

AQS Concepts



In This Section We Will Talk About

- AQS Background
- History
- AQS as part of a monitoring program
- Types of Information in AQS
- AQS and CDX
- Database basics
- AQS Data Model
- Tying AQS codes to real-world examples



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

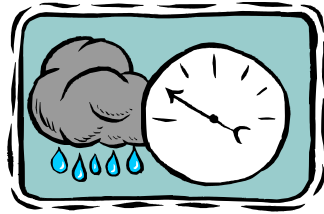


Brief History of AQS

- **SAROAD** (1970 – 1985)
 - Storage And Retrieval Of Air Data
 - Created in Response to the 1970 Clean Air Act
- **AIRS – AQS** (1985 – 2000)
 - Aeroemetric Information Retrieval System
 - Stored Ambient Air Quality Data (Air Quality Subsystem) as well as Point Source Emission Data
 - Combined the Data from Ambient, Point Source, and Quality Assurance Data Systems
- **AQS** (2000 – Present)
 - Air Quality System
 - Contains Ambient Air Quality Data and Quality Assurance Information



How Does AQS Fit in the Big Picture?

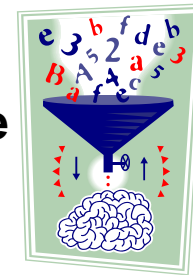


**Monitor
the Air**



Acquire Data

**Handle
Data**

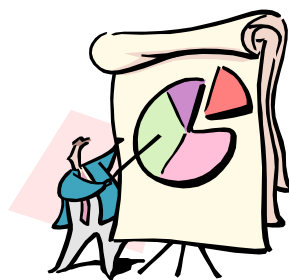


**Report (Load)
Data**

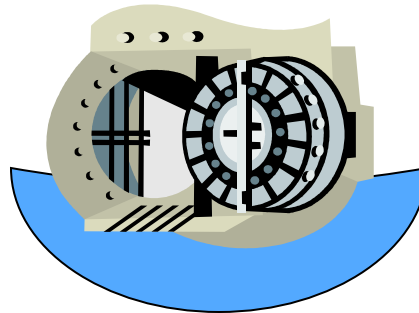


Regulate

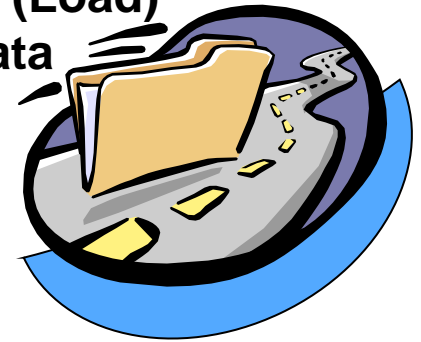
Analyze



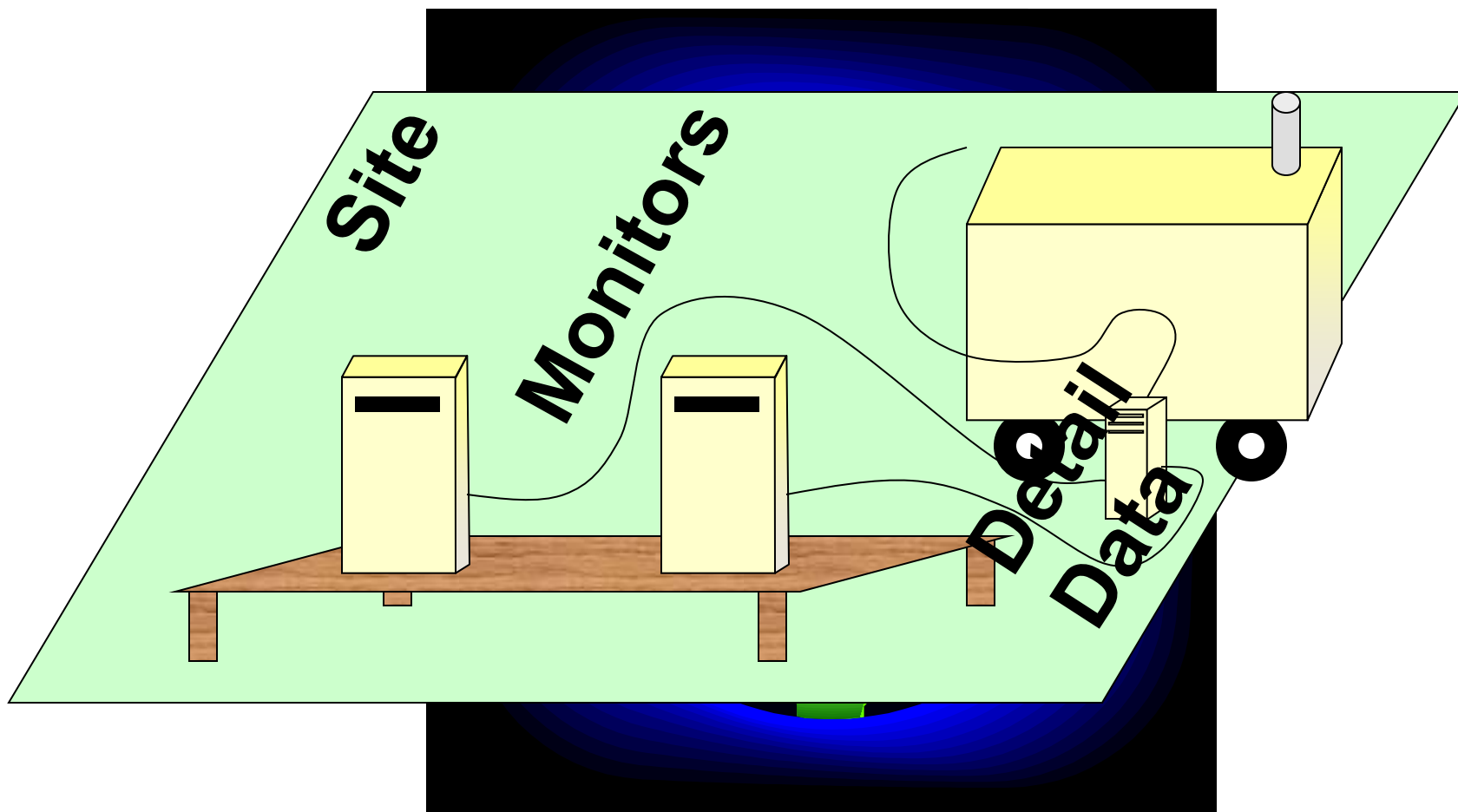
Store



AQS



Types of Core Data in AQS



Site Information

- Physical location – Where is the site?
 - Latitude and longitude
 - Street address
- Characteristics of the site
 - Nearby Streets
 - Open Path Set Up
 - Primary monitor (PM_{2.5}, Lead or NO₂)
- Identified by
 - State Code - County Code - Site ID OR
 - Tribal Code - Site ID



Monitor Information

- How is a Given Pollutant Measured?
 - When Sampling Began
 - Which Network(s) are associated with the Monitor
 - What Agencies run the Monitor
 - What Are the Monitoring Objectives
 - What Obstructions are Nearby
 - What Nearby Roads May Affect the Monitor
 - If the Monitor is Collocated, is this monitor the Primary or Collocated Monitor?
If Collocated, which is the Primary?
 - How Frequently Does the Monitor Try to Get a Sample?
- Identified by
 - AQS Site ID + Pollutant Code + Parameter Occurrence Code (POC)
(Think of it a POC a Sequence Number)



Detail Data

- Sample Measurement Obtained by the Instrument
 - User Reports:
 - Individual Sample Data (Raw Data)
 - Any Notes & Flags Pertaining to the Sample Data
 - Audit Data (Precision and Bias Data)
 - AQS Computes
 - Multi-hour Averages (e.g. 8-hour running average)
 - Daily Summaries
 - Site Summaries (PM_{2.5} and Lead Only)
 - Quarterly Summaries
 - Annual Summaries
 - Site Annual Summaries (PM_{2.5} and Lead Only)
- Identified by
 - Individual Sample Data
 - Monitor ID + When the Sample Was Taken (Date & Time) + Status
 - Audit Data
 - Monitor ID + When the Sample Was Taken (Date & Time)
 - Summary Data
 - Monitor ID + Time Period Summarized + Sample Duration + Exceptional Data Type + Pollutant Standard



Reference Data

- “Extra” Information about the Data in AQS
 - Sets of Codes Available for these Descriptions
 - Standard Codes Used where Available
- Codes are Used to Identify
 - States, Counties, Tribal Lands,
 - Pollutants,
 - Sample Lengths,
 - etc...



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

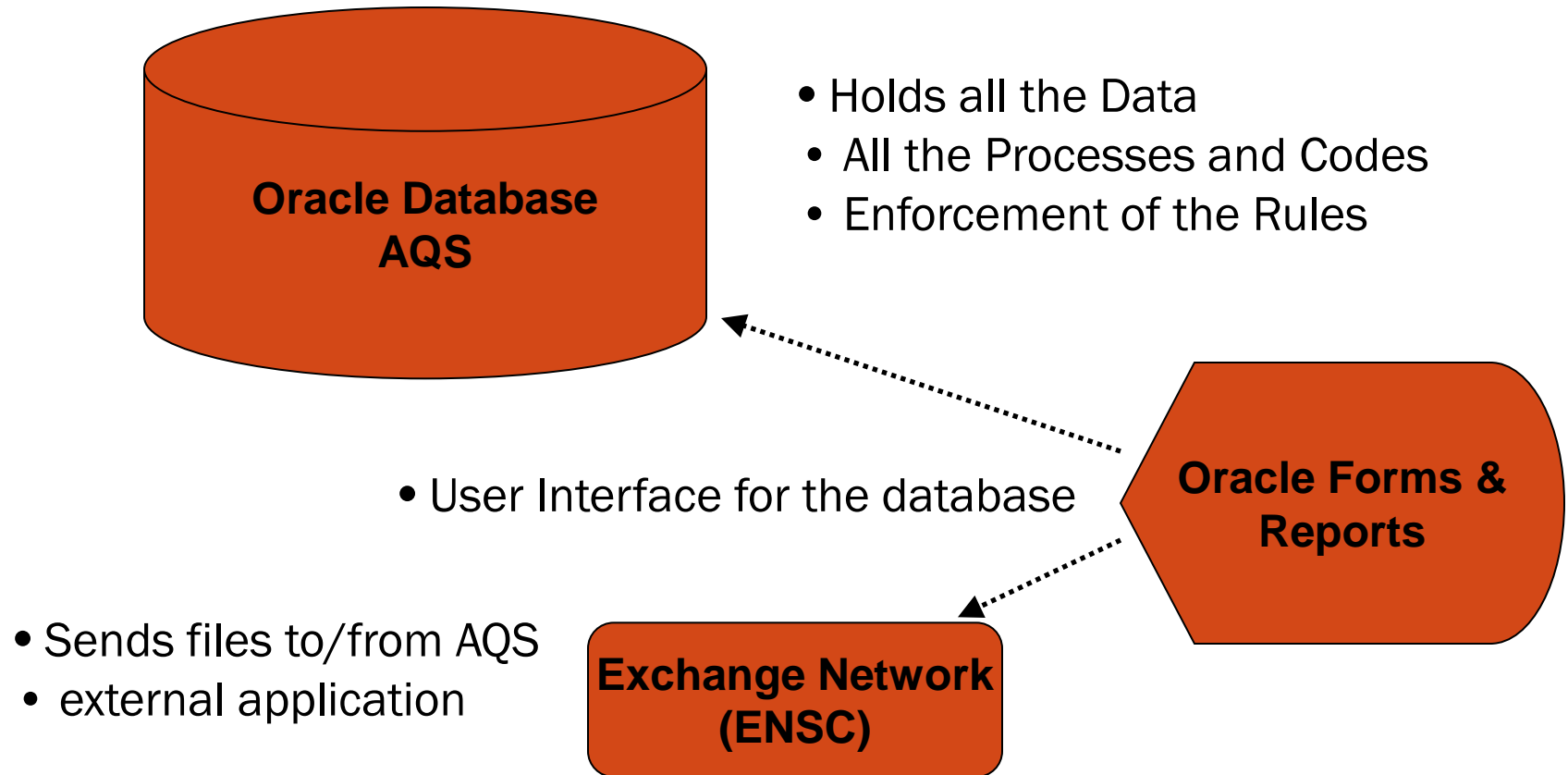


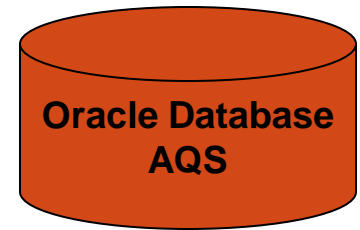
Core + Reference Information

- An Ozone (44201) Monitor in Wake County(183), North Carolina (37) is represented as
37-183-0001-44201-1
- A PM10 (81102) Monitor for the St. Regis Band of Mohawk Indians of New York (007) is represented as
TT-007-1234-81102-1



Components of AQS



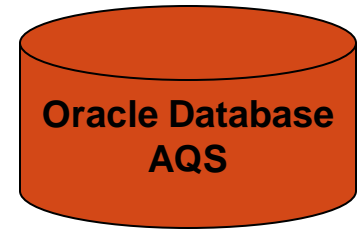


What is a Database?

- A collection of information about a particular subject stored so that the information can be accessed and organized
- The AQS Database stores information about ambient air quality measurements



The AQS Database

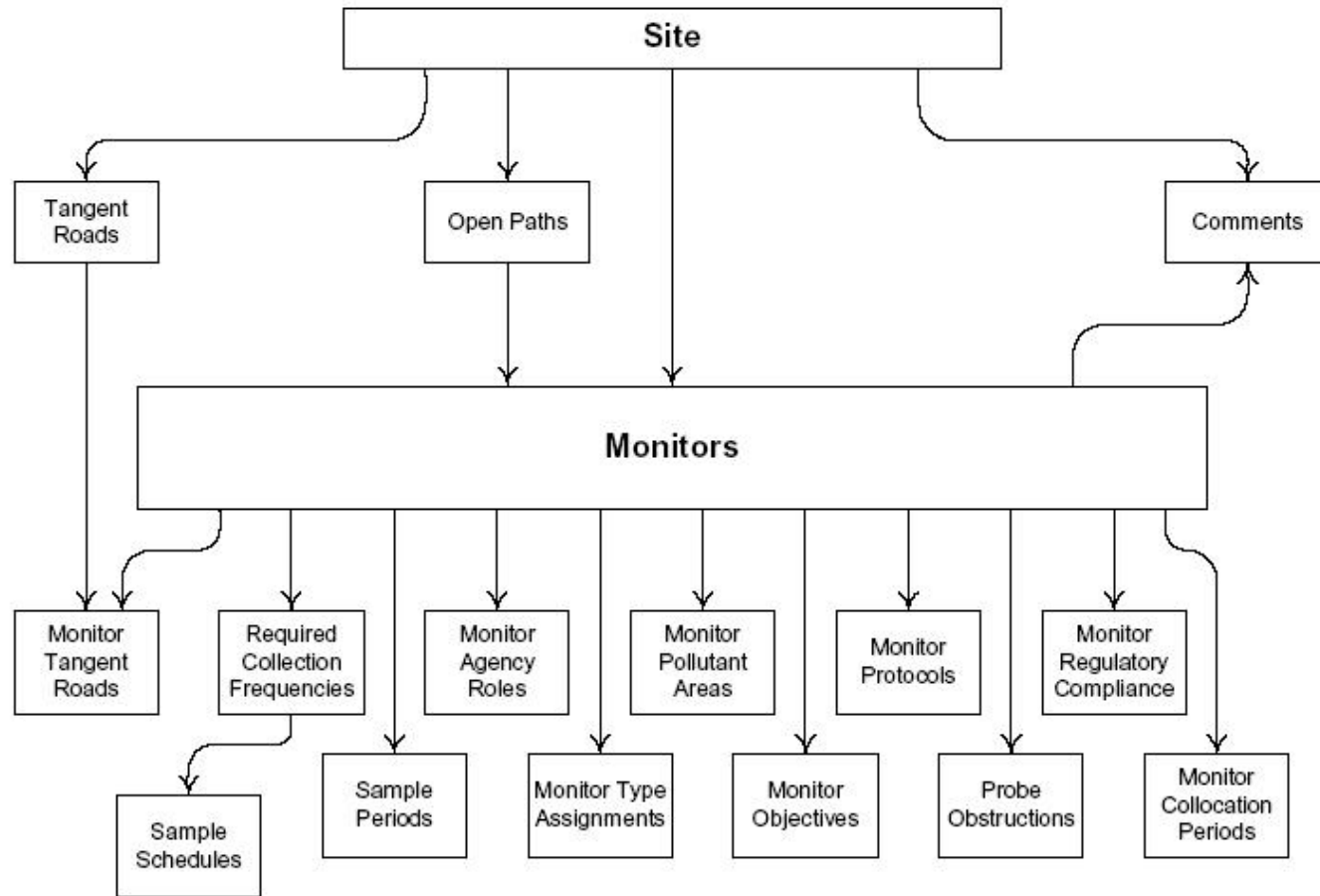
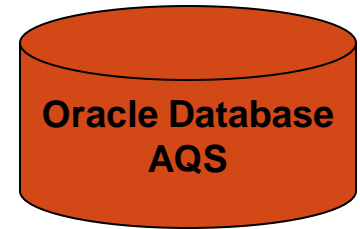


The AQS database can be considered to have four fundamental types of data:

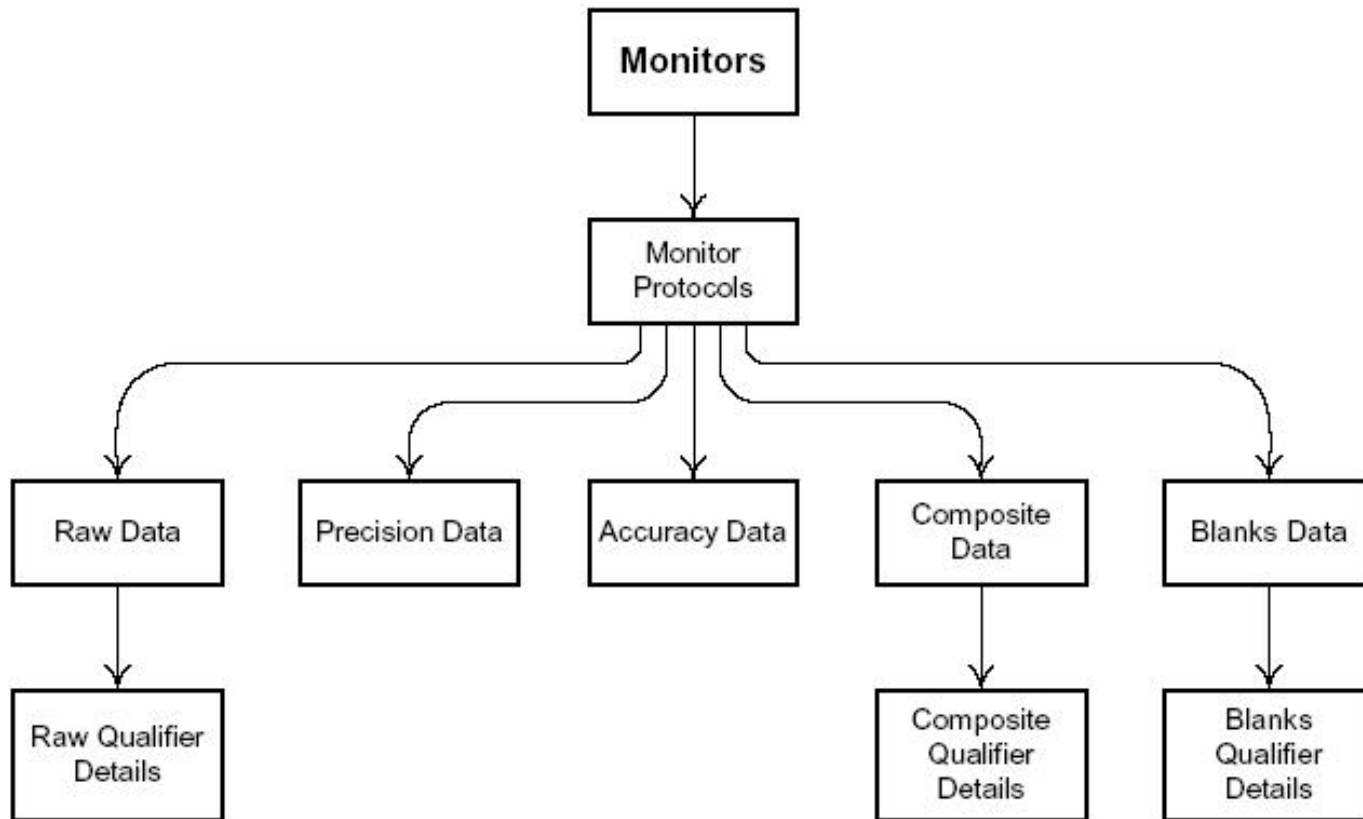
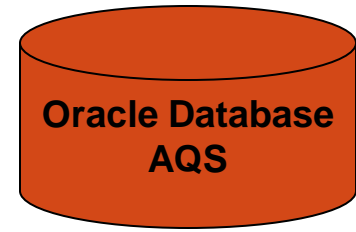
- **Sites:** Information about monitoring locations
- **Monitors:** Information about how measurements are taken
- **Detail Data:** Measurements, Summaries, and QA information
- **Reference Data:** Information about the real-world (e.g., States, Tribes, Pollutants (parameters))



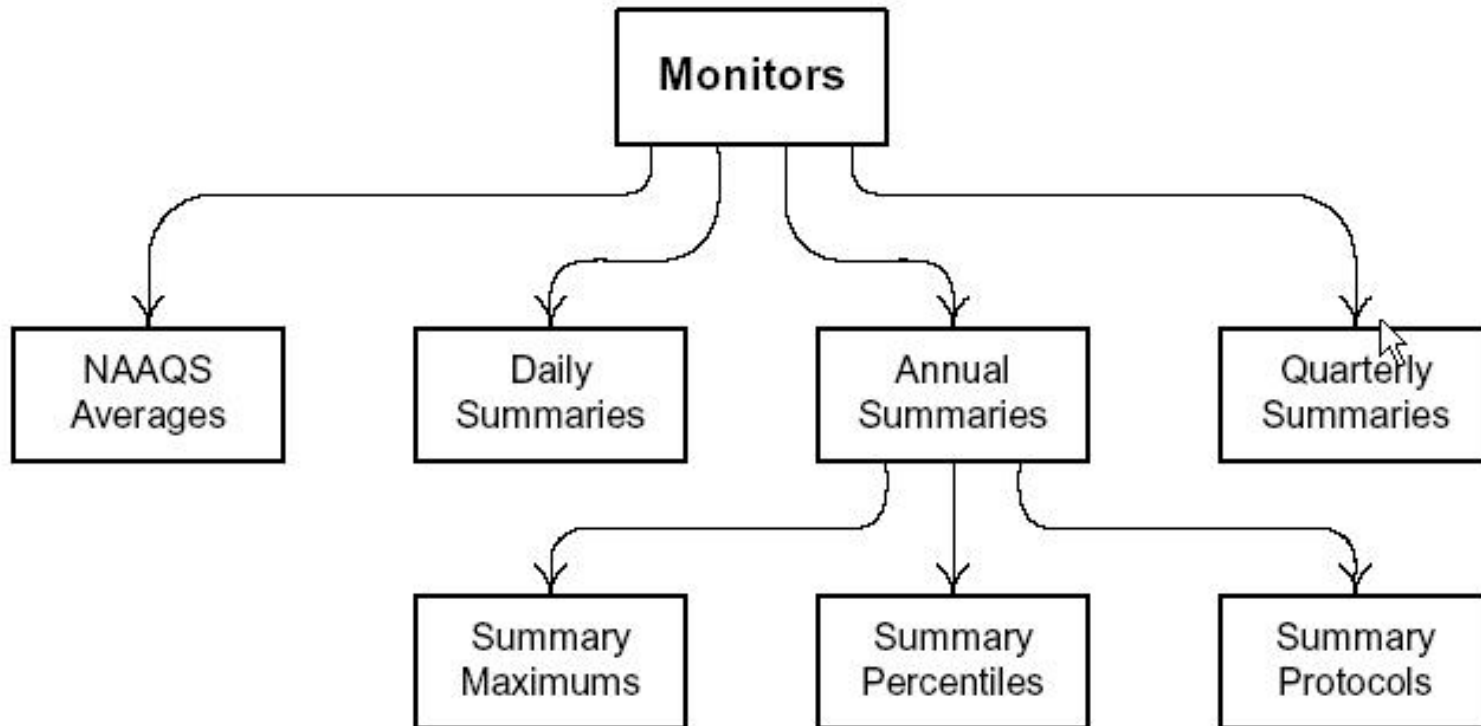
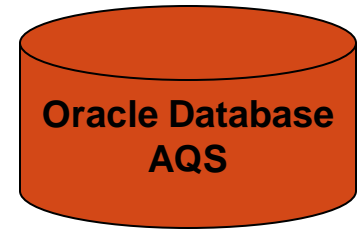
AQS Site and Monitor Data Model



AQS Data Model – Sample Data



AQS Data Model – Summary Data



Exercise 1.1

1. Name the 4 Categories of Data in AQS.

1. _____

2. _____

3. _____

4. _____

2. What is meant by a “site”? How do you uniquely define a “site” in AQS?

3. What is meant by a “monitor”? How do you uniquely define a “monitor” in AQS?

4. What would a Summary Record with a Duration Code of “W” and a Parameter Code of “44201” represent?



The 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



Forms:

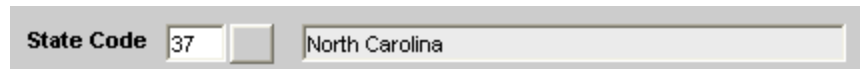
- Forms are the primary way that you interact with the AQS database.

- They provide a way for you to enter data:



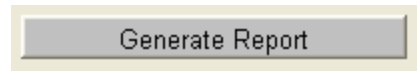
State Code

- They display previously entered data:



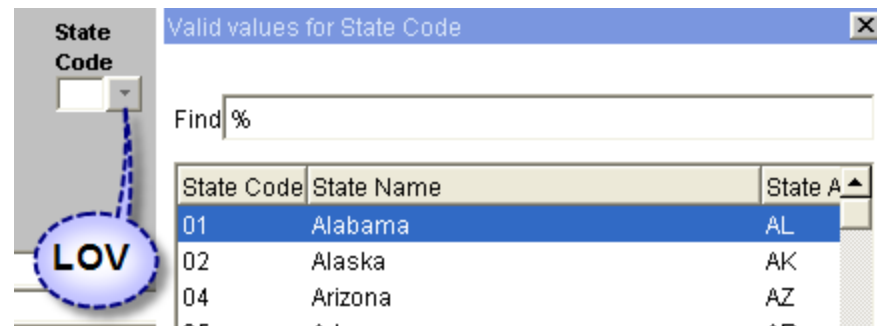
State Code 37 North Carolina

- They may have buttons to allow you to request actions:



Generate Report

- They often have List of Values (LOVs) to make a selection:



State Code

Valid values for State Code

Find %

State Code	State Name	State A
01	Alabama	AL
02	Alaska	AK
04	Arizona	AZ

LOV

Form Types (1)

- Some forms are designed to display only one record at the time:

The screenshot shows a web-based form titled "Maintain Site (National Air Data Group)". The form is divided into several sections with tabs at the top: "Basic Site Data", "Additional Site Data", "Agency Roles", "Tangent Roads", "Open Paths", "Comments", and "Primary Monitor Periods".

Site Identification

State Code: 37 (dropdown), North Carolina (text)
County Code: 183 (dropdown), Wake (text) Site Id: 0002 (text) Status Ind: P (dropdown)

User Coordinates

Horizontal Datum: NAD27 (dropdown) Latitude: 35.788611 (text) Longitude: -78.678889 (text) Lookup Geography (button)
UTM Zone: (text) UTM Easting: (text) UTM Northing: (text)

Standard Coordinates: Datum: WGS84 (dropdown) Latitude: 35.788701 (text) Longitude: -78.678628 (text)

Horizontal Method: 027 (dropdown), UNKNOWN (text)

Horizontal Accuracy (Meters): 10 (text) Source Map Scale (Non-GPS): 24000 (text)

Vertical Measure (Meters): 111 (text) **Vertical Accuracy (Meters):** 10 (text) **Vertical Datum:** UNKNOWN (dropdown)

Vertical Method: 000 (dropdown), UNKNOWN (text)

Street Address: 1914 PARK DR CAMERON VILLAGE (text)

Land Use Type: RESIDENTIAL (dropdown) **Location Setting:** URBAN AND CENTER CITY (dropdown)

City Code: 55000 (dropdown), Raleigh (text)
Urban Area Code: 6639 (dropdown), RALEIGH, NC (text)
AQCR Code: 166 (dropdown), EASTERN PIEDMONT (text)

Site Established Date (YYYYMMDD): 19720101 (text) **Time Zone Name:** EASTERN (dropdown)

Buttons at the bottom: "Check Completeness" and "Create Monitor".



Form Types (2)

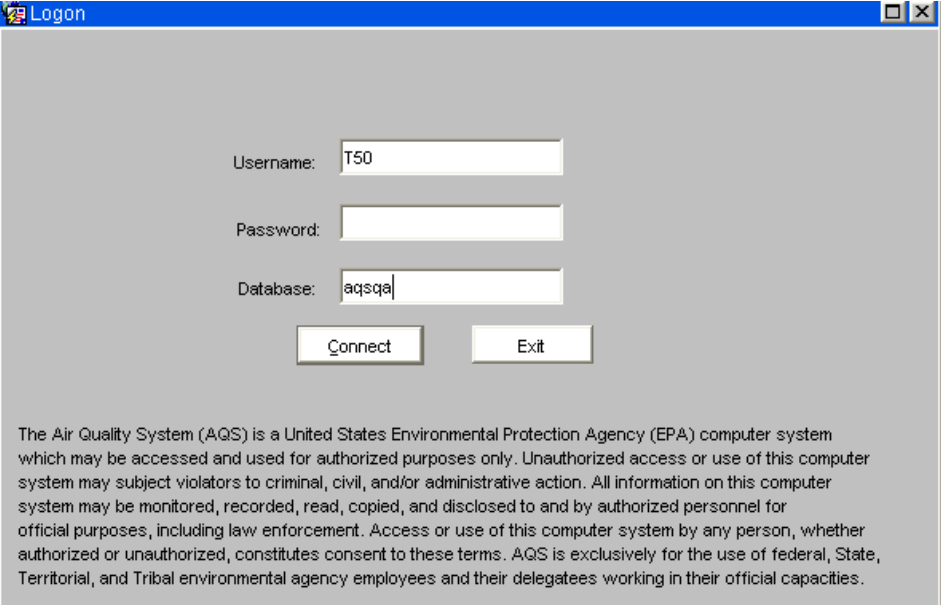
- Other forms allow you to view/edit multiple records at the same time:

Maintain Blanks Data (National Air Data Group)

State County Site Parameter POC Begin Date End Date

MONITOR					PROTOCOL				BLANKS DATA			
State	County	Site ID	Parameter	POC	Method	Unit	Duration	Mdl	Date	Time	Blank Type	Blank Value
State Code												

AQS Login Form



Username: T50

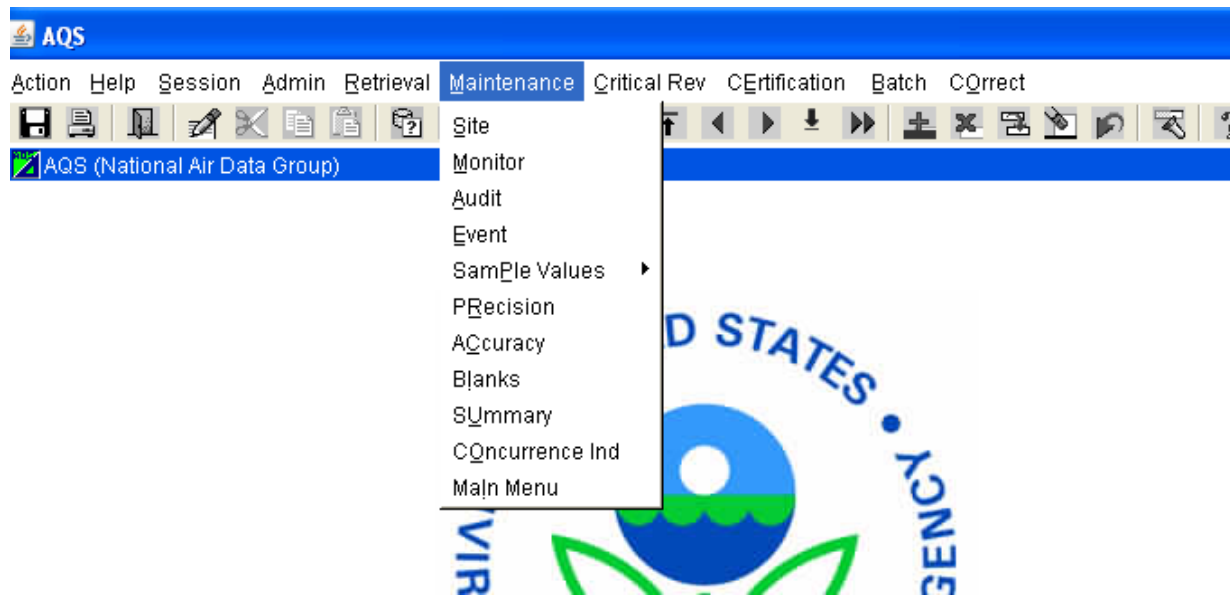
Password:

Database: aqsqal

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.

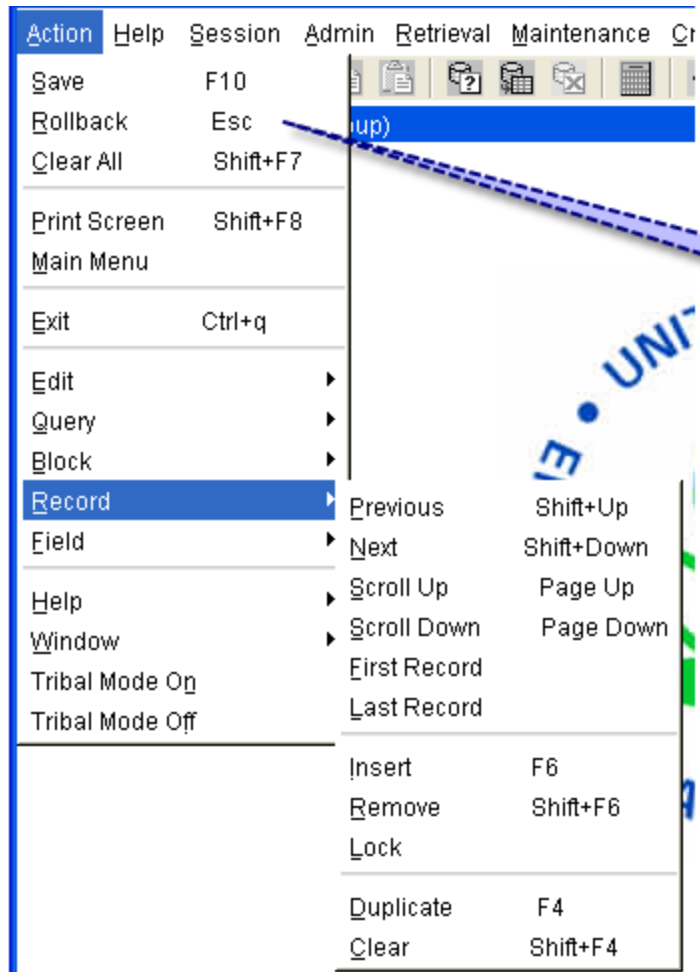
AQS Menu

- The AQS Main Menu allows access to all forms that are part of AQS:



AQS Menu (Action):

- The Action Menu allows you to request specific operations:

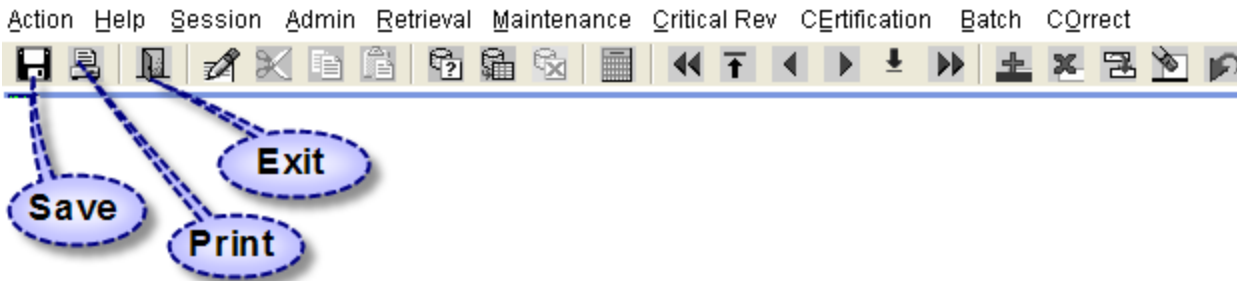


Notice
Shortcut
Keys





AQS Icons

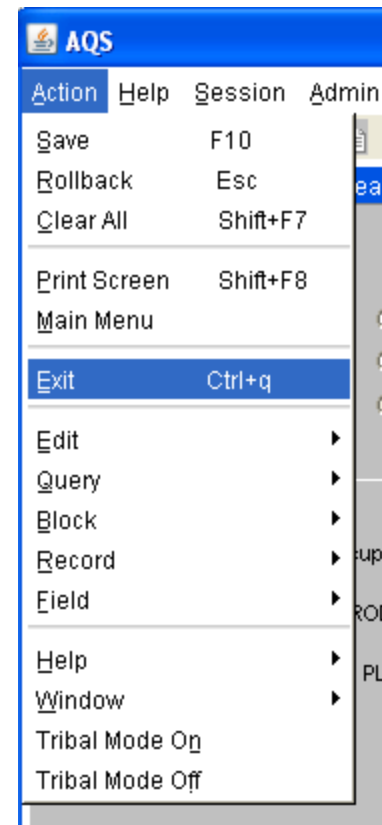
- AQS Icons allow you to request actions from the Action Menu:



- Other icons will be covered later

Three ways to log off

- Click on the Exit Icon  from the Main Menu
- Click on the red  at the top right corner
- Select Exit from the Action Menu



Help



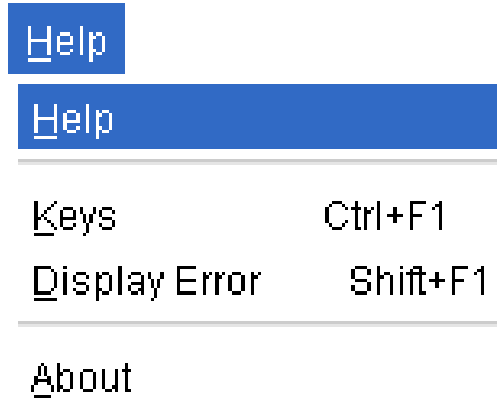
Where to Find AQS Help

- On-Line Help from the Application
- AQS Documentation
- On the Phone
- Internet Training
- AQS Regional Contacts
- Other Users



From the Application

- “Help” From the Menu
 - Topics
 - Short-Cut Keys
 - Display Error
- Field-Level Help



A screenshot of the application's data entry form. The form contains the following fields and values:

Horizontal Method	012	GPS CARRIER PHASE STATIC RELATIVE POSITION
Horizontal Accuracy (Meters)	3.04	Source Map Scale (Non-GPS) 24000
Vertical Measure (Meters)	Description of the accuracy as a range of the latitude/longitude reported in meters. Only the least accurate measurement needs to be recorded whether is latitude or longitude.	
Vertical Method	000	UNKNOWN
Street Address	HEALTH DEPT, 300 E MAIN STREET	

Enter a valid Dominant Source code that identifies the primary source of the pollutant being monitored.

Record: 1/? ... List of Valu... <OSC>



Help within AQS

Data Completeness Workfile

When user requests a work file, two separate files will be produced:

- Summary level information on a per EPA Region, State, Reporting Organization, Parameter, and Monitor Type basis.
- Monitor level information, which contains month-by-month counts and percentages of samples collected by the monitor.

Field	Summary Workfile Format
1	EPA REGION
2	STATE
3	REPORTING ORGANIZATION NAME
4	MONITOR TYPE
5	PARAMETER NAME
6	NUMBER MONITORS EVALUATED
7	AVERAGE COMPLETENESS
8	NUMBER NOT REPORTING

Field	Monitor Workfile Format
1	MONITOR TYPE
2	SITE_ID (ST-CNT-SITE)
3	PARAMETER CODE
4	POC
5	REGION



Helpdesk User Support



EPA Helpdesk

- 866-411-4372 or epacallcenter@epa.gov
- Levels of support
 - Level 1: password resets for AQSProd; opens a problem ticket
 - Level 2: AQS-specific issues → Pamela and Donnie
 - Level 3: server issues → NCC
 - Level 4: software and data issues → AQS Team
- Exchange Network (EN) Helpdesk
 - 888-890-1995 or nodehelpdesk@epa.cdx.net
 - Supports:
 - Node (production) password resets / general Node support

When in doubt, call the EPA Helpdesk

AQS Team

AQSTeam@epa.gov

- Robert Coats, team lead
- Bill Frietsche (QA & audits)
- Way Poteat
- Chris Chapman
- Nick Mangus (Data Mart)
- Michael Hamlin (user registration)
- Angie Shatas



AQS Regional Contacts

1: Wendy McDougall

(617) 918-8323

2: Henry Feingersh

(212) 637-3382

3: Pauline DeVose

(215) 814-2186

4: Darren Palmer

(404) 562-9052

5: Jesse McGrath

(312) 886-1532

6: Trisha Curran

(214) 665-8345

7: James Regehr

(913) 551-5063

8: Joe Delwiche

(303) 312-6448

9: Fletcher Clover

(415) 972-3991

10: Jan Noel

(206) 553-1691



AQS Documentation

- Manuals and Guides

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

- Design Value Report (SO₂) *
- Submit Automation User Guide *
- Data Dictionary *
- Data Coding Manual
- AQS Input Transaction Formats ***
- Exceptional Event Tutorial
- Fundamentals & User Guide **
- Data Retrieval Manual **
- Codes and Descriptions *
- Memos and Software Release Notes *

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



* New/updated

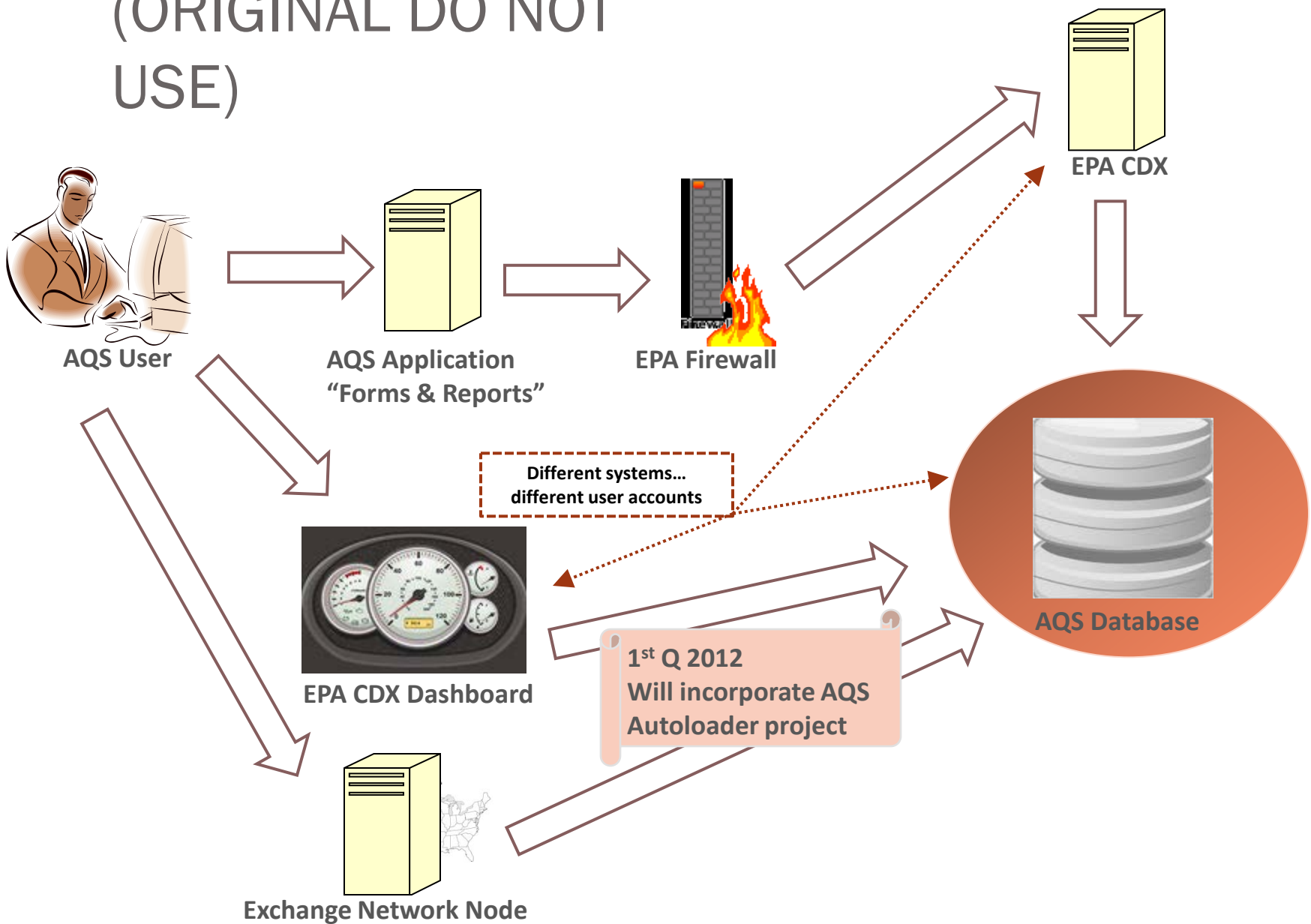
** Near term updates/overhaul

*** Longer term overhaul

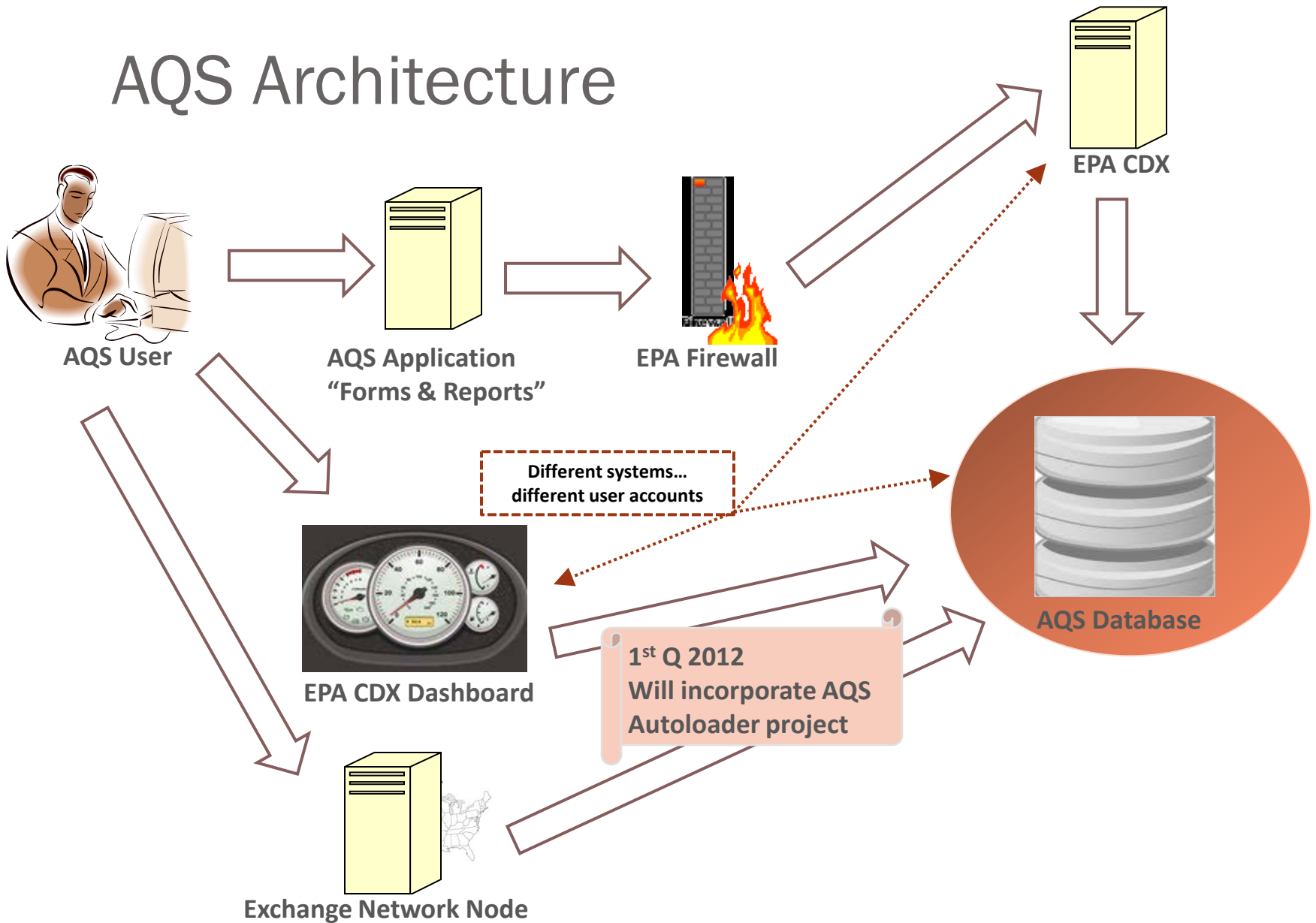
About Your User ID & User Profile



(ORIGINAL DO NOT USE)



AQS Architecture



AQS, CDX, Exchange Network

- AQS database

oasext.epa.gov/aqs

- File transfers to AQS must be handled externally

- Via CDX

www.epa.gov/cdx

- CDX account is requested for all new AQS users
- Call CDX Help Desk to complete registration

- Via CDX Dashboard (EN-compliant), starting Q1 2012

- AQS users will be seamlessly routed through CDX Dashboard
- AQS and CDX user IDs will change
- AQS will be first name initial + last name (“JSMITH”)
- CDX will be email address (“Smith.John@epa.gov”)

- Via the Exchange Network using XML by end of 2013



Why move from CDX to Exchange Network?

- ECOS (Environmental Council of States) resolution
- Goals of Exchange Network:
 - Standardize file transfer formats to EPA
 - Use XML
- “Autoloading” of files into AQS is a side result
 - AQS Load only
 - AQS Load & Stat CR only
 - AQS Load, Stat CR, & Post



Logging on to AQS

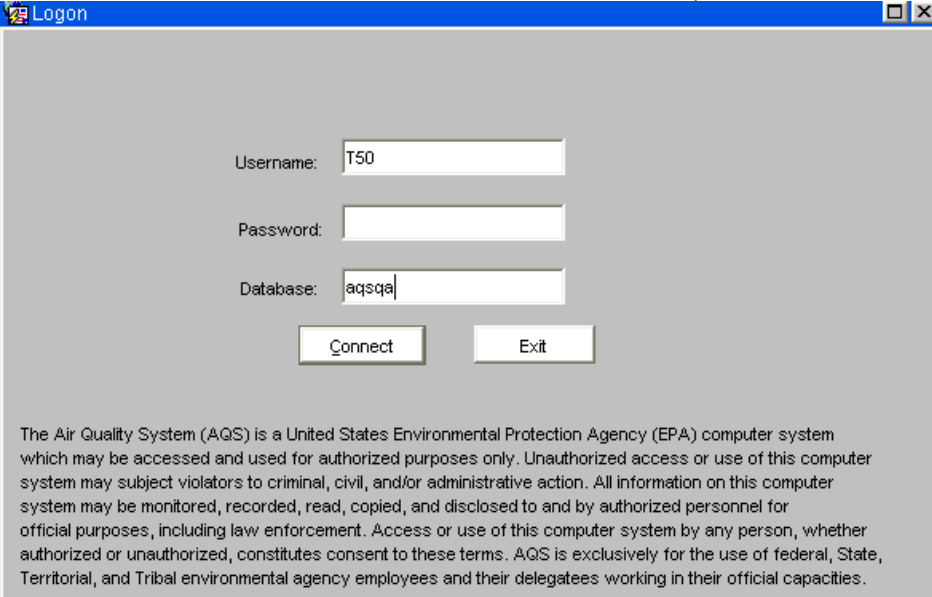
- Username = 3-character ID obtained with registration
- Password = your selected password
- Database= “AQSPROD”

For this training class, see your notebook for the login information:

Username: “TXX”

Password:

Database: “AQSQQA”

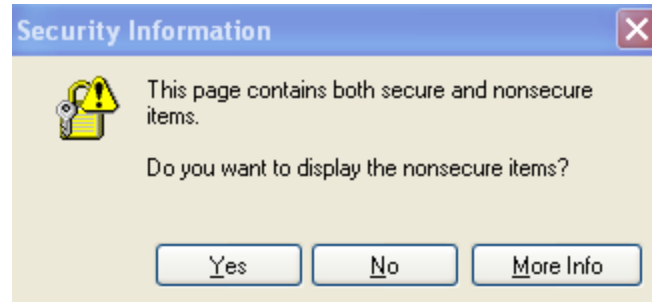


The screenshot shows a Windows-style window titled "Logon". It contains three input fields: "Username:" with the value "T50", "Password:" which is empty, and "Database:" with the value "aqsqqa". Below the fields are two buttons: "Connect" and "Exit". At the bottom of the window, there is a disclaimer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

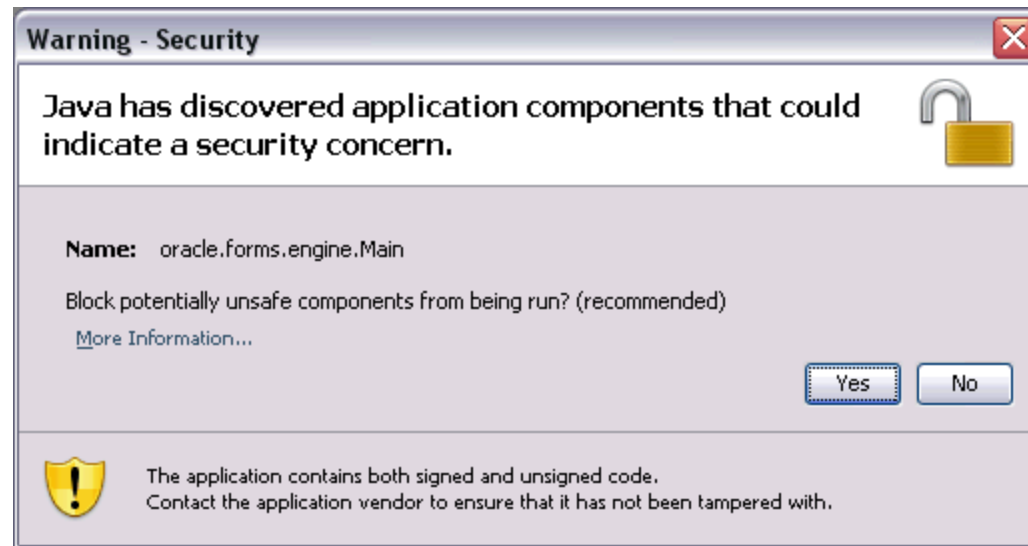
Logging on to AQS – security pop-ups

- Pop-up warning:



- Latest Java versions also display this warning:

Choose “No” or the menu bars in AQS will be blocked



Account management

- Change password every 90 days (For AQS & CDX)
 - 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 or END 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
 - 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 'Administration - Application Security (Read Only) Tribal Mode' window. The 'Maintain Security' tab is active. On the left, a user profile for JONATHAN MILLER is displayed with fields for First Name, Phone, Zip Code, County Code, User ID, and Fax. On the right, there are fields for Last Name, Room, and other details. A 'Security - Change Password' dialog box is overlaid in the center, displaying an information icon and the message '-20459: Password changed.' with an 'OK' button.

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

The screenshot shows the password change form. The 'New Password' and 'Confirm password' fields are highlighted with red circles. The 'OK' button is also highlighted with a red circle. Below these fields, there are 'CDX' fields for 'Current CDX Password' and a 'Synchronize CDX' button.

Step 3: Click “OK”



Synchronize Your CDX Password

The screenshot shows a web application window titled "Administration - Application Security (Read Only) Tribal Mode". The window has several tabs: "User Profile", "Maintain Security", "Security Reference Tables", "Maintain Roles", and "User History". The "User Profile" tab is active, displaying a form with the following fields:

- First Name: JONATHAN
- Phone: 919-541-7738
- Zip Code: 27711
- County Code: 063
- User ID: JNZ
- Fax: 9195417738

A modal dialog box titled "Security - Change Password" is overlaid on the form. It contains an information icon and the message: "-20708: Password changed to lower case version of current Oracle password." with an "OK" button.

Below the user profile, there is a section titled "Change Your Oracle Passwords". It contains two rows of input fields and buttons:

- AQS: New Password: [input field] Confirm password: [input field] [OK button]
- CDX: Current CDX Password: [input field] [Synchronize CDX button]

Red circles highlight the "Current CDX Password" input field and the "Synchronize CDX" button. Two text boxes provide instructions: "Step 1: Enter 'Old' CDX Password" points to the input field, and "Step 2: Click 'Synchronize CDX'" points to the button.



About Your User Profile

- Cannot change
 - Agency Code
 - User ID
 - User Type
 - AQS Contact
 - Status Indicator

Administration - Application Security (Read Only) Tribal Mode

User Profile | Maintain Security | Security Reference Tables | Maintain Roles | User History

First Name	JONATHAN	Initial	K	Last	MILLER
Phone	919-541-7738	Street Address 1	EPA Building	Street Address 2	Room 335F
Zip Code	27711	City	Research Triangle Park	State Code	37
County Code	063	Agency Code	1108	AQS Contact	N
User ID	JNZ	User Type	H	EPA Region Code	04
Fax	9195417738	Status Ind	P	Tribal User	<input checked="" type="checkbox"/>
E Mail	miller.jonathan@epamail.epa.gov				

Change Your Oracle Passwords

AQS New Password: Confirm password:

CDX Current CDX Password:

- Tribal user setting
 - Determines how you see AQS Site IDs
- Keep Email address current!

Tribal User "ON"
TT-549-0001
Tribal User "OFF"
36-001-0001

Put it into practice: Exercise 1.2



AQS Screening Groups

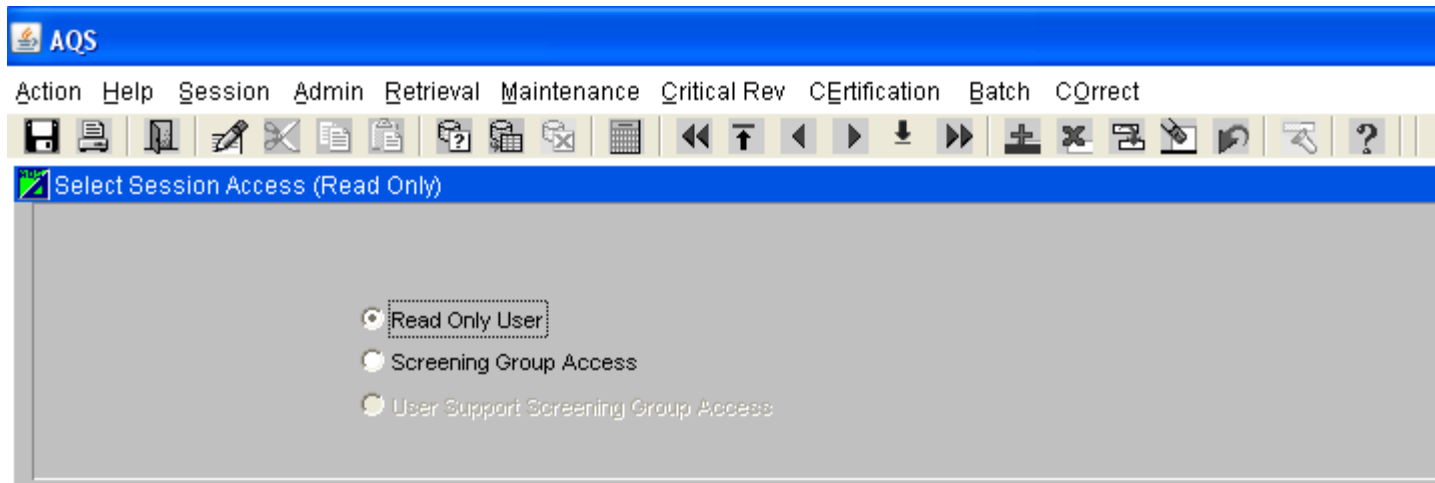


In This Section We Will Talk About

- Access levels in AQS
 - Read-only access
 - Screening group access



Logged into AQS; Now choose Access Level



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

Menu	Access Type	
	Read-only	Screening Group
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

- **Main 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
- **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)

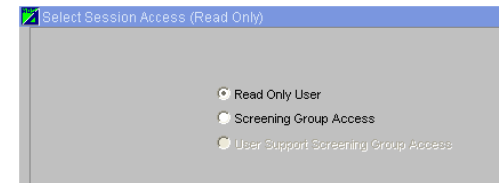
- “P” = Production Status
 - Can be seen by Everyone
- “S” = Statistically Evaluated
 - Only for Raw Data
 - Can only be seen by the Data Owner
- “R” = Relationally Valid
 - Only for Raw Data
 - Can only be seen by the Data Owner
- “F” = Field Level Error
 - Something Needs to be Fixed Before the Record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



What If I Want to Change From “Read Only” to “Screening Group” Access?

- From the “Main Menu”

Action Help Session Admin Retrieval Maintenance Critical Rev Certification Batch COrrect

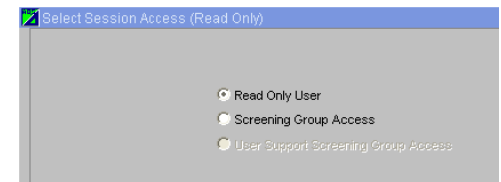


- From a “Sub Menu”

Action Help Site Monitor Audit Event Sample Values PRecision ACcuracy Blanks SUmmary CQncurrence Ind Main Menu



Action Help Session Admin Retrieval Maintenance Critical Rev Certification Batch COrrect



AQS

Action Help Site Monitor Audit Event Sample Values Precision Accuracy Blanks Summary Concurrence Ind Main M

Maintain Site (SCHOOL AIR TOXICS MET)

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

Site Identification

State Code 01 Alabama
 County Code 073 Jefferson Site Id 5505 Status Ind F

User Coordinates

Horizontal Datum WGS84 Latitude 33.55 Longitude -86.8
 UTM Zone UTM Easting UTM Northing Lookup Geography

Standard Coordinates: Datum WGS84 Latitude 33.550000 Longitude -86.800000

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 07000 Birmingham
 Urban Area Code 1000 BIRMINGHAM, AL
 AQCR Code
 Site Established Date (YYYYMMDD) Time Zone Name

Check Completeness Create Monitor



Demo / Class Walk-Through

- Notice the window title – what mode are you in?
- Click the “Action” menu “Tribal Mode On” pick. Window Title?
- Click the Session menu pick, then the Screening Group Access radio button; then the OK button. Window Title?
- Click Action/TribalModeOff. Window title?
- Go to Maintain Site. Do a query (Enter/Execute Query). You will only see sites in your screening group.
- You can update information on any site in this screening group. To update information, use “Cancel Query” to go into update mode.



Browsing Data in AQS

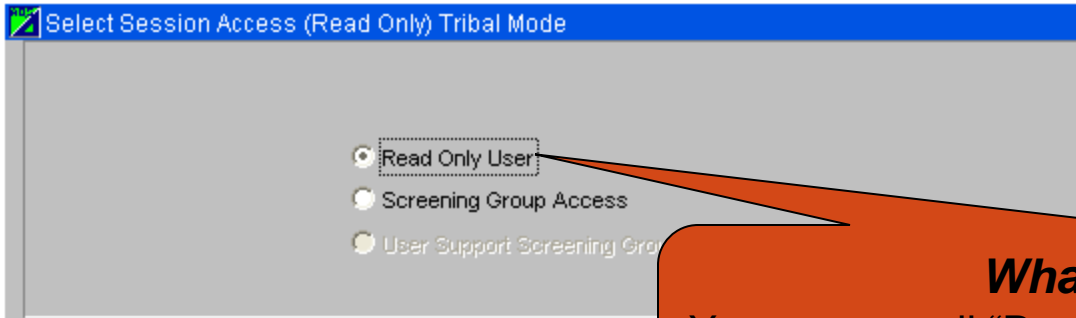


What Can I Browse?

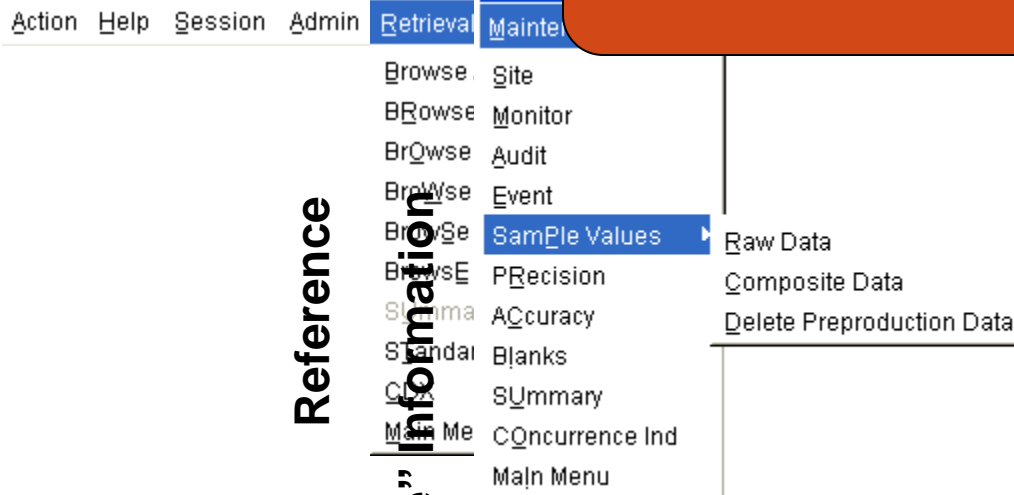
- Reference Information
 - Codes Used in the System
 - Seasonal Definitions
- Data Supplied to AQS in Small Groups of Information
 - Site
 - Monitor
 - Sample Data
 - Summary Data



Where Do I Start?



What does this Mean?
You can see all "Production" data from Anyone
You cannot change any data



Reference
"Core" Information



What's the Big Idea?


- Select the Type of Data you Want
- Get Only the Records You Need by Specifying Filters
- Execute the Query
- Scroll Through the Records



How Do I Do That?

- Select the Type of Data (Reference or Core)
- Get Only the Records You Need by Specifying Filters

Tribal Code State Code County Code Site ID Parameter Code POC

- Execute the Query 
- Scroll Through the Records

Reference

Retrieval

Browse Annual Summary
Browse Monitoring Season
Browse Sample Methodology
Browse State Threshold
Browse Parameter
Browse Audits
Summary Data Extraction
Standard Report Selection
CDX
Main Menu

“Core” Information

Maintenance

Site
Monitor
Audit
Event
Sample Values
Precision
Accuracy
Blanks
Summary
Concurrence Ind
Main Menu

Raw Data
Composite Data
Delete Preproduction Data



Navigation

Tabs

Browse Annual Summary (Read Only) Tribal Mode

Monitor Summary Maximums

Annual Summaries

Tribal Code State Code County Code Site ID Parameter Code POC

Summary Year Duration Code EDT

Obs Lt Half Mdl Observation Pct Geom Std Dev

Arith Std Dev Geometric Mean Arithmetic Mean

Min Sample Value Observation Cnt Sum Method Cnt

Criteria Ind Null Data Obs Cnt Cert Ind

Exp Data Cnt Val GT Pri Std Val GT Sec Std

Days GT Alert Lvl Non Overlap GT Miss Day LT Std

Req Mon Cnt Weighted Mean Ans Type

Direct Entry Ind Valid Day Cnt

Est Days GT Std

Summary Protocols

Mp Id Coll Freq Code Comp Type Alt Mdl

Parameter Code Parameter Desc

Method Code Coll Desc

Anal Desc

Duration Code Duration Desc

Rep Unit Rep Unit Desc

Std Unit Std Unit Desc

Record: 25/?

Blocks

Record in Focus

Fields

Records

Monitor Summary Maximums

Summary Maximums

Max Level	Max Sample Value	Max Coll Date
1	788	20060306
2	787	20060303
3	774	20060309
4	768	20060126
5	768	20060219

Summary Percentiles

Percentile Num	Percentile Sample Value
10	753
25	754
50	757
75	763
90	767



Form Navigation



Previous Block

Next Block

First Record

Last Record

Previous Record

Next Record

Brief Definition of the Field in Focus

Enter a State FIPS code that identifies one of the 50 states or other countries.

Record: 25/? ... <OSC>

The 25th Record of the current block / Unknown Total Number of Records.
Click "Last Record" to get the Total Number

Put it into practice – Exercise 1.3



Introduction to Standard Reports



How to get information out of AQS

- Standard Reports
 - Site / Monitor Metadata
 - Detail Data Reports
 - “Raw” Data
 - Extraction Reports
 - Summary Data
 - Audit / Precision & Accuracy Data
 - Raw Data Qualifier
 - Data Certification
 - Design Value
- Custom queries via Discoverer



Site & Monitor Reports

- Site metadata
 - Location, nearby streets
 - Open Path Set Up
 - Which PM_{2.5}, lead or NO₂ Monitor is the Primary Monitor
- Monitor metadata
 - How a given pollutant is measured
 - Sampling length
 - Monitoring frequency
 - Agencies responsible for the monitor and analysis
 - Monitoring objectives
 - Collocation information

AMP390 – Site Description

AMP390 – Monitor Description



Detail Data Reports

- “Raw” data from AQS
 - Can import information into spreadsheet for further processing
 - Open Path Set Up
- Extraction Reports
 - Provide data in AQS transaction format with Insert, Delete or Update codes
 - Useful for duplicating and reloading data

AMP500 - Extract Site/Monitor Data

AMP501 - Extract Raw Data

AMP502 - Extract Precision and Accuracy Data

AMP503 - Extract Blanks Data



Summary Data Reports

- Contains the calculated summary values from AQS
 - Multi-hour Averages (e.g. 8-hour running average)
 - Daily Summaries
 - Site Summaries (PM_{2.5} and Lead Only)
 - Quarterly Summaries
 - Annual Summaries
 - Site Annual Summaries (PM_{2.5} and Lead Only)

AMP450 – QuickLook

AMP435 – Daily Summary

AMP355 – Combined Site Sample Values (only for NO₂, PM_{2.5} and lead)



Audit Reports

- Audit Data (Precision and Bias data)
 - 1-Point Quality Control
 - Annual Performance Evaluations
 - Flow Rate Verifications
 - Semi-Annual Flow Rate Audits
 - Collocation information
 - Performance Evaluation Program (PEP)
 - Single and collocated monitor precision checks

AMP255 - Data Quality Indicator

AMP250 - P/A Raw Data Report

AMP246 - Precision Report



Raw Data Qualifier report

- Raw data points that have qualifiers
 - Null data code qualifiers
 - Quality assurance qualifiers
 - Exceptional event qualifiers
 - Includes any Regional Office concurrence information

AMP360 - Raw Data Qualifier Report



Data Certification Reports

- **AMP450 - Quick Look Criteria**
for CO, NO2, SO2, ozone, PM10, PM2.5, and lead
(12128)
choose “Include Events”
- **AMP450NC - Quick Look All**
for all other pollutants & lead (14129)
- **AMP255 - Data Quality Indicator**



Design Values Report

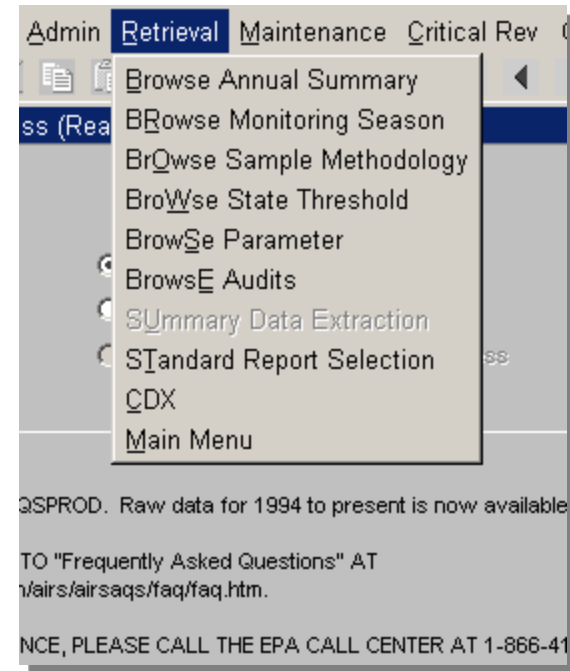
- Generates the statistics used for NAAQS determinations.
- Also allows the 1) assessment of the effect of exceptional event flagging on Design Values, and 2) the assessment of attainment issues based on partial data.

AMP480 - Design Values Report



Standard Reports

- Retrieval
 - Standard report selection



The Process of Creating a Report – Choosing the “Criteria Set”

1. Select report (Report Code field)
2. Specify Output type (Report, Workfile, XML)
3. Establish report-selection criteria
 1. Geography
 2. Pollutants
 3. Date
 4. Screening group
4. Modify report Sort Order criteria (where available)
5. Modify output Report Options (where available)
6. Generate Report
7. As you leave Reports form, prompted to save the Criteria Set.



General Issues

- Do NOT run reports without specifying some limiting selection criteria
- Almost all reports require date-selection criteria
- Sort Order and Report Options available on reports where data structure allows
- Oracle provides output in several formats. PDF generally most reliable.
- Do not use the initial browser window (that started AQS) for any other purpose. If not blank gray, reports will not run properly.
- Batch vs online delivery
 - Online: Pop-up window in web browser window, save from browser window
 - Batch/CDX: Separate CDX transfer of report to local disk
 - Batch/email: Email delivery of report as Link



Standard Reports: Criteria Set

Standard Report Criteria Selection (T50) AMP410 Tribal Mode

Criteria Set | Monitor Selection | Area Selection | Sort Order | Report Options | Retrieve Reports

Criteria Set Desc

Owner Type

Report Code Report Name

Run Online
 Send via Email
 Send to CDX

Report Outputs
 REPORT
 WORKFILE
 XML

Print Format
File Name

Report Selection Mode
 Monitor Selection(detail)
 Area Selection



Overview of “and/or” in selections

Standard Report Criteria Selection (T50) AMP350

Criteria Set | **Monitor Selection** | Area Selection | Sort Order | Report Options | Retrieve Reports

Site-Monitor Criteria

State Code	County Code	Site Id	Parameter Code	POC	Method Code	Duration Code	Start Date			End Date		
							YYYY	MM	DD	YYYY	MM	DD

Global Report Criteria

Pollutant Type	Parameter Code	Method Code	Duration Code

Global Date Range

Start Date			End Date		
YYYY	MM	DD	YYYY	MM	DD

Generate Report

- **AND within a row**
 - State and county AND site AND parameter AND method AND duration...
- **OR between rows in block**
 - State/County OR State/County or...
- **AND between blocks**
 - State AND Pollutant AND date...



Example 2: and/or in Selections (cont.)

Standard Report Criteria Selection (Read Only) AMP350

Criteria Set | Monitor Selection | Area Selection | Sort Order | Report Options | Retrieve Reports

Geographical Criteria

State Code	County Code	Site Id	City Code	AQCR Code	UAR Code	CBSA Code	CSA Code	EPA Region Code
36								01

Monitor Type:
 Land Use Type:
 PQAQ:

Protocol Criteria

Pollutant Type	Parameter Code	Method Code	Duration Code
CRITERIA			

Date Criteria

Start Date: YYYY MM DD
 1998 01 01

End Date: YYYY MM DD
 1998 01 31

Generate

- All criteria monitors in New York or New England during January '98
- (State 36 OR region 01) AND (only criteria pollutants) AND (>19980101 AND <19980131)



Example 3: and/or in Selections (cont.)

Standard Report Criteria Selection (Read Only) AMP350

Criteria Set | Monitor Selection | Area Selection | Sort Order | Report Options | Retrieve Reports

Geographical Criteria

State Code	County Code	Site Id	City Code	AQCR Code	UAR Code	CBSA Code	CSA Code	EPA Region Code
36								01

Monitor Type | Land Use Type | PQA0

Protocol Criteria

Pollutant Type	Parameter Code	Method Code	Duration Code
	44201		
	42401		

Date Criteria

Start Date: YYYY MM DD | End Date: YYYY MM DD

1998 01 01 | 1998 01 31

Generate Report

- Ozone or sulfur dioxide monitors in New York and Region 1 during January '98
- (State 36 AND region 01) AND (44201 OR 42401) AND (>19980101 AND <19980131)
- This is a Null dataset, "No Data found"



Standard Reports: Sort Order

Standard Report Criteria Selection (Lbauder) AMP350

Criteria Set | Monitor Selection | Area Selection | **Sort Order** | Report Options | Retrieve Reports

Sort Order

Order	Column Name	Allowed Range	
		Lo	Hi
1	STATE_CODE	1	5
2	COUNTY_CODE	1	5
3	SITE_ID	1	5
4	PARAMETER_CODE	1	5
5	POC	1	5

▲ Move highlighted column up

▼ Move highlighted column down

Generate Report Restore Report Defaults



Report options to consider

- Applicable standard
 - Depends on the pollutant(s) you choose
- Exceptional events – on summary reports, show summary data with EDT ID
 - 0
 - 0 – No data has been flagged
 - OR
 - 1, 2, and 5
 - 1 – The summary excludes all flagged data
 - 2 – The summary does not exclude any data
 - 5 – The summary excludes regionally concurred flagged data



Standard Reports: Report Options

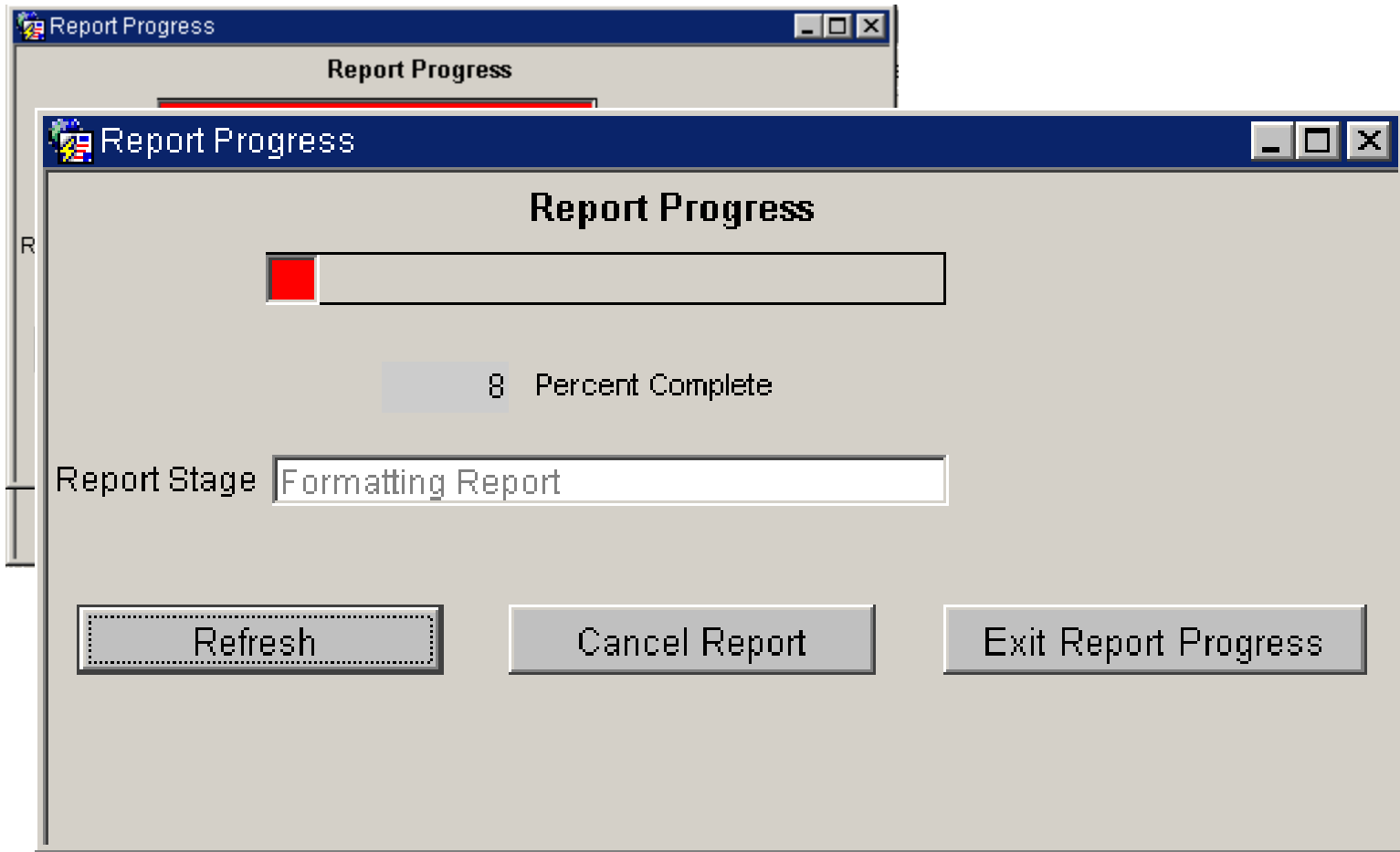
The screenshot displays the AQS (Air Quality System) interface for selecting report criteria. The main window is titled "Standard Report Criteria Selection (Read Only) AMP435" and has tabs for "Criteria Set", "Monitor Selection", "Area Selection", "Sort Order", "Report Options", and "Retrieve Reports". The "Report Options" tab is selected, showing a table of criteria sets and their corresponding options. A dropdown menu is open for the "EVENTS PROCESSING" criteria set, showing options: "INCLUDE EVENTS", "EXCLUDE EVENTS", "EXCLUDE REGIONALLY CONCURRED EVENTS", and "REPORT ALL EVENT RECORDS". A separate window titled "Option Values" is also open, showing a search field and a list of options: "INCLUDE EVENTS", "EXCLUDE EVENTS", "EXCLUDE REGIONALLY CONCURRED EVENTS", and "REPORT ALL EVENT RECORDS".

Below the main table, there is a section titled "Applicable Standards Information" with a list of standards and a dropdown menu. The standards listed are: "NO2 Annual 1971", "Ozone 8-Hour 2008", "PM10 24-hour 2006", "Lead 3-Month PM10 Surrogate 2009", "PM25 Annual 2006", and "SO2 1-hour 2010". A "Generate Report" button is located at the bottom left of the interface.

Defaults are shown;
Where applicable,
the drop-down offers
other standards



Standard Reports: Progress Popup



Standard Reports: Retrieve Reports

Standard Report Criteria Selection (Lbauder) AMP350

Criteria Set | Monitor Selection | Area Selection | Sort Order | Report Options | Retrieve Reports

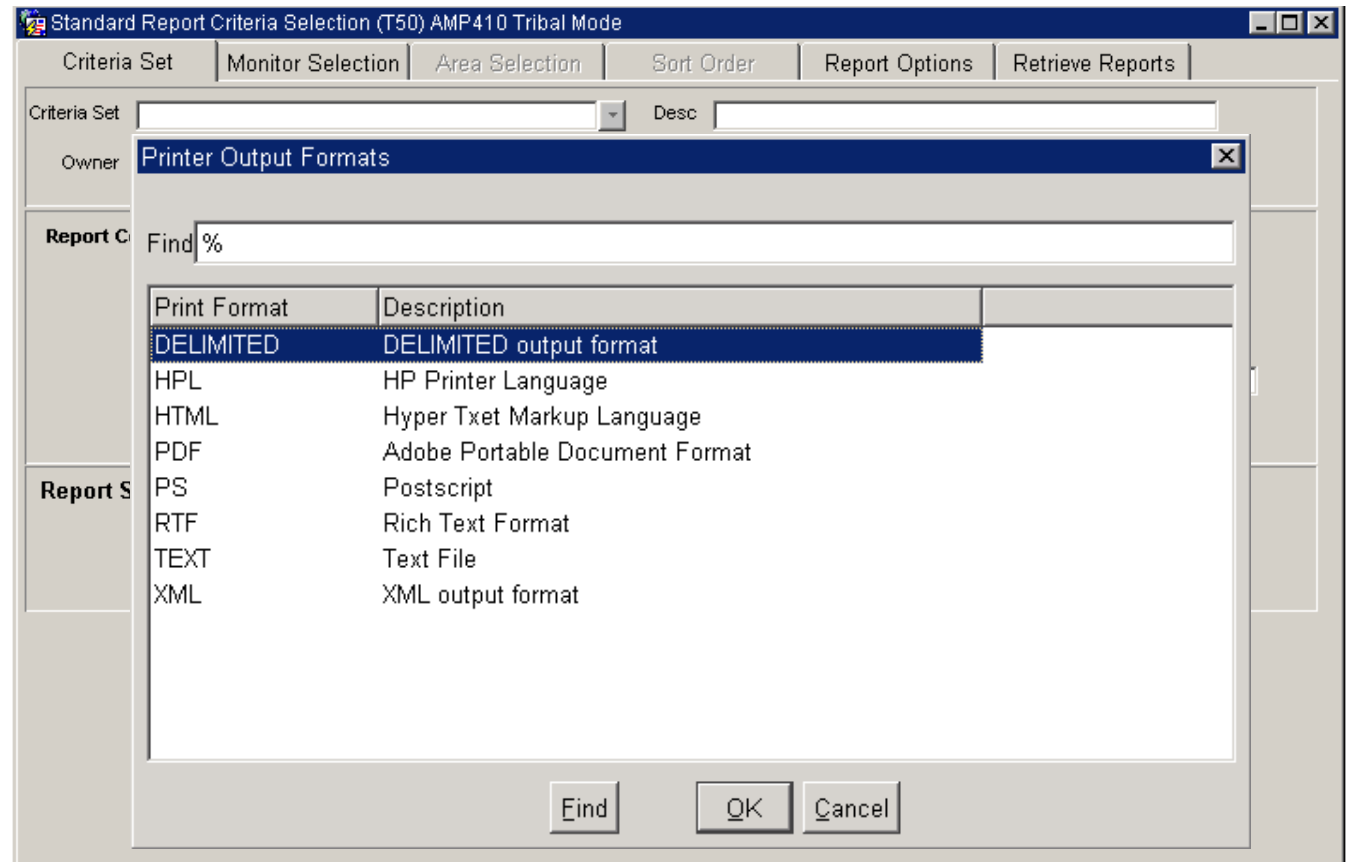
User Id	Report Code	Request Type	Request Date	Report Stage	% Complete
BIB	AMP350	ONLINE	03/30/2004 08:25 PM	Cancelled	100
BIB	AMP501	ONLINE	03/30/2004 07:25 PM	Completed	100
BIB	AMP500	ONLINE	03/30/2004 07:19 PM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP440	BATCH	03/30/2004 11:17 AM	Completed	100
BIB	AMP260	BATCH	03/30/2004 11:16 AM	Completed	100
BIB	AMP260	BATCH	03/30/2004 11:16 AM	Completed	100
BIB	AMP260	BATCH	03/30/2004 11:16 AM	Completed	100
BIB	AMP260	BATCH	03/30/2004 11:16 AM	Completed	100

Retrieve Report | Refresh Query | Cancel Report | Delete Report



Standard Reports: Report Output Formats

- pdf is default



Saving a Criteria Set

- Saves the Query... Not the Results of the Query
- Go to the “Criteria Set” Tab
 - 1) Enter a Name
 - 2) Enter a Description
 - 3) Mark as
 - Private” (Just for You)
 - “Public” (For Anyone)
 - 4) Save / Commit

Standard Report Criteria Selection (Read Only) AMP410 Tribal Mode

Criteria Set | Monitor Selection | Area Selection | Sort Order | Report Options | Retrieve Reports

Criteria Set: Training Test

Description: This is a Demonstration Test

Owner: JONATHAN MILLER

Type: PRIVATE

Report Code: AMP410

Report Name: AIR QUALITY INDEX REPORT

Put it into practice - Exercise 1.4



PM2.5 - Local Conditions (88101)

Wisconsin

Micrograms/cubic meter (LC) (105)

24-HOUR										1ST	2ND	3RD	4TH	98TH	WTD			
SITE ID	P O C	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	MAX	MAX	MAX	MAX	PERCENTILE VALUE	ARITH MEAN	CERT	EDT		
55-003-0010	1	1175	Not in a city	Ashland	BAD RIVER TRIBAL SCHOOL - ODANAH	2010	117	60	17.9	17.3	15.6	14.0	17.3	5.28		0		
55-003-0010	2	1175	Not in a city	Ashland	BAD RIVER TRIBAL SCHOOL - ODANAH	2010	117	60	18.1	17.5	15.6	13.7	17.5	5.34		0		
55-009-0005	1	1175	Green Bay	Brown	EAST HIGH, 1415 E. WALNUT	2010	118	336	45.5	42.3	40.5	38.9	35.1	9.97		0		

Note: The * indicates that the mean does not satisfy summary criteria.

98th percentile completeness for PM2.5 24-hour (2006) standard. Summary criteria met when all 4 site-level quarterly summaries are present, and one of the following is true: quarters are 75% complete, or Annual 98th percentile value greater than the 24-hour standard (35 ug/m3). "Wtd Arith Mean" for PM2.5 24-annual (2006) standard is based on quarterly means. Summary criteria are met when the percent of observations (quarterly) are >= 75%. (See AQS Data Dictionary section 4.281 and 40 CFR Part 50.13.).

National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁷⁾	Same as Primary	

⁽⁶⁾ To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁷⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).



Nitrogen dioxide (NO2) (42602)

Wisconsin

Parts per billion (008)

SITE ID	P O C	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	COMP QTRS	1ST	2ND	98TH PCTL	OBS	PCT	ARITH	CERT	EDT
									1-HR	1-HR			COMP	MEAN		
55-041-0007	1	1175	Crandon	Forest	FIRE TOWER RD, POTAWATOMI SITE	2010	082	2	15.0	9.0	9.0	4364	50	1.20*	0	
55-071-0007	1	1175	Two Rivers	Manitowoc	MANITOWOC/WOODL ND DUNES, 2315 GOODWIN RD	2010	075	0	11.0	10.0	10.0	2016	23	2.56*	0	
55-079-0026	1	1175	Milwaukee	Milwaukee	DNR SER HDQRTS, 2300 N M. L. KING JR DR	2010	074	4	112.0	92.0	53.0	8608	98	12.90	0	

Note: The * indicates that the mean does not satisfy summary criteria.

“Comp qtrs” are complete quarters. The number of quarterly summaries, with corresponding pollutant standard and exceptional data type, where the summary criterion is met. For NO2, to have a complete quarter, the number of valid days in a quarter compared to number of total days in a quarter must be >= 75%.

“Arith Mean” is arithmetic mean. For NO2, this is the average of the hourly values for the year. This is defined on pages 4-20 and 4-21 of the AQS Data Dictionary.

The "Summary Criteria" column indicates whether or not the annual summary is complete as required by 40 CFR Part 50. i.e. If the mean is valid by these rules, it is set to 'Y', and if it is not, it is set to 'N'. For the NO2 annual standard, 75% of the hours for the year must have values. (See AQS Data Dictionary section 4.278 and 40 CFR Part 50.11.)

National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Nitrogen Dioxide	53 ppb (3)	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour (4)	None	

(4) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).



Quicklook

Ozone (44201)

Wisconsin

Parts per million (007)

1-HOUR

SITE ID	C	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	VALID DAYS	NUM DAYS	1ST	2ND	3RD	4TH	DAY	EST	MISS	
										MAX	MAX	MAX	MAX	MAX>	DAYS>	DAYS<	CERT
55-117-0006	1	1175	Not in a city	Sheboygan	E12886 TOWER RD KOHLEER ANDRE PARK, 1520 OLD PARK ROAD	2010	087	182	184	.100	.099	.096	.093	0	0.0	0	0
55-123-0008	1	1175	Not in a city	Vernon	WILDCAT MTN, HWY 33, ONTARIO	2010	087	182	184	.079	.072	.068	.067	0	0.0	0	0
55-125-0001	1	1175	Boulder Junction	Vilas	TROUT LAKE NURSERY, COUNTY HWY M	2010	087	183	184	.074	.068	.068	.066	0	0.0	1	0
55-127-0005	1	1175	Lake Geneva	Walworth	LAKE GENEVA NADP SITE, RR4 ELGIN CLUB RD	2010	087	183	184	.087	.074	.074	.072	0	0.0	1	0
No 55-131-0009 no	1	1175	Slinger	Washington	SLINGER, HWY 60 & SCENIC, POLK TWNSHP	2010	087	184	184	.083	.075	.070	.068	0	0.0	0	0
55-133-0027	1	1175	Waukesha	Waukesha	1310 CLEVELAND AVE	2010	087	184	184	.082	.079	.073	.071	0	0.0	0	0

National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Ozone	0.075 ppm (2008 std)	8-hour (8)	Same as Primary	
	0.08 ppm (1997 std)	8-hour (9)	Same as Primary	
	0.12 ppm	1-hour (10)	Same as Primary	

(8) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

(9) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

(c) EPA is in the process of reconsidering these standards (set in March 2008).

(10) (a) EPA revoked the [1-hour ozone standard](#) in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1 .



Maximum Values

MAXIMUM VALUES REPORT

PM10 Total 0-10um STP (81102)

State: Kansas
 Duration: 24-HR BLK AVG
 Year: 2009

Primary: 150
 Secondary: 150

Unit: Micrograms/cubic meter
 (25 C)

						Maximum Values					Num	Num	EDT
Site ID	POC	County Name	Methods	1st Max	2nd Max	3rd Max	4th Max	5th Max	Num	Exc	ID		
20-173-0009	1	Sedgwick Wichita	079	6th Max	7th Max	8th Max	9th Max	10th Max	363	0	1		
				55	44	42	40	40					
				03/06:00	10/01:00	07/11:00	02/06:00	04/09:00					
				40	39	39	39	38					
				04/22:00	06/06:00	06/26:00	06/27:00	01/12:00					
20-173-0009	1	Sedgwick Wichita	079	6th Max	7th Max	8th Max	9th Max	10th Max	365	0	2		
				66	55	44	42	40					
				04/08:00	03/06:00	10/01:00	07/11:00	02/06:00					
				40	40	39	39	39					
				04/09:00	04/22:00	06/06:00	06/26:00	06/27:00					
20-173-0009	1	Sedgwick Wichita	079	6th Max	7th Max	8th Max	9th Max	10th Max	365	0	5		
				66	55	44	42	40					
				04/08:00	03/06:00	10/01:00	07/11:00	02/06:00					
				40	40	39	39	39					
				04/09:00	04/22:00	06/06:00	06/26:00	06/27:00					

Multiple lines are due to multiple event types. Check your report criteria.



Design Values

- available for PM10, PM2.5, SO2, NO2, ozone, lead

PRELIMINARY DESIGN VALUE REPORT

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-Hour 2008

Statistic: Annual 4th Maximum **Level:** .075

Design Value Year: 2010

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: North Carolina

Site ID	Poc STREET ADDRESS	2010				2009				2008				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert	Valid Days	Percent Complete	4th Max	Cert	Valid Days	Percent Complete	4th Max	Cert	Percent Complete	Design Value	D. V. Validity
37-183-0014 1	3801 SPRING FOREST RD.	212	99	.071		201	94	.068		211	99	.078	Y	97	.072	Y
37-183-0016 1	201 NORTH BROAD STREET	209	98	.073		201	94	.069		208	97	.078	Y	96	.073	Y

Pollutant: Ozone(44201)

Standard Units: Parts per million(007)

NAAQS Standard: Ozone 8-Hour 2008

Statistic: Annual 4th Maximum **Level:** .075

Design Value Year: 2009

REPORT EXCLUDES MEASUREMENTS WITH REGIONALLY CONCURRED EVENT FLAGS.

State: North Carolina

Site ID	Poc STREET ADDRESS	2009				2008				2007				3 - Year		
		Valid Days	Percent Complete	4th Max	Cert	Valid Days	Percent Complete	4th Max	Cert	Valid Days	Percent Complete	4th Max	Cert	Percent Complete	Design Value	D. V. Validity
37-183-0014 1	3801 SPRING FOREST RD.	201	94	.068		211	99	.078	Y	204	95	.084	Y	96	.076	Y
37-183-0016 1	201 NORTH BROAD STREET	201	94	.069		208	97	.078	Y	214	100	.080	Y	97	.075	Y

Each design value is for a 3-year period.

