flow rate verifications had a hard time meeting this requirement since the probability interval became very tight, making it difficult for better performing PQAOs to meet the requirement. Separate statistics to evaluate the flow rate verifications and flow rate audits are already promulgated so the removal of this check does not affect data quality assessments.

The EPA proposes to remove the reporting requirements that are currently in section 5 of appendix A because they do not pertain to PSD monitoring (current sections 5.1, 5.1.1 and 5.1.2.1). Since PSD organizations are not required to certify their data to the EPA nor report to AQS, the EPA will remove language related to these requirements and language that required the EPA to calculate and report the measurement uncertainty for the entire calendar year. The EPA will retain the quarterly PSD reporting requirements (current section 5.2 in appendix A) and require that those requirements be consistent with Part 58.16 as it pertains to PSD ambient air quality data and QC data, as described in appendix B.

## IV. Statutory and Executive Order Reviews

### *A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review*

This action is not a ''significant regulatory action'' under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) and is therefore not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011).

### *B. Paperwork Reduction Act*

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq*. Burden is defined at 5 CFR 1320.3(b). While the EPA believes that the net effect of the proposed changes to requirements is a net decrease in burden, the current information collection request calculation tools are not sufficiently detailed to show a material change in burden compared with the existing requirements.

### *C. Regulatory Flexibility Act*

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of this rule on small entities, small entity is defined as (1) a small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This proposed rule will neither impose emission measurement requirements beyond those specified in the current regulations, nor will it change any emission standard. As such, it will not present a significant economic impact on small entities.

### *D. Unfunded Mandates Reform Act*

This action contains no federal mandates under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538 for state, local, or tribal governments or the private sector. This action imposes no enforceable duty on any state, local or tribal governments or the private sector. Therefore, this action is not subject to the requirements of sections 202 or 205 of the UMRA. This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

### *E. Executive Order 13132: Federalism*

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This action proposes minor changes to existing monitoring requirements and will not materially impact the time required to operate monitoring networks. Thus, Executive Order 13132 does not apply to this action. In the spirit of Executive Order 13132, and consistent with the EPA policy to promote communications between the EPA and state and local governments, the EPA specifically solicits comment on this proposed rule from state and local officials.

### *F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). This proposed rule imposes no requirements on tribal governments. This action proposes minor changes to existing monitoring requirements and will not materially impact the time required to operate monitoring networks. Thus, Executive Order 13175 does not apply to this action. In the spirit of Executive order 13175, the EPA specifically solicits additional comment on this proposed action from tribal officials.

### *G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

The EPA interprets E.O. 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5–501 of the E.O. has the potential to influence the regulation. This action is not subject to E.O. 13045 because it does not establish an environmental standard intended to mitigate health or safety risks.

### *H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*

This action is not a ''significant energy action'' as defined in Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not likely to have a significant adverse effect on the

supply, distribution, or use of energy. This action proposes minor changes to existing monitoring requirements.

*I. National Technology Transfer and Advancement Act*

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law No. 104–113 (15 U.S.C. 272 note) directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs the EPA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards. This proposed rulemaking does not involve technical standards. Therefore this action is not subject to the NTTAA.

*J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

Executive Order (E.O.) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

The EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment.

**List of Subjects in 40 CFR Part 58**

Environmental protection, Administrative practice and procedure, Air pollution control, Intergovernmental relations.

Dated: August 13, 2014.

**Gina McCarthy,**

*Administrator.*

For the reasons stated in the preamble, the Environmental Protection Agency proposes to amend title 40, chapter 1 of the Code of Federal Regulations as follows:

## PART 58—AMBIENT AIR QUALITY SURVEILLANCE

■ 1. The authority citation for part 58 continues to read as follows:

**Authority:** 42 U.S.C. 7403, 7405, 7410, 7414, 7601, 7611, 7614, and 7619.

■ 2. Revise § 58.1 to read as follows:

### § 58.1 Definitions.

As used in this part, all terms not defined herein have the meaning given them in the Clean Air Act.

*AADT* means the annual average daily traffic.

*Act* means the Clean Air Act as amended (42 U.S.C. 7401, *et seq.*)

*Additive and multiplicative bias* means the linear regression intercept and slope of a linear plot fitted to corresponding candidate and reference method mean measurement data pairs.

*Administrator* means the Administrator of the Environmental Protection Agency (EPA) or his or her authorized representative.

*Air Quality System (AQS)* means the EPA's computerized system for storing and reporting of information relating to ambient air quality data.

*Approved regional method (ARM)* means a continuous $PM_{2.5}$ method that has been approved specifically within a state or local air monitoring network for purposes of comparison to the NAAQS and to meet other monitoring objectives.

*AQCR* means air quality control region.

*Area-wide* means all monitors sited at neighborhood, urban, and regional scales, as well as those monitors sited at either micro- or middle-scale that are representative of many such locations in the same CBSA.

*Certifying agency* means a state, local, or tribal agency responsible for meeting the data certification requirements in accordance with § 58.15 of this part for a unique set of monitors.

*Chemical Speciation Network (CSN)* includes Speciation Trends Network stations (STN) as specified in paragraph 4.7.4 of appendix D of this part and supplemental speciation stations that provide chemical species data of fine particulate.

*CO* means carbon monoxide.

*Combined statistical area (CSA)* is defined by the U.S. Office of Management and Budget as a geographical area consisting of two or more adjacent Core Based Statistical Areas (CBSA) with employment interchange of at least 15 percent. Combination is automatic if the employment interchange is 25 percent and determined by local opinion if more than 15 but less than 25 percent.

*Core-based statistical area (CBSA)* is defined by the U.S. Office of Management and Budget, as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. Metropolitan Statistical Areas (MSAs) and micropolitan statistical areas are the two categories of CBSA (metropolitan areas have populations greater than 50,000; and micropolitan areas have populations between 10,000 and 50,000). In the case of very large cities where two or more CBSAs are combined, these larger areas are referred to as combined statistical areas (CSAs)

*Corrected concentration* pertains to the result of an accuracy or precision assessment test of an open path analyzer in which a high-concentration test or audit standard gas contained in a short test cell is inserted into the optical measurement beam of the instrument. When the pollutant concentration measured by the analyzer in such a test includes both the pollutant concentration in the test cell and the concentration in the atmosphere, the atmospheric pollutant concentration must be subtracted from the test measurement to obtain the corrected concentration test result. The corrected concentration is equal to the measured concentration minus the average of the atmospheric pollutant concentrations measured (without the test cell) immediately before and immediately after the test.

*Design value* means the calculated concentration according to the applicable appendix of part 50 of this chapter for the highest site in an attainment or nonattainment area.

*EDO* means environmental data operations.

*Effective concentration* pertains to testing an open path analyzer with a high-concentration calibration or audit standard gas contained in a short test cell inserted into the optical measurement beam of the instrument. Effective concentration is the equivalent ambient-level concentration that would produce the same spectral absorbance over the actual atmospheric monitoring path length as produced by the high-concentration gas in the short test cell. Quantitatively, effective concentration is equal to the actual concentration of the gas standard in the test cell multiplied by the ratio of the path length of the test cell to the actual atmospheric monitoring path length.

*Federal equivalent method (FEM)* means a method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with part 53; it does not include a method for which an equivalent method designation has been canceled in accordance with § 53.11 or § 53.16.

*Federal reference method (FRM)* means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to part 50 of this chapter, or a method that has been designated as a reference method in accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with § 53.11 or § 5316.

*$HNO_3$* means nitric acid.

*Implementation Plan* means an implementation plan approved or promulgated by the EPA pursuant to section 110 of the Act.

*Local agency* means any local government agency, other than the state agency, which is charged by a state with the responsibility for carrying out a portion of the annual monitoring network plan required by § 58.10.

*Meteorological measurements* means measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation that occur at stations including NCore and PAMS.

*Metropolitan Statistical Area (MSA)* means a CBSA associated with at least one urbanized area of 50,000 population or greater. The central county, plus adjacent counties with a high degree of integration, comprise the area.

*Monitor* means an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of appendix C to this part.

*Monitoring agency* means a state, local or Tribal agency responsible for meeting the requirements of this part.

*Monitoring organization* means a monitoring agency or other monitoring organization responsible for operating a monitoring site for which the quality assurance regulations apply.

*Monitoring path* for an open path analyzer means the actual path in space between two geographical locations over which the pollutant concentration is measured and averaged.

*Monitoring path length* of an open path analyzer means the length of the monitoring path in the atmosphere over which the average pollutant concentration measurement (path-averaged concentration) is determined. See also, *optical measurement path length*.

*Monitoring planning area (MPA)* means a contiguous geographic area with established, well-defined boundaries, such as a CBSA, county or state, having a common area that is used for planning monitoring locations for $PM_{2.5}$. A MPA may cross state boundaries, such as the Philadelphia PA–NJ MSA, and be further subdivided into community monitoring zones. The MPAs are generally oriented toward CBSAs or CSAs with populations greater than 200,000, but for convenience, those portions of a state that are not associated with CBSAs can be considered as a single MPA.

*NATTS* means the national air toxics trends stations. This network provides hazardous air pollution ambient data.

*NCore* means the National Core multipollutant monitoring stations. Monitors at these sites are required to measure particles ($PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10\text{-}2.5}$), $O_3$, $SO_2$, CO, nitrogen oxides ($NO/NO_y$), and meteorology (wind speed, wind direction, temperature, relative humidity).

*Near-road monitor* means any approved monitor meeting the applicable specifications described in 40 CFR part 58, appendix D (sections 4.2.1, 4.3.2, 4.7.1(b)(2)) and appendix E (section 6.4(a), Table E–4) for near-road measurement of $PM_{2.5}$, CO, or $NO_2$.

*Network* means all stations of a given type or types.

*Network Plan* means the Annual Monitoring Network Plan described in § 58.10 of this part.

*$NH_3$* means ammonia.

*$NO_2$* means nitrogen dioxide.

*NO* means nitrogen oxide.

*$NO_X$* means the sum of the concentrations of $NO_2$ and NO.

*$NO_y$* means the sum of all total reactive nitrogen oxides, including NO, $NO_2$, and other nitrogen oxides referred to as $NO_Z$.

*$O_3$* means ozone.

*Open path analyzer* means an automated analytical method that measures the average atmospheric pollutant concentration in situ along one or more monitoring paths having a monitoring path length of 5 meters or more and that has been designated as a reference or equivalent method under the provisions of part 53 of this chapter.

*Optical measurement path length* means the actual length of the optical beam over which measurement of the pollutant is determined. The path-integrated pollutant concentration measured by the analyzer is divided by the optical measurement path length to determine the path-averaged concentration. Generally, the optical measurement path length is:

(1) Equal to the monitoring path length for a (bistatic) system having a transmitter and a receiver at opposite ends of the monitoring path;

(2) Equal to twice the monitoring path length for a (monostatic) system having a transmitter and receiver at one end of the monitoring path and a mirror or retroreflector at the other end; or

(3) Equal to some multiple of the monitoring path length for more complex systems having multiple passes of the measurement beam through the monitoring path.

*PAMS* means photochemical assessment monitoring stations.

*Pb* means lead.

*PM* means particulate matter, including but not limited to $PM_{10}$, $PM_{10C}$, $PM_{2.5}$, and $PM_{10\text{-}2.5}$.

*$PM_{2.5}$* means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on appendix L of part 50 and designated in accordance with part 53, by an equivalent method designated in accordance with part 53, or by an approved regional method designated in accordance with appendix C to this part.

*$PM_{10}$* means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix J of part 50 and designated in accordance with part 53 or by an equivalent method designated in accordance with part 53.

*$PM_{10C}$* means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix O of part 50 and designated in accordance with part 53 or by an equivalent method designated in accordance with part 53.

*$PM_{10\text{-}2.5}$* means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers as measured by a reference method based on appendix O to part 50 and designated in accordance with part 53 or by an equivalent method designated in accordance with part 53.

*Point analyzer* means an automated analytical method that measures pollutant concentration in an ambient air sample extracted from the atmosphere at a specific inlet probe point, and that has been designated as a reference or equivalent method in accordance with part 53 of this chapter.

*Primary Monitor means* the monitor identified by the monitoring organization that provides concentration data used for comparison to the

NAAQS. For any specific site, only one monitor for each pollutant can be designated in AQS as primary monitor for a given period of time. The primary monitor identifies the default data source for creating a combined site record for purposes of NAAQS comparisons.

*Primary quality assurance organization* (PQAO) means a monitoring organization, a group of monitoring organizations or other organization that is responsible for a set of stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the SLAMS and SPM networks must be associated with only one PQAO.

*Probe* means the actual inlet where an air sample is extracted from the atmosphere for delivery to a sampler or point analyzer for pollutant analysis.

*PSD monitoring network* means a set of stations that provide concentration information for a specific PSD permit.

*PSD monitoring organization* means a source owner/operator, a government agency, or a contractor of the source or agency that operates an ambient air pollution monitoring network for PSD purposes.

*PSD reviewing authority* means the state air pollution control agency, local agency, other state agency, tribe, or other agency authorized by the Administrator to carry out a permit program under § 51.165 and § 51.166, or the Administrator in the case of EPA-implemented permit programs under § 52.21.

*PSD station* means any station operated for the purpose of establishing the effect on air quality of the emissions from a proposed source for purposes of prevention of significant deterioration as required by § 51.24(n).

*Regional Administrator* means the Administrator of one of the ten EPA regional offices or his or her authorized representative.

*Reporting organization* means an entity, such as a state, local, or tribal monitoring agency, that reports air quality data to the EPA.

*Site* means a geographic location. One or more stations may be at the same site.

*SLAMS* means state or local air monitoring stations. The SLAMS include the ambient air quality monitoring sites and monitors that are required by appendix D of this part and are needed for the monitoring objectives of appendix D, including NAAQS comparisons, but may serve other data purposes. The SLAMS includes NCore, PAMS, CSN, and all other state or locally operated criteria pollutant monitors operated in accordance to this part, that have not been designated and approved by the Regional Administrator as SPM stations in an annual monitoring network plan.

*$SO_2$* means sulfur dioxide.

*Special purpose monitor (SPM)* station means a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its annual monitoring network plan and in the AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types. Any SPM operated by an air monitoring agency must be included in the periodic assessments and annual monitoring network plan required by § 58.10 and approved by the Regional Administrator.

*State agency* means the air pollution control agency primarily responsible for development and implementation of a State Implementation Plan under the Act.

*Station* means a single monitor, or a group of monitors, located at a particular site.

*STN* station means a $PM_{2.5}$ chemical speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulate.

*Supplemental speciation station* means a $PM_{2.5}$ chemical speciation station that is operated for monitoring agency needs and not part of the STN.

*Traceable* means that a local standard has been compared and certified, either directly or via not more than one intermediate standard, to a National Institute of Standards and Technology (NIST)-certified primary standard such as a NIST-traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS).

*TSP* (total suspended particulates) means particulate matter as measured by the method described in appendix B of part 50.

*Urbanized area* means an area with a minimum residential population of at least 50,000 people and which generally includes core census block groups or blocks that have a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile. The Census Bureau notes that under certain conditions, less densely settled territory may be part of each Urbanized Area.

*VOCs* means volatile organic compounds.

■ 3. In § 58.10:

■ a. Revise paragraphs (a)(1) and (a)(2).

■ b. Add paragraph (a)(9).

■ c. Add paragraph (b)(14).

The revisions and additions read as follows:

**§ 58.10 Annual monitoring network plan and periodic network assessment.**

(a)(1) Beginning July 1, 2007, the state, or where applicable local, agency shall submit to the Regional Administrator an annual monitoring network plan which shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations. The plan shall include a purpose statement for each monitor along with a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require the submission of additional information as needed to evaluate compliance with applicable requirements of part 58 and its appendices. The annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall reference and address any such received comments.

(2) Any annual monitoring network plan that proposes SLAMS network modifications (including new or discontinued monitoring sites, new determinations that data are not of sufficient quality to be compared to the NAAQS, and changes in identification of monitors as suitable or not suitable for comparison against the annual $PM_{2.5}$ NAAQS) is subject to the approval of the EPA Regional Administrator, who shall approve or disapprove the plan within 120 days of submission of a complete plan to the EPA.

* * * * *

(9) A detailed description of the PAMS network being operated in accordance with the requirements of appendix D to this part shall be submitted as part of the annual monitoring network plan for review by the EPA Administrator. The PAMS Network Description described in section 5 of appendix D may be used to meet this requirement.

(b) * * *

(14) The identification of any SPMs operating for a longer period than 24 months that utilize FRM, FEM, and/or ARM monitors accompanied by a discussion of the rationale for retention

as an SPM rather than a reclassification to SLAMS.

* * * * *

■ 4. In § 58.11, revise paragraph (a)(3) to read as follows:

**§ 58.11 Network technical requirements.**

(a) * * *

(3) The owner or operator of an existing or a proposed source shall follow the quality assurance criteria in appendix B to this part that apply to PSD monitoring when operating a PSD site.

* * * * *

■ 5. In § 58.12:

■ a. Revise paragraph (d)(1).

■ b. Revise paragraph (d)(3).

The revisions read as follows:

**§ 58.12 Operating schedules.**

* * * * *

(d) * * *

(1)(i) Manual $PM_{2.5}$ samplers at required SLAMS stations without a collocated continuously operating $PM_{2.5}$ monitor must operate on at least a 1-in-3 day schedule unless a waiver for an alternative schedule has been approved per paragraph (d)(1)(ii) of this section.

(ii) For SLAMS $PM_{2.5}$ sites with both manual and continuous $PM_{2.5}$ monitors operating, the monitoring agency may request approval for a reduction to 1-in-6 day $PM_{2.5}$ sampling or for seasonal sampling from the EPA Regional Administrator. Other requests for a reduction to 1-in-6 day $PM_{2.5}$ sampling or for seasonal sampling may be approved on a case-by-case basis. The EPA Regional Administrator may grant sampling frequency reductions after consideration of factors (including but not limited to the historical $PM_{2.5}$ data quality assessments, the location of current $PM_{2.5}$ design value sites, and their regulatory data needs) if the Regional Administrator determines that the reduction in sampling frequency will not compromise data needed for implementation of the NAAQS. Required SLAMS stations whose measurements determine the design value for their area and that are within plus or minus 10 percent of the annual NAAQS, and all required sites where one or more 24-hour values have exceeded the 24-hour NAAQS each year for a consecutive period of at least 3 years are required to maintain at least a 1-in-3 day sampling frequency until the design value no longer meets these criteria for 3 consecutive years. A continuously operating FEM or ARM $PM_{2.5}$ monitor satisfies this requirement unless it is identified in the monitoring agency's annual monitoring network plan as not appropriate for comparison to the NAAQS and the EPA Regional Administrator has approved that the data from that monitor may be excluded from comparison to the NAAQS.

(iii) Required SLAMS stations whose measurements determine the 24-hour design value for their area and whose data are within plus or minus 5 percent of the level of the 24-hour $PM_{2.5}$ NAAQS must have an FRM or FEM operate on a daily schedule if that area's design value for the annual NAAQS is less than the level of the annual $PM_{2.5}$ standard. A continuously operating FEM or ARM $PM_{2.5}$ monitor satisfies this requirement unless it is identified in the monitoring agency's annual monitoring network plan as not appropriate for comparison to the NAAQS and the EPA Regional Administrator has approved that the data from that monitor may be excluded from comparison to the NAAQS. The daily schedule must be maintained until the referenced design values no longer meets these criteria for 3 consecutive years.

(iv) Changes in sampling frequency attributable to changes in design values shall be implemented no later than January 1 of the calendar year following the certification of such data as described in § 58.15.

* * * * *

(3) Manual $PM_{2.5}$ speciation samplers at STN stations must operate on at least a 1-in-3 day sampling frequency unless a reduction in sampling frequency has been approved by the EPA Administrator based on factors such as area's design value, the role of the particular site in national health studies, the correlation of the site's species data with nearby sites, and presence of other leveraged measurements.

* * * * *

■ 6. In § 58.14, revise paragraph (a) to read as follows:

**§ 58.14 System modification.**

(a) The state, or where appropriate local, agency shall develop and implement a network modification plan and schedule to modify the ambient air quality monitoring network that implements the findings of the network assessment required every 5 years by § 58.10(d). The network modification plan shall be submitted as part of the Annual Monitoring Network Plan that is due no later than the year after submittal of the network assessment.

* * * * *

■ 7. Revise § 58.15 to read as follows:

**§ 58.15 Annual air monitoring data certification.**

(a) The state, or where appropriate local, agency shall submit to the EPA Regional Administrator an annual air monitoring data certification letter to certify data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites that meet criteria in appendix A to this part from January 1 to December 31 of the previous year. The head official in each monitoring agency, or his or her designee, shall certify that the previous year of ambient concentration and quality assurance data are completely submitted to AQS and that the ambient concentration data are accurate to the best of her or his knowledge, taking into consideration the quality assurance findings. The annual data certification letter is due by May 1 of each year.

(b) Along with each certification letter, the state shall submit to the Regional Administrator an annual summary report of all the ambient air quality data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites. The annual report(s) shall be submitted for data collected from January 1 to December 31 of the previous year. The annual summary serves as the record of the specific data that is the object of the certification letter.

(c) Along with each certification letter, the state shall submit to the Regional Administrator a summary of the precision and accuracy data for all ambient air quality data collected by FRM, FEM, and ARM monitors at SLAMS and SPM sites. The summary of precision and accuracy shall be submitted for data collected from January 1 to December 31 of the previous year.

■ 8. In § 58.16, revise paragraphs (a), (c), and (d) to read as follows:

**§ 58.16 Data submittal and archiving requirements.**

(a) The state, or where appropriate, local agency, shall report to the Administrator, via AQS all ambient air quality data and associated quality assurance data for $SO_2$; CO; $O_3$; $NO_2$; NO; $NO_y$; $NO_X$; Pb-TSP mass concentration; Pb-$PM_{10}$ mass concentration; $PM_{10}$ mass concentration; $PM_{2.5}$ mass concentration; for filter-based $PM_{2.5}$ FRM/FEM, the field blank mass; chemically speciated $PM_{2.5}$ mass concentration data; $PM_{10-2.5}$ mass concentration; meteorological data from NCore and PAMS sites; and metadata records and information specified by the AQS Data Coding Manual (*http://www.epa.gov/ttn/airs/airsaqs/manuals/manuals.htm*). Air quality data and information must be submitted directly to the AQS via electronic transmission on the specified schedule described in paragraphs (b) and (d) of this section.

* * * * *

(c) Air quality data submitted for each reporting period must be edited,

validated, and entered into the AQS (within the time limits specified in paragraphs (b) and (d) of this section) pursuant to appropriate AQS procedures. The procedures for editing and validating data are described in the AQS Data Coding Manual and in each monitoring agency's quality assurance project plan.

(d) The state shall report VOC and if collected, carbonyl, $NH_3$, and $HNO_3$ data from PAMS sites, and chemically speciated $PM_{2.5}$ mass concentration data to AQS within 6 months following the end of each quarterly reporting period listed in paragraph (b) of this section.

* * * * *

■ 9. Revise Appendix A to part 58 to read as follows:

## Appendix A to Part 58—Quality Assurance Requirements for Monitors Used in Evaluations of National Ambient Air Quality Standards

1. General Information
2. Quality System Requirements
3. Measurement Quality Check Requirements
4. Calculations for Data Quality Assessments
5. Reporting Requirements
6. References

### 1. General Information

1.1 *Applicability.* (a) This appendix specifies the minimum quality system requirements applicable to SLAMS and other monitor types whose data are intended to be used to determine compliance with the NAAQS (e.g., SPMs, tribal, CASTNET, industrial, etc), unless the EPA Regional Administrator has reviewed and approved the monitor for exclusion from NAAQS use and these quality assurance requirements.

(b) Primary quality assurance organizations are encouraged to develop and maintain quality systems more extensive than the required minimums. Additional guidance for the requirements reflected in this appendix can be found in the ''Quality Assurance Handbook for Air Pollution Measurement Systems,'' Volume II (see reference 10 of this appendix) and at a national level in references 1, 2, and 3 of this appendix.

1.2 *Primary Quality Assurance Organization (PQAO).* A PQAO is defined as a monitoring organization or a coordinated aggregation of such organizations that is responsible for a set of stations that monitors the same pollutant and for which data quality assessments will be pooled. Each criteria pollutant/monitor must be associated with only one PQAO. In some cases, data quality is assessed at the PQAO level.

1.2.1 Each PQAO shall be defined such that measurement uncertainty among all stations in the organization can be expected to be reasonably homogeneous as a result of common factors. Common factors that should be considered in defining PQAOs include:

(a) Operation by a common team of field operators according to a common set of procedures;

(b) Use of a common quality assurance project plan (QAPP) or standard operating procedures;

(c) Common calibration facilities and standards;

(d) Oversight by a common quality assurance organization; and

(e) Support by a common management organization (i.e., state agency) or laboratory.

Since data quality assessments are made and data certified at the PQAO level, the monitoring organization identified as the PQAO will be responsible for the oversight of the quality of data of all monitoring organizations within the PQAO.

1.2.2 Monitoring organizations having difficulty describing its PQAO or in assigning specific monitors to primary quality assurance organizations should consult with the appropriate EPA regional office. Any consolidation of monitoring organizations to PQAOs shall be subject to final approval by the appropriate EPA regional office.

1.2.3 Each PQAO is required to implement a quality system that provides sufficient information to assess the quality of the monitoring data. The quality system must, at a minimum, include the specific requirements described in this appendix. Failure to conduct or pass a required check or procedure, or a series of required checks or procedures, does not by itself invalidate data for regulatory decision making. Rather, PQAOs and the EPA shall use the checks and procedures required in this appendix in combination with other data quality information, reports, and similar documentation that demonstrate overall compliance with part 58. Accordingly, the EPA and PQAOs shall use a ''weight of evidence'' approach when determining the suitability of data for regulatory decisions. The EPA reserves the authority to use or not use monitoring data submitted by a monitoring organization when making regulatory decisions based on the EPA's assessment of the quality of the data. Consensus built validation templates or validation criteria already approved in Quality Assurance Project Plans (QAPPs) should be used as the basis for the weight of evidence approach.

1.3 *Definitions.*

(a) Measurement Uncertainty. A term used to describe deviations from a true concentration or estimate that are related to the measurement process and not to spatial or temporal population attributes of the air being measured.

(b) Precision. A measurement of mutual agreement among individual measurements of the same property usually under prescribed similar conditions, expressed generally in terms of the standard deviation.

(c) Bias. The systematic or persistent distortion of a measurement process which causes errors in one direction.

(d) Accuracy. The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (imprecision) and systematic error (bias) components which are due to sampling and analytical operations.

(e) 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.

(f) Detection Limit. The lowest concentration or amount of target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

1.4 *Measurement Quality Checks.* The measurement quality checks described in sections 3 of this appendix shall be reported to AQS and are included in the data required for certification.

1.5 *Assessments and Reports.* Periodic assessments and documentation of data quality are required to be reported to the EPA. To provide national uniformity in this assessment and reporting of data quality for all networks, specific assessment and reporting procedures are prescribed in detail in sections 3, 4, and 5 of this appendix. On the other hand, the selection and extent of the quality assurance and quality control activities used by a monitoring organization depend on a number of local factors such as field and laboratory conditions, the objectives for monitoring, the level of data quality needed, the expertise of assigned personnel, the cost of control procedures, pollutant concentration levels, etc. Therefore, quality system requirements in section 2 of this appendix are specified in general terms to allow each monitoring organization to develop a quality system that is most efficient and effective for its own circumstances while achieving the data quality objectives described in this appendix.

### 2. Quality System Requirements

A quality system (reference 1 of this appendix) is the means by which an organization manages the quality of the monitoring information it produces in a systematic, organized manner. It provides a framework for planning, implementing, assessing and reporting work performed by an organization and for carrying out required quality assurance and quality control activities.

2.1 *Quality Management Plans and Quality Assurance Project Plans.* All PQAOs must develop a quality system that is described and approved in quality management plans (QMP) and QAPPs to ensure that the monitoring results:

(a) Meet a well-defined need, use, or purpose (reference 5 of this appendix);

(b) Provide data of adequate quality for the intended monitoring objectives;

(c) Satisfy stakeholder expectations;

(d) Comply with applicable standards specifications;

(e) Comply with statutory (and other legal) requirements; and

(f) Reflect consideration of cost and economics.

2.1.1 The QMP describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, assessing and reporting activities involving environmental data operations (EDO). The QMP must be suitably documented in accordance with EPA requirements (reference 2 of this appendix), and approved by the appropriate Regional Administrator, or his or her representative. The quality system described in the QMP

will be reviewed during the systems audits described in section 2.5 of this appendix. Organizations that implement long-term monitoring programs with EPA funds should have a separate QMP document. Smaller organizations, organizations that do infrequent work with the EPA or have monitoring programs of limited size or scope may combine the QMP with the QAPP if approved by, and subject to any conditions of the EPA. Additional guidance on this process can be found in reference 10 of this appendix. Approval of the recipient's QMP by the appropriate Regional Administrator or his or her representative may allow delegation of authority to review and approve environmental data collection activities adequately described and covered under the scope of the QMP and documented in appropriate planning documents (QAPP) to the PQAOs independent quality assurance function. Where a PQAO or monitoring organization has been delegated authority to review and approve their QAPP, an electronic copy must be submitted to the EPA region at the time it is submitted to the PQAO/monitoring organizations QAPP approving authority. The QAPP will be reviewed by the EPA during systems audits or circumstances related to data quality. The QMP submission and approval dates for PQAOs/monitoring organizations must be reported to AQS.

2.1.2 The QAPP is a formal document describing, in sufficient detail, the quality system that must be implemented to ensure that the results of work performed will satisfy the stated objectives. PQAOs must develop QAPPs that describe how the organization intends to control measurement uncertainty to an appropriate level in order to achieve the data quality objectives for the EDO. The quality assurance policy of the EPA requires every EDO to have a written and approved QAPP prior to the start of the EDO. It is the responsibility of the PQAO/monitoring organization to adhere to this policy. The QAPP must be suitably documented in accordance with EPA requirements (reference 3 of this appendix) which include standard operating procedures for all EDOs either within the document or by appropriate reference. The QAPP must identify each PQAO operating monitors under the QAPP as well as generally identify the sites and monitors to which it is applicable. The QAPP submission and approval dates must be reported to AQS.

2.1.3 'The PQAO/monitoring organization's quality system must have adequate resources both in personnel and funding to plan, implement, assess and report on the achievement of the requirements of this appendix and its approved QAPP.

2.2 *Independence of Quality Assurance.* The PQAO must provide for a quality assurance management function; that aspect of the overall management system of the organization that determines and implements the quality policy defined in a PQAO's QMP. Quality management includes strategic planning, allocation of resources and other systematic planning activities (e.g., planning, implementation, assessing and reporting) pertaining to the quality system. The quality assurance management function must have sufficient technical expertise and management authority to conduct independent oversight and assure the implementation of the organization's quality system relative to the ambient air quality monitoring program and should be organizationally independent of environmental data generation activities.

2.3. *Data Quality Performance Requirements.*

2.3.1 *Data Quality Objectives.* The DQOs, or the results of other systematic planning processes, are statements that define the appropriate type of data to collect and specify the tolerable levels of potential decision errors that will be used as a basis for establishing the quality and quantity of data needed to support the monitoring objectives (reference 5 of this appendix). The DQOs will be developed by the EPA to support the primary regulatory objectives for each criteria pollutant. As they are developed, they will be added to the regulation. The quality of the conclusions derived from data interpretation can be affected by population uncertainty (spatial or temporal uncertainty) and measurement uncertainty (uncertainty associated with collecting, analyzing, reducing and reporting concentration data). This appendix focuses on assessing and controlling measurement uncertainty.

2.3.1.1 *Measurement Uncertainty for Automated and Manual $PM_{2.5}$ Methods.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the coefficient of variation (CV) of 10 percent and plus or minus 10 percent for total bias.

2.3.1.2 *Measurement Uncertainty for Automated $O_3$ Methods.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 7 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 7 percent.

2.3.1.3 *Measurement Uncertainty for Pb Methods.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 20 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 15 percent.

2.3.1.4 *Measurement Uncertainty for $NO_2$.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 15 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 15 percent.

2.3.1.5 *Measurement Uncertainty for $SO_2$.* The goal for acceptable measurement uncertainty for precision is defined as an upper 90 percent confidence limit for the CV of 10 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 10 percent.

2.4 *National Performance Evaluation Programs.* The PQAO shall provide for the implementation of a program of independent and adequate audits of all monitors providing data for NAAQS compliance purposes including the provision of adequate resources for such audit programs. A monitoring plan (or QAPP) which provides for PQAO participation in the EPA's National Performance Audit Program (NPAP), the $PM_{2.5}$ Performance Evaluation Program ($PM_{2.5}$-PEP) program and the Pb Performance Evaluation Program (Pb-PEP) and indicates the consent of the PQAO for the EPA to apply an appropriate portion of the grant funds, which the EPA would otherwise award to the PQAO for these QA activities, will be deemed by the EPA to meet this requirement. For clarification and to participate, PQAOs should contact either the appropriate EPA regional quality assurance (QA) coordinator at the appropriate EPA regional office location, or the NPAP coordinator at the EPA Air Quality Assessment Division, Office of Air Quality Planning and Standards, in Research Triangle Park, North Carolina. The PQAOs that plan to implement these programs (self-implement) rather than use the federal programs must meet the adequacy requirements found in the appropriate sections that follow, as well as meet the definition of independent assessment that follows.

2.4.1 *Independent assessment.* An assessment performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the ambient air monitoring data. An organization can conduct the performance evaluation (PE) if it can meet this definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management. In addition, the sample analysis of audit filters must be performed by a laboratory facility and laboratory equipment separate from the facilities used for routine sample analysis. Field and laboratory personnel will be required to meet PE field and laboratory training and certification requirements to establish comparability to federally implemented programs.

2.5 *Technical Systems Audit Program.* Technical systems audits of each PQAO shall be conducted at least every 3 years by the appropriate EPA regional office and reported to the AQS. If a PQAO is made up of more than one monitoring organization, all monitoring organizations in the PQAO should be audited within 6 years (two TSA cycles of the PQAO). As an example, if a state has five local monitoring organizations that are consolidated under one PQAO, all five local monitoring organizations will receive a technical systems audit within a 6-year period. Systems audit programs are described in reference 10 of this appendix. For further instructions, PQAOs should contact the appropriate EPA regional QA coordinator.

2.6 *Gaseous and Flow Rate Audit Standards.*

2.6.1 Gaseous pollutant concentration standards (permeation devices or cylinders of compressed gas) used to obtain test concentrations for carbon monoxide (CO), sulfur dioxide ($SO_2$), nitrogen oxide (NO), and nitrogen dioxide ($NO_2$) must be traceable to either a National Institute of Standards and Technology (NIST) Traceable Reference Material (NTRM) or a NIST-certified Gas

Manufacturer's Internal Standard (GMIS), certified in accordance with one of the procedures given in reference 4 of this appendix. Vendors advertising certification with the procedures provided in reference 4 of this appendix and distributing gases as ''EPA Protocol Gas'' for ambient air monitoring purposes must participate in the EPA Ambient Air Protocol Gas Verification Program or not use ''EPA'' in any form of advertising. Monitoring organizations must provide information to the EPA on the gas producers they use on an annual basis and those PQAOs purchasing standards will be obligated, at the request of the EPA, to participate in the program at least once every 5 years by sending a new unused standard to a designated verification laboratory.

2.6.2 Test concentrations for ozone ($O_3$) must be obtained in accordance with the ultraviolet photometric calibration procedure specified in appendix D to part 50 of this chapter and by means of a certified NIST-traceable $O_3$ transfer standard. Consult references 7 and 8 of this appendix for guidance on transfer standards for $O_3$.

2.6.3 Flow rate measurements must be made by a flow measuring instrument that is NIST-traceable to an authoritative volume or other applicable standard. Guidance for certifying some types of flowmeters is provided in reference 10 of this appendix.

2.7 *Primary Requirements and Guidance.* Requirements and guidance documents for developing the quality system are contained in references 1 through 11 of this appendix, which also contain many suggested procedures, checks, and control specifications. Reference 10 describes specific guidance for the development of a quality system for data collected for comparison to the NAAQS. Many specific quality control checks and specifications for methods are included in the respective reference methods described in part 50 of this chapter or in the respective equivalent method descriptions available from the EPA (reference 6 of this appendix). Similarly, quality control procedures related to specifically designated reference and equivalent method monitors are contained in the respective operation or instruction manuals associated with those monitors.

**3. Measurement Quality Check Requirements**

This section provides the requirements for PQAOs to perform the measurement quality checks that can be used to assess data quality. Data from these checks are required to be submitted to the AQS within the same time frame as routinely-collected ambient concentration data as described in 40 CFR 58.16. Table A–1 of this appendix provides a summary of the types and frequency of the measurement quality checks that will be described in this section.

3.1. *Gaseous Monitors of $SO_2$, $NO_2$, $O_3$, and CO.*

3.1.1 *One-Point Quality Control (QC) Check for $SO_2$, $NO_2$, $O_3$, and CO.* (a) A one-point QC check must be performed at least once every 2 weeks on each automated monitor used to measure $SO_2$, $NO_2$, $O_3$ and CO. With the advent of automated calibration systems, more frequent checking is strongly encouraged. See Reference 10 of this appendix for guidance on the review procedure. The QC check is made by challenging the monitor with a QC check gas of known concentration (effective concentration for open path monitors) between the prescribed range of 0.005 and 0.08 parts per million (ppm) for $SO_2$, $NO_2$, and $O_3$, and between the prescribed range of 0.5 and 5 ppm for CO monitors. The QC check gas concentration selected within the prescribed range must be related to the mean or median of the ambient air concentrations normally measured at sites within the monitoring network in order to appropriately reflect the precision and bias at these ambient air concentration ranges. If the mean or median concentrations at the sites are below or above the prescribed range for the relevant pollutant, select the lowest or highest concentration in the range. An additional QC check point is encouraged for those organizations that may have occasional high values or would like to confirm the monitors' linearity at the higher end of the operational range or around NAAQS concentrations.

(b) Point analyzers must operate in their normal sampling mode during the QC check and the test atmosphere must pass through all filters, scrubbers, conditioners and other components used during normal ambient sampling and as much of the ambient air inlet system as is practicable. The QC check must be conducted before any calibration or adjustment to the monitor.

(c) Open path monitors are tested by inserting a test cell containing a QC check gas concentration into the optical measurement beam of the instrument. If possible, the normally used transmitter, receiver, and as appropriate, reflecting devices should be used during the test, and the normal monitoring configuration of the instrument should be altered as little as possible to accommodate the test cell for the test. However, if permitted by the associated operation or instruction manual, an alternate local light source or an alternate optical path that does not include the normal atmospheric monitoring path may be used. The actual concentration of the QC check gas in the test cell must be selected to produce an effective concentration in the range specified earlier in this section. Generally, the QC test concentration measurement will be the sum of the atmospheric pollutant concentration and the QC test concentration. As such, the result must be corrected to remove the atmospheric concentration contribution. The corrected concentration is obtained by subtracting the average of the atmospheric concentrations measured by the open path instrument under test immediately before and immediately after the QC test from the QC check gas concentration measurement. If the difference between these before and after measurements is greater than 20 percent of the effective concentration of the test gas, discard the test result and repeat the test. If possible, open path monitors should be tested during periods when the atmospheric pollutant concentrations are relatively low and steady.

(d) Report the audit concentration of the QC gas and the corresponding measured concentration indicated by the monitor to AQS. The percent differences between these concentrations are used to assess the precision and bias of the monitoring data as described in sections 4.1.2 (precision) and 4.1.3 (bias) of this appendix.

3.1.2 *Annual performance evaluation for $SO_2$, $NO_2$, $O_3$, or CO.* A performance evaluation must be conducted on each primary monitor once a year. This can be accomplished by evaluating 25 percent of the primary monitors each quarter. The evaluation should be conducted by a trained experienced technician other than the routine site operator.

3.1.2.1 The evaluation is made by challenging the monitor with audit gas standards of known concentration from at least three audit levels. Two of the audit levels selected will represent a range of 10–80 percent of the typical ambient air concentrations either measured by the monitor or in the PQAOs network of monitors. The third point should be at the NAAQS level or above the highest 3-year ambient air hourly concentration, whichever is greater. An additional 4th level is encouraged for those agencies that would like to confirm the monitors' linearity at the higher end of the operational range. In rare circumstances, there may be sites measuring concentrations above audit level 10. Notify the appropriate EPA region and the AQS program in order to make accommodations for auditing at levels above level 10.

| Audit level | Concentration range, ppm | | | |
|---|---|---|---|---|
| | $O_3$ | $SO_2$ | $NO_2$ | CO |
| 1 | 0.004–0.0059 | 0.0003–0.0029 | 0.0003–0.0029 | 0.020–0.059 |
| 2 | 0.006–0.019 | 0.0030–0.0049 | 0.0030–0.0049 | 0.060–0.199 |
| 3 | 0.020–0.039 | 0.0050–0.0079 | 0.0050–0.0079 | 0.200–0.899 |
| 4 | 0.040–0.069 | 0.0080–0.0199 | 0.0080–0.0199 | 0.900–2.999 |
| 5 | 0.070–0.089 | 0.0200–0.0499 | 0.0200–0.0499 | 3.000–7.999 |
| 6 | 0.090–0.119 | 0.0500–0.0999 | 0.0500–0.0999 | 8.000–15.999 |
| 7 | 0.120–0.139 | 0.1000–0.1499 | 0.1000–0.2999 | 16.000–30.999 |
| 8 | 0.140–0.169 | 0.1500–0.2599 | 0.3000–0.4999 | 31.000–39.999 |

| Audit level | Concentration range, ppm | | | |
|---|---|---|---|---|
| | $O_3$ | $SO_2$ | $NO_2$ | CO |
| 9 | 0.170–0.189 | 0.2600–0.7999 | 0.5000–0.7999 | 40.000–49.999 |
| 10 | 0.190–0.259 | 0.8000–1.000 | 0.8000–1.000 | 50.000–60.000 |

3.1.2.2 The $NO_2$ audit techniques may vary depending on the ambient monitoring method. For chemiluminescence-type $NO_2$ analyzers, gas phase titration (GPT) techniques should be based on EPA guidance documents and monitoring agency experience. The $NO_2$ gas standards may be more appropriate than GPT for direct $NO_2$ methods that do not employ converters. Care should be taken to ensure the stability of such gas standards prior to use.

3.1.2.3 The standards from which audit gas test concentrations are obtained must meet the specifications of section 2.6.1 of this appendix. The gas standards and equipment used for the performance evaluation must not be the same as the standards and equipment used for one-point QC, calibrations, span evaluations or NPAP.

3.1.2.4 For point analyzers, the evaluation shall be carried out by allowing the monitor to analyze the audit gas test atmosphere in its normal sampling mode such that the test atmosphere passes through all filters, scrubbers, conditioners, and other sample inlet components used during normal ambient sampling and as much of the ambient air inlet system as is practicable.

3.1.2.5 Open path monitors are evaluated by inserting a test cell containing the various audit gas concentrations into the optical measurement beam of the instrument. If possible, the normally used transmitter, receiver, and, as appropriate, reflecting devices should be used during the evaluation, and the normal monitoring configuration of the instrument should be modified as little as possible to accommodate the test cell for the evaluation. However, if permitted by the associated operation or instruction manual, an alternate local light source or an alternate optical path that does not include the normal atmospheric monitoring path may be used. The actual concentrations of the audit gas in the test cell must be selected to produce effective concentrations in the evaluation level ranges specified in this section of this appendix. Generally, each evaluation concentration measurement result will be the sum of the atmospheric pollutant concentration and the evaluation test concentration. As such, the result must be corrected to remove the atmospheric concentration contribution. The corrected concentration is obtained by subtracting the average of the atmospheric concentrations measured by the open path instrument under test immediately before and immediately after the evaluation test (or preferably before and after each evaluation concentration level) from the evaluation concentration measurement. If the difference between the before and after measurements is greater than 20 percent of the effective concentration of the test gas standard, discard the test result for that concentration level and repeat the test for that level. If possible, open path monitors should be evaluated during periods when the atmospheric pollutant concentrations are relatively low and steady. Also, if the open path instrument is not installed in a permanent manner, the monitoring path length must be reverified to be within plus or minus 3 percent to validate the evaluation since the monitoring path length is critical to the determination of the effective concentration.

3.1.2.6 Report both the evaluation concentrations (effective concentrations for open path monitors) of the audit gases and the corresponding measured concentration (corrected concentrations, if applicable, for open path monitors) indicated or produced by the monitor being tested to AQS. The percent differences between these concentrations are used to assess the quality of the monitoring data as described in section 4.1.1 of this appendix.

3.1.3 *National Performance Audit Program (NPAP).*

The NPAP is a performance evaluation which is a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument or laboratory. Details of the program can be found in reference 11 of this appendix. The program requirements include:

3.1.3.1 Performing audits of the primary monitors at 20 percent of monitoring sites per year, and 100 percent of the sites in 6 years. High-priority sites may be visited more often. Since not all gaseous criteria pollutants are monitored at every site within a PQAO, it is not required that 20 percent of the primary monitors for each pollutant receive an NPAP audit each year only that 20 percent of the PQAOs monitoring sites receive an NPAP audit. It is expected that over the 6-year period all primary monitors for all gaseous pollutants will receive an NPAP audit.

3.1.3.2 Developing a delivery system that will allow for the audit concentration gasses to be introduced to the probe inlet where logistically feasible.

3.1.3.3 Using audit gases that are verified against the NIST standard reference methods or special review procedures and validated annually for CO, $SO_2$ and $NO_2$, and at the beginning of each quarter of audits for $O_3$.

3.1.3.4 As described in section 2.4 of this appendix, the PQAO may elect, on an annual basis, to utilize the federally implemented NPAP program. If the PQAO plans to self-implement NPAP, the EPA will establish training and other technical requirements for PQAOs to establish comparability to federally implemented programs. In addition to meeting the requirements in sections 3.1.3.1 through 3.1.3.3 of this appendix, the PQAO must:

(a) Utilize an audit system equivalent to the federally implemented NPAP audit system and is separate from equipment used in annual performance evaluations.

(b) Perform a whole system check by having the NPAP system tested against an independent and qualified EPA lab, or equivalent.

(c) Evaluate the system with the EPA NPAP program through collocated auditing at an acceptable number of sites each year (at least one for an agency network of five or less sites; at least two for a network with more than five sites).

(d) Incorporate the NPAP in the PQAO's quality assurance project plan.

(e) Be subject to review by independent, EPA-trained personnel.

(f) Participate in initial and update training/certification sessions.

3.2 *$PM_{2.5}$.*

3.2.1 *Flow Rate Verification for $PM_{2.5}$.* A one-point flow rate verification check must be performed at least once every month (each verification minimally separated by 14 days) on each monitor used to measure $PM_{2.5}$. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. For the standard procedure, use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be used in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. Report the flow rate of the transfer standard and the corresponding flow rate measured by the monitor to AQS. The percent differences between the audit and measured flow rates are used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.2.2 *Semi-Annual Flow Rate Audit for $PM_{2.5}$.* Audit the flow rate of the particulate monitor twice a year. The two audits should ideally be spaced between 5 and 7 months apart. The EPA strongly encourages more frequent auditing. The audit should (preferably) be conducted by a trained experienced technician other than the routine site operator. The audit is made by measuring the monitor's normal operating flow rate(s) using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used for verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard. Care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor to AQS. The

percent differences between these flow rates are used to evaluate monitor performance.

3.2.3 *Collocated Quality Control Sampling Procedures for $PM_{2.5}$.* For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor. There can be only one primary monitor at a monitoring site for a given time period.

3.2.3.1 For each distinct monitoring method designation (FRM or FEM) that a PQAO is using for a primary monitor, the PQAO must:

(a) Have 15 percent of the primary monitors of each method designation collocated (values of 0.5 and greater round up); and

(b) Have at least one collocated quality control monitor (if the total number of monitors is less than three). The first collocated monitor must be a designated FRM monitor.

3.2.3.2 In addition, monitors selected for collocation must also meet the following requirements:

(a) A primary monitor designated as an EPA FRM shall be collocated with a quality control monitor having the same EPA FRM method designation.

(b) For each primary monitor designated as an EPA FEM used by the PQAO, 50 percent of the monitors designated for collocation, or the first if only one collocation is necessary, shall be collocated with a FRM quality control monitor and 50 percent of the monitors shall be collocated with a monitor having the same method designation as the FEM primary monitor. If an odd number of collocated monitors is required, the additional monitor shall be a FRM quality control monitor. An example of the distribution of collocated monitors for each unique FEM is provided below. Table A–2 of this appendix demonstrates the procedure with a PQAO having an FRM and multiple FEMs.

| #Primary FEMS of a unique method designation | #Collocated | #Collocated with an FRM | #Collocated with same method designation |
|---|---|---|---|
| "1–9" | 1 | 1 | 0 |
| "10–16" | 2 | 1 | 1 |
| "17–23" | 3 | 2 | 1 |
| "24–29" | 4 | 2 | 2 |
| "30–36" | 5 | 3 | 2 |
| "37–43" | 6 | 3 | 3 |

3.2.3.3 Since the collocation requirements are used to assess precision of the primary monitors and there can only be one primary monitor at a monitoring site, a site can only count for the collocation of the method designation of the primary monitor at that site.

3.2.3.4 The collocated monitors should be deployed according to the following protocol:

(a) Fifty percent of the collocated quality control monitors should be deployed at sites with annual average or daily concentrations estimated to be within ±20 percent of either the annual or 24-hour NAAQS and the remainder at the PQAOs discretion;

(b) If an organization has no sites with annual average or daily concentrations within ±20 percent of the annual NAAQS or 24-hour NAAQS, 50 percent of the collocated quality control monitors should be deployed at those sites with the annual mean concentrations or 24-hour concentrations among the highest for all sites in the network and the remainder at the PQAOs discretion.

(c) The two collocated monitors must be within 4 meters (inlet to inlet) of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the Regional Administrator for sites at a neighborhood or larger scale of representation during the annual network plan approval process. Calibration, sampling, and analysis must be the same for both primary and collocated quality control samplers and the same as for all other samplers in the network.

(d) Sample the collocated quality control monitor on a 1-in-12 day schedule. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site to AQS. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

3.2.4 *$PM_{2.5}$ Performance Evaluation Program (PEP) Procedures.* The PEP is an independent assessment used to estimate total measurement system bias. These evaluations will be performed under the NPEP as described in section 2.4 of this appendix or a comparable program. Performance evaluations will be performed annually within each PQAO. For PQAOs with less than or equal to five monitoring sites, five valid performance evaluation audits must be collected and reported each year. For PQAOs with greater than five monitoring sites, eight valid performance evaluation audits must be collected and reported each year. A valid performance evaluation audit means that both the primary monitor and PEP audit concentrations are valid and above 3 $\mu g/m^3$. Siting of the PEP monitor should be consistent with section 3.2.3.7. However, any horizontal distance greater than 4 meters and any vertical distance greater than one meter must be reported to the EPA regional PEP coordinator. Additionally for every monitor designated as a primary monitor, a primary quality assurance organization must:

3.2.4.1 Have each method designation evaluated each year; and,

3.2.4.2 Have all FRM, FEM or ARM samplers subject to a PEP audit at least once every six years; which equates to approximately 15 percent of the monitoring sites audited each year.

3.2.4.3 Additional information concerning the PEP is contained in reference 10 of this appendix. The calculations for evaluating bias between the primary monitor and the performance evaluation monitor for $PM_{2.5}$ are described in section 4.2.5 of this appendix.

3.3 *$PM_{10}$.*

3.3.1 *Flow Rate Verification for $PM_{10}$ Low Volume Samplers (less than 200 liter/minute).* A one-point flow rate verification check must be performed at least once every month (each verification minimally separated by 14 days) on each monitor used to measure $PM_{10}$. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. For the standard procedure, use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be taken in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. The percent differences between the audit and measured flow rates are reported to AQS and used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.3.2 *Flow Rate Verification for $PM_{10}$ High Volume Samplers (greater than 200 liters/minute).* For $PM_{10}$ high volume samplers, the verification frequency is one verification every 90 days (quarter) with 4 in a year. Other than verification frequency, follow the same technical procedure as described in section 3.3.1 of this appendix.

3.3.3 *Semi-Annual Flow Rate Audit for $PM_{10}$.* Audit the flow rate of the particulate monitor twice a year. The two audits should ideally be spaced between 5 and 7 months apart. The EPA strongly encourages more frequent auditing. The audit should (preferably) be conducted by a trained experienced technician other than the routine site operator. The audit is made by measuring the monitor's normal operating

flow rate using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used for verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard. Care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor to AQS. The percent differences between these flow rates are used to evaluate monitor performance.

3.3.4 *Collocated Quality Control Sampling Procedures for Manual $PM_{10}$.* Collocated sampling for $PM_{10}$ is only required for manual samplers. For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site and designate the other as the quality control monitor.

3.3.4.1 For manual $PM_{10}$ samplers, a PQAO must:

(a) Have 15 percent of the primary monitors collocated (values of 0.5 and greater round up); and

(b) Have at least one collocated quality control monitor (if the total number of monitors is less than three).

3.3.4.2 The collocated quality control monitors should be deployed according to the following protocol:

(a) Fifty percent of the collocated quality control monitors should be deployed at sites with daily concentrations estimated to be within ±20 percent of the applicable NAAQS and the remainder at the PQAOs discretion;

(b) If an organization has no sites with daily concentrations within ±20 percent of the NAAQS, 50 percent of the collocated quality control monitors should be deployed at those sites with the daily mean concentrations among the highest for all sites in the network and the remainder at the PQAOs discretion.

(c) The two collocated monitors must be within 4 meters (inlet to inlet) of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the Regional Administrator for sites at a neighborhood or larger scale of representation. This waiver may be approved during the annual network plan approval process. Calibration, sampling, and analysis must be the same for both collocated samplers and the same as for all other samplers in the network.

(d) Sample the collocated quality control monitor on a 1-in-12 day schedule. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site to AQS. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

(e) In determining the number of collocated quality control sites required for $PM_{10}$, monitoring networks for lead ($Pb\text{-}PM_{10}$) should be treated independently from networks for particulate matter (PM), even though the separate networks may share one or more common samplers. However, a single quality control monitor that meets the collocation requirements for $Pb\text{-}PM_{10}$ and $PM_{10}$ may serve as a collocated quality control monitor for both networks. Extreme care must be taken when using the filter from a quality control monitor for both $PM_{10}$ and Pb analysis. A $PM_{10}$ filter weighing should occur prior to any Pb analysis.

3.4 *Pb.*

3.4.1 *Flow Rate Verification for Pb–$PM_{10}$ Low Volume Samplers (less than 200 liter/minute).* A one-point flow rate verification check must be performed at least once every month (each verification minimally separated by 14 days) on each monitor used to measure Pb. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. For the standard procedure, use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be taken in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. The percent differences between the audit and measured flow rates are reported to AQS and used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.4.2 *Flow Rate Verification for Pb High Volume Samplers (greater than 200 liters/minute).* For high volume samplers, the verification frequency is one verification every 90 days (quarter) with four in a year. Other than verification frequency, follow the same technical procedure as described in section 3.4.1 of this appendix.

3.4.3 *Semi-Annual Flow Rate Audit for Pb.* Audit the flow rate of the particulate monitor twice a year. The two audits should ideally be spaced between 5 and 7 months apart. The EPA strongly encourages more frequent auditing. The audit should (preferably) be conducted by a trained experienced technician other than the routine site operator. The audit is made by measuring the monitor's normal operating flow rate using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used for verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard. Care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor to AQS. The percent differences between these flow rates are used to evaluate monitor performance.

3.4.4 *Collocated Quality Control Sampling for TSP Pb for monitoring sites other than non-source NCore.* For each pair of collocated monitors for manual TSP Pb samplers, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor.

3.4.4.1 A PQAO must:

(a) Have 15 percent of the primary monitors (not counting non-source NCore sites in PQAO) collocated. Values of 0.5 and greater round up; and

(b) Have at least one collocated quality control monitor (if the total number of monitors is less than three).

3.4.4.2 The collocated quality control monitors should be deployed according to the following protocol:

(a) The first collocated Pb site selected must be the site measuring the highest Pb concentrations in the network. If the site is impractical, alternative sites, approved by the EPA Regional Administrator, may be selected. If additional collocated sites are necessary, collocated sites may be chosen that reflect average ambient air Pb concentrations in the network.

(b) The two collocated monitors must be within 4 meters (inlet to inlet) of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference.

(c) Sample the collocated quality control monitor on a 1-in-12 day schedule. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site to AQS. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

3.4.5 *Collocated Quality Control Sampling for Pb-$PM_{10}$ at monitoring sites other than non-source NCore.* If a PQAO is monitoring for $Pb\text{-}PM_{10}$ at sites other than at a non-source oriented NCore site then the PQAO must:

3.4.5.1 Have 15 percent of the primary monitors (not counting non-source NCore sites in PQAO) collocated. Values of 0.5 and greater round up; and

3.4.5.2 Have at least one collocated quality control monitor (if the total number of monitors is less than three).

3.4.5.3 The collocated monitors should be deployed according to the following protocol:

(a) Fifty percent of the collocated quality control monitors should be deployed at sites with the highest 3-month average concentrations and the remainder at the PQAOs discretion.

(b) The two collocated monitors must be within 4 meters (inlet to inlet) of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the Regional Administrator for sites at a neighborhood or larger scale of representation. This waiver may be approved during the annual network plan approval

process. Calibration, sampling, and analysis must be the same for both collocated samplers and the same as for all other samplers in the network.

(c) Sample the collocated quality control monitor on a 1-in-12 day schedule. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site to AQS. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

(d) In determining the number of collocated quality control sites required for Pb-$PM_{10}$, monitoring networks for $PM_{10}$ should be treated independently from networks for Pb-$PM_{10}$, even though the separate networks may share one or more common samplers. However, a single quality control monitor that meets the collocation requirements for Pb-$PM_{10}$ and $PM_{10}$ may serve as a collocated quality control monitor for both networks. Extreme care must be taken when using a using the filter from a quality control monitor for both $PM_{10}$ and Pb analysis. A $PM_{10}$ filter weighing should occur prior to any Pb analysis.

3.4.6 *Pb Analysis Audits.* Each calendar quarter, audit the Pb reference or equivalent method analytical procedure using filters containing a known quantity of Pb. These audit filters are prepared by depositing a Pb standard on unexposed filters and allowing them to dry thoroughly. The audit samples must be prepared using batches of reagents different from those used to calibrate the Pb analytical equipment being audited. Prepare audit samples in the following concentration ranges:

| Range | Equivalent ambient Pb concentration, µg/m³ |
|---|---|
| 1 | 30–100% of Pb NAAQS. |
| 2 | 200–300% of Pb NAAQS. |

(a) Extract the audit samples using the same extraction procedure used for exposed filters.

(b) Analyze three audit samples in each of the two ranges each quarter samples are analyzed. The audit sample analyses shall be distributed as much as possible over the entire calendar quarter.

(c) Report the audit concentrations (in µg Pb/filter or strip) and the corresponding measured concentrations (in µg Pb/filter or strip) to AQS using AQS unit code 077. The percent differences between the concentrations are used to calculate analytical accuracy as described in section 4.2.6 of this appendix.

3.4.7 *Pb PEP Procedures for monitoring sites other than non-source NCore.* The PEP is an independent assessment used to estimate total measurement system bias. These evaluations will be performed under the NPEP described in section 2.4 of this appendix or a comparable program. Each year, one performance evaluation audit must be performed at one Pb site in each primary quality assurance organization that has less than or equal to five sites and two audits at PQAOs with greater than five sites. Non-source oriented NCore sites are not counted. In addition, each year, four collocated samples from PQAOs with less than or equal to five sites and six collocated samples at PQAOs with greater than five sites must be sent to an independent laboratory, the same laboratory as the performance evaluation audit, for analysis. Siting of this PEP monitor should be consistent with section 3.4.5.4. However, any horizontal distance greater than 4 meters and any vertical distance greater than 1 meter must be reported to the EPA regional PEP coordinator. The calculations for evaluating bias between the primary monitor and the performance evaluation monitor for Pb are described in section 4.2.4 of this appendix.

4. Calculations for Data Quality Assessment

(a) Calculations of measurement uncertainty are carried out by the EPA according to the following procedures. The PQAOs must report the data to AQS for all measurement quality checks as specified in this appendix even though they may elect to perform some or all of the calculations in this section on their own.

(b) The EPA will provide annual assessments of data quality aggregated by site and PQAO for $SO_2$, $NO_2$, $O_3$ and CO and by PQAO for $PM_{10}$, $PM_{2.5}$, and Pb.

(c) At low concentrations, agreement between the measurements of collocated quality control samplers, expressed as relative percent difference or percent difference, may be relatively poor. For this reason, collocated measurement pairs are selected for use in the precision and bias calculations only when both measurements are equal to or above the following limits:

(1) Pb: 0.002 µg/m³ (Methods approved after 3/04/2010, with exception of manual equivalent method EQLA–0813–803).

(2) Pb: 0.02 µg/m³ (Methods approved before 3/04/2010, and manual equivalent method EQLA–0813–803).

(3) $PM_{10}$(Hi-Vol): 15 µg/m³.

(4) $PM_{10}$(Lo-Vol): 3 µg/m³.

(5) $PM_{2.5}$: 3 µg/m³.

4.1 *Statistics for the Assessment of QC Checks for $SO_2$, $NO_2$, $O_3$ and CO.*

4.1.1 *Percent Difference.* Many of the measurement quality checks start with a comparison of an audit concentration or value (flow rate) to the concentration/value measured by the monitor and use percent difference as the comparison statistic as described in equation 1 of this section. For each single point check, calculate the percent difference, $d_i$, as follows:

$$d_i = \frac{meas - audit}{audit} \cdot 100$$

Equation 1

where, *meas* is the concentration indicated by the PQAO's instrument and *audit* is the audit concentration of the standard used in the QC check being measured.

4.1.2 *Precision Estimate.* The precision estimate is used to assess the one-point QC checks for $SO_2$, $NO_2$, $O_3$, or CO described in section 3.1.1 of this appendix. The precision estimator is the coefficient of variation upper bound and is calculated using equation 2 of this section:

Equation 2

$$CV = \sqrt{\frac{n \cdot \sum_{i=1}^{n} d_i^2 - \left(\sum_{i=1}^{n} d_i\right)^2}{n(n-1)}} \cdot \sqrt{\frac{n-1}{\chi^2_{0.1,n-1}}}$$

where, *n* is the number of single point checks being aggregated; $X^2_{0.1,n-1}$ is the 10th percentile of a chi-squared distribution with n-1 degrees of freedom.

4.1.3 *Bias Estimate.* The bias estimate is calculated using the one-point QC checks for $SO_2$, $NO_2$, $O_3$, or CO described in section 3.1.1 of this appendix. The bias estimator is an upper bound on the mean absolute value of the percent differences as described in equation 3 of this section:

Equation 3

$$|bias| = AB + t_{0.95,n-1} \cdot \frac{AS}{\sqrt{n}}$$

where, *n* is the number of single point checks being aggregated; $t_{0.95,-1}$ is the 95th quantile of a t-distribution with n-1 degrees of freedom; the quantity *AB* is the mean of the absolute values of the $d_i$'s and is calculated using equation 4 of this section:

Equation 4

$$AB = \frac{1}{n} \cdot \sum_{i=1}^{n} |d_i|$$

and the quantity *AS* is the standard deviation of the absolute value of the $d_i$'s and is calculated using equation 5 of this section:

Equation 5

$$AS = \sqrt{\frac{n \cdot \sum_{i=1}^{n} |d_i|^2 - \left(\sum_{i=1}^{n} |d_i|\right)^2}{n(n-1)}}$$

4.1.3.1 *Assigning a sign (positive/negative) to the bias estimate.* Since the bias statistic as calculated in equation 3 of this appendix uses absolute values, it does not have a tendency (negative or positive bias) associated with it. A sign will be designated by rank ordering the percent differences of the QC check samples from a given site for a particular assessment interval.

4.1.3.2 Calculate the 25th and 75th percentiles of the percent differences for each site. The absolute bias upper bound should be flagged as positive if both percentiles are positive and negative if both percentiles are negative. The absolute bias upper bound would not be flagged if the 25th and 75th percentiles are of different signs.

4.2 *Statistics for the Assessment of $PM_{10}$, $PM_{2.5}$, and Pb.*

4.2.1 *Collocated Quality Control Sampler Precision Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* Precision is estimated via duplicate measurements from collocated samplers. It is recommended that the precision be aggregated at the PQAO level quarterly, annually, and at the 3-year level. The data pair would only be considered valid if both concentrations are greater than or equal to the minimum values specified in section 4(c) of this appendix. For each collocated data pair, calculate the relative percent difference, $d_i$, using equation 6 of this appendix:

Equation 6

$$d_i = \frac{X_i - Y_i}{(X_i + Y_i)/2} \cdot 100$$

where, $X_i$ is the concentration from the primary sampler and $Y_i$ is the concentration value from the audit sampler. The coefficient of variation upper bound is calculated using equation 7 of this appendix:

Equation 7

$$CV = \sqrt{\frac{n \cdot \sum_{i=1}^{n} d_i^2 - \left(\sum_{i=1}^{n} d_i\right)^2}{2n(n-1)}} \cdot \sqrt{\frac{n-1}{X^2_{0.1,n-1}}}$$

where, $n$ is the number of valid data pairs being aggregated, and $X^2_{0.1,n-1}$ is the 10th percentile of a chi-squared distribution with n-1 degrees of freedom. The factor of 2 in the denominator adjusts for the fact that each $d_i$ is calculated from two values with error.

4.2.2 *One-Point Flow Rate Verification Bias Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* For each one-point flow rate verification, calculate the percent difference in volume using equation 1 of this appendix where *meas* is the value indicated by the sampler's volume measurement and *audit* is the actual volume indicated by the auditing flow meter. The absolute volume bias upper bound is then calculated using equation 3, where $n$ is the number of flow rate audits being aggregated; $t_{0.95,n-1}$ is the 95th quantile of a t-distribution with n-1 degrees of freedom, the quantity *AB* is the mean of the absolute values of the $d_i$'s and is calculated using equation 4 of this appendix, and the quantity *AS* in equation 3 of this appendix is the standard deviation of the absolute values if the $d_i$'s and is calculated using equation 5 of this appendix.

4.2.3 *Semi-Annual Flow Rate Audit Bias Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* Use the same procedure described in section 4.2.2 for the evaluation of flow rate audits.

4.2.4 *Performance Evaluation Programs Bias Estimate for Pb.* The Pb bias estimate is calculated using the paired routine and the PEP monitor as described in section 3.4.7. Use the same procedures as described in section 4.1.3 of this appendix.

4.2.5 *Performance Evaluation Programs Bias Estimate for $PM_{2.5}$.* The bias estimate is calculated using the PEP audits described in section 4.1.3 of this appendix. The bias estimator is based on the mean percent differences (Equation 1). The mean percent difference, $D$, is calculated by Equation 8 below.

Equation 8

$$D = \frac{1}{n_j} \cdot \sum_{i=1}^{n_j} d_i$$

where, $n_j$ is the number of pairs and $d_1$, $d_2$,...$d_{nj}$ are the biases for each pair to be averaged.

4.2.6 Pb *Analysis Audit Bias Estimate.* The bias estimate is calculated using the analysis audit data described in section 3.4.6. Use the same bias estimate procedure as described in section 4.1.3 of this appendix.

5. Reporting Requirements

5.1 *Reporting Requirements.* For each pollutant, prepare a list of all monitoring sites and their AQS site identification codes in each PQAO and submit the list to the appropriate EPA regional office, with a copy to AQS. Whenever there is a change in this list of monitoring sites in a PQAO, report this change to the EPA regional office and to AQS.

5.1.1 *Quarterly Reports.* For each quarter, each PQAO shall report to AQS directly (or via the appropriate EPA regional office for organizations not direct users of AQS) the results of all valid measurement quality checks it has carried out during the quarter. The quarterly reports must be submitted consistent with the data reporting requirements specified for air quality data as set forth in 40 CFR 58.16. The EPA strongly encourages early submission of the quality assurance data in order to assist the PQAOs ability to control and evaluate the quality of the ambient air data.

5.1.2 *Annual Reports.*

5.1.2.1 When the PQAO has certified relevant data for the calendar year, the EPA will calculate and report the measurement uncertainty for the entire calendar year.

**6.0 References**


(1) American National Standard—Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs. ANSI/ASQC E4–2004. February 2004. Available from American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.

(2) EPA Requirements for Quality Management Plans. EPA QA/R–2. EPA/240/B–01/002. March 2001, Reissue May 2006. Office of Environmental Information, Washington DC 20460. *http://www.epa.gov/quality/qs-docs/r2-final.pdf.*

(3) EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations. EPA QA/R–5. EPA/240/B–01/003. March 2001, Reissue May 2006. Office of Environmental Information, Washington DC 20460. *http://www.epa.gov/quality/qs-docs/r5-final.pdf.*

(4) EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards. EPA–600/R–12/531. May, 2012. Available from U.S. Environmental Protection Agency, National Risk Management Research Laboratory, Research Triangle Park NC 27711. *http://www.epa.gov/nrmrl/appcd/mmd/db-traceability-protocol.html.*

(5) Guidance for the Data Quality Objectives Process. EPA QA/G–4. EPA/240/B–06/001. February, 2006. Office of Environmental Information, Washington DC 20460. *http://www.epa.gov/quality/qs-docs/g4-final.pdf.*

(6) List of Designated Reference and Equivalent Methods. Available from U.S. Environmental Protection Agency, National Exposure Research Laboratory,

Human Exposure and Atmospheric Sciences Division, MD–D205–03, Research Triangle Park, NC 27711. *http://www.epa.gov/ttn/amtic/criteria.html.*

(7) Transfer Standards for the Calibration of Ambient Air Monitoring Analyzers for Ozone. EPA–454/B–13–004 U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, October, 2013. *http://www.epa.gov/ttn/amtic/qapollutant.html.*

(8) Paur, R.J. and F.F. McElroy. Technical Assistance Document for the Calibration of Ambient Ozone Monitors. EPA–600/4–79–057. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, September, 1979. *http://www.epa.gov/ttn/amtic/cpreldoc.html.*

(9) Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 1–A Field Guide to Environmental Quality Assurance. EPA–600/R–94/038a. April 1994. Available from U.S. Environmental Protection Agency, ORD Publications Office, Center for Environmental Research Information (CERI), 26 W. Martin Luther King Drive, Cincinnati, OH 45268. *http://www.epa.gov/ttn/amtic/qabook.html.*

(10) Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program Quality System Development. EPA–454/B–13–003. *http://www.epa.gov/ttn/amtic/qabook.html.*

(11) National Performance Evaluation Program Standard Operating Procedures. *http://www.epa.gov/ttn/amtic/npapsop.html.*

## TABLE A–1 OF APPENDIX A TO PART 58—MINIMUM DATA ASSESSMENT REQUIREMENTS FOR NAAQS RELATED CRITERIA POLLUTANT MONITORS

| Method | Assessment method | Coverage | Minimum frequency | Parameters reported | AQS assessment type |
|---|---|---|---|---|---|
| **Gaseous Methods ($CO$, $NO_2$, $SO_2$, $O_3$)** | | | | | |
| 1-Point QC for $SO_2$, $NO_2$, $O_3$, CO | Response check at concentration 0.005–0.08 ppm $SO_2$, $NO_2$, $O_3$, and 0.5 and 5 ppm CO. | Each analyzer ... | Once per 2 weeks. | Audit concentration [1] and measured concentration [2]. | 1-Point QC. |
| Annual performance evaluation for $SO_2$, $NO_2$, $O_3$, CO. | See section 3.1.2 of this appendix | Each analyzer ... | Once per year ... | Audit concentration [1] and measured concentration [2] for each level. | Annual PE. |
| NPAP for $SO_2$, $NO_2$, $O_3$, CO ..... | Independent Audit ..... | 20% of sites each year. | Once per year ... | Audit concentration [1] and measured concentration [2] for each level. | NPAP. |
| **Particulate Methods** | | | | | |
| Continuous [4] method-collocated quality control sampling $PM_{2.5}$. | Collocated samplers ..... | 15% ..... | 1-in-12 days ..... | Primary sampler concentration and duplicate sampler concentration.[3] | No Transaction reported as raw data. |
| Manual method-collocated quality control sampling $PM_{10}$, $PM_{2.5}$, Pb–TSP, Pb–$PM_{10}$. | Collocated samplers ..... | 15% ..... | 1-in-12 days ..... | Primary sampler concentration and duplicate sampler concentration.[3] | No Transaction reported as raw data. |
| Flow rate verification $PM_{10}$ (low Vol) $PM_{2.5}$, Pb-$PM_{10}$. | Check of sampler flow rate ..... | Each sampler .... | Once every month. | Audit flow rate and measured flow rate indicated by the sampler. | Flow Rate Verification. |
| Flow rate verification $PM_{10}$ (High-Vol), Pb-TSP. | Check of sampler flow rate ..... | Each sampler .... | Once every quarter. | Audit flow rate and measured flow rate indicated by the sampler. | Flow Rate Verification. |
| Semi-annual flow rate audit $PM_{10}$, TSP, $PM_{10\text{-}2.5}$, $PM_{2.5}$, Pb-TSP, Pb-$PM_{10}$.. | Check of sampler flow rate using independent standard. | Each sampler .... | Once every 6 months. | Audit flow rate and measured flow rate indicated by the sampler. | Semi Annual Flow Rate Audit. |
| Pb analysis audits Pb-TSP, Pb-$PM_{10}$. | Check of analytical system with Pb audit strips/filters. | Analytical ..... | Once each quarter. | Measured value and audit value (μg Pb/filter) using AQS unit code 077. | Pb Analysis Audits. |
| Performance Evaluation Program $PM_{2.5}$. | Collocated samplers ..... | (1) 5 valid audits for primary QA orgs, with <=5 sites. (2) 8 valid audits for primary QA orgs, with >5 sites. (3) All samplers in 6 years. | Distributed over all 4 quarters. | Primary sampler concentration and performance evaluation sampler concentration. | PEP. |
| Performance Evaluation Program Pb-TSP, Pb-$PM_{10}$. | Collocated samplers ..... | (1) 1 valid audit and 4 collocated samples for primary QA orgs, with <=5 sites. (2) 2 valid audits and 6 collocated samples for primary QA orgs with >5 sites. | Distributed over all 4 quarters. | Primary sampler concentration and performance evaluation sampler concentration. Primary sampler concentration and duplicate sampler concentration. | PEP. |

[1] Effective concentration for open path analyzers.
[2] Corrected concentration, if applicable for open path analyzers.
[3] Both primary and collocated sampler values are reported as raw data.
[4] $PM_{2.5}$ is the only particulate criteria pollutant requiring collocation of continuous and manual primary monitors.

TABLE A–2 OF APPENDIX A TO PART 58—SUMMARY OF $PM_{2.5}$ NUMBER AND TYPE OF COLLOCATION (15% COLLOCATION REQUIREMENT) REQUIRED USING AN EXAMPLE OF A PQAO THAT HAS 54 PRIMARY MONITORS (54 SITES) WITH ONE FEDERAL REFERENCE METHOD TYPE AND THREE TYPES OF APPROVED FEDERAL EQUIVALENT METHODS

| Primary sampler method designation | Total number of monitors | Total number of collocated | Number of collocated with FRM | Number of collocated with same method designation as primary |
|---|---|---|---|---|
| FRM | 20 | 3 | 3 | 3 |
| FEM (A) | 20 | 3 | 2 | 1 |
| FEM (B) | 2 | 1 | 1 | 0 |
| FEM (C) | 12 | 2 | 1 | 1 |

■ 10. Add Appendix B to part 58 to read as follows:

## Appendix B to Part 58—Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring

1. General Information
2. Quality System Requirements
3. Measurement Quality Check Requirements
4. Calculations for Data Quality Assessments
5. Reporting Requirements
6. References

### 1. General Information

1.1 *Applicability.*

(a) This appendix specifies the minimum quality assurance requirements for the control and assessment of the quality of the ambient air monitoring data submitted to a PSD reviewing authority or the EPA by an organization operating an air monitoring station, or network of stations, operated in order to comply with Part 51 New Source Review—Prevention of Significant Deterioration (PSD). Such organizations are encouraged to develop and maintain quality assurance programs more extensive than the required minimum. Additional guidance for the requirements reflected in this appendix can be found in the ''Quality Assurance Handbook for Air Pollution Measurement Systems,'' Volume II (Ambient Air) and ''Quality Assurance Handbook for Air Pollution Measurement Systems,'' Volume IV (Meteorological Measurements) and at a national level in references 1, 2, and 3 of this appendix.

(b) It is not assumed that data generated for PSD under this appendix will be used in making NAAQS decisions. However, if all the requirements in this appendix are followed (including the NPEP programs) and reported to AQS, with review and concurrence from the EPA region, data may be used for NAAQS decisions. With the exception of the NPEP programs (NPAP, $PM_{2.5}$ PEP, Pb–PEP) for which implementation is at the discretion of the PSD reviewing authority, all other quality assurance and quality control requirements found in the appendix must be met.

1.2 *PSD Primary Quality Assurance Organization (PQAO).* A PSD PQAO is defined as a monitoring organization or a coordinated aggregation of such organizations that is responsible for a set of stations within one reviewing authority that monitors the same pollutant and for which data quality assessments will be pooled. Each criteria pollutant/monitor must be associated with only one PSD PQAO.

1.2.1 Each PSD PQAO shall be defined such that measurement uncertainty among all stations in the organization can be expected to be reasonably homogeneous, as a result of common factors. A PSD PQAO must be associated with only one PSD reviewing authority. Common factors that should be considered in defining PSD PQAOs include:

(a) Operation by a common team of field operators according to a common set of procedures;

(b) Use of a common QAPP and/or standard operating procedures;

(c) Common calibration facilities and standards;

(d) Oversight by a common quality assurance organization; and

(e) Support by a common management organization or laboratory.

1.2.2 PSD monitoring organizations having difficulty describing its PQAO or in assigning specific monitors to a PSD PQAO should consult with the reviewing authority. Any consolidation of PSD PQAOs shall be subject to final approval by the PSD reviewing authority.

1.2.3 Each PSD PQAO is required to implement a quality system that provides sufficient information to assess the quality of the monitoring data. The quality system must, at a minimum, include the specific requirements described in this appendix. Failure to conduct or pass a required check or procedure, or a series of required checks or procedures, does not by itself invalidate data for regulatory decision making. Rather, PSD PQAOs and the PSD reviewing authority shall use the checks and procedures required in this appendix in combination with other data quality information, reports, and similar documentation that demonstrate overall compliance with parts 51, 52 and 58 of this chapter. Accordingly, the PSD reviewing authority shall use a ''weight of evidence'' approach when determining the suitability of data for regulatory decisions. The PSD reviewing authority reserves the authority to use or not use monitoring data submitted by a PSD monitoring organization when making regulatory decisions based on the PSD reviewing authority's assessment of the quality of the data. Generally, consensus built validation templates or validation criteria already approved in quality assurance project plans (QAPPs) should be used as the basis for the weight of evidence approach.

1.3 *Definitions.*

(a) *Measurement Uncertainty.* A term used to describe deviations from a true concentration or estimate that are related to the measurement process and not to spatial or temporal population attributes of the air being measured.

(b) *Precision.* A measurement of mutual agreement among individual measurements of the same property usually under prescribed similar conditions, expressed generally in terms of the standard deviation.

(c) *Bias.* The systematic or persistent distortion of a measurement process which causes errors in one direction.

(d) *Accuracy.* The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (imprecision) and systematic error (bias) components which are due to sampling and analytical operations.

(e) *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.

(f) *Detectability.* The low critical range value of a characteristic that a method specific procedure can reliably discern.

1.4 *Measurement Quality Check Reporting.* The measurement quality checks described in section 3 of this appendix, are required to be submitted to the PSD reviewing authority within the same time frame as routinely-collected ambient concentration data as described in 40 CFR 58.16. The PSD reviewing authority may as well require that the measurement quality check data be reported to AQS.

1.5 *Assessments and Reports.* Periodic assessments and documentation of data quality are required to be reported to the PSD reviewing authority. To provide national uniformity in this assessment and reporting of data quality for all networks, specific assessment and reporting procedures are prescribed in detail in sections 3, 4, and 5 of this appendix.

### 2. Quality System Requirements

A quality system (reference 1 of this appendix) is the means by which an organization manages the quality of the monitoring information it produces in a

systematic, organized manner. It provides a framework for planning, implementing, assessing and reporting work performed by an organization and for carrying out required quality assurance and quality control activities.

2.1 *Quality Assurance Project Plans.* All PSD PQAOs must develop a quality system that is described and approved in quality assurance project plans (QAPP) to ensure that the monitoring results:

(a) Meet a well-defined need, use, or purpose (reference 5 of this appendix);

(b) Provide data of adequate quality for the intended monitoring objectives;

(c) Satisfy stakeholder expectations;

(d) Comply with applicable standards specifications;

(e) Comply with statutory (and other legal) requirements; and

(f) Assure quality assurance and quality control adequacy and independence.

2.1.1 The QAPP is a formal document that describes these activities in sufficient detail and is supported by standard operating procedures. The QAPP must describe how the organization intends to control measurement uncertainty to an appropriate level in order to achieve the objectives for which the data are collected. The QAPP must be documented in accordance with EPA requirements (reference 3 of this appendix).

2.1.2 The PSD PQAO's quality system must have adequate resources both in personnel and funding to plan, implement, assess and report on the achievement of the requirements of this appendix and it's approved QAPP.

2.1.3 Incorporation of quality management plan (QMP) elements into the QAPP. The QMP describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, assessing and reporting activities involving environmental data operations (EDO). The PSD PQAOs may combine pertinent elements of the QMP into the QAPP rather than requiring the submission of both QMP and QAPP documents separately, with prior approval of the PSD reviewing authority. Additional guidance on QMPs can be found in reference 2 of this appendix.

2.2 Independence of Quality Assurance Management. The PSD PQAO must provide for a quality assurance management function for its PSD data collection operation, that aspect of the overall management system of the organization that determines and implements the quality policy defined in a PSD PQAO's QAPP. Quality management includes strategic planning, allocation of resources and other systematic planning activities (e.g., planning, implementation, assessing and reporting) pertaining to the quality system. The quality assurance management function must have sufficient technical expertise and management authority to conduct independent oversight and assure the implementation of the organization's quality system relative to the ambient air quality monitoring program and should be organizationally independent of environmental data generation activities.

2.3. *Data Quality Performance Requirements.*

2.3.1 *Data Quality Objectives (DQOs).* The DQOs, or the results of other systematic planning processes, are statements that define the appropriate type of data to collect and specify the tolerable levels of potential decision errors that will be used as a basis for establishing the quality and quantity of data needed to support air monitoring objectives (reference 5 of the appendix). The DQOs have been developed by the EPA to support attainment decisions for comparison to national ambient air quality standards (NAAQS). The reviewing authority and the PSD monitoring organization will be jointly responsible for determining whether adherence to the EPA developed NAAQS DQOs specified in appendix A of this part are appropriate or if DQOs from a project-specific systematic planning process are necessary.

2.3.1.1 *Measurement Uncertainty for Automated and Manual $PM_{2.5}$ Methods.* The goal for acceptable measurement uncertainty for precision is defined as an upper 90 percent confidence limit for the coefficient of variation (CV) of 10 percent and plus or minus 10 percent for total bias.

2.3.1.2 *Measurement Uncertainty for Automated Ozone Methods.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 7 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 7 percent.

2.3.1.3 *Measurement Uncertainty for Pb Methods.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 20 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 15 percent.

2.3.1.4 *Measurement Uncertainty for $NO_2$.* The goal for acceptable measurement uncertainty is defined for precision as an upper 90 percent confidence limit for the CV of 15 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 15 percent.

2.3.1.5 *Measurement Uncertainty for $SO_2$.* The goal for acceptable measurement uncertainty for precision is defined as an upper 90 percent confidence limit for the CV of 10 percent and for bias as an upper 95 percent confidence limit for the absolute bias of 10 percent.

2.4 *National Performance Evaluation Program.* Organizations operating PSD monitoring networks are required to implement the EPA's national performance evaluation program (NPEP) if the data will be used for NAAQS decisions and at the discretion of the PSD reviewing authority if PSD data is not used for NAAQS decisions. The NPEP includes the National Performance Audit Program (NPAP), the $PM_{2.5}$ Performance Evaluation Program ($PM_{2.5}$-PEP) and the Pb Performance Evaluation Program (Pb-PEP). The PSD QAPP shall provide for the implementation of NPEP including the provision of adequate resources for such audit programs. Contact the PSD reviewing authority to determine the best procedure for implementing the audits which may include an audit by the PSD reviewing authority, a contractor certified for the activity, or through self-implementation which is described in sections below. A determination of which entity will be performing this audit program should be made as early as possible and during the QAPP development process. The PSD PQAOs, including contractors that plan to implement these programs on behalf of PSD PQAOs, that plan to implement these programs (self-implement) rather than use the federal programs, must meet the adequacy requirements found in the appropriate sections that follow, as well as meet the definition of independent assessment that follows.

2.4.1 *Independent Assessment.* An assessment performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. This auditing organization must not be involved with the generation of the routinely-collected ambient air monitoring data. An organization can conduct the performance evaluation (PE) if it can meet this definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management. In addition, the sample analysis of audit filters must be performed by a laboratory facility and laboratory equipment separate from the facilities used for routine sample analysis. Field and laboratory personnel will be required to meet the performance evaluation field and laboratory training and certification requirements. The PSD PQAO will be required to participate in the centralized field and laboratory standards certification and comparison processes to establish comparability to federally implemented programs.

2.5 *Technical Systems Audit Program.* The PSD reviewing authority or the EPA, may conduct system audits of the ambient air monitoring programs or organizations operating PSD networks. The PSD monitoring organizations shall consult with the PSD reviewing authority to verify the schedule of any such technical systems audit. Systems audit programs are described in reference 10 of this appendix.

2.6 *Gaseous and Flow Rate Audit Standards.*

2.6.1 Gaseous pollutant concentration standards (permeation devices or cylinders of compressed gas) used to obtain test concentrations for carbon monoxide (CO), sulfur dioxide ($SO_2$), nitrogen oxide (NO), and nitrogen dioxide ($NO_2$) must be traceable to either a National Institute of Standards and Technology (NIST) Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS), certified in accordance with one of the procedures given in reference 4 of this appendix. Vendors advertising certification with the procedures provided in reference 4 of this appendix and distributing gases as ''EPA Protocol Gas'' must participate in the EPA Protocol Gas Verification Program or not use ''EPA'' in any form of advertising. The PSD PQAOs must provide information to the PSD reviewing authority on the gas vendors they use (or will use) for the duration of the PSD monitoring project. This information can be provided in the QAPP or monitoring plan, but must be updated if there is a change in the producer used.

2.6.2 Test concentrations for ozone ($O_3$) must be obtained in accordance with the ultraviolet photometric calibration procedure specified in appendix D to part 50, and by means of a certified NIST-traceable $O_3$ transfer standard. Consult references 7 and 8 of this appendix for guidance on transfer standards for $O_3$.

2.6.3 Flow rate measurements must be made by a flow measuring instrument that is NIST-traceable to an authoritative volume or other applicable standard. Guidance for certifying some types of flow-meters is provided in reference 10 of this appendix.

2.7 *Primary Requirements and Guidance.* Requirements and guidance documents for developing the quality system are contained in references 1 through 11 of this appendix, which also contain many suggested procedures, checks, and control specifications. Reference 10 describes specific guidance for the development of a quality system for data collected for comparison to the NAAQS. Many specific quality control checks and specifications for methods are included in the respective reference methods described in part 50 or in the respective equivalent method descriptions available from the EPA (reference 6 of this appendix). Similarly, quality control procedures related to specifically designated reference and equivalent method monitors are contained in the respective operation or instruction manuals associated with those monitors. For PSD monitoring, the use of reference and equivalent method monitors are required.

**3. Measurement Quality Check Requirements**

This section provides the requirements for PSD PQAOs to perform the measurement quality checks that can be used to assess data quality. Data from these checks are required to be submitted to the PSD reviewing authority within the same time frame as routinely-collected ambient concentration data as described in 40 CFR 58.16. Table B–1 of this appendix provides a summary of the types and frequency of the measurement quality checks that are described in this section. Reporting these results to AQS may be required by the PSD reviewing authority.

3.1 *Gaseous monitors of $SO_2$, $NO_2$, $O_3$, and CO.*

3.1.1 *One-Point Quality Control (QC) Check for $SO_2$, $NO_2$, $O_3$, and CO.* (a) A one-point QC check must be performed at least once every 2 weeks on each automated monitor used to measure $SO_2$, $NO_2$, $O_3$ and CO. With the advent of automated calibration systems, more frequent checking is strongly encouraged and may be required by the PSD reviewing authority. See Reference 10 of this appendix for guidance on the review procedure. The QC check is made by challenging the monitor with a QC check gas of known concentration (effective concentration for open path monitors) between the prescribed range of 0.005 and 0.08 parts per million (ppm) for $SO_2$, $NO_2$, and $O_3$, and between the prescribed range of 0.5 and 5 ppm for CO monitors. The QC check gas concentration selected within the prescribed range must be related to the mean or median of the ambient air concentrations normally measured at sites within the PSD monitoring network in order to appropriately reflect the precision and bias at these routine concentration ranges. If the mean or median concentrations at the sites are below or above the prescribed range, select the lowest or highest concentration in the range. An additional QC check point is encouraged for those organizations that may have occasional high values or would like to confirm the monitors' linearity at the higher end of the operational range.

(b) Point analyzers must operate in their normal sampling mode during the QC check and the test atmosphere must pass through all filters, scrubbers, conditioners and other components used during normal ambient sampling and as much of the ambient air inlet system as is practicable. The QC check must be conducted before any calibration or adjustment to the monitor.

(c) Open-path monitors are tested by inserting a test cell containing a QC check gas concentration into the optical measurement beam of the instrument. If possible, the normally used transmitter, receiver, and as appropriate, reflecting devices should be used during the test and the normal monitoring configuration of the instrument should be altered as little as possible to accommodate the test cell for the test. However, if permitted by the associated operation or instruction manual, an alternate local light source or an alternate optical path that does not include the normal atmospheric monitoring path may be used. The actual concentration of the QC check gas in the test cell must be selected to produce an effective concentration in the range specified earlier in this section. Generally, the QC test concentration measurement will be the sum of the atmospheric pollutant concentration and the QC test concentration. As such, the result must be corrected to remove the atmospheric concentration contribution. The corrected concentration is obtained by subtracting the average of the atmospheric concentrations measured by the open path instrument under test immediately before and immediately after the QC test from the QC check gas concentration measurement. If the difference between these before and after measurements is greater than 20 percent of the effective concentration of the test gas, discard the test result and repeat the test. If possible, open path monitors should be tested during periods when the atmospheric pollutant concentrations are relatively low and steady.

(d) Report the audit concentration of the QC gas and the corresponding measured concentration indicated by the monitor. The percent differences between these concentrations are used to assess the precision and bias of the monitoring data as described in sections 4.1.2 (precision) and 4.1.3 (bias) of this appendix.

3.1.2 *Quarterly performance evaluation for $SO_2$, $NO_2$, $O_3$, or CO.* Evaluate each primary monitor each calendar quarter during which monitors are operated or a least once (if operated for less than one quarter). The quarterly performance evaluation (quarterly PE) must be performed by a qualified individual, group, or organization that is not part of the organization directly performing and accountable for the work being assessed. The person or entity performing the quarterly PE must not be involved with the generation of the routinely-collected ambient air monitoring data. A PSD monitoring organization can conduct the quarterly PE itself if it can meet this definition and has a management structure that, at a minimum, will allow for the separation of its routine sampling personnel from its auditing personnel by two levels of management. The quarterly PE also requires a set of equipment and standards independent from those used for routine calibrations or zero, span or precision checks. The PE personnel will be required to meet PE training and certification requirements.

3.1.2.1 The evaluation is made by challenging the monitor with audit gas standards of known concentration from at least three audit levels. Two of the audit levels selected will represent a range of 10–80 percent of the typical ambient air concentrations either measured by the monitor or in the PQAOs network of monitors. The third point should be at the NAAQS level or above the highest anticipated routine hourly concentration, whichever is greater. An additional 4th level is encouraged for those PSD organizations that would like to confirm the monitor's linearity at the higher end of the operational range. In rare circumstances, there may be sites measuring concentrations above audit level 10. These sites should be identified to the PSD reviewing authority.

| Audit level | Concentration range, ppm | | | |
|---|---|---|---|---|
| | $O_3$ | $SO_2$ | $NO_2$ | CO |
| 1 | 0.004–0.0059 | 0.0003–0.0029 | 0.0003–0.0029 | 0.020–0.059 |
| 2 | 0.006–0.019 | 0.0030–0.0049 | 0.0030–0.0049 | 0.060–0.199 |
| 3 | 0.020–0.039 | 0.0050–0.0079 | 0.0050–0.0079 | 0.200–0.899 |
| 4 | 0.040–0.069 | 0.0080–0.0199 | 0.0080–0.0199 | 0.900–2.999 |
| 5 | 0.070–0.089 | 0.0200–0.0499 | 0.0200–0.0499 | 3.000–7.999 |
| 6 | 0.090–0.119 | 0.0500–0.0999 | 0.0500–0.0999 | 8.000–15.999 |
| 7 | 0.120–0.139 | 0.1000–0.1499 | 0.1000–0.2999 | 16.000–30.999 |
| 8 | 0.140–0.169 | 0.1500–0.2599 | 0.3000–0.4999 | 31.000–39.999 |

| Audit level | Concentration range, ppm | | | |
|---|---|---|---|---|
| | $O_3$ | $SO_2$ | $NO_2$ | CO |
| 9 | 0.170–0.189 | 0.2600–0.7999 | 0.5000–0.7999 | 40.000–49.999 |
| 10 | 0.190–0.259 | 0.8000–1.000 | 0.8000–1.000 | 50.000–60.000 |

3.1.2.2 The $NO_2$ audit techniques may vary depending on the ambient monitoring method. For chemiluminescence-type $NO_2$ analyzers, gas phase titration (GPT) techniques should be based on the EPA guidance documents and monitoring agency experience. The $NO_2$ gas standards may be more appropriate than GPT for direct $NO_2$ methods that do not employ converters. Care should be taken to ensure the stability of such gas standards prior to use.

3.1.2.3 The standards from which audit gas test concentrations are obtained must meet the specifications of section 2.6.1 of this appendix.

3.1.2.4 For point analyzers, the evaluation shall be carried out by allowing the monitor to analyze the audit gas test atmosphere in its normal sampling mode such that the test atmosphere passes through all filters, scrubbers, conditioners, and other sample inlet components used during normal ambient sampling and as much of the ambient air inlet system as is practicable.

3.1.2.5 Open-path monitors are evaluated by inserting a test cell containing the various audit gas concentrations into the optical measurement beam of the instrument. If possible, the normally used transmitter, receiver, and, as appropriate, reflecting devices should be used during the evaluation, and the normal monitoring configuration of the instrument should be modified as little as possible to accommodate the test cell for the evaluation. However, if permitted by the associated operation or instruction manual, an alternate local light source or an alternate optical path that does not include the normal atmospheric monitoring path may be used. The actual concentrations of the audit gas in the test cell must be selected to produce effective concentrations in the evaluation level ranges specified in this section of this appendix. Generally, each evaluation concentration measurement result will be the sum of the atmospheric pollutant concentration and the evaluation test concentration. As such, the result must be corrected to remove the atmospheric concentration contribution. The corrected concentration is obtained by subtracting the average of the atmospheric concentrations measured by the open-path instrument under test immediately before and immediately after the evaluation test (or preferably before and after each evaluation concentration level) from the evaluation concentration measurement. If the difference between the before and after measurements is greater than 20 percent of the effective concentration of the test gas standard, discard the test result for that concentration level and repeat the test for that level. If possible, open path monitors should be evaluated during periods when the atmospheric pollutant concentrations are relatively low and steady. Also, if the open-path instrument is not installed in a permanent manner, the monitoring path length must be reverified to be within plus or minus 3 percent to validate the evaluation, since the monitoring path length is critical to the determination of the effective concentration.

3.1.2.6 Report both the evaluation concentrations (effective concentrations for open-path monitors) of the audit gases and the corresponding measured concentration (corrected concentrations, if applicable, for open-path monitors) indicated or produced by the monitor being tested. The percent differences between these concentrations are used to assess the quality of the monitoring data as described in section 4.1.1 of this appendix.

3.1.3 *National Performance Evaluation Program (NPAP).*

As stated in sections 1.1 and 2.4, PSD monitoring networks may be subject to the NPEP, which includes the NPAP. The NPAP is a performance evaluation which is a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument and laboratory. The NPAP should not be confused with the quarterly PE program described in section 3.1.2. The PSD organizations shall consult with the PSD reviewing authority or the EPA regarding whether the implementation of NPAP is required and the implementation options available. Details of the EPA NPAP can be found in reference 11 of this appendix. The program requirements include:

3.1.3.1 Performing audits on 100 percent of monitors and sites each year including monitors and sites that may be operated for less than 1 year. The reviewing authority has the authority to require more frequent audits at sites they consider to be high priority.

3.1.3.2 Developing a delivery system that will allow for the audit concentration gasses to be introduced at the probe inlet where logistically feasible.

3.1.3.3 Using audit gases that are verified against the National Institute for Standards and Technology (NIST) standard reference methods or special review procedures and validated annually for CO, $SO_2$ and $NO_2$, and at the beginning of each quarter of audits for $O_3$.

3.1.3.4 The PSD PQAO may elect to self-implement NPAP. In these cases, the PSD reviewing authority will work with those PSD PQAOs to establish training and other technical requirements to establish comparability to federally implemented programs. In addition to meeting the requirements in sections 3.1.1.3 through 3.1.3.3, the PSD PQAO must:

(a) Ensure that the PSD audit system is equivalent to the EPA NPAP audit system and is an entirely separate set of equipment and standards from the equipment used for quarterly performance evaluations. If this system does not generate and analyze the audit concentrations, as the EPA NPAP system does, its equivalence to the EPA NPAP system must be proven to be as accurate under a full range of appropriate and varying conditions as described in section 3.1.3.6.

(b) Perform a whole system check by having the PSD audit system tested at an independent and qualified EPA lab, or equivalent.

(c) Evaluate the system with the EPA NPAP program through collocated auditing at an acceptable number of sites each year (at least one for a PSD network of five or less sites; at least two for a network with more than five sites).

(d) Incorporate the NPAP into the PSD PQAO's QAPP.

(e) Be subject to review by independent, EPA-trained personnel.

(f) Participate in initial and update training/certification sessions.

3.2 *$PM_{2.5}$.*

3.2.1 *Flow Rate Verification for $PM_{2.5}$.* A one-point flow rate verification check must be performed at least once every month (each verification minimally separated by 14 days) on each monitor used to measure $PM_{2.5}$. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. For the standard procedure, use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be used in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. Flow rate verification results are to be reported to the PSD reviewing authority quarterly as described in section 5.1. Reporting these results to AQS is encouraged. The percent differences between the audit and measured flow rates are used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.2.2 *Semi-Annual Flow Rate Audit for $PM_{2.5}$.* Every 6 months, audit the flow rate of the $PM_{2.5}$ particulate monitors. For short-term monitoring operations (those less than 1 year), the flow rate audits must occur at start up, at the midpoint, and near the completion of the monitoring project. The audit must be conducted by a trained technician other than the routine site operator. The audit is made by measuring the monitor's normal operating flow rate using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used for verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard.

Care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor. The percent differences between these flow rates are used to evaluate monitor performance.

3.2.3 *Collocated Sampling Procedures for $PM_{2.5}$.* A PSD PQAO must have at least one collocated monitor for each PSD monitoring network.

3.2.3.1 For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the QC monitor. There can be only one primary monitor at a monitoring site for a given time period.

(a) If the primary monitor is a FRM, then the quality control monitor must be a FRM of the same method designation.

(b) If the primary monitor is a FEM, then the quality control monitor must be a FRM unless the PSD PQAO submits a waiver for this requirement, provides a specific reason why a FRM cannot be implemented, and the waiver is approved by the PSD reviewing authority. If the waiver is approved, then the quality control monitor must be the same method designation as the primary FEM monitor.

3.2.3.2 In addition, the collocated monitors should be deployed according to the following protocol:

(a) The collocated quality control monitor(s) should be deployed at sites with the highest predicted daily $PM_{2.5}$ concentrations in the network. If the highest $PM_{2.5}$ concentration site is impractical for collocation purposes, alternative sites approved by the PSD reviewing authority may be selected. If additional collocated sites are necessary, the PSD PQAO and the reviewing authority should determine the appropriate location(s) based on data needs.

(b) The two collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated quality control monitor may be approved by the PSD reviewing authority for sites at a neighborhood or larger scale of representation. This waiver may be approved during the QAPP review and approval process. Calibration, sampling, and analysis must be the same for both collocated samplers and the same as for all other samplers in the network.

(c) Sample the collocated quality control monitor on a 6-day schedule for sites not requiring daily monitoring and on a 3-day schedule for any site requiring daily monitoring. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

3.2.4 *$PM_{2.5}$ Performance Evaluation Program (PEP) Procedures.* As stated in sections 1.1 and 2.4 of this appendix, PSD monitoring networks may be subject to the NPEP, which includes the $PM_{2.5}$ PEP. The PSD monitoring organizations shall consult with the PSD reviewing authority or the EPA regarding whether the implementation of $PM_{2.5}$ PEP is required and the implementation options available for the $PM_{2.5}$ PEP. For PSD PQAOs with less than or equal to five monitoring sites, five valid performance evaluation audits must be collected and reported each year. For PSD PQAOs with greater than five monitoring sites, eight valid performance evaluation audits must be collected and reported each year. Additionally, within the five or eight required audits, each type of method designation (FRM/FEM designation) used as a primary monitor in the PSD network shall be audited. For a PE to be valid, both the primary monitor and PEP audit measurements must meet quality control requirements and be above 3 $\mu g/m^3$ or a predefined lower concentration level determined by a systematic planning process and approved by the PSD reviewing authority. Due to the relatively short-term nature of most PSD monitoring, the likelihood of measuring low concentrations in many areas attaining the $PM_{2.5}$ standard and the time required to weigh filters collected in PEs, a PSD monitoring organization's QAPP may contain a provision to waive the 3 $\mu g/m^3$ threshold for validity of PEs conducted in the last quarter of monitoring, subject to approval by the PSD reviewing authority.

3.3 *$PM_{10}$.*

3.3.1 *Flow Rate Verification for $PM_{10}$.* A one-point flow rate verification check must be performed at least once every month (each verification minimally seperated by 14 days) on each monitor used to measure $PM_{10}$. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. For the standard procedure, use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be taken in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. The percent differences between the audit and measured flow rates are used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.3.2 *Semi-Annual Flow Rate Audit for $PM_{10}$.* Every 6 months, audit the flow rate of the $PM_{10}$ particulate monitors. For short-term monitoring operations (those less than 1 year), the flow rate audits must occur at start up, at the midpoint, and near the completion of the monitoring project. Where possible, the EPA strongly encourages more frequent auditing. The audit must be conducted by a trained technician other than the routine site operator. The audit is made by measuring the monitor's normal operating flow rate using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used for verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard. Care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor. The percent differences between these flow rates are used to evaluate monitor performance

3.3.3 *Collocated Sampling Procedures for Manual $PM_{10}$.* A PSD PQAO must have at least one collocated monitor for each PSD monitoring network.

3.3.3.1 For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor.

3.3.3.2 In addition, the collocated monitors should be deployed according to the following protocol:

(a) The collocated quality control monitor(s) should be deployed at sites with the highest predicted daily $PM_{10}$ concentrations in the network. If the highest $PM_{10}$ concentration site is impractical for collocation purposes, alternative sites approved by the PSD reviewing authority may be selected.

(b) The two collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the PSD reviewing authority for sites at a neighborhood or larger scale of representation. This waiver may be approved during the QAPP review and approval process. Calibration, sampling, and analysis must be the same for both collocated samplers and the same as for all other samplers in the network.

(c) Sample the collocated quality control monitor on a 6-day schedule or 3-day schedule for any site requiring daily monitoring. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

(d) In determining the number of collocated sites required for $PM_{10}$, PSD monitoring networks for Pb-$PM_{10}$ should be treated independently from networks for particulate matter (PM), even though the separate networks may share one or more common samplers. However, a single quality control monitor that meets the collocation requirements for Pb-$PM_{10}$ and $PM_{10}$ may serve as a collocated quality control monitor for both networks. Extreme care must be taken if using the filter from a quality control monitor for both $PM_{10}$ and Pb analysis. $PM_{10}$ filter weighing should occur prior to any Pb analysis.

3.4 *Pb.*

3.4.1 *Flow Rate Verification for Pb.* A one-point flow rate verification check must be performed at least once every month (each verification minimally separated by 14 days) on each monitor used to measure Pb. The verification is made by checking the operational flow rate of the monitor. If the verification is made in conjunction with a flow rate adjustment, it must be made prior to such flow rate adjustment. Use a flow rate transfer standard certified in accordance with section 2.6 of this appendix to check the monitor's normal flow rate. Care should be taken in selecting and using the flow rate measurement device such that it does not alter the normal operating flow rate of the monitor. The percent differences between the audit and measured flow rates are used to assess the bias of the monitoring data as described in section 4.2.2 of this appendix (using flow rates in lieu of concentrations).

3.4.2 *Semi-Annual Flow Rate Audit for Pb.* Every 6 months, audit the flow rate of the Pb particulate monitors. For short-term monitoring operations (those less than 1 year), the flow rate audits must occur at start up, at the midpoint, and near the completion of the monitoring project. Where possible, the EPA strongly encourages more frequent auditing. The audit must be conducted by a trained technician other than the routine site operator. The audit is made by measuring the monitor's normal operating flow rate using a flow rate transfer standard certified in accordance with section 2.6 of this appendix. The flow rate standard used for auditing must not be the same flow rate standard used to in verifications or to calibrate the monitor. However, both the calibration standard and the audit standard may be referenced to the same primary flow rate or volume standard. Great care must be taken in auditing the flow rate to be certain that the flow measurement device does not alter the normal operating flow rate of the monitor. Report the audit flow rate of the transfer standard and the corresponding flow rate measured by the monitor. The percent differences between these flow rates are used to evaluate monitor performance.

3.4.3 *Collocated Sampling for Pb.* A PSD PQAO must have at least one collocated monitor for each PSD monitoring network.

3.4.3.1 For each pair of collocated monitors, designate one sampler as the primary monitor whose concentrations will be used to report air quality for the site, and designate the other as the quality control monitor.

3.4.3.2 In addition, the collocated monitors should be deployed according to the following protocol:

(a) The collocated quality control monitor(s) should be deployed at sites with the highest predicted daily Pb concentrations in the network. If the highest Pb concentration site is impractical for collocation purposes, alternative sites approved by the PSD reviewing authority may be selected.

(b) The two collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates greater than 200 liters/min or at least 1 meter apart for samplers having flow rates less than 200 liters/min to preclude airflow interference. A waiver allowing up to 10 meters horizontal distance and up to 3 meters vertical distance (inlet to inlet) between a primary and collocated sampler may be approved by the reviewing authority for sites at a neighborhood or larger scale of representation. This waiver may be approved during the QAPP review and approval process. Calibration, sampling, and analysis must be the same for both collocated samplers and the same as for all other samplers in the network.

(c) Sample the collocated quality control monitor on a 6-day schedule if daily monitoring is not required or 3-day schedule for any site requiring daily monitoring. Report the measurements from both primary and collocated quality control monitors at each collocated sampling site. The calculations for evaluating precision between the two collocated monitors are described in section 4.2.1 of this appendix.

(d) In determining the number of collocated sites required for Pb-$PM_{10}$, PSD monitoring networks for $PM_{10}$ should be treated independently from networks for Pb-$PM_{10}$, even though the separate networks may share one or more common samplers. However, a single quality control monitor that meets the collocation requirements for Pb-$PM_{10}$ and $PM_{10}$ may serve as a collocated quality control monitor for both networks. Extreme care must be taken if using a using the filter from a quality control monitor for both $PM_{10}$ and Pb analysis. The $PM_{10}$ filter weighing should occur prior to any Pb analysis.

3.4.4 *Pb Analysis Audits.* Each calendar quarter, audit the Pb reference or equivalent method analytical procedure using filters containing a known quantity of Pb. These audit filters are prepared by depositing a Pb standard on unexposed filters and allowing them to dry thoroughly. The audit samples must be prepared using batches of reagents different from those used to calibrate the Pb analytical equipment being audited. Prepare audit samples in the following concentration ranges:

| Range | Equivalent ambient Pb concentration, μg/m³ |
|---|---|
| 1 ..... | 30–100% of Pb NAAQS. |
| 2 ..... | 200–300% of Pb NAAQS. |

(a) Audit samples must be extracted using the same extraction procedure used for exposed filters.

(b) Analyze three audit samples in each of the two ranges each quarter samples are analyzed. The audit sample analyses shall be distributed as much as possible over the entire calendar quarter.

(c) Report the audit concentrations (in μg Pb/filter or strip) and the corresponding measured concentrations (in μg Pb/filter or strip) using AQS unit code 077 (if reporting to AQS). The percent differences between the concentrations are used to calculate analytical accuracy as described in section 4.2.5 of this appendix.

3.4.5 *Pb Performance Evaluation Program (PEP) Procedures.* As stated in sections 1.1 and 2.4, PSD monitoring networks may be subject to the NPEP, which includes the Pb Performance Evaluation Program. PSD monitoring organizations shall consult with the PSD reviewing authority or the EPA regarding whether the implementation of Pb-PEP is required and the implementation options available for the Pb-PEP. The PEP is an independent assessment used to estimate total measurement system bias. Each year, one PE audit must be performed at one Pb site in each PSD PQAO network that has less than or equal to five sites and two audits for PSD PQAO networks with greater than five sites. In addition, each year, four collocated samples from PSD PQAO networks with less than or equal to five sites and six collocated samples from PSD PQAO networks with greater than five sites must be sent to an independent laboratory for analysis. The calculations for evaluating bias between the primary monitor and the PE monitor for Pb are described in section 4.2.4 of this appendix.

**4. Calculations for Data Quality Assessment**

(a) Calculations of measurement uncertainty are carried out by PSD PQAO according to the following procedures. The PSD PQAOs should report the data for all appropriate measurement quality checks as specified in this appendix even though they may elect to perform some or all of the calculations in this section on their own.

(b) At low concentrations, agreement between the measurements of collocated samplers, expressed as relative percent difference or percent difference, may be relatively poor. For this reason, collocated measurement pairs will be selected for use in the precision and bias calculations only when both measurements are equal to or above the following limits:

(1) Pb: 0.002 μg/m³ (Methods approved after 3/04/2010, with exception of manual equivalent method EQLA–0813–803).

(2) Pb: 0.02 μg/m³ (Methods approved before 3/04/2010, and manual equivalent method EQLA–0813–803).

(3) $PM_{10}$ (Hi-Vol): 15 μg/m³.

(4) $PM_{10}$ (Lo-Vol): 3 μg/m³.

(5) $PM_{2.5}$: 3 μg/m³.

The $PM_{2.5}$ 3 μg/m³ limit for the $PM_{2.5}$-PEP may be superseded by mutual agreement between the PSD PQAO and the PSD reviewing authority as specified in section 3.2.4 of the appendix and detailed in the approved QAPP.

4.1 *Statistics for the Assessment of QC Checks for $SO_2$, $NO_2$, $O_3$ and CO.*

4.1.1 *Percent Difference.* Many of the measurement quality checks start with a comparison of an audit concentration or value (flow-rate) to the concentration/value measured by the monitor and use percent difference as the comparison statistic as described in equation 1 of this section. For each single point check, calculate the percent difference, $d_i$, as follows:

Equation 1

$$d_i = \frac{meas - audit}{audit} \cdot 100$$

where, *meas* is the concentration indicated by the PQAO's instrument and *audit* is the audit concentration of the standard used in the QC check being measured.

4.1.2 *Precision Estimate.* The precision estimate is used to assess the one-point QC checks for $SO_2$, $NO_2$, $O_3$, or CO described in section 3.1.1 of this appendix. The precision estimator is the coefficient of variation upper bound and is calculated using equation 2 of this section:

Equation 2

$$CV = \sqrt{\frac{n \cdot \sum_{i=1}^{n} d_i^2 - \left(\sum_{i=1}^{n} d_i\right)^2}{n(n-1)}} \cdot \sqrt{\frac{n-1}{\chi^2_{0.1,n-1}}}$$

where, *n* is the number of single point checks being aggregated; $X^2_{0.1,n-1}$ is the 10th percentile of a chi-squared distribution with n–1 degrees of freedom.

4.1.3 *Bias Estimate.* The bias estimate is calculated using the one-point QC checks for $SO_2$, $NO_2$, $O_3$, or CO described in section 3.1.1 of this appendix. The bias estimator is an upper bound on the mean absolute value of the percent differences as described in equation 3 of this section:

Equation 3

$$|bias| = AB + t_{0.95,n-1} \cdot \frac{AS}{\sqrt{n}}$$

where, *n* is the number of single point checks being aggregated; $t_{0.95,n-1}$ is the 95th quantile of a t-distribution with n-1 degrees of freedom; the quantity *AB* is the mean of the absolute values of the $d_i$'s and is calculated using equation 4 of this section:

Equation 4

$$AB = \frac{1}{n} \cdot \sum_{i=1}^{n} |d_i|$$

and the quantity *AS* is the standard deviation of the absolute value of the $d_i$'s and is calculated using equation 5 of this section:

Equation 5

$$AS = \sqrt{\frac{n \cdot \sum_{i=1}^{n} |d_i|^2 - \left(\sum_{i=1}^{n} |d_i|\right)^2}{n(n-1)}}$$

4.1.3.1 *Assigning a sign (positive/negative) to the bias estimate.* Since the bias statistic as calculated in equation 3 of this appendix uses absolute values, it does not have a tendency (negative or positive bias) associated with it. A sign will be designated by rank ordering the percent differences of the QC check samples from a given site for a particular assessment interval.

4.1.3.2 Calculate the 25th and 75th percentiles of the percent differences for each site. The absolute bias upper bound should be flagged as positive if both percentiles are positive and negative if both percentiles are negative. The absolute bias upper bound would not be flagged if the 25th and 75th percentiles are of different signs.

4.2 *Statistics for the Assessment of $PM_{10}$, $PM_{2.5}$, and Pb.*

4.2.1 *Collocated Quality Control Sampler Precision Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* Precision is estimated via duplicate measurements from collocated samplers. It is recommended that the precision be aggregated at the PQAO level quarterly, annually, and at the 3-year level. The data pair would only be considered valid if both concentrations are greater than or equal to the minimum values specified in section 4(c) of this appendix. For each collocated data pair, calculate the relative percent difference, $d_i$, using equation 6 of this appendix:

Equation 6

$$d_i = \frac{X_i - Y_i}{(X_i + Y_i)/2} \cdot 100$$

where, $X_i$ is the concentration from the primary sampler and $Y_i$ is the concentration value from the audit sampler. The coefficient of variation upper bound is calculated using equation 7 of this appendix:

Equation 7

$$CV = \sqrt{\frac{n \cdot \sum_{i=1}^{n} d_i^2 - \left(\sum_{i=1}^{n} d_i\right)^2}{2n(n-1)}} \cdot \sqrt{\frac{n-1}{X^2_{0.1,n-1}}}$$

where, *n* is the number of valid data pairs being aggregated, and $X^2_{0.1,n-1}$ is the 10th percentile of a chi-squared distribution with n–1 degrees of freedom. The factor of 2 in the denominator adjusts for the fact that each $d_i$ is calculated from two values with error.

4.2.2 *One-Point Flow Rate Verification Bias Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* For each one-point flow rate verification, calculate the percent difference in volume using equation 1 of this appendix where *meas* is the value indicated by the sampler's volume measurement and *audit* is the actual volume indicated by the auditing flow meter. The absolute volume bias upper bound is then calculated using equation 3, where *n* is the number of flow rate audits being aggregated; $t_{0.95,n-1}$ is the 95th quantile of a t-distribution with n-1 degrees of freedom, the quantity *AB* is the mean of the absolute values of the $d_i$'s and is calculated using equation 4 of this appendix, and the quantity *AS* in equation 3 of this appendix is the standard deviation of the absolute values if the $d_i$'s and is calculated using equation 5 of this appendix.

4.2.3 *Semi-Annual Flow Rate Audit Bias Estimate for $PM_{10}$, $PM_{2.5}$ and Pb.* Use the same procedure described in section 4.2.2 for the evaluation of flow rate audits.

4.2.4 *Performance Evaluation Programs Bias Estimate for Pb.* The Pb bias estimate is calculated using the paired routine and the

PEP monitor as described in section 3.4.5. Use the same procedures as described in section 4.1.3 of this appendix.

4.2.5 *Performance Evaluation Programs Bias Estimate for $PM_{2.5}$.* The bias estimate is calculated using the PEP audits described in section 4.1.3 of this appendix. The bias estimator is based on the mean percent differences (Equation 1). The mean percent difference, *D*, is calculated by Equation 8 below.

*Equation 8*

$$D = \frac{1}{n_j} \cdot \sum_{i=1}^{n_j} d_i$$

where, $n_j$ is the number of pairs and $d_1, d_2, \ldots d_{nj}$ are the biases for each pair to be averaged.

4.2.6 *Pb Analysis Audit Bias Estimate.* The bias estimate is calculated using the analysis audit data described in section 3.4.4. Use the same bias estimate procedure as described in section 4.1.3 of this appendix.

**5. Reporting Requirements**

5.1 *Quarterly Reports.* For each quarter, each PSD PQAO shall report to the PSD reviewing authority (and AQS if required by the PSD reviewing authority) the results of all valid measurement quality checks it has carried out during the quarter. The quarterly reports must be submitted consistent with the data reporting requirements specified for air quality data as set forth in 40 CFR 58.16 and pertain to PSD monitoring.

6.0 References

(1) American National Standard—Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs. ANSI/ASQC E4–2004. February 2004. Available from American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.

(2) EPA Requirements for Quality Management Plans. EPA QA/R–2. EPA/240/B–01/002. March 2001, Reissue May 2006. Office of Environmental Information, Washington, DC 20460. *http://www.epa.gov/quality/qs-docs/r2-final.pdf.*

(3) EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations. EPA QA/R–5. EPA/240/B–01/003. March 2001, Reissue May 2006. Office of Environmental Information, Washington, DC 20460. *http://www.epa.gov/quality/qs-docs/r5-final.pdf.*

(4) EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards. EPA–600/R–12/531. May, 2012. Available from U.S. Environmental Protection Agency, National Risk Management Research Laboratory, Research Triangle Park, NC 27711. *http://www.epa.gov/nrmrl/appcd/mmd/db-traceability-protocol.html.*

(5) Guidance for the Data Quality Objectives Process. EPA QA/G–4. EPA/240/B–06/001. February, 2006. Office of Environmental Information, Washington, DC 20460. *http://www.epa.gov/quality/qs-docs/g4-final.pdf.*

(6) List of Designated Reference and Equivalent Methods. Available from U.S. Environmental Protection Agency, National Exposure Research Laboratory, Human Exposure and Atmospheric Sciences Division, MD–D205–03, Research Triangle Park, NC 27711. *http://www.epa.gov/ttn/amtic/criteria.html.*

(7) Transfer Standards for the Calibration of Ambient Air Monitoring Analyzers for Ozone. EPA–454/B–13–004 U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, October, 2013. *http://www.epa.gov/ttn/amtic/qapollutant.html.*

(8) Paur, R.J. and F.F. McElroy. Technical Assistance Document for the Calibration of Ambient Ozone Monitors. EPA–600/4–79–057. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, September, 1979. *http://www.epa.gov/ttn/amtic/cpreldoc.html.*

(9) Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 1—A Field Guide to Environmental Quality Assurance. EPA–600/R–94/038a. April 1994. Available from U.S. Environmental Protection Agency, ORD Publications Office, Center for Environmental Research Information (CERI), 26 W. Martin Luther King Drive, Cincinnati, OH 45268. *http://www.epa.gov/ttn/amtic/qabook.html.*

(10) Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program Quality System Development. EPA–454/B–13–003. *http://www.epa.gov/ttn/amtic/qabook.html.*

(11) National Performance Evaluation Program Standard Operating Procedures. *http://www.epa.gov/ttn/amtic/npapsop.html.*

TABLE B–1—MINIMUM DATA ASSESSMENT REQUIREMENTS FOR NAAQS RELATED CRITERIA POLLUTANT PSD MONITORS

| Method | Assessment method | Coverage | Minimum frequency | Parameters reported | AQS assessment type |
|---|---|---|---|---|---|
| **Gaseous Methods ($CO$, $NO_2$, $SO_2$, $O_3$)** | | | | | |
| 1-Point QC for $SO_2$, $NO_2$, $O_3$, CO. | Response check at concentration 0.005–0.08 ppm $SO_2$, $NO_2$, $O_3$, & 0.5 and 5 ppm CO. | Each analyzer | Once per 2 weeks | Audit concentration [1] and measured concentration [2]. | 1-Point QC. |
| Quarterly performance evaluation for $SO_2$, $NO_2$, $O_3$, CO. | See section 3.1.2 of this appendix. | Each analyzer | Once per quarter | Audit concentration [1] and measured concentration [2] for each level. | Annual PE. |
| NPAP for $SO_2$, $NO_2$, $O_3$, CO [3]. | Independent Audit | Each primary monitor | Once per year | Audit concentration [1] and measured concentration [2] for each level. | NPAP. |
| **Particulate Methods** | | | | | |
| Collocated sampling $PM_{10}$, $PM_{2.5}$, Pb. | Collocated samplers | 1 per PSD Network per pollutant. | Every 6 days or every 3 days if daily monitoring required. | Primary sampler concentration and duplicate sampler concentration [4]. | No Transaction reported as raw data. |
| Flow rate verification $PM_{10}$, $PM_{2.5}$, Pb | Check of sampler flow rate. | Each sampler | Once every month | Audit flow rate and measured flow rate indicated by the sampler. | Flow Rate Verification. |
| Semi-annual flow rate audit. $PM_{10}$, $PM_{2.5}$, Pb | Check of sampler flow rate using independent standard. | Each sampler | Once every 6 months or beginning, middle and end of monitoring. | Audit flow rate and measured flow rate indicated by the sampler. | Semi Annual Flow Rate Audit. |

TABLE B–1—MINIMUM DATA ASSESSMENT REQUIREMENTS FOR NAAQS RELATED CRITERIA POLLUTANT PSD MONITORS—Continued

| Method | Assessment method | Coverage | Minimum frequency | Parameters reported | AQS assessment type |
|---|---|---|---|---|---|
| Pb analysis audits ..... Pb-TSP, Pb-$PM_{10}$ ..... | Check of analytical system with Pb audit strips/filters. | Analytical ..... | Each quarter ..... | Measured value and audit value (ug Pb/filter) using AQS unit code 077 for parameters: 14129—Pb (TSP) LC FRM/FEM. 85129—Pb (TSP) LC Non-FRM/FEM. | Pb Analysis Audits. |
| Performance Evaluation Program $PM_{2.5}$ [3]. | Collocated samplers ..... | (1) 5 valid audits for PQAOs with <= 5 sites. (2) 8 valid audits for PQAOs with > 5 sites. (3) All samplers in 6 years. | Over all 4 quarters ..... | Primary sampler concentration and performance evaluation sampler concentration. | PEP. |
| Performance Evaluation Program. Pb [3] ..... | Collocated samplers ..... | (1) 1 valid audit and 4 collocated samples for PQAOs, with <=5 sites. (2) 2 valid audits and 6 collocated samples for PQAOs with > 5 sites. | Over all 4 quarters ..... | Primary sampler concentration and performance evaluation sampler concentration. Primary sampler concentration and duplicate sampler concentration. | PEP. |

[1] Effective concentration for open path analyzers.
[2] Corrected concentration, if applicable for open path analyzers.
[3] NPAP, $PM_{2.5}$ PEP and Pb-PEP must be implemented if data is used for NAAQS decisions otherwise implementation is at PSD reviewing authority discretion.
[4] Both primary and collocated sampler values are reported as raw data.

■ 11. In Appendix D to part 58, revise paragraph 3(b), remove and reserve paragraph 4.5(b), and revise paragraph 4.5(c) to read as follows:

## Appendix D to Part 58—Network Design Criteria for Ambient Air Quality Monitoring

* * * * *

3. * * *

(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, $O_3$, $SO_2$, CO, NO/$NO_Y$, wind speed, wind direction, relative humidity, and ambient temperature.

(1) Although the measurement of $NO_y$ is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of $NO_y$ compared to the conventional measurement of $NO_X$, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between $NO_y$ and $NO_X$ measured concentrations, the Administrator may allow for waivers that permit $NO_X$ monitoring to be substituted for the required $NO_y$ monitoring at applicable NCore sites.

(2) The EPA recognizes that, in some cases, the physical location of the NCore site may not be suitable for representative meteorological measurements due to the site's physical surroundings. It is also possible that nearby meteorological measurements may be able to fulfill this data need. In these cases, the requirement for meteorological monitoring can be waived by the Administrator.

* * * * *

4.5 * * *

(b) [Reserved]

(c) The EPA Regional Administrator may require additional monitoring beyond the minimum monitoring requirements contained in paragraph 4.5(a) of this appendix where the likelihood of Pb air quality violations is significant or where the emissions density, topography, or population locations are complex and varied. EPA Regional Administrators may require additional monitoring at locations including, but not limited to, those near existing additional industrial sources of Pb, recently closed industrial sources of Pb, airports where piston-engine aircraft emit Pb, and other sources of re-entrained Pb dust.

* * * * *

[FR Doc. 2014–19758 Filed 9–10–14; 8:45 am]

BILLING CODE 6560–50–P