



COLORADO
Department of Public
Health & Environment

Air Pollution Control Division

Technical Services Program

APPENDIX D6

Standard Operating Procedure for
EPA's Air Quality Systems

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1 SCOPE AND APPLICABILITY

1.1 Introduction

The purpose of this standard operating procedure is to provide information and operational guidance on EPA's Air Quality System (AQS), the national ambient air monitoring data repository based in Research Triangle Park (RTP), NC. All regulatory ambient air data collected by the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) is submitted to AQS once data has gone through the appropriate Quality Control (QC) and Quality Assurance (QA) checks and has been deemed complete and correct.

1.2 Format and Purpose

The sequence of topics covered in this method follows the 2007 EPA guidance on preparing standard operating procedures (SOPs). This method was also written to help data managers understand how and why key procedures are performed (US EPA, 2007). Guidance for developing these AQS procedures was attained from EPA's AQS Users Guide (US EPA, 2013) and AQS Coding Manual (US EPA, 2014).

2 SUMMARY OF METHOD

The AQS database contains ambient air pollution data collected by EPA, state, local, and tribal air pollution control agencies from thousands of monitoring stations throughout the country. AQS also contains meteorological data, QC and QA data, and descriptive information about each monitoring station [including geographic location and the Primary Quality Assurance Organization (PQAO) responsible for the station]. The Office of Air Quality Planning and Standards (OAQPS) and other AQS users rely upon the system data to assess air quality, assist in Attainment/Non-Attainment designations, evaluate State Implementation Plans for Non-Attainment Areas, perform modeling for permit review analysis, and perform other air quality management functions. AQS information is also used to prepare reports for Congress as mandated by the Clean Air Act.

3 DEFINITIONS

The CDPHE/APCD/TSP QAPP contains an appendix of acronyms and definitions. Any commonly used shorthand designations for items such as the sponsoring organization, monitoring site, and the geographical area will be defined and included in this SOP or in the QAPP Appendix P2. Of unique significance to this SOP are the definitions that pertain to the AQS system.

AIRS – Aerometric Information Retrieval System - This is the data system that was replaced by the AQS database.

AQS – Air Quality System – The AQS database replaced the “old” AIRS database in 2001. It is designed to be a relational database capable of handling the new monitoring requirements associated with hazardous air pollutants.

ENSC – Exchange Network Service Center

4 PERSONNEL QUALIFICATIONS

General Personnel Qualifications are discussed in the CDPHE/APCD/TSP QAPP main body.

5 SYSTEM DESIGN

AQS is deployed on the World Wide Web to eliminate the installation and updates of the AQS software on users' machines. The link for the AQS Web Application is:

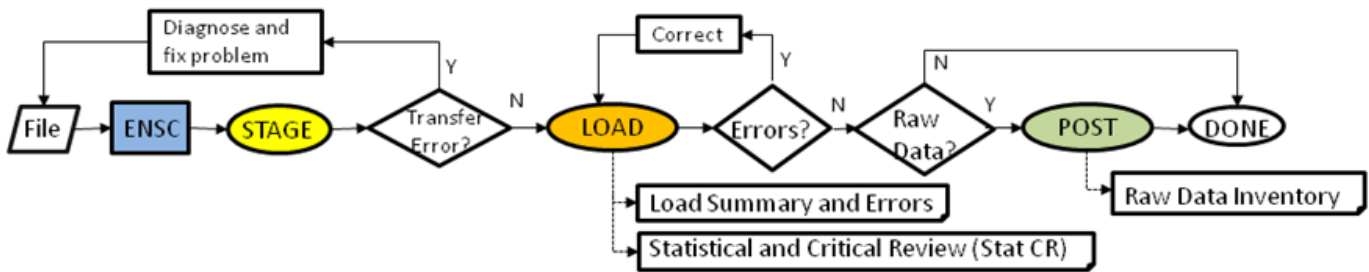
<https://aqz.epa.gov/aqs/>

First Time Users: You must be registered with AQS prior to using it. After connecting to the AQS Web Application using the link above, please refer to the [AQS User Registration](#) website link for a new user registration. In addition, there is a one-time initial setup needed to access the AQS Web application. Click the following link for <https://www.epa.gov/aqs>. You may also find the [AQS user guide](#) (PDF) and (113 pp, 4148K, [About PDF](#)) helpful.

6 DATA STORAGE

6.1 Description

Data storage is the creation of the permanent record of the air quality data within AQS, including monitoring site data collected by the APCD. The data are stored electronically on EPA servers located at the National Computing Center (NCC) in Research Triangle Park, NC. The program system used to store the data is the AQS, a computer repository of measurements of ambient concentrations of air pollutants and meteorological data from thousands of monitoring stations operated by EPA, state, local and tribal agencies. A back-up copy of data is kept on servers at the CDPHE offices. A hard copy of the data is also kept at the APCD offices. This procedure addresses the transfer of data to AQS. A flowchart of the data input process is as follows:



6.2 AQS Web

AQS Web allows the user to access the AQS database using web browser (Internet Explorer, v.5 or greater) technology. AQS Web uses the Exchange Network Service Center (ENSC) software to send and receive data and reports from the AQS database. If the user can access the web using Internet Explorer or Google Chrome, they can access AQS Web.

6.3 Exchange Network Service Center

The Exchange Network Service Center (ENSC) is the electronic front door to the EPA AQS database and is the mechanism that the user-community uses to send and receive data from EPA.

6.4 AQS Web/ENSC Setup

Registered AQS users will access the ENSC after completing the AQS Initial Setup by starting with the link below:

<https://enservices.epa.gov/login.aspx>

The AQS Web Application home page/Login screen will appear. The AQS user will then click on the box under “Launch Applications” titled: Proceed to ENSC (NOTE: the USER may also connect with AQS using this link/homepage).

The ENSC home page will now be displayed and the user will note a hyperlink for “Request an Account” that an AQS user should connect to, if one has not already obtained an account. Contact your regional EPA AQS representative for more information in regards to creating a new user account. The following link has information regarding the Exchange Network:

<https://www.epa.gov/exchangenetwork>

After completing and submitting the registration form, the user will receive an e-mail with the username and password to use for the fields in the ENSC Login screen. ENSC passwords provided by the ENSC administrators are “permanent” in the sense that they don’t need to be updated approximately every four weeks, unlike the AQS password. If a user forgets the ENSC password, they will need to contact ENSC, using the link above, to have the password reset. Enter the username and password, select “default” in the Domain drop down box and click on Login. The user will be prompted to select one of three options to continue. Select “Go” in the choice “Exchange Network Services”.

In the resulting screen, choose “Express Request” and enter AQS in the field “enter key works”, and click on “search”. A Services Directory screen will appear offering multiple choices. Clicking on the “submit info” hyperlink associated with the Service Name “AQS Submit”, will transfer the user to the “Express Request: AQS Submit” screen. You are now ready to submit a data file to AQS using the ENSC.

6.5 Create a Data File

Create your file of ambient air data (or Site/Monitor, or Precision/Accuracy data). Valid file format options are either text (*.txt; a.k.a. “FLAT” file) files using the familiar delimited “Data Input Formats” (e.g., pipe-delimited), or XML files (*.xml) using the AQS Schema.

6.6 Loading Data to the AQS database using the ENSC

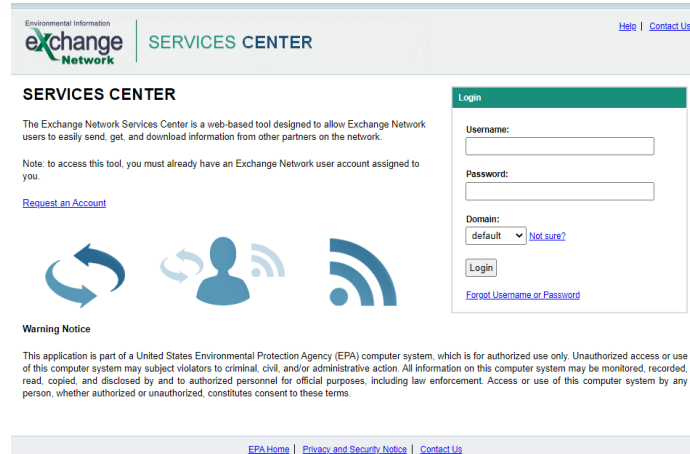
To review, the AQS Web is accessed is through the link:

<https://aqz.epa.gov/aqs/>

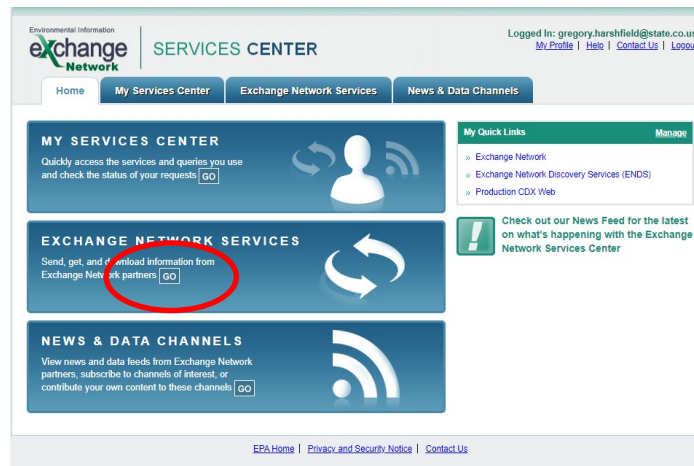
or the AQS homepage:

<https://www.epa.gov/aqs>

The logon screen for AQS Web has two options “Connect” or “Exit” The database is “aqzprod”. AQS uses “two-step” verification to access the database. If the user clicks the “Connect” button they will be routed to EPA’s “Login.gov” website. An account must be created with Login.gov to proceed from this point. After an account has been created with Login.gov the user will enter their email and password associated with this account and click the “Sign In” button. A one-time passcode will be sent to the user’s phone number (or by other means depending on user preferences) by text message and is used as a second step verification to gain access to AQS. After the pass code is typed in to <https://login.gov/> a green “Success” page should appear on the browser and the AQS application will allow access. Once access is achieved the “Select Session Access” screen will appear. Click on the “Screening Group Access” button. The window “Select a Screening Group (Colorado)” will appear. Click “OK”. The main AQS screen will appear: “AQS (Colorado)” with the EPA logo. From the toolbar click on the “Batch” button to start the data input process from the “Batch (Colorado)” screen, which will have “Process by File” and “History” tabs. Click on the “Go to ENSC” button on the bottom right of the “Batch (Colorado)” screen. The ENSC application login screen will appear.



At the ENSC login screen, enter the appropriate username and password (provided in 6.4 above), follow the steps in 6.4 to arrive at the “Express Request: AQS Submit” screen.



There are three data file “types”: Site/Monitor, Raw, and Quality Assurance(QA). All three data file types may be “pipe-delimited” files coded according to the EPA’s publication: AQS Data Coding Manual (US EPA, 2014), or *.XML files. This manual along with all other relevant manuals and guides are available for download at:

<http://www.epa.gov/ttn/airs/airsaqs/manuals/manuals.htm>

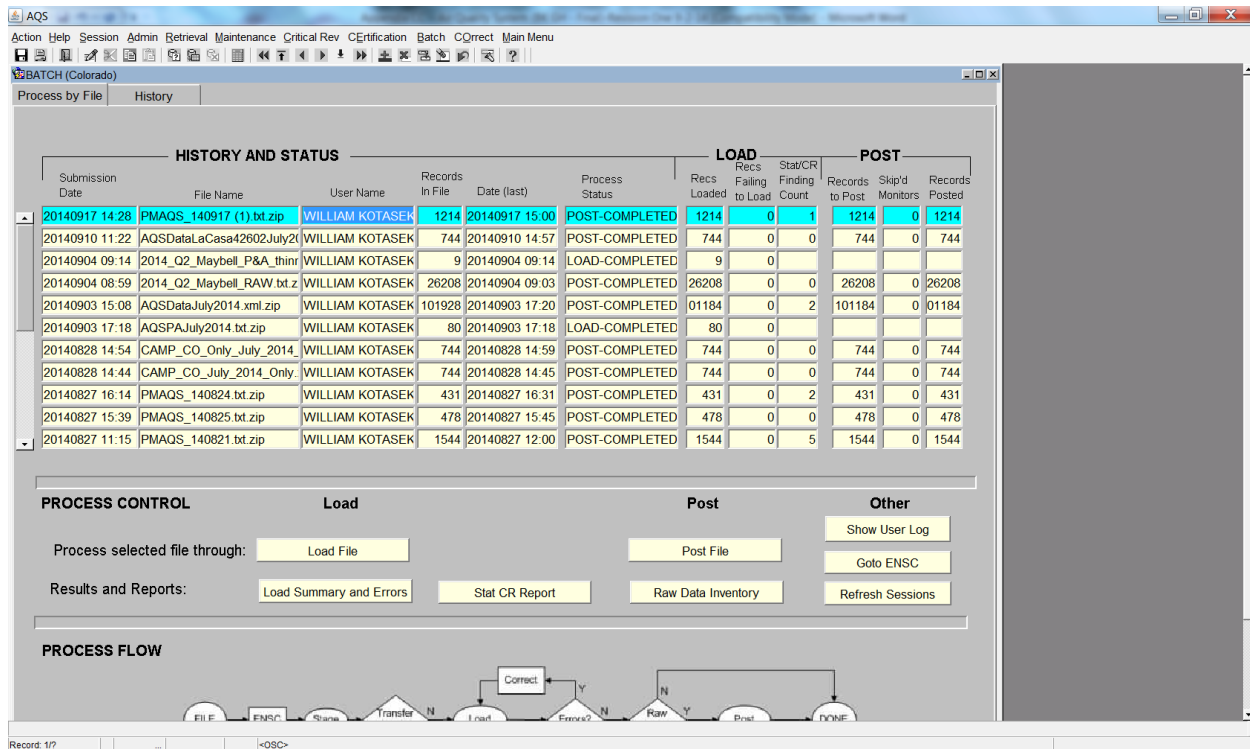
Click on the “Choose File” button near the top of this screen, and then select the data file created. The file may be located in a directory on a drive of the user’s PC or located on “external media”, e.g., a “flash drive”.

6.7 Uploading data from the ENSC to the AQS database

Once it is verified that ENSC has received the file (the file name will appear below the “Choose File” button), fill in the remaining fields: Sender’s e-mail address, AQS user i.d., Screening Group (“Colorado” selected from drop-down list), File Type (FLAT or XML), Final Processing Step (“POST”), and Stop on Error (YES). Once all fields have been populated, clicking on the Send Data button below all the fields will begin the file transfer process to AQS.

NOTE: please refer to the flow chart in 6.1 above to assist in understanding the STAGE, LOAD, and POST process

Data strings with no errors enter into a pre-production database and are considered to have passed “Edit”. The Raw data values that have passed Edit and are in Pre-production must undergo a statistical analysis before being posted to the AQS database. Data values (including Site/Monitor and QA data) with errors are entered into “Staging Tables” where corrections are made using the “Correct” function on the AQS menu bar. The “Batch (Colorado)” screen (example shown below) will show the most recently submitted file in the first row of the “History and Status” section of this screen.



Click the “Load Summary and Errors” tab at the bottom left of this screen to view the “Load Report”, which has two sections: (1): A “Load Summary” section which lists number of errors, number of records without errors (a.k.a “pre-production” records), posted records, and total number of records loaded, and (2): A “Load Detail” section where records with errors and descriptions of the errors are displayed. If there are no errors proceed to Section 6.9, otherwise proceed to Section 6.8, “Using Correct to Change Records in the Staging Tables”.

6.8 Using Correct to Change Records in the Staging Tables

If there were errors tallied in the Edit Load Summary Report in Step 6.7 above, that report will have a section at the end of the report that will list the records with the corresponding errors as well as a brief description of the error. This section of the report is called the “Edit Error Report”. The Edit Error Report specifically describes the error for each record that has not passed Edit. Depending on the size of the Edit Error Report, it is often useful to print this report to have in front of the user when making the corrections in “Correct” mode. From the Main Menu, click “Correct”, selecting from the dropdown menu the type of data you will be correcting: Site Data, Monitor Data, Raw Data, Precision, or Accuracy. From the “Correct – Raw Data (Colorado)” screen, click on the “Enter Query” icon on the toolbar. Enter identifying information in the appropriate spaces, e.g., state, county, site, parameter, etc. Once the identifying information is entered, click on the “Execute Query” on the Toolbar. All records associated with the identifying information will be retrieved and appear on the screen. **At least State Code (Colorado = 08) must be entered.** Entering just the state code will bring up every record in the staging table. This may or may not be a good idea depending on the type of corrections to be made. For example if there is a “global” correction to be made, such

as every record having an incorrect Method Code, then it would be appropriate to execute such a general query, do a Search and Replace (again clicking on the Search and Replace icon on the Toolbar) of the incorrect/correct method codes. In other cases it will be more appropriate to narrow a query so that a specific record is retrieved for correction. Once corrections are made to the retrieved record(s), Click on the Save icon on the Toolbar. Click on Main Menu, then Click Batch to return to the Batch Process screen. Click on the “Load File” on the bottom of the screen. This step subjects the corrected data to the same Edit checks that were originally performed on the original Raw Data file: A message will appear on the screen noting that the job has been submitted and an e-mail will be sent once the job is complete. Data passing Edit will move to the pre-production table, those records with Errors will remain in the Staging Table and will require additional correction.

6.9 Performing the Statistical Check on Records in Pre-production

Data passing Edit and proceeding to Pre-production must undergo a statistical check before being “Posted” to the AQS database. This is also accomplished from the “Batch (Colorado) Screen. Click the “Stats CR Report” button, directly to the right of the “Load Summary and Errors” button. This initiates the statistical check process. Use the refresh button on the bottom of the screen to check “Session Status” until Session Status is not “ACTIVE”. An email confirming completion of the CRST process will be received as well. Once the Statistical Check (CRST) has “COMPLETED”, click the Scan Report button at the bottom of the Batch Process Screen under “Batch Reports”. The Scan report is generated and enables the submitter of AQS data to see how the data in Pre-production compares to historical values. Values greater than the historical maxima will be “flagged” with an asterisk, and will show the date and corresponding value, so that one will be able to examine site records of this preliminary data and determine if it is a legitimate value.

6.10 Posting Records to Production

Once the AQS user is satisfied that the records have passed the statistical checks, the records need to be “Posted” to the AQS database. Click the “Post File” button in the bottom half of the Batch (Colorado) screen under “Post”. Process Status for the file of interest will now be listed as POST-ACTIVE. The user will now be returned to the Batch Process screen, and the Post process will be initiated. Use the refresh button at the bottom to check the “Process Status” until the Session Status changes from “ACTIVE” to “COMPLETED”. An email confirming completion of the POST process will be received as well. Click the “Raw Data Inventory” button located on the lower right corner of the Batch Process screen. This will generate a pdf report (pop-up) that will list every site/monitor i.d. and corresponding number of records for each site/monitor i.d. which were posted to AQS. The total number of records posted to AQS appears at the end of this report. At this point you may close, save, or print this report. Once this report is closed, the Posting of data to AQS is complete.

7 REFERENCES

- US EPA. (2007). *Guidance for Preparing Standard Operating Procedures*. Research Triangle Park, NC: US EPA OAQPS AQAD.
- US EPA. (2013, 7 31). *AQS Users Guide (Version 1.0.0)*. Retrieved from US EPA: http://www.epa.gov/ttn/airs/airsaqs/manuals/docs/users_guide.html
- US EPA. (2013). *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 2*. RTP, N: US EPA.
- US EPA. (2015, April 30). *AQS Data Coding Manual (Version 3.2)*. Retrieved from EPA: http://www.epa.gov/ttn/airs/airsaqs/manuals/AQS_Data_Coding_Manual.pdf