

AQS Basics

Data Entry and Maintenance



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AQS Background

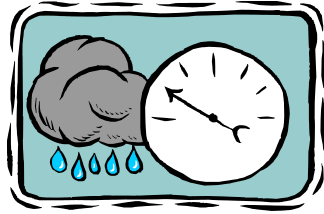


What is AQS?

- EPA's Database Application used to House and Store Ambient Air Quality Data
- Centralizes the Location of Data
 - Used to Determine if areas are meeting the National Ambient Air Quality Standards (NAAQS)
 - Used by Universities and Institutes to Perform Health Studies



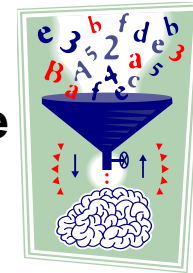
How Does AQS Fit in the Big Picture?



**Monitor
the Air**



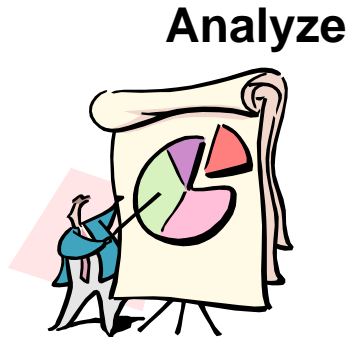
Acquire Data



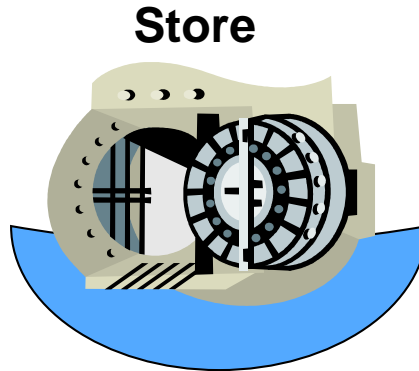
**Handle
Data**



Regulate

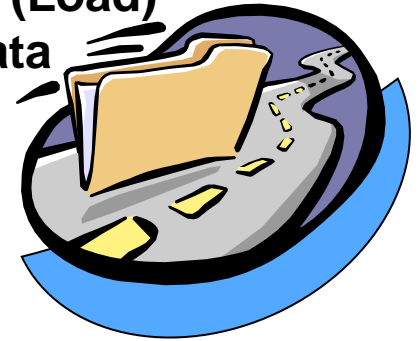


Analyze



Store

**Report (Load)
Data**



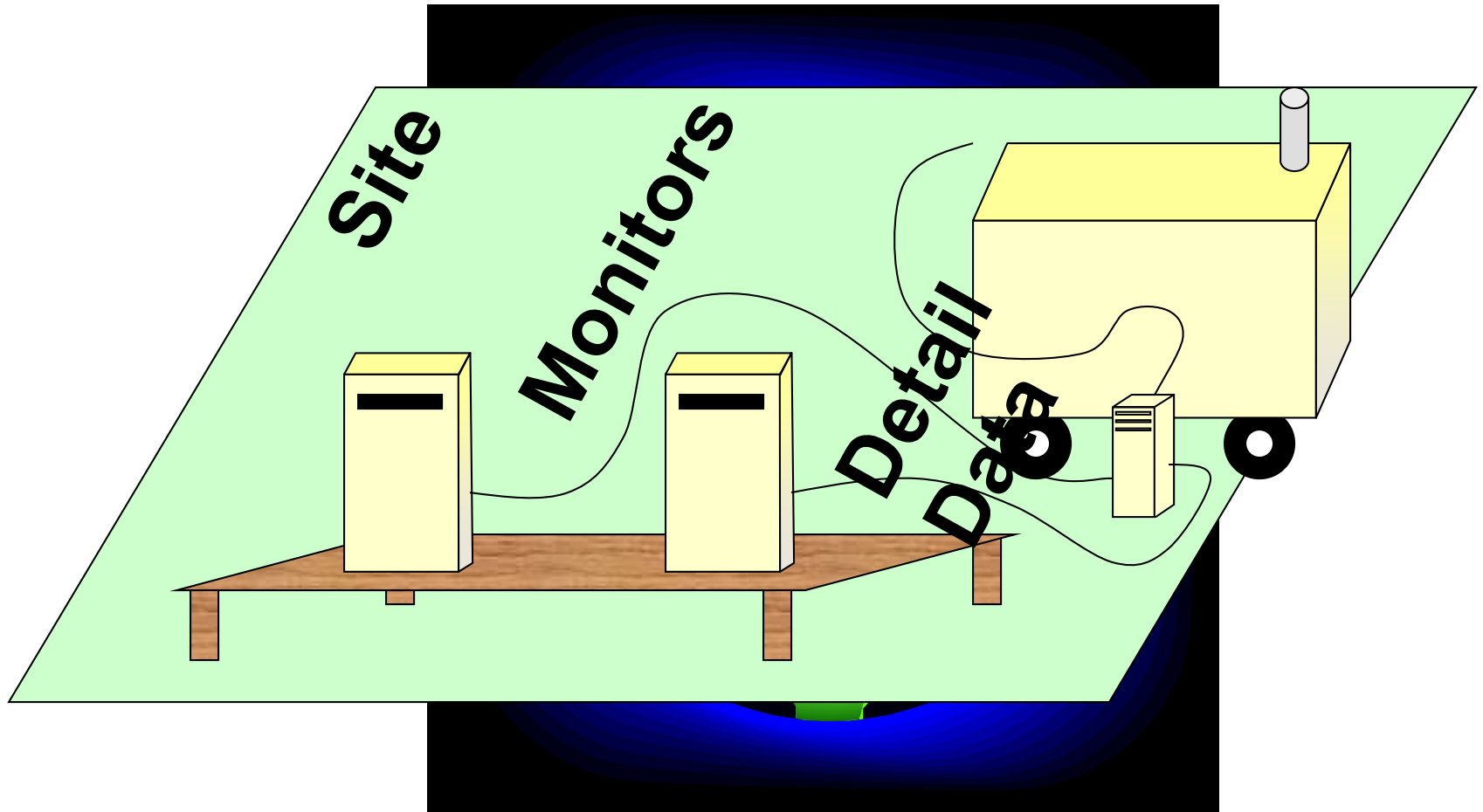
AQS

AQS and the CFR

- CFR = Code of Federal Regulations
- Chapter 40 of the CFR deals with the environment
 - Part 50 deals with NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS (NAAQS).
 - AQS changes often made when NAAQS changes (Example: 2015 Ozone standard).
 - Part 58 deals with AMBIENT AIR QUALITY SURVEILLANCE (a/k/a Monitoring)
 - AQS changes made when monitoring program change. Examples include NPAP, and QA Program Re-engineering.



Types of Core Data in AQS



Types of Data in AQS (Site and Monitor)

- Site Data
 - Physical Location (Latitude and longitude, Street Address)
 - Site Characteristics (Nearby Streets, primary Monitor)
 - Site Identifier (State – County –Site ID or Tribal Code – Site ID)
- Monitor data
 - How is a given Pollutant measured (When Sampling Began, networks, Agencies, Objectives, Obstructions and/or Roads nearby, Collocation, sampling frequency)
 - Identified by AQS Site ID + Parameter Code + POC



Types of Data in AQS (Detail / Refer.)

- **Sample Measurement Obtained by the Instrument**
 - User Reports Individual Sample data, Notes or Flags about Samples, and Audit Data.
 - AQS Computes Multi Hour Averages and Daily, Site, Quarterly, Annual and Site Annual Summaries
- **Sample Data Identified by Monitor ID plus**
 - When the Sample Was Taken (Date & Time) + Status (Individual Sample data)
 - When the Sample Was Taken (Date & Time) (Audit Data)
 - Time Period Summarized + Sample Duration + Exceptional Data Type + Pollutant Standard (Summary Data)
- **Reference Data**
 - Codes used to identify things like States, Counties, Sample Duration
 - Use Standard Codes (FIPS) when available
- **Quality Assurance Data**
 - Quality Checks of the Monitoring Program



Examples of Commonly Used Codes

- Parameter Codes

- $O_3 = 44201$
- $NO_2 = 42602$
- SO_2 hourly = 42401
- $CO = 42101$
- $PM_{2.5} = 88101$
- PM_{10} STP = 81102
- Lead (TSP) at LC FRM/FEM = 14129
- Lead (PM_{10}) at LC FRM/FEM = 85129

- Units of Measure

- 001 = $\mu g/m^3$
- 007 = ppm (parts per million)
- 008 = ppb (parts per billion)

- Collection Frequency Codes

- 1 = Every Day
- 3 = Every 3rd Day
- 6 = Every 6th Day

- Duration Codes

- 7 = 24 Hours
- 1 = 1 Hour
- W = 8-Hour Running Avg.*
- X = 24-Hour Block Avg.*
- Y = 3-Hour Block Avg.*

* AQS Generated Durations

LC = local conditions

STP = standard temperature and pressure

FRM = Federal Reference Method

FEM = Federal Equivalent Method



Two ways to submit data in AQS

- Batch submissions
 - Via an Exchange Network Node or ENSC
 - Data can be sent all the way to production OR
 - Just loaded into staging tables and then handled via the Batch Form
- Online submission
 - Via the correct forms new records can be submitted
 - Records of all types (Raw Data, QA, Site, monitor)



AQS User Interface



User Interface Parts

(aka “Oracle Forms and Reports”)

- **Forms:** Present information and accept input.
- **Reports:** Present formatted data for printing (reports) or input by other software (workfiles)
- **Menus:** Select a form or execute an action
- **Icons:** Execute an action



Logging on to AQS

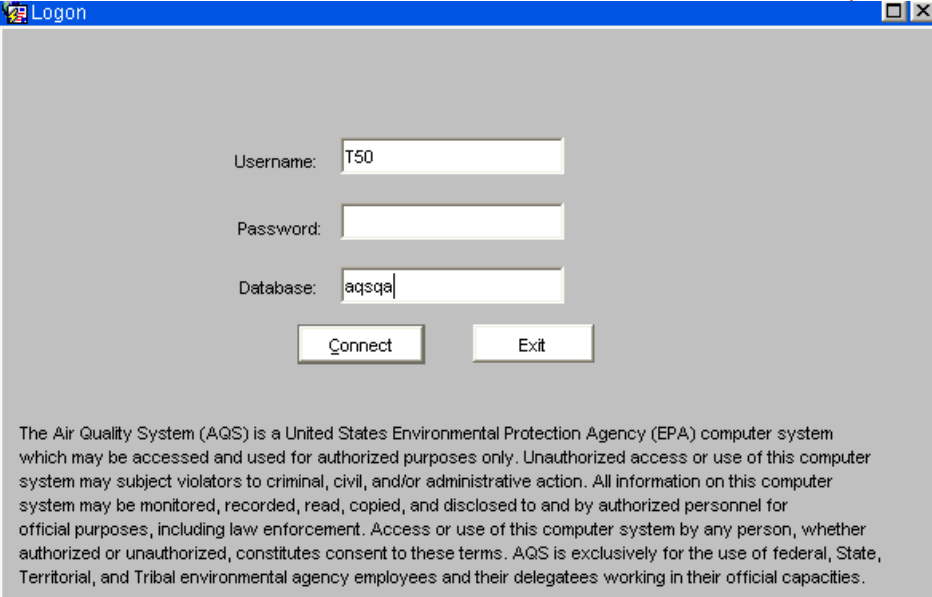
- Username = ID obtained with registration
- Password = your selected password
- Database= “AQSPROD” (Normally, HOWEVER, you will use a different database during today’s training)

For this training class, please use the following for the login information:

Username: “TXX”

Password:

Database: “AQSQA”



The screenshot shows a window titled "Logon" with a grey background. It contains three input fields: "Username:" with the value "T50", "Password:" which is empty, and "Database:" with the value "aqsqa". Below the fields are two buttons: "Connect" and "Exit". At the bottom of the window, there is a disclaimer text.

The Air Quality System (AQS) is a United States Environmental Protection Agency (EPA) computer system which may be accessed and used for authorized purposes only. Unauthorized access or use of this computer system may subject violators to criminal, civil, and/or administrative action. All information on this computer system may be monitored, recorded, read, copied, and disclosed to and by authorized personnel for official purposes, including law enforcement. Access or use of this computer system by any person, whether authorized or unauthorized, constitutes consent to these terms. AQS is exclusively for the use of federal, State, Territorial, and Tribal environmental agency employees and their delegates working in their official capacities.



Account management

- Change password every 90 days
 - You receive an automated reminder
 - You can change your passwords in AQS at any time
- After 180 days of inactivity, your user account is locked
 - You receive an automated reminder
 - If your account is locked, you must call the EPA Helpdesk to have it unlocked
- After 365 days of inactivity, your user account is removed
 - You receive an automated reminder
 - You must go through the user registration process



Password Rules

- Must be between 8 -15 characters
- Must contain at least 1 uppercase, 1 lowercase and 1 number
- Must not BEGIN with a number
- Must be changed every 90 days
- At least three characters or character positions of the new password must differ from the old
 - “Novemb3r” could be changed to “Decemb3r”
 - “Fido1smydog” could be changed to “mydog1sFido”
- NOT Allowed:
 - Special characters (eg, !@#\$\$%^&*)
 - Your first or last name
 - Any common word found in a dictionary followed by digits
 - Your 3-digit AQS username (in forward or reverse order)
 - The letters “AQS”
 - The word “password”
- Password or account problems? Call the EPA Call Center at 866-411-4372



Where to Change Your AQS Password

Admin

Security

Reference

User Statistics

Appl Audits

Export Ca Dump Bucket

Maintain Monitoring Season

Step 1: Select “Admin” → “Security” from the Main Menu

The screenshot shows the 'Application Security (60 Test User Screening Group)' window. A 'Security - Change Password' dialog box is open, displaying an information icon and the message '-20459: Password changed.' with an 'OK' button. The background window contains various fields for user information, including 'TEST', '123-456-7890', '27707', '063', 'T60', and 'AQST60@YMAIL.CC'.

Step 2: Fill in the “New Password” & “Confirm Password Fields

The 'Change Passwords' form is shown with two red circles highlighting the 'New Password' and 'Confirm password' input fields. The 'Change Oracle Password' button is also circled in red. The form includes fields for 'Old Password:', 'New Password:', and 'Confirm password:', along with buttons for 'Change Oracle Password' and 'Change EN password'.

Step 3: Click “Change Oracle Password”



Put it into Practice: Exercise 1

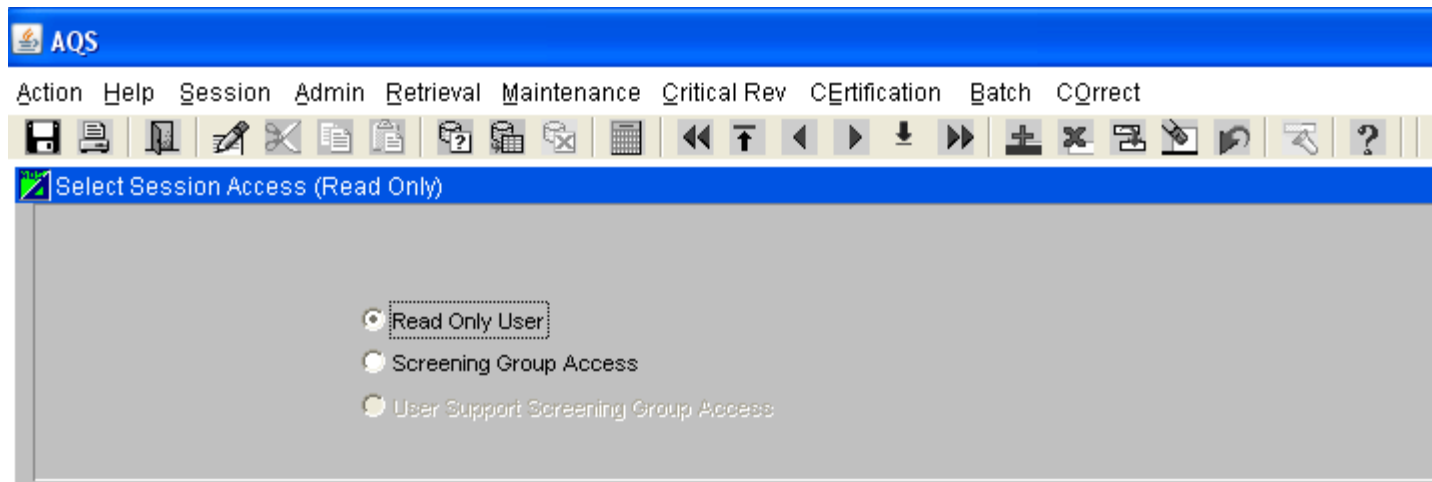
- Perform Exercise 1
- QA URL: <https://aqs.epa.gov/aqs>
- Exercise 1 Location:
https://aqs.epa.gov/aqsweb/Exercises/Exercise1_2016.doc



AQS Security (Screening groups)



Logged into AQS; Now choose Access Level



What is the Difference Between “Read Only” & Screening Group Access?

Menu	Access Type	
	Read Only	Screening Group Access
Maintenance (browse)	✓ All public data	✓ Only see data (public or not) owned by screening group
Maintenance (update)	✓ No changes can be made	✓ Can change any data in SG
Standard Reports	✓	✓ (plus extra reports)
Batch	✗	✓
Correct	✗	✓

- Signing on With a Screening Group Allows You Into New Areas of the Application
- Using Maintenance in a Screening Group → only access monitors owned by that Screening Group



Screening Group

- Present Security Mechanism in AQS
 - Defines What Group Owns a Monitor
 - Only One Group Can Own a Monitor
 - Only the Data Owner Can Change Data for This Monitor
- We will migrate to Agency Based Security within next year
- Users Are Assigned to One or More Screening Groups
 - Different Levels of Access Possible
 - Access granted during registration; Can be changed if needed
- A MONITOR Can Only Be “Owned” by One Screening Group
- You Must Select a Screening Group in the Session If You Want to Change Data

In this class. . .

- Each person has a separate Screening Group
- Each person has a unique set of monitors that can be changed
- Screening group is “TRAININGGROUPxx”, where “xx” are last two digits of your Training ID



Status Of Records (as it relates to ownership)

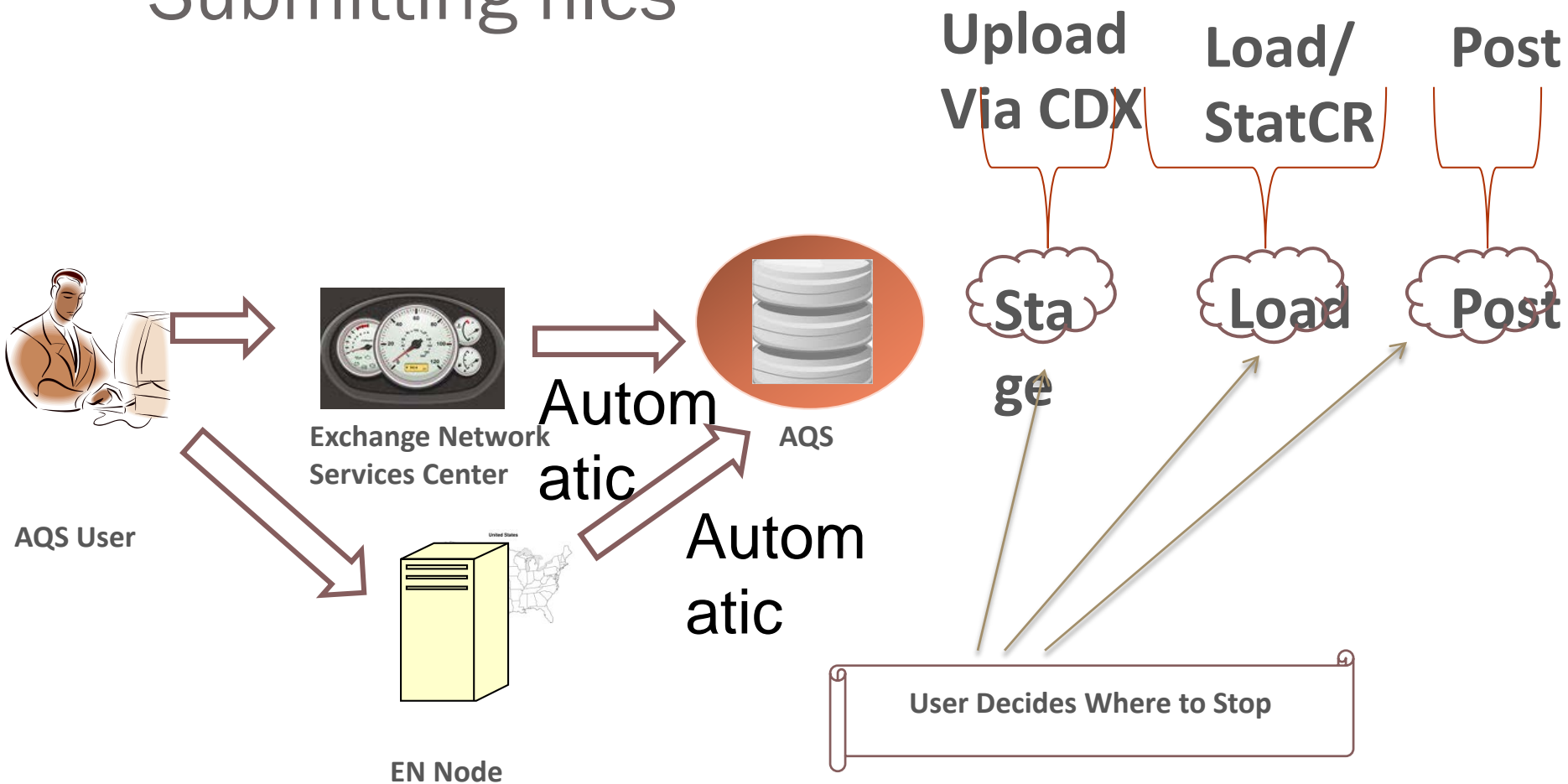
- “P” = Production Status
 - Can be seen by Everyone
- “S” = Statistically Evaluated
 - Only for Raw Data
 - Can only be seen by the Data Owner
- “R” = Relationally Valid
 - Only for Raw Data
 - Can only be seen by the Data Owner
- “F” = Field Level Error
 - Something Needs to be Fixed Before the Record is “Production Status”
 - Can only be seen by the Data Owner
 - Can only changed by the Data Owner



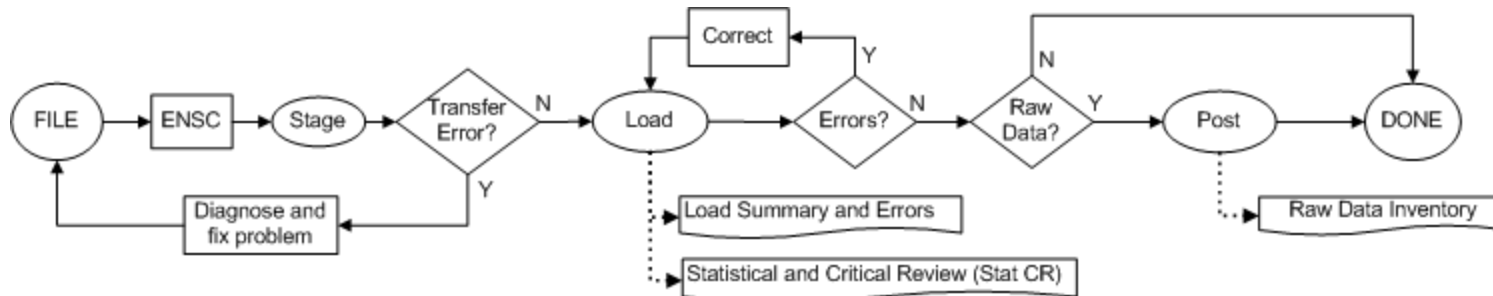
AQS Batch Updates of Data



Submitting files



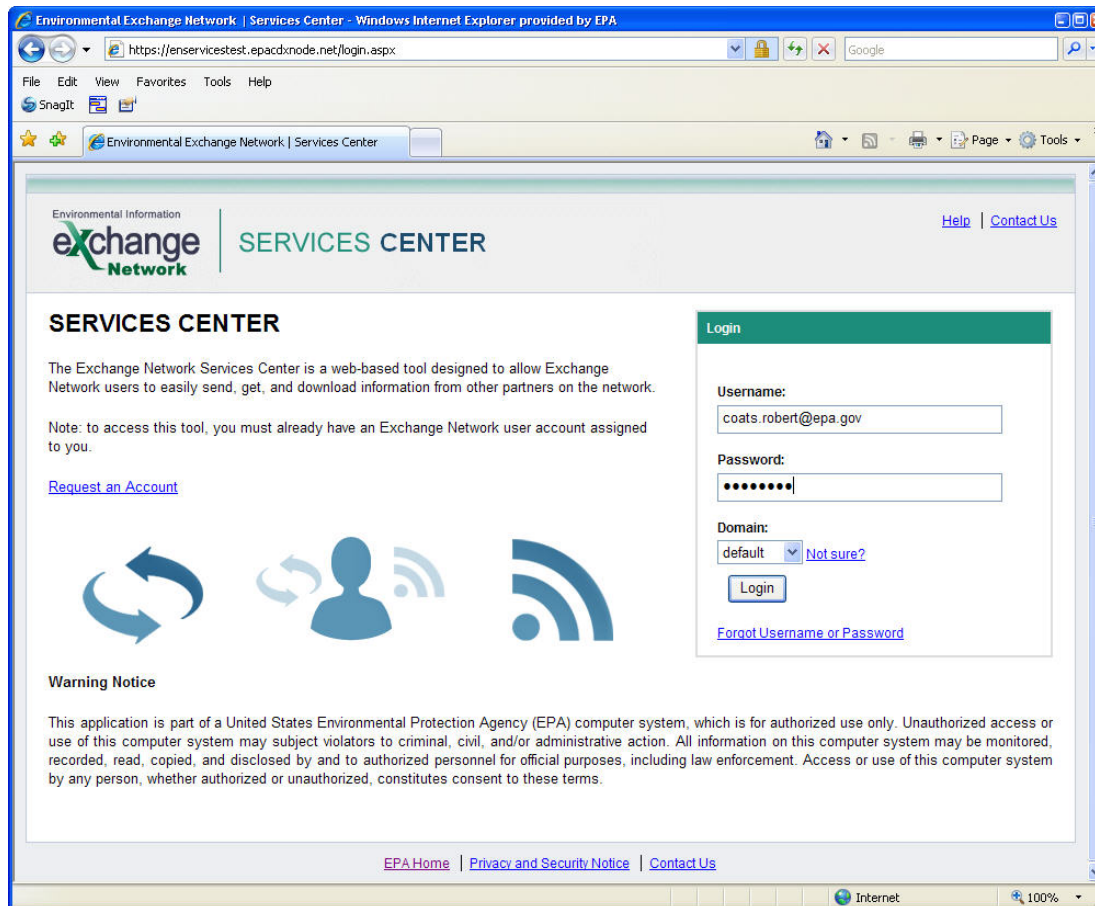
Submit Process



- ENSC: User enters File name (**zipped**), AQS Access information, and Processing Options
- Automatic: File is submitted by ENSC to AQS with user information
- AQS:
 - User monitors status & records processed
 - Correct any Errors
 - Submit / resubmit remaining processing steps

ENSC website

- URL: <https://enservices.epa.gov/login.aspx>
- Username = `chapman.chris@epa.gov`
- Password: TestBits16



The screenshot shows a Windows Internet Explorer browser window displaying the ENSC (Environmental Network Services Center) login page. The browser's address bar shows the URL <https://enservicetest.epacdxnode.net/login.aspx>. The page header includes the "Exchange Network" logo and "SERVICES CENTER" text, with links for "Help" and "Contact Us".

The main content area is titled "SERVICES CENTER" and contains the following text:

The Exchange Network Services Center is a web-based tool designed to allow Exchange Network users to easily send, get, and download information from other partners on the network.

Note: to access this tool, you must already have an Exchange Network user account assigned to you.

[Request an Account](#)

Below the text are three icons: a circular refresh icon, a person icon with a signal wave, and a standard RSS feed icon.

Warning Notice

This application is part of a United States Environmental Protection Agency (EPA) computer system, which is for authorized use only. Unauthorized access or use of this computer system may subject violators to criminal, civil, and/or administrative action. All information on this computer system may be monitored, recorded, read, copied, and disclosed by and to authorized personnel for official purposes, including law enforcement. Access or use of this computer system by any person, whether authorized or unauthorized, constitutes consent to these terms.

The login form on the right side of the page is titled "Login" and includes the following fields:

- Username:**
- Password:**
- Domain:** [Not sure?](#)

A "Login" button is located below the domain field. A link for [Forgot Username or Password](#) is positioned below the login button.

At the bottom of the page, there are links for [EPA Home](#), [Privacy and Security Notice](#), and [Contact Us](#). The browser's status bar at the bottom shows "Internet" and "100%" zoom level.

Initial ENSC Home Page

Environmental Information

exchange Network


SERVICES CENTER

Logged In: coats.robert@epa.gov
[My Profile](#) | [Help](#) | [Contact Us](#) | [Logout](#)

[Home](#) | [My Services Center](#) | [Exchange Network Services](#) | [News & Data Channels](#)


MY SERVICES CENTER

Quickly access the services and queries you use and check the status of your requests [GO](#)




EXCHANGE NETWORK SERVICES

Send, get, and download information from Exchange Network partners [GO](#)




NEWS & DATA CHANNELS

View news and data feeds from Exchange Network partners, subscribe to channels of interest, or contribute your own content to these channels [GO](#)



My Quick Links [Manage](#)

- » [Exchange Network](#)
- » [Check your Submission \(QA Services\)](#)
- » [Exchange Network Discovery Services \(ENDS\)](#)
- » [Production CDX Web](#)



Check out our News Feed for the latest on what's happening with the Exchange Network Services Center

Click here

[EPA Home](#) | [Privacy and Security Notice](#) | [Contact Us](#)

First-time AQS Selection (1)

The screenshot shows the 'Exchange Network SERVICES CENTER' interface. At the top, it says 'Environmental Information' and 'exchange Network'. The user is logged in as 'coats.robert@epa.gov'. The main navigation bar includes 'Home', 'My Services Center', 'Exchange Network Services', and 'News & Data Channels'. Below the navigation, a message states: 'Use either the **Step-by-Step** OR **Express** approach to send, get, or download information from the Exchange Network.'

The 'CHOOSE' section is divided into two options:

- Guide Me Step-by-Step** (recommended for novice users):
 - Step 1: Choose the Type of Transaction to Perform
 - Send information to a system on the Exchange Network
 - Get information that is stored on the Exchange Network
 - Download a document from the Exchange Network. You must know the [Transaction ID](#) or [Document ID](#) to perform a download.

OR

- Express Request** (recommended for advanced users):
 - Search for a Service by Keyword
 - Input field: AQS
 - Search button
 - OR
 - Browse our entire Services Directory
 - Browse Services Directory button

Red handwritten annotations include 'Type AQS' pointing to the input field and 'Then Click Here' pointing to the Search button.

First-time AQS Selection (2)

Home My Services Center Exchange Network Services News & Data Channels [My Quick Links](#) ▼

[Add this page to My Quick Links](#)

Services Directory

This directory runs from Exchange Network Discovery Service (ENDS) metadata. It requires the commitment of our Network to keep it up to date and useful. For the BETA version, the Services Directory contains only services that support Submit, Query, Solicit, and Download operations. Select the name of the Service you wish to use.

Filter By:

1 - 4 of 4

<u>Service Transaction</u>	<u>Dataflow</u>	<u>Service Name</u>	<u>Service Description</u>	<u>Node</u>	<u>Service Provider</u>
Get Info	AQDE	AQDERawData	Queries or Solicits the Raw Data for the AQDE Flow. The return is an XML file that conforms to the AQS Version 2.0 Schema.	NewJerseyNodeV1_Prod	NJDEP
Send Info	AQS	AQS Submit	Air Quality System Document Submissions	NGNProd2.0	U.S. Environmental Protection Agency
Get Info	AQS	DNR.AQSSubmitRawData	DNR.AQSSubmitRawData	WDNRnode2	Wisconsin DNR
Get Info	FRS	DNR.AQSSubmitRawData	DNR.AQSSubmitRawData	WDNRnode2UAT	Wisconsin DNR

Click Here

ENSC Upload Form

Express Request: AQS Submit ?

Select a Document to Upload (max. size 1 GB):

Required

One file only;

Enter Sender's Email Address to Notify of Transaction Status Changes:

Optional

AQS User ID:

Required

Additional Data Flow Specific Information:

Screening Group :

Required

Flat or XML

File Type :

Required

Stage, Load, or Post

Final Processing Step :

Optional

Yes or No

Stop On Error :

Optional

► [Provide information \(metadata\) about this Document \(recommended\)](#)

[Cancel](#)

SEND DATA

Defaults:
Final Processing Step = "Post"
Stop on Error = "Yes"

Submit Acknowledgement

Request Received!

Your File AQS_Sample_Blanks_v2.2.zip has been received.

The following Transaction ID has been assigned to this request:

78f81539-6c17-47e7-81c8-ec209d80b9fc

Record for
future
reference

Current Status of Request:

Transaction Status	Service Name	Transaction Type	Date
Processing	AQS Submit	Send Information	3/21/2012 2:59 PM

What would you like to do next?

[View the Status of this request in My Activity](#)

[Complete another Transaction using this same Service](#)

[Complete another Transaction using a different Service](#)

[Add this Service to My Quick Links](#)

[Log out of the Services Center](#)



ENSC Status Page

[My Services](#) [My EPA Activity](#) [My Channels](#)

[Add this page to My Quick Links](#)

Make this my Start page

My EPA Activity ? View the status of your transactions

Filter By: Status ▼ All ▼ [Filter](#) [Clear](#)

1 - 5 of 5

[< Previous](#) **1** [Next >](#)

[Refresh Activity](#)

Service Name	Dataflow Name	Transaction Status	Transaction Type	Date	Transaction ID	Documents
AQS Submit	AQS	COMPLETED: Number of data rows successfully staged: 24. Number of rows that failed to stage: None. Number of transactions successfully loaded: 0. Number of transactions with Load error: 24.	Send Info	8/8/2014 10:35:02 AM	_daccf978-d879-4533-b950-f51ccf3fc80b	Ex2_3_T79.txt.zip
AQS Submit	AQS	COMPLETED: Number of data rows successfully staged: 33. Number of rows that failed to stage: None. Number of transactions successfully loaded: 9. Number of transactions with Load error: 24.	Send Info	8/8/2014 10:27:06 AM	_c688c6bb-e2f1-4f91-8395-6c1a8824f92e	Ex2_2_T79.txt.zip
AQS Submit	AQS	COMPLETED: Number of data rows successfully staged: 33. Number of rows that failed to stage: None. Number of transactions successfully loaded: 0. Number of transactions with Load error: 33.	Send Info	8/8/2014 10:18:10 AM	_86aeaf51-bbf7-46a4-90ae-428ce3b79dfe	AQS_Load_Reports.zip
AQS Submit	AQS	COMPLETED: Number of data rows successfully staged: 24. Number of rows that failed to stage: None. Number of transactions successfully loaded: 0. Number of transactions with Load error: 24.	Send Info	8/8/2014 10:01:54 AM	_76842965-4315-4d1e-a275-a04eb28b0c12	AQS_Load_Reports.zip
AQS Submit	AQS	COMPLETED: Number of data rows successfully staged: 33. Number of rows that failed to stage: None. Number of transactions successfully loaded: 0. Number of transactions with Load error: 33.	Send Info	8/8/2014 9:57:44 AM	_67dbbbed-4780-40-800f-400000000000	AQS_Load_Reports.zip

ENSC Download Page

Transaction Details

Transaction ID: _78f81539-6c17-47e7-81c8-ec209d80b9fc

Transaction Status: COMPLETED

Date: 3/21/2012 2:59:26 PM

Service Name: AQS Submit

Message: Number of transactions processed successfully: 882. Number of transactions rejected with error: None.

DataFlow: AQS

Transaction Type: Submit

Approved Count: 0

Recipients:

[Return to My Activity](#)

Documents Associated with this Transaction:

AQS Load Reports.zip	View Details
ValidationResults.xml	View Details
AQS Sample Blanks v2.2.zip	View Details



Second ENSC Login

Environmental Information
exchange
Network

SERVICES CENTER

Logged In: coats.robort@epa.gov
[My Profile](#) | [Help](#) | [Contact Us](#) | [Logout](#)

[Home](#) | [My Services Center](#) | [Exchange Network Services](#) | [News & Data Channels](#) | [My Quick Links](#) ▼

[My Services](#) | [My EPA Activity](#) | [My Channels](#) (Added to My Quick Links)

Make this my Start page

My Services ? Access services you have used before. [Use a New Service](#)

[All](#) | [Send Info](#) | [Get Info](#) | [Download](#) | [My Queries](#)

Find a Service: My Services Services Directory [Find](#)

<u>Service Name</u>	<u>Service Description</u>	<u>Publisher</u>	<u>RSS-enabled</u>	<u>Last Used</u>
NGNTest2.0/AQS/AQS Submit	AQS Submit: Send files to the Air Quality System (AQS).	U.S. Environmental Protection Agency	No	3/21/2012 2:59:25 PM

AQS Batch form (1)

BATCH (Robert Coats Test) _ _ X

Process by File

History

HISTORY AND STATUS

LOAD

POST

Submission Date	File Name	User Name	Records In File	Date (last)	Process Status	LOAD			POST		
						Recs Loaded	Recs Failing to Load	Stat/CR Finding Count	Records to Post	Skip'd Monitors	Records Posted
20120502 10:44	Del_Raw_XML.zip	ROBERT COATS	939	20120502 10:45	CRST-COMPLETED	939	0	191	939	0	
20120502 10:42	Ins_PA.zip	ROBERT COATS	64	20120502 10:42	STAGE-COMplete						
20120502 10:30	Ins_Raw.zip	ROBERT COATS	951	20120502 10:33	POST-COMPLETED	939	12	12	939	0	939
20120502 10:07	ONLINE_RCG_779491	ROBERT COATS	6	20120502 10:07	STAGE-COMplete						
20120222 12:42	do_nothing.zip	ROBERT COATS	0	20120222 12:42	STAGE-ERROR						

PROCESS CONTROL

Load

Post

Other

Process selected file through: Load File Post File

Results and Reports: Load Summary and Errors Stat CR Report Raw Data Inventory Show User Log

Goto ENSC Refresh Sessions

PROCESS FLOW

```

graph LR
    FILE((FILE)) --> ENSC[ENSC]
    ENSC --> Stage((Stage))
    Stage --> TE{Transfer Error?}
    TE -- Y --> DFF[Diagnose and fix problem]
    DFF --> FILE
    TE -- N --> Load((Load))
    Load --> Errors{Errors?}
    Errors -- Y --> Correct[Correct]
    Correct --> Load
    Errors -- N --> RD{Raw Data?}
    RD -- Y --> Post((Post))
    RD -- N --> DONE((DONE))
    Post --> DONE
    Load -.-> LSE[Load Summary and Errors]
    Errors -.-> SCR[Statistical and Critical Review (Stat CR)]
    Post -.-> RDI[Raw Data Inventory]
    
```

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Batch Form Fields

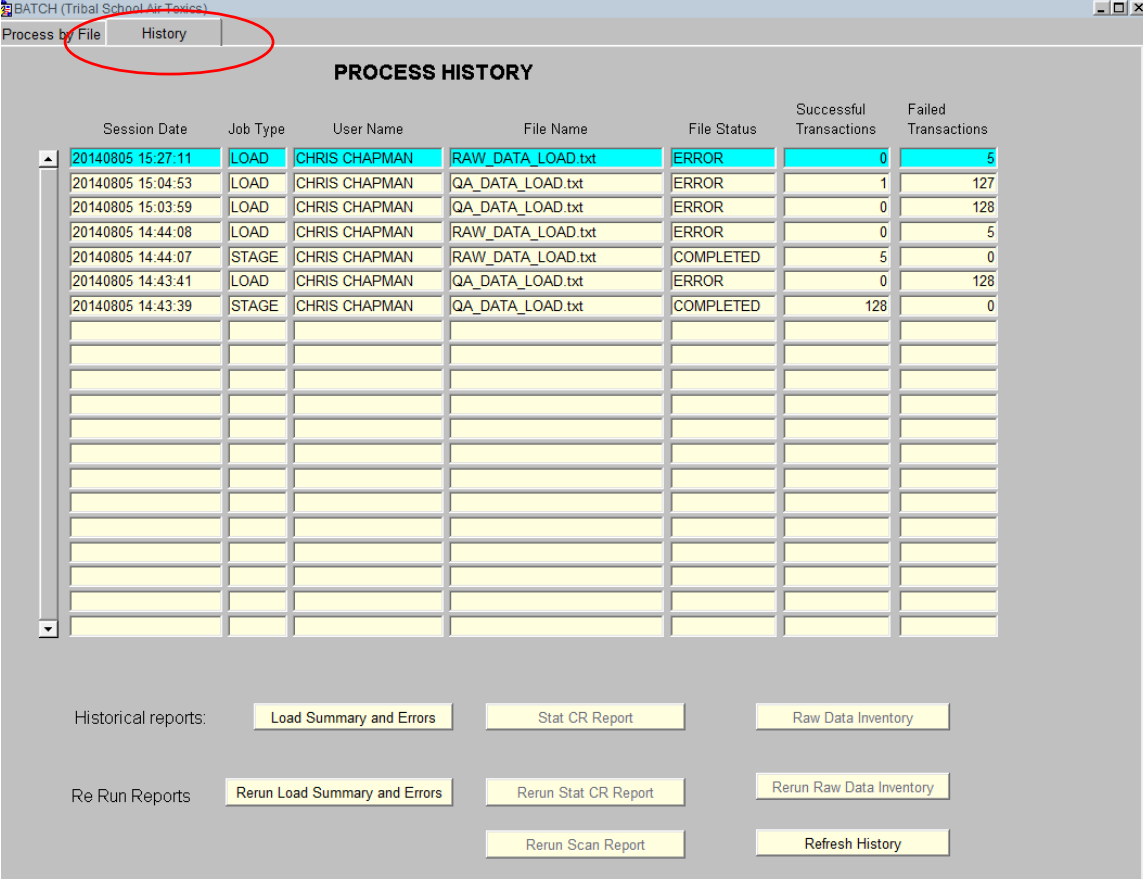
- Submission Date: Date-time file received by AQS
- File Name: Name of file uploaded by user
- User Name: User who *last* processed file in AQS
- Records In File: Count of transactions received by AQS
- Process Status: Last process executed and its status
- Date that last process executed
- Records Loaded: Successfully loaded transactions
- Recs Failing to Load: Number of transactions with errors.
- Stat/CR Finding Count: Number of Statistical results + number of Critical Review results
- Records to Post: Count of Raw Data records ready to post
- Skipped Monitors: Number of monitors being modified by another user
- Records Posted: Count of Raw Data transactions posted to production

Batch Form Notes

- Each row on form shows processing status of single file (trace processing left-to-right)
- Blank columns mean either process has not been run yet or not appropriate to data (e.g. Post not valid for some transactions)
- Load button will run both old Load and Stat/CR
- Post button will run Load, Stat/Cr, and Post
- All reports created when processing job executes → their results will be available for 15 days
- Count columns are cumulative: i.e. if 10 records are processed successfully the first time load is run for file and 10 the second time, then Recs Loaded will be 20
- Records created in “Correct” forms will show up with filename of “ONLINE_”+user+number
- **Warning: While reports are running, no indication on form. Do not click Load or Post button until prior submission complete (Look at email or user log to check!)**

AQS Batch Form (2): History Tab

Form shows each individual program execution and its results



The screenshot shows the 'History' tab of the 'BATCH (Tribal School Air Toxics)' form. The 'History' tab is circled in red. The main content is a table titled 'PROCESS HISTORY' with the following columns: Session Date, Job Type, User Name, File Name, File Status, Successful Transactions, and Failed Transactions. The table contains several rows of data, with the first row highlighted in blue. Below the table are sections for 'Historical reports' and 'Re Run Reports' with various buttons.

Session Date	Job Type	User Name	File Name	File Status	Successful Transactions	Failed Transactions
20140805 15:27:11	LOAD	CHRIS CHAPMAN	RAW_DATA_LOAD.txt	ERROR	0	5
20140805 15:04:53	LOAD	CHRIS CHAPMAN	QA_DATA_LOAD.txt	ERROR	1	127
20140805 15:03:59	LOAD	CHRIS CHAPMAN	QA_DATA_LOAD.txt	ERROR	0	128
20140805 14:44:08	LOAD	CHRIS CHAPMAN	RAW_DATA_LOAD.txt	ERROR	0	5
20140805 14:44:07	STAGE	CHRIS CHAPMAN	RAW_DATA_LOAD.txt	COMPLETED	5	0
20140805 14:43:41	LOAD	CHRIS CHAPMAN	QA_DATA_LOAD.txt	ERROR	0	128
20140805 14:43:39	STAGE	CHRIS CHAPMAN	QA_DATA_LOAD.txt	COMPLETED	128	0

Historical reports:

Re Run Reports:

Put it into Practice: Exercise 2

- QA URL: <https://aqs.epa.gov/aqs> (DATABASE: AQSQA)
- ENSC URL:
<https://enservicetest.epacdxnode.net/login.aspx>
- Exercise 2 Location:
https://aqs.epa.gov/aqsweb/Exercises/EXERCISE2_TXX.txt (XX is your Test ID)
- Exercise 2 File to Download:
https://aqs.epa.gov/aqsweb/Exercises/Exercise2_2016.doc
- Videos: <https://www.epa.gov/aqs/aqs-training>



Put it into Practice: Exercises 3 and 4

- QA URL: <https://aqs.epa.gov/aqs> (DATABASE: AQSQA)
- ENSC URL:
<https://enservicetest.epacdxnode.net/login.aspx>
- Exercise 3/4 Location:
https://aqs.epa.gov/aqsweb/Exercises/EXERCISE3_TXX.txt (XX is your Test ID) (Put a 4 to get exercise 4)
- Exercise 3/4 File to Download:
https://aqs.epa.gov/aqsweb/Exercises/Exercise3_2016.doc (Put a 4 to get Exercise 4)
- Videos: <https://www.epa.gov/aqs/aqs-training>

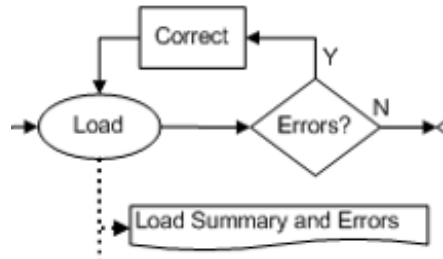


Correct Function



Batch Load: Error Process

AQS Batch Data Input Flow Sheet



Load Summary

File Name : RAW_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Transaction Type	Errors	Excluded by			Total
		User	Pre-Production	Posted	
RD-Raw Data	5	0	0	0	5
Totals	5	0	0	0	5

Aug. 3, 2014

Load Detail

File Name : RAW_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Site/Monitor ID: 01-003-0010-44201-1 Transaction: Raw Data

Transaction: RD || |01 |003 |0010 |44201 |1 |1 |007 |047 |20110501 |00:00 |||BF |||||

Column	Error Description	Error Code
Multiple Columns	Screening group of user does not equal screening group of Monitor.	-20460

Site/Monitor ID: 01-003-0010-44201-1 Transaction: Raw Data



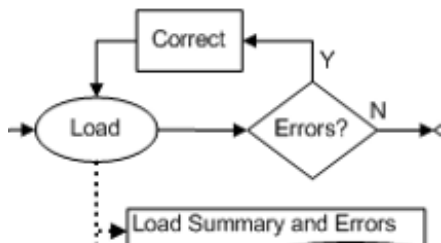
Correct Process

- CORRECT is a Type of On-Line Editor That Works Against the “Staging Tables”
- Staging Tables are in the format of the Pipe-Delimited Transactions and are Not the “Real” Table (Because There is an Error that Prevents Them From Getting to the “Real” Table)
- There are two “flavors” of correct forms
 - Older ones that correct raw data and non-QA transactions
 - Newer QA Transaction correct forms



Batch Load: Error Process (Old Way)

AQS Batch Data Input Flow Sheet



Load Summary

File Name : RAW_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Transaction Type	Errors	Excluded by			Total
		User	Pre-Production	Posted	
RD-Raw Data	5	0	0	0	5
Totals	5	0	0	0	5

Aug. 5, 2014

Load Detail

File Name : RAW_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Site/Monitor ID: 01-003-0010-44201-1 Transaction: Raw Data

Transaction: RD || |01 |003 |0010 |44201 |1 |1 |007 |047 |20110501 |00:00 | |BF | | | | | | | | | | | | | | | | |

Column	Error Description	Error Code
Multiple Columns	Screening group of user does not equal screening group of Monitor.	-20460



Batch load: Using Correct Forms

1) Execute Query

- This will load all of this type of data in the Staging tables for your Screening Group.
- If you want to limit selection you must put in selection values **before** the execute query.

5) Save

2) Read the error message(s)

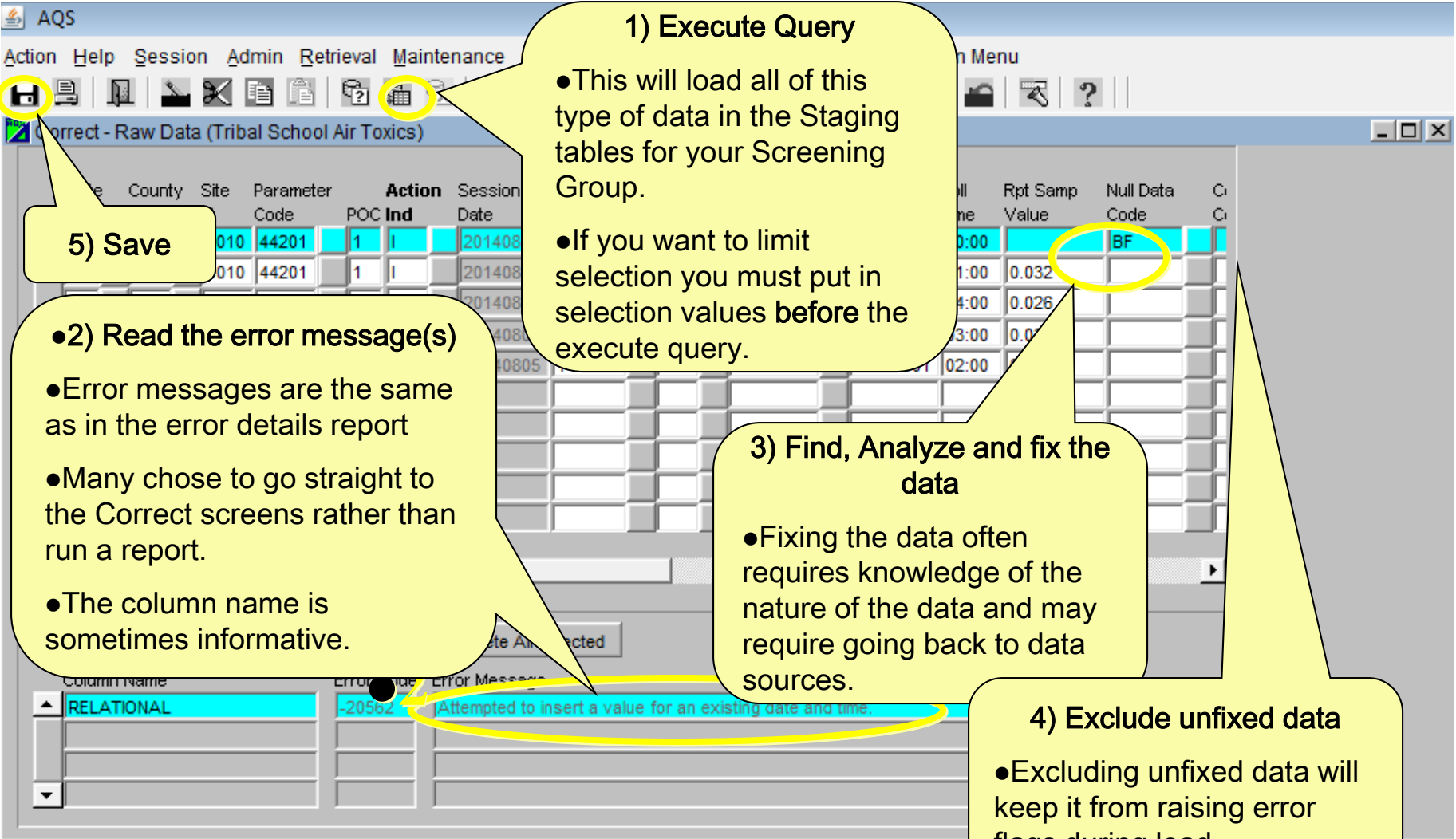
- Error messages are the same as in the error details report
- Many chose to go straight to the Correct screens rather than run a report.
- The column name is sometimes informative.

3) Find, Analyze and fix the data

- Fixing the data often requires knowledge of the nature of the data and may require going back to data sources.

4) Exclude unfixed data

- Excluding unfixed data will keep it from raising error flags during load.



Batch load: Using Correct Forms

Deleting Data (cont.)

The screenshot shows the AQS software interface. The main window is titled 'Correct - Raw Data (Tribal School Air Toxics)'. It contains two data tables. The first table has columns: State Code, County Code, Site Id, Parameter Code, POC, Coll Date, Coll Time, Rpt Samp Value, Null Data Code, and C. The second table has columns: Column Name, Error Code, and Error Message. A 'Forms' dialog box is open, asking for confirmation to delete records. A 'Delete All Selected' button is visible. An error message is displayed at the bottom.

State Code	County Code	Site Id	Parameter Code	POC	Coll Date	Coll Time	Rpt Samp Value	Null Data Code	C
01	003	0010	44201	1	20110501	00:00		BF	
01	003	0010	44201	1	20110501	01:00	0.032		
01	003	0010	44201	1	20110501	04:00	0.026		
01	003	0010	44201	1	20110501	03:00	0.034		
01	003	0010	44201	1	20110501	02:00	0.030		

Column Name	Error Code	Error Message
RELATIONAL	-20562	Attempted to insert a value for an existing date and time.

Forms

This will delete all of the selected records. Do you want to continue?

Yes No

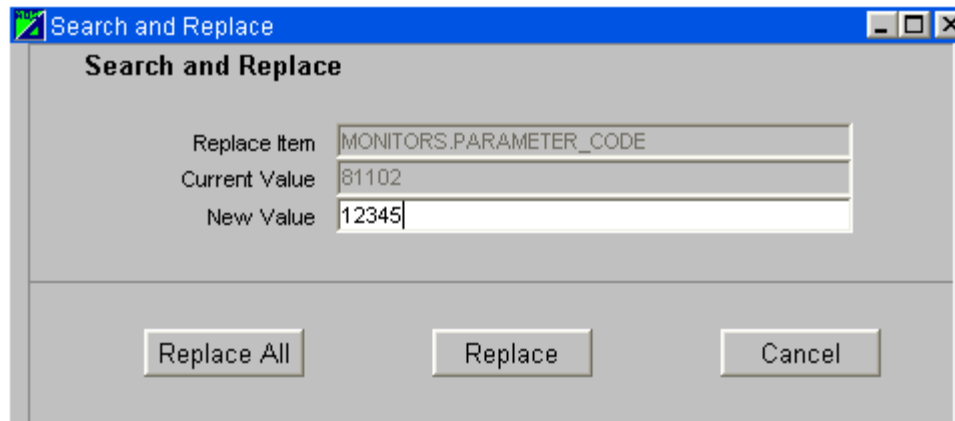
Delete All Selected

- The highlighted record can be deleted from the form.
- The record will be deleted from the Staging Table database only after a SAVE.
- All selected records will be deleted.
- The records will be deleted from the Staging Table database when the button is clicked.

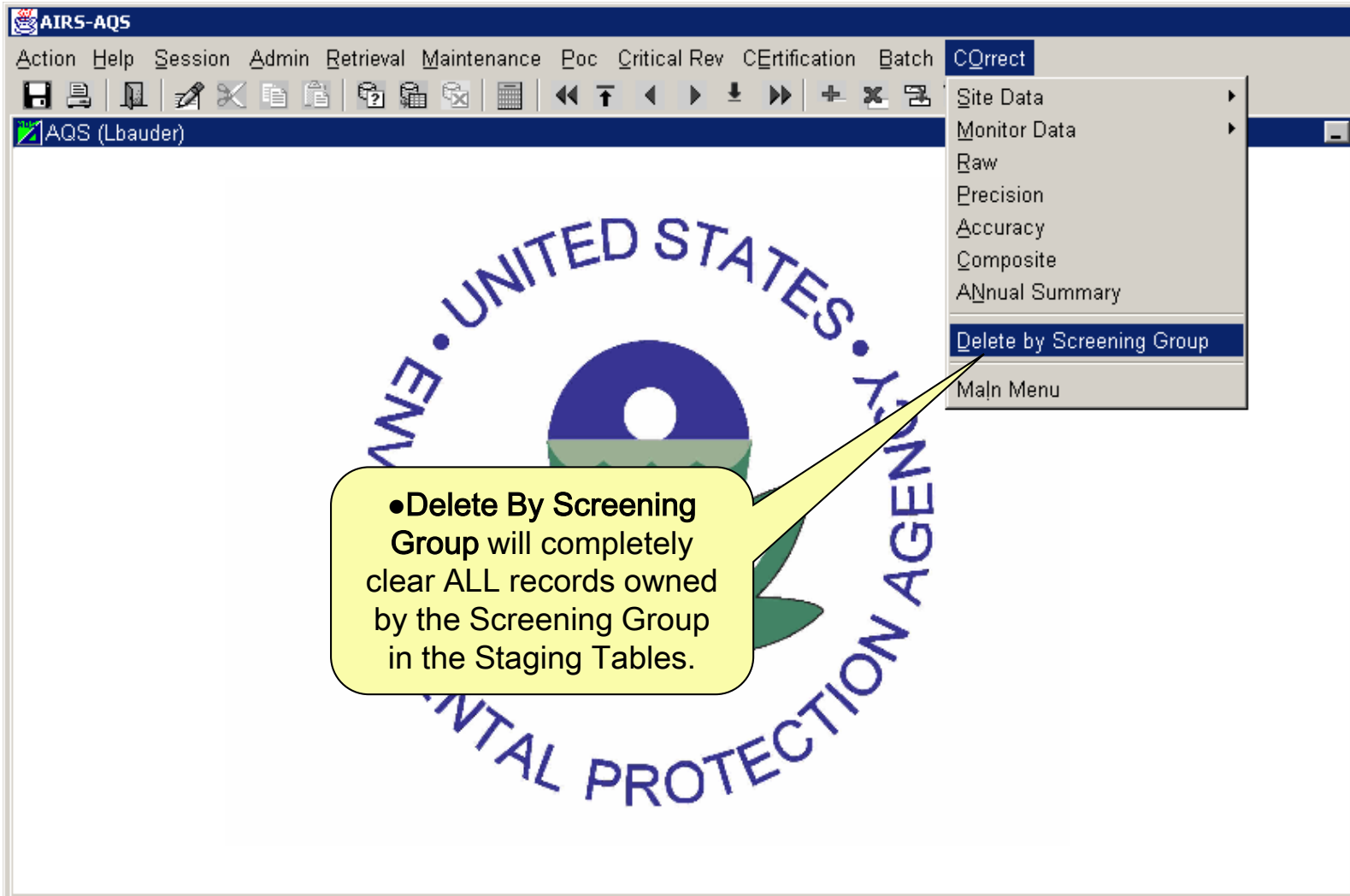
Search & Replace



- Not “Search & Replace” as you may know it!
- Replaces ALL Queried Values in a given column Regardless of the “Current Value”



Deleting Data (cont.)

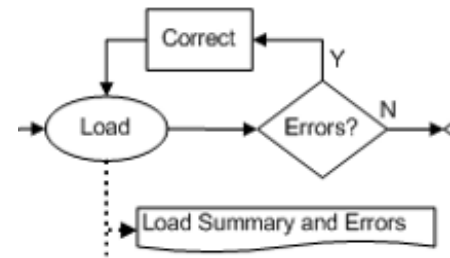


The screenshot shows the AIRS-AQS software interface. The menu bar includes Action, Help, Session, Admin, Retrieval, Maintenance, Poc, Critical Rev, Certification, Batch, and Correct. The 'Correct' menu is open, showing options: Site Data, Monitor Data, Raw, Precision, Accuracy, Composite, Annual Summary, Delete by Screening Group (highlighted), and Main Menu. A callout box points to the 'Delete by Screening Group' option with the following text:

- Delete By Screening Group will completely clear ALL records owned by the Screening Group in the Staging Tables.

Batch Load: Correct Process (New Way)

AQS Batch Data Input Flow Sheet



Load Summary

File Name : QA_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Transaction Type	Errors	Excluded by User	Pre-Production	Posted	Total
QA-Quality Assurance	128	0	0	0	128
Totals	128	0	0	0	128

Aug. 5, 2014

Load Detail

File Name : QA_DATA_LOAD.txt

Screening Group : Tribal School Air Toxics

Site/Monitor ID: 01-003-0010-44201-1 Transaction: Quality Assurance

Transaction: QA || 1-Point QC |0013 |01 |003 |0010 |44201 |1 |20110501 |1 |047 |007 |0.09 |0.09 |

Column	Error Description	Error Code
	Duplicate monitor assessment.	-20395

Site/Monitor ID: 01-003-0010-44201-1 Transaction: Quality Assurance



Batch load: Using Correct Forms

1) Find the file with data to be corrected

2) Load QA Data

• This will load all of this transactions of this type in this batch file

SELECT FILE TO VIEW ERRORS:

Submission Date	File Name	User Name	Transaction Count
20140805 14:43	QA_DATA_LOAD.txt	CHRIS CHAPMAN	126

1-Point QC

3) Read the error message(s)

• Error messages are the same as in the error details report

• Many chose to go straight to the Correct screens rather than run a report.

4) Find, Analyze and fix the data

• Fixing the data often requires knowledge of the nature of the data and may require going back to data sources.

Action	State Code/County	Tribal	Site Number	Parameter Code	Poc	Assessment Date	Assessment Number	Performing Agency	Monitor Method	Reported Unit	Monitor Conc	Asmnt Conc
			01	44201						007	0.09	0.09
			01	44201	1	20120517	1	0013	047	007	0.09	0.09
			01	44201	1	20110518	1	0013	047	007	0.089	0.09
			01	44201					047	007	0.09	0.09
			01	44201	1	20110520	1	0013	047			
			01	44201	1	20110521	1	0013	047			
			01	44201	1	20110522	1	0013	047			
			01	44201	1	20110523	1	0013	047			
			01	44201	1	20110524	1	0013	047			
			01	44201	1	20110525	1	0013	047			
			01	44201	1	20110526	1	0013	047			
			01	44201	1	20110527	1	0013	047			
			01	44201	1	20110528	1	0013	047			
			0001	44201	1	20110529	1	0013	047			
			0001	44201	1	20110530	1	0013	047			

Column Name	Error Code	Error Message
	-20395	Duplicate monitor assessment.
	-20395	Duplicate monitor assessment.
	-20395	Duplicate monitor assessment.

5) Save



Correct Features

- New transactions may be entered using Correct forms
- After making changes/additions on Correct screen, **SAVE** changes
- “Delete All Selected” button will delete according to “Execute Query” selection criteria for the form; it will ignore subsequent changes.
- Can use “Delete by screening group” to completely eliminate all records in staging tables for your screening group
 - **Be sure this is what you want to do. It works quickly and it deletes *EVERYTHING* for the screening group, including data entered by other users in your screening group.**



Re Load (or Re Post) the Data

- Once data is corrected
 - Load data, Recheck for errors, Correct residual errors, Repeat until no errors occur

HISTORY AND STATUS						LOAD			POST		
Submission Date	File Name	User Name	Records In File	Date (last)	Process Status	Recs Loaded	Recs Failing to Load	Stat/CR Finding Count	Records to Post	Skip'd Monitors	Records Posted
20140805 14:44	RAW_DATA_LOAD.txt	CHRIS CHAPMAN	5	20140805 15:27	LOAD-ERROR	0	5				
20140805 14:43	QA_DATA_LOAD.txt	CHRIS CHAPMAN	128	20140805 15:04	LOAD-ERROR	1	127				

PROCESS CONTROL	Load	Post	Other
Process selected file through:	<input type="button" value="Load File"/>	<input type="button" value="Post File"/>	<input type="button" value="Show User Log"/>
Results and Reports:	<input type="button" value="Load Summary and Errors"/> <input type="button" value="Stat CR Report"/>	<input type="button" value="Raw Data Inventory"/>	<input type="button" value="Goto ENSC"/>
			<input type="button" value="Refresh Sessions"/>

PROCESS FLOW

```

graph LR
    FILE((FILE)) --> ENSC[ENSC]
    ENSC --> Stage((Stage))
    Stage --> TE{Transfer Error?}
    TE -- N --> Load((Load))
    TE -- Y --> DFFP[Diagnose and fix problem]
    DFFP --> FILE
    Load --> ERR{Errors?}
    ERR -- Y --> CORRECT[Correct]
    CORRECT --> Load
    ERR -- N --> RD{Raw Data?}
    RD -- Y --> Post((Post))
    RD -- N --> DONE((DONE))
    Post --> DONE
    Load -.-> LSE[Load Summary and Errors]
    ERR -.-> SCR[Statistical and Critical Review (Stat CR)]
    Post -.-> RDI[Raw Data Inventory]
    
```



Put it into Practice: Exercises 3 and 4

- Analyze and correct the following Batch load error types
 - Raw Data (Exercise 3)
 - Quality Assurance Data (Exercise 4)



Data Formats



Data Formats Overview

- 2 types supported
 - “Pipe-delimited” format
 - “|”
 - One format for each type of data supported through the system
 - “Data Input Formats for the Re-engineered AQS”
 - <https://aqs.epa.gov/aqsweb/documents/TransactionFormats.html>
 - XML
 - AQS XML Schema definition can be found at <http://www.exchangenetwork.net/data-exchange/aqs/>



Pipe-Delimited Transaction Common Fields

- Transaction Type – always the 1st column
- Action Indicator – always the 2nd column
 - I = INSERT
 - U = UPDATE
 - D = DELETE
- State Code – usually the 3rd column
- County Code – usually the 4th column
- Site ID - usually the 5th column



Pipe-Delimited vs XML Example

- AQS Site ID: 01-001-9999
- Pollutant Measured: Ozone
- POC (assigned as part of the monitor ID): 1
- Does this value already exist in the system? No
- How long did it take to form sample (the duration): hour
- What kind of instrument was used? Dasibi 1008-AH
- When was the sample collected? June 10, 2006
- What time did sample begin (local standard time): 1:00 PM
- Sample Concentration: 0.050 parts per million
- Other qualifiers that you want to apply to data? No
- Would you like to specify an alternate Minimum Detection Limit for this sampler? No
- Would you like to specify an uncertainty value with this sample? No



Pipe-Delimited

```
OR | I | 01 | 001 | 9999 | 44201 | 1 | 1 | 007 | 056 | 20060610 | 13:00 | 0.050 | | | | | | | | | | | | | | | |
```

```
<ActionRawDataInsert>
```

XML Format

```
<StateCode>01</StateCode>  
<CountyCode>001</CountyCode>  
<SiteIdentifier>9999</SiteIdentifier>  
</SiteIdentifierDetails>  
<MonitorIdentifierDetails>  
<ParameterCode>44201</ParameterCode>  
<ParameterOccurrenceCode>1</ParameterOccurrenceCode>  
</MonitorIdentifierDetails>  
<TransactionProtocolDetails>  
<DurationCode>1</DurationCode>  
<MethodCode>056</MethodCode>  
<UnitCode>007</UnitCode>  
</TransactionProtocolDetails>  
<TransactionRDInsertDetails>  
<ObservationDate>20060610</ObservationDate>  
<ObservationStartTime>13:00</ObservationStartTime>  
<RawValueInsertDetails>  
<SampleValue>0.050</SampleValue>  
</RawValueInsertDetails>  
</TransactionRDInsertDetails>  
</ActionRawDataInsert>
```



XML Format

- As you can see, XML looks like HTML, but with some changes:
 - The HTML standard defines a fixed set of “tags” that define the data content and formatting.
 - XML allows you to create your own tags, with the meanings that you define.
- XML Tradeoffs:
 - XML files are “self describing”
 - XML files are bigger (100 X bigger, but compressible.)



Online Updates of Data



What *can* you update online?

What *should* you?

- Data owned by your Screening Group
- Data -- update online if you can narrow it down
 - Site
 - Monitor
 - Sample Data
 - QA Data
 - Summary Data
 - Comments
- Exceptional Event definitions and concurrences -- online only



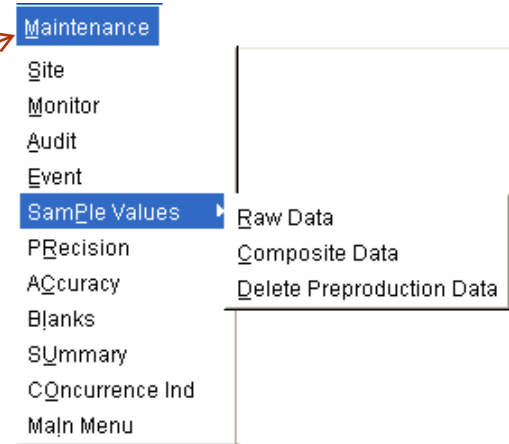
Where Do I Start?

The screenshot shows a web application window titled "Select Session Access (Information Management Group) Tribal Mode". It contains a sub-window titled "Select a Screening Group" with the instruction "Select a Screening Group for this session:". Below this instruction is a table with two columns: "Name" and "Type". The table contains one row with "QAOTEST" in the "Name" column and "OTHER" in the "Type" column. A large orange callout box is overlaid on the table, containing the text: ***Session access***
You can only see data from monitors YOU OWN
You can change any data that YOU OWN


Below the table, there is an "OK" button. At the bottom of the main window, there is a message: "You have accessed AQSPROD. Raw data for 1993 to present". Below this message, there is a link to "Frequently Asked Questions" and a phone number for the EPA call center: "LOOK FOR ANSWERS TO 'Frequently Asked Questions' AT: <http://www.epa.gov/air/air/stair/aqsp/faq/faq.htm>. IF YOU NEED ASSISTANCE, PLEASE CALL THE EPA CALL CENTER AT 1-866-411-4EPA (1-866-411-4372) Hours: 6:00am- 6:30pm Eastern."

How to update data online?

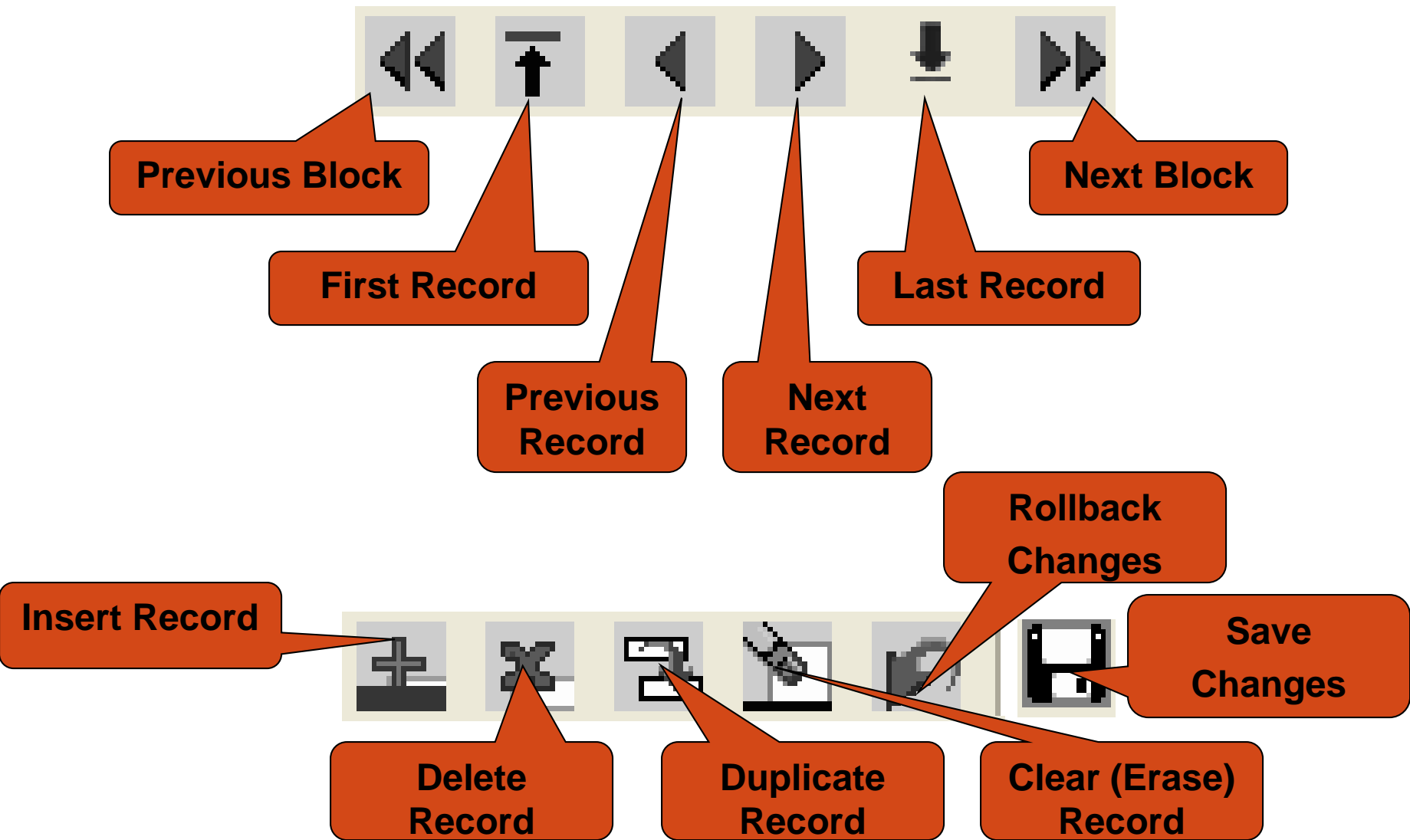
- You are in your Screening Group
- Go to Maintenance tab
- Select the type of data you want
 - Site OR Monitor OR Event OR Sample Values
- Build the query



Tribal Code State Code County Code Site ID Parameter Code POC

- specify “filters” (just like in Browse) to get only the records you want
- Execute the Query 
- Scroll through the records and modify as needed
- Save (Look for confirmation message)

Form Navigation



Save & Rollback

- Rollback
 - Throws away all changes back to the last time you Saved.
 - Cannot “undo” a Rollback
- Save
 - None of the changes you make take effect until you save.



Example 1: Maintain Site

Maintain Site (National Air Data Group)

Basic Site Data | Additional Site Data | Agency Roles | Tangent Roads | Open Paths | Comments | Primary Monitor Periods

Site Identification

State Code

County Code Site Id Status Ind

User Coordinates

Horizontal Datum Latitude Longitude

UTM Zone UTM Easting UTM Northing

Standard Coordinates: Datum Latitude Longitude

Horizontal Method

Horizontal Accuracy (Meters) Source Map Scale (Non-GPS)

Vertical Measure (Meters) Vertical Accuracy (Meters) Vertical Datum

Vertical Method

Street Address

Land Use Type Location Setting

City Code

Urban Area Code

AQCR Code

Site Established Date (YYYYMMDD) Time Zone Name

Owning Agency



Example 2 – Maintain Monitor

Maintain - Monitors (National Air Data Group)

State Code	County Code	Site Id	Parameter Code	POC	Status Ind
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Project Class <input type="text"/>		Dominant Source <input type="text"/>			
Meas Scale <input type="text"/>		Open Path Num <input type="text"/>			
Probe Location <input type="text"/>		Probe Height <input type="text"/>		Probe Hor Dist <input type="text"/>	
Probe Vert Dist <input type="text"/>		Surrogate Ind <input type="text"/>		Unrest Air Flow <input type="text"/>	
Samp Res Time <input type="text"/>		Last Samp Date <input type="text"/>		Last Post Date <input type="text"/>	
Close Date <input type="text"/>		Monitoring Agency (Owner) <input type="text"/>			

Check Completeness Duplicate Monitor

- Monitor Basic
- Sample Periods
- Type Assign.
- Network Affiliations
- Agency Roles
- Objectives
- Req Frequencies
- Collocation
- Methods
- Exclusions
- Pollutant Area
- Tangent Road
- Probe Obs.
- Reg Compliances
- Protocols
- Channels
- Comments



Example 3 – Maintain Raw Data

Maintain - Raw Data (National Air Data Group)

Raw Data | Comments

State: County: Site: Parameter: POC: Begin Date: End Date: Standard Units:

Raw Data		Stat	Reported	Standard	EPA	Action	Exclusion	Null			Uncertainty
Mp ID	Date	Ind	Sample Value	Sample Value	Ind	Ind	Ind	Data Code	Description		Value
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Qualifier Code **Qualifier Desc** **Qualifier Type**

Event Description **Association Date**

Event Comment

Event URL

Monitor Protocol **Method** **Unit** **Duration** **Coll Frequency** **Alt Mdl**



Example 4 – Maintain QA Data

maintain (National Air Data Group)

Query Criteria Read

Agency	<input type="text"/>	Method	<input type="text"/>
Agency Role	<input type="text"/>	Begin Date	<input type="text"/> YYYYMMDD
Tribal Area	<input type="text"/>	End Date	<input type="text"/> YYYYMMDD
State	<input type="text"/>	Monitor Type	<input type="text"/>
County	<input type="text"/>	Monitor Network	<input type="text"/>
Site ID	<input type="text"/>		
Parameter	<input type="text"/>		
POC	<input type="text"/>		



Put it into practice – Exercise 5

Create Online Data



END OF LOAD PORTION

