



QUALITY MANAGEMENT BRANCH

STANDARD OPERATING PROCEDURES

FOR

AIR QUALITY DATA ACTION REQUEST

Quality Assurance Section SOP AO

Revision 1

MONITORING AND LABORATORY DIVISION

June 27, 2017



California Environmental Protection Agency

AIR RESOURCES BOARD

Approval of Standard Operating Procedures (SOP)

Title: Air Quality Data Action Request

SOP: Quality Assurance Section, Revision 1

Section: Quality Assurance Section

Branch: Quality Management Branch

Division: Monitoring and Laboratory Division

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FIGURES

AIR QUALITY DATA ACTION REQUEST

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LIST OF ACRONYMS

AIS	Audit Information System
AQDA	Air Quality Data Action
AQS	Air Quality System
ARB	Air Resources Board
CAN	Corrective Action Notification
MO	Monitoring Organization
QAS	Quality Assurance Section
QMB	Quality Management Branch
SOP	Standard Operating Procedure
U.S. EPA	United States Environmental Protection Agency

1.0 AIR QUALITY DATA ACTION

The Quality Assurance Section (QAS) within the Quality Management Branch (QMB) is responsible for initiating, issuing, tracking, finalizing and storing the Air Quality Data Action (AQDA) Request. This includes confirming the completion of the action stated in the AQDA.

The AQDA process, Figure 1, provides a corrective action mechanism for addressing a failure of a parameter at an ambient air monitoring station or mass analysis laboratory resulting from a performance evaluation or audit. The AQDA process is a vital quality assurance component established to ensure that ambient air data collected by Monitoring Organizations (MO) throughout the State meets or exceeds the defined data quality and program objectives. AQDAs serve to alert stakeholders that ambient data is in question. All AQDAs must be investigated and resolved to correct the problem and prevent reoccurrence. Four main actions are performed through the AQDA process:

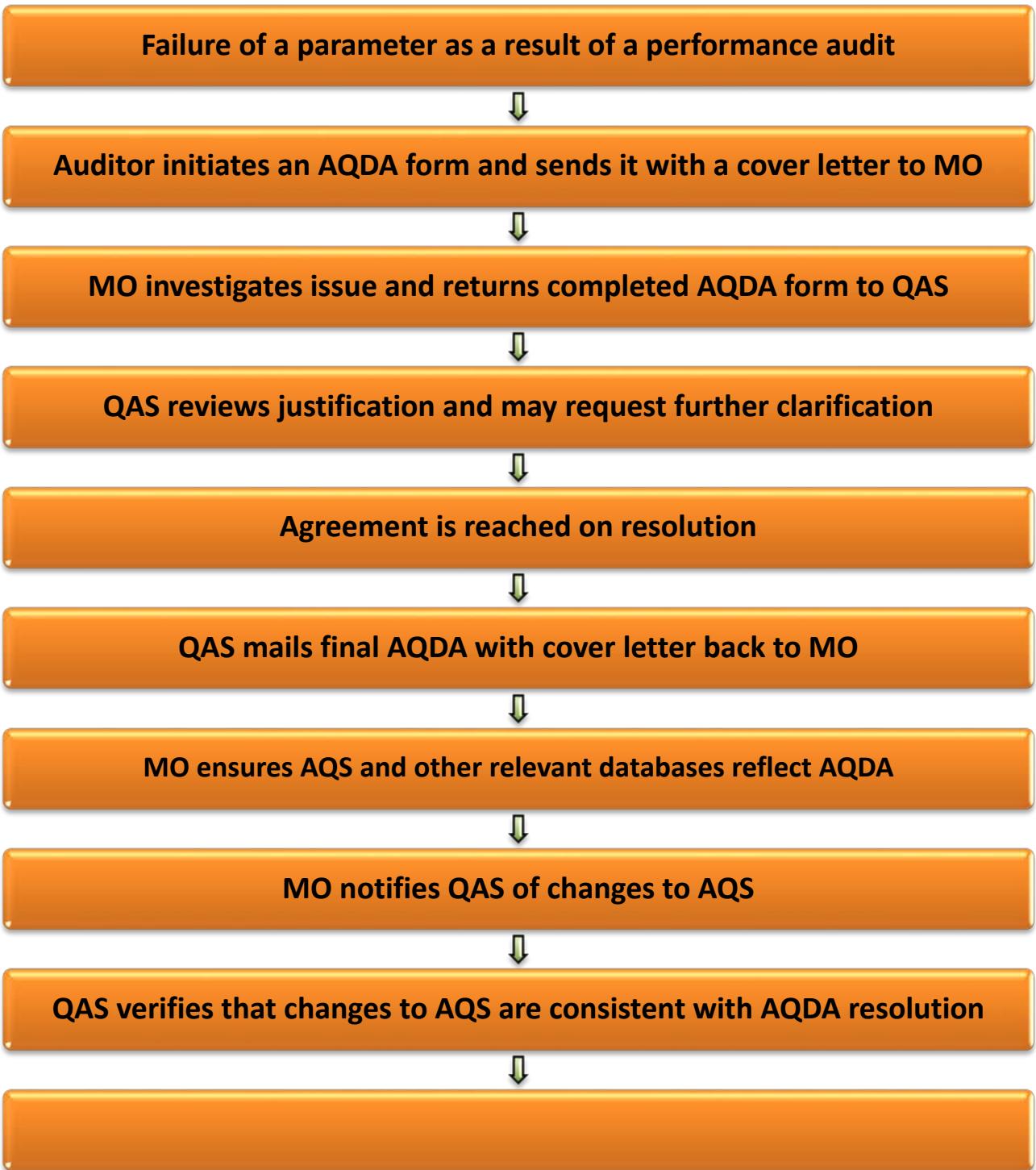
1. Identify and document the failure of a performance criterion.
2. Ascertain the problem and find a resolution which will prevent reoccurrence.
3. Determine the time period and impact on the data collected.
4. Verify that changes to the Air Quality System (AQS) are consistent with the AQDA resolution.

An AQDA Request form is generated when the operation of an air monitoring parameter does not meet the federal critical or Air Resources Board (ARB) control limits criteria. These criteria are derived from various sources:

- Title 40 of the Code of Federal Regulations, Part 50 and 58
- U.S. EPA's Quality Assurance Handbook for Air Pollution Measurements Systems, Volume II, Ambient Air Quality Monitoring Program
- U.S. EPA's Quality Assurance Handbook for Air Pollution Measurements, Volume IV, Meteorological Systems
- U.S. EPA's Guidance Document Method 2.12, Monitoring PM in 2.5 Ambient Air Using Designated Reference or Class I Equivalent Methods
- ARB's Performance Audit Validation Template
(<https://www.arb.ca.gov/aaqm/qa/qa-audits/audit-criteria.pdf>)

While a station operator is informed immediately of a failure requiring an AQDA, the formal initiation of the AQDA begins when the auditor returns back to the office.

Failures not qualifying for an AQDA that may impact data quality are documented through the Corrective Action Notice (CAN) process, (https://www.arb.ca.gov/aaqm/qa/pqao/pqao_can.htm).



AQDA PROCESS
Figure 1

2.0 ISSUING THE AQDA

A qualified and trained QAS auditor will issue the AQDA Request. Training for new staff will be completed on the job. The QAS supervisor will determine when a trainee can issue an AQDA.

Completing an AQDA Request form begins with accessing the QAS Audit Information System (AIS). AIS is the database for generating and storing performance audit reports, CANs, and the AQDA Requests.

The AQDA Request consists of two sections. The first section in AIS is filled out by the QAS auditor initiating the AQDA (see Figure 2). For this SOP, each field in Figure 2 is identified by a number that correlates to corresponding instructions for each field.

After the AQDA is initiated, it is converted to a pdf and saved electronically into the auditor's incoming folder located on the ARB system drive. Hard copies using the AQDA tracking form (S:Cabinet\Forms and Worksheets) are distributed for peer, manager, and branch review prior to being sent out to the MO responsible for the operation of the monitoring station. QAS staff responsible for scheduling audits will be notified that a re-audit of the parameter at the air monitoring station will be needed in the future.

The AQDA form is transmitted to the MO with a cover letter or a memo. The template for the cover letter/memo can be found in S:\Cabinet\TEMPLATES - AQDAs and Letters.

AQDA detail for AIS Test Site . Click on the site number to view information about that site.

ARB Site Number 33333	AIRS Site Number N/A	1 Site Name AIS Test Site	2 Audit Date -- Select an Audit Date --	3 AQDA Number 8312
4 AQDA Date 04 16 2015 Set Date	5 Agency : Code -- Select an Agency Name : Code --	6 Contact Person	7 Auditor Laura Niles	
8 Pollutant Pollutant	9 POC	10 Qual Code	Review Person AQPSD Contact	Estimated Start Date 00 00 0000 Set Date
11 Reason For Action			12	13
14				

AQDA ISSUING PROCESS

Figure 2

1. **Site Name:** Select from drop down menu. (**ARB Site Number** and **AIRS Site Number** will be automatically generated)
2. **Audit Date:** Select from drop-down menu.
3. **AQDA Number:** Is automatically generated.
4. **AQDA Date:** Input date that AQDA will be sent to MO.
5. **Agency Code:** Select MO from drop-down menu.
6. **Contact Person:** Either operator or designated person from the MO.
7. **Auditor:** Enter the name of the auditor.
8. **Pollutant:** Select the affected pollutant from the drop-down menu.
9. **POC:** Parameter Occurrence Code can be obtained from site dossier.

10. **Qual Code:** Leave blank. To be determined based on resolution.
11. **Review person:** Enter ARB's Air Quality Science and Planning Division liaison.
12. **Estimated Start Date:** Enter the earliest date that data may be in question.
13. **Estimated End Date:** Enter 45 days from the "AQDA Date" in block 4.
14. **Reason For Action:** Enter the description of the parameter that failed or was inoperative. Include the identification number, date of the audit, last calibration date, and applicable citation from either Quality Assurance Volume II, Code of Federal Regulations, or ARB control limits criteria.

(See Figure 5, for steps 15 and 16)

15. When the AQDA is complete, select "Submit Changes" to save your AQDA form
16. Select "Get AQDA Form" and create a .pdf file. See Figure 3 for pdf version of the AQDA. Complete a transmittal cover letter using the template in S:\Cabinet\TEMPLATES - AQDAs and Letters, and use the AQDA tracking form located on the S:\cabinet\Foms and Worksheets\AQDA tracking form. The naming convention for saving the .pdf should be:

AQDA#_AQDA_Site Name_Parameter and Reason_Your Name_Date of Issuance (MM DD 'YY)

Save to your incoming folder on the "W" drive.

Air Quality Data Action Request

SITE NAME:	<u>AIS Test Site</u>	REQUEST LOG #:	<u>8371</u>
SITE NUMBER:	<u>33333</u>	AQS#:	<u>06</u>
		POC#:	<u>1</u>
		REQUEST DATE:	<u>03-06-2017</u>
TO: <u>Station Operator</u> , Air Monitoring/APCD. Please investigate the potential inaccuracies listed below and recommend appropriate action(s). If no response is received by 04-20-2017, QA staff shall review and recommend appropriate action(s), which may/may not affect the data involved.			
TO: <u>AQPSD Contact</u> , Air Quality Data Review. Please withhold the following air quality data from processing until potential data inaccuracies are resolved.			
FROM: <u>QA Auditor</u> , Quality Assurance Section.			

POLLUTANT	EST. TIME PERIOD *			REASON FOR ACTION
SO2	From:			During the gaseous audit conducted on 3/01/17, the SO2 analyzer (ID# 20124321) was found to be operating outside the +/- 15% acceptance criteria at the high audit point (-21.0%), the mid audit point (-19.7%), and at the low audit point (-18.9%). Acceptance criteria for SO2 are specified in the California Air Resources Board Performance Audit Validation Template. The SO2 analyzer was last calibrated December 19, 2016.
	12	19	2016	
QUALIFIER CODE	Month	Day	Year	
	To:			
	04	16	2017	
	Month	Day	Year	

Air Monitoring/APCD completes the following block based on their quality control records, signs and returns the form to the Quality Assurance Section. * Exact interval to be determined by district.

RECOMMENDED DATA ACTION	TIME PERIOD (INCLUSIVE)				±CORRECTION FACTOR
RELEASE:	BEGIN:	00	00	00	0000
CORRECT:	END:	00	00	00	0000
INVALIDATE*:		Hour	Month	Day	Year
FLAG DATA*:					

Justification/Corrective Action Taken

Reviewed By:	1. _____	Date: _____
	2. _____	Date: _____
	3. _____	Date: _____
	4. _____	Date: _____

The recommended data actions were applied and the air quality data were updated on the AQS/ADAM Database by _____ on _____.

3.0 AQDA JUSTIFICATION PROCESS

An AQDA will result in the release or invalidation of data for the period in question. In rare instances, the AQDA may result in the correction of data if it is determined to result from a calculation error. The appropriate final action for the data is reached collaboratively between the MO and QAS.

It is the responsibility of the MO to consult field technicians, calibrators, data reviewers, or any relevant parties when conducting their investigation. The MO generates a proposed resolution based on defensible documentation (log book entries, calibration sheets, etc.) for retaining or invalidating data. This includes providing the qualifier or null code that should be applied to the affected data.

<https://aqs.epa.gov/aqsweb/documents/codetables/qualifiers.html>

The MO completes the bottom portion of the AQDA form and returns the form to QAS. Figure 4 highlights the four fields that need to be addressed by the MO:

1. Recommended Data Action - The MO proposes to release, correct, invalidate, or flag the data for the affected time period.
2. Time Period - This is the period from the last time that the data was documented to be accurate up to the time the underlying issue is resolved.
3. Null Code, Qualifier Code, or Correction Factor - MO proposes the appropriate code or factor.
4. Justification and Corrective Action Taken - MO justifies the proposed action and explains the strategy for preventing future reoccurrence.

The information requested by QAS in the bottom portion of the AQDA can be provided electronically by the MO in the form of a word document or an email. The MO is required to provide copies of documents that support their proposed resolution. These documents can also be sent electronically as scanned PDFs.

QAS reviews the information, documentation, and decisions that are outlined in the MO's proposed resolution. QAS may request additional information that may be required for defensibility of the resolution. Once a resolution is agreed upon, QAS will complete the bottom portion of the AQDA in AIS as outlined in Figure 5. A re-audit will be scheduled to verify that the issue has been resolved.

Air Quality Data Action Request

SITE NAME:	AIS Test Site	REQUEST LOG #:	8371
SITE NUMBER:	AQS#:	POC#:	REQUEST DATE:
33333	06	1	03-06-2017
TO: Station Operator, Air Monitoring/APCD. Please investigate the potential inaccuracies listed below and recommend appropriate action(s). If no response is received by 04-20-2017, QA staff shall review and recommend appropriate action(s), which may/may not affect the data involved.			
TO: AQPSD Contact, Air Quality Data Review. Please withhold the following air quality data from processing until potential data inaccuracies are resolved.			
FROM: QA Auditor, Quality Assurance Section.			

POLLUTANT	EST. TIME PERIOD *			REASON FOR ACTION
SO2	From:			During the gaseous audit conducted on 3/01/17, the SO2 analyzer (ID# 20124321) was found to be operating outside the +/- 15% acceptance criteria at the high audit point (-21.0%), the mid audit point (-19.7%), and at the low audit point (-18.9%). Acceptance criteria for SO2 are specified in the California Air Resources Board Performance Audit Validation Template. The SO2 analyzer was last calibrated December 19, 2016.
	12	19	2016	
QUALIFIER CODE	Month	Day	Year	
3	To:			
	04	16	2017	
	Month	Day	Year	

Air Monitoring/APCD completes the following block based on their quality control records, signs and returns the form to the Quality Assurance Section. * Exact interval to be determined by district.

RECOMMENDED DATA ACTION	TIME PERIOD (INCLUSIVE)				CORRECTION FACTOR
RELEASE:	BEGIN:	00	00	00	0000
CORRECT‡:	END:	00	00	00	0000
INVALIDATE*:		Hour	Month	Day	Year
FLAG DATA*:					

Justification/Corrective Action Taken

4

Reviewed By:	1. _____	Date: _____
	2. _____	Date: _____
	3. _____	Date: _____
	4. _____	Date: _____

The recommended data actions were applied and the air quality data were updated on the AQS/ADAM Database by _____ on _____.

AQDA FIELDS ADDRESSED BY MONITORING ORGANIZATION
 Figure 4

1A	2A	3A	4A
Resolution Start Date	Resolution Start Time	Resolution End Date	Resolution End Time
00 00 0000 Set Date	<input type="text"/>	00 00 0000 Set Date	<input type="text"/>
Null Code	Correction Factor	Ambient Data Action	Audit Data Action
<input type="text"/>	<input type="text"/>	-- Select an Amb Action --	-- Select an Audit Action --
Justification/Corrective Action Taken			
5A	6A	7A	8A
9A			
1B			
Signature One		Signature Two	
-Signature One- Set Date	<input type="text"/>	-Signature Two- Set Date	<input type="text"/>
Signature Three		Signature Four	
-Signature Three- Set Date	<input type="text"/>	-Signature Four- Set Date	<input type="text"/>
Submit Changes		15	
Delete This AQDA			
Get AQDA Form		16	
Click to return to AQDA list.			
Click to return to AQDA open menu.			

AQDA JUSTIFICATION PROCESS
 Figure 5

For completing the bottom portion of the AQDA in AIS, each field in Figure 5 is identified by a number and a letter. Corresponding instructions for each field are identified below:

- 1A. **Resolution Start Date:** Select the actual start date that data is in question.
- 2A. **Resolution Start Time:** Select the start time using the drop-down menu.
- 3A. **Resolution End Date:** Select the actual end date for the data in question.
- 4A. **Resolution End Time:** Select the end time using the drop-down.
- 5A. **Null Code:** If resolution calls for data invalidation, the agreed-upon null code is entered.
- 6A. **Correction Factor:** When applicable, enter the correction factor provided by the monitoring organization.
- 7A. **Ambient Data Action:** Select Invalidate, Flag or Release from drop-down menu.
- 8A. **Audit Data Action:** Leave blank, not used.
- 9A. **Justification/Corrective Action Taken:** Input the justification.
- 1B. **Signature One:** Select original QAS reviewers (issued) from the drop-down menu and the date the initial original copy was signed.
15. When the AQDA is complete, select "Submit Changes" to save your AQDA form.
16. Select "Get AQDA Form" and create a .pdf file (Figure 6). Complete a transmittal cover letter, and use the AQDA tracking form located on the S:\Cabinet\Forms and Worksheets\AQDA tracking form. The naming convention for saving the .pdf is:

AQDA#_AQDA_Site Name_Parameter_ Reason_Resolution(*)_Your Name_ Date of Issuance (MM DD 'YY)

* The word "Resolution" remains unchanged for file search purposes.

Save to your incoming folder on the "W" drive.

After the "final" is sent out using the QAS AQDA tracking form, a signed copy of the mailed AQDA is electronically returned to QAS. The assigned QAS staff will save it to the S:\Cabinet\AQDA\Year.

A finalized AQDA signifies that the proposed corrective action has been agreed upon by the MO and QAS. Completion of proposed data actions must still be performed in AQS and the MOs data management system as needed.

Air Quality Data Action Request

SITE NAME:	<u>AIS Test Site</u>	REQUEST LOG #:	<u>8371</u>
SITE NUMBER:	<u>33333</u>	AQS#:	<u>06</u>
		POC#:	<u>1</u>
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TO: <u>Station Operator</u> , Air Monitoring/APCD. Please investigate the potential inaccuracies listed below and recommend appropriate action(s). If no response is received by 04-20-2017, QA staff shall review and recommend appropriate action(s), which may/may not affect the data involved.			
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	12	19	2016	
QUALIFIER CODE	Month	Day	Year	
	To:			
	04	16	2017	
	Month	Day	Year	

Air Monitoring/APCD completes the following block based on their quality control records, signs and returns the form to the Quality Assurance Section. * Exact interval to be determined by district.

RECOMMENDED DATA ACTION	TIME PERIOD (INCLUSIVE)					CORRECTION FACTOR
RELEASE:	BEGIN:	1400	12	19	2016	
CORRECT:	END:	1600	03	07	2017	*NULL CODE
INVALIDATE*:	X	Hour	Month	Day	Year	AS
FLAG DATA*:						

Justification/Corrective Action Taken

The Monitoring Organization did an as is calibration on the SO2 analyzer on 3/07/17. It passed at -4.5%. Precision and span data was examined over the period dating back to the 12/19/16 calibration and no anomalies were found. However, upon careful inspection of the sample train it was discovered that there was a leak at the manifold at a connection that was replaced during the 12/19/16 calibration. Room air was being entrained into the manifold and this led to the diluted readings found at the time of the CARB audit. The connection was tightened and leak-checked on 3/07/17. A CARB re-audit on 3/28/17 confirmed that criteria was met. Data will be invalidated for the period of 12/19/16 through 3/7/17. The Monitoring Organization will leak check the sample train any time modifications are made in the future.

Reviewed By:	1. _____	Date: _____
	2. _____	Date: _____
	3. _____	Date: _____
	4. _____	Date: _____

The recommended data actions were applied and the air quality data were updated on the AQS/ADAM Database by _____ on _____.

4.0 AQS AND OTHER DATABASE UPDATES

It is the responsibility of the MO to initiate or request an AQS update to reflect the data action agreed upon in the AQDA resolution. Furthermore, details of the AQS update request must be communicated by the MO to all MO staff associated with the operation of the impacted air monitoring station. Lastly, the MO must obtain confirmation that the change has been completed and inform QAS of the change. QAS will run an AMP 350 raw data report in AQS to verify the changes. If a discrepancy is noted or no action was taken by the MO, QAS will correspond with the MO to ensure AQS is properly updated.

The AQDA is considered satisfactorily resolved when the AMP 350 report reflects the agreed upon change. At this point, QAS formally closes the AQDA in AIS by “unchecking” the “Not Resolved” column in AIS. In the event that a future amendment or modification to the AQDA becomes necessary, the MO will be notified. QAS will work with the MO to generate an agreed-upon solution. The MO will then initiate or request the agreed-upon change to AQS. After the changes are made, QAS will run a new AMP 350 raw data report in AQS to verify the changes.

The final resolution cover letter states that it is the responsibility of the MO to confirm that the affected data is consistently coded in any other relevant database that collects data directly from the analyzer. QAS will not verify nor maintain records of changes to databases other than AQS.

5.0 RECORDS RETENTION

A hard copy filing system for closed AQDAs has been established using archive boxes. All evidence collected by AQS, correspondence and routing slips should be placed in folder with AQDA number, site name and parameter, and then filed in the archive box.

Records are retained in QAS for a period of 10 years in accordance with ARB’s record retention policy.

LIST OF REFERENCES

Air Resources Board Control and Warning Limits
Air Resources Board Corrective Action Notification Process
Title 40 of the Code of Federal Regulations, Part 50 and 58
U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, Ambient Air Quality Monitoring Program
U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement, Volume IV, Meteorological Systems
U.S. EPA's Guidance Document Method 2.12, Monitoring PM in 2.5 Ambient Air Using Designated Reference or Class I Equivalent Methods
U.S. EPA's Technology Transfer Network (TTN) Air Quality System (AQS)