



AQS Data Mart Interface Quick Start Guide

Version 1.1

28 August 2007

US EPA - AQS Data Mart Team

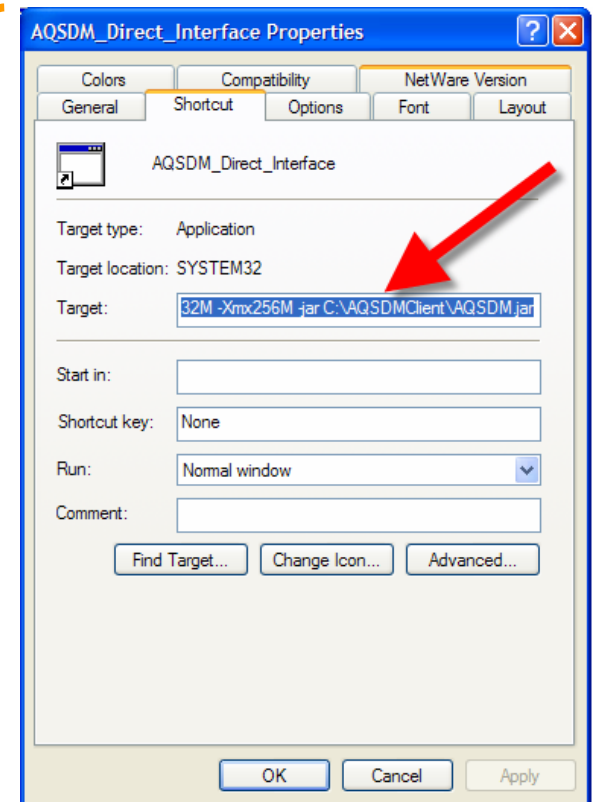
aqsdatamart@epa.gov

[System Requirements]

- JRE v 1.5 or higher
- Port 443 (HTTPS) open
- Only tested on PCs but it is a pure java application
- The user must have a “CDX Node” account
 - Two ways to get it:
 - Call helpdesk at 888-890-1995
 - Press option for Network Node (currently “2”)
 - Ask for a “node account to use the AQS Data Mart”
 - Email helpdesk at nodehelpdesk@csc.com
 - Ask for a “node account to use the AQS Data Mart”
 - You will be sent a user ID (your email) and password

Installation on a PC

- Download the client from the Data Mart Access web page:
 - <http://www.epa.gov/ttn/airs/aqsdatamart/access.htm>
- Double click on the self extracting archive
 - Follow the defaults
 - It will create a folder called “C:\AQSDMClient” with the software
- To run the Direct Interface
 - Navigate to this folder
 - Double click on the shortcut “AQSDM_Direct_Interface”
 - You may move or copy this shortcut to your desktop
- If you save the AQSDMClient folder anywhere other than the root directory on the C: drive, or you change its name you must do the following.
 - Navigate to the folder
 - Right click on the shortcut “AQSDM_Direct_Interface” and select “Properties”
 - In the “Target” box on the “Shortcut tab”, make sure your cursor is all the way to the end of the field.
 - Replace the path “C:\AQSDMClient\” with the path to where you saved the folder



Web Service Based Application

- “Service” = “Query” for this application
- Internet standard technology
 - EPA/ECOS standard to position ourselves for the future
- Service model: make a request, get a response
 - Like any service – ordering a meal
- Data Mart Interface (standard EPA) implementation:
 - A – B – C – D – E
 - Authenticate
 - Build query
 - Consume service
 - Download response
 - Enjoy results! (with a stylesheet)

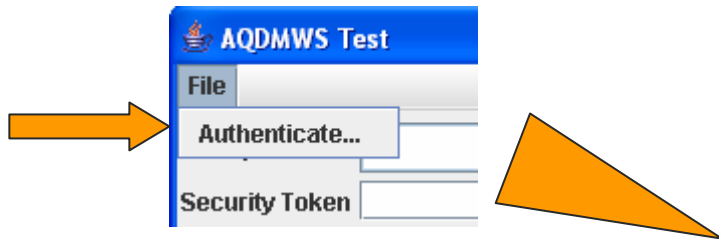
[Air Quality Query Components]

- There are 4 facets to air quality data query construction:
 - Geography
 - Substance / parameter
 - Individual or a class (e.g., criteria, toxic)
 - Time
 - Other AQS metadata
 - Monitor operations

The AQS Data Mart Interface

The screenshot shows a web browser window titled "AQDMWS Test". The interface includes a "File" menu, an "Endpoint URL" dropdown, and a "Security Token" input field. Below these are buttons for "Submit", "Status", "Download", and "Clear Tab", along with a "Transaction ID" input. A tabbed interface has "Monitor Criteria" selected, showing dropdown menus for "State Name", "County Name", "City Name", "Tribal Name", "AQS Site Identifier", and "EPA Region Number". A "Location" section contains "Latitude" and "Longitude" inputs, each with "Min." and "Max." sub-inputs. At the bottom are dropdowns for "Substance Type", "Substance Name", and "Monitor Type".

[A - Authenticate]



1 – Select File | Authenticate

OR select an “Endpoint URL” from the pulldown

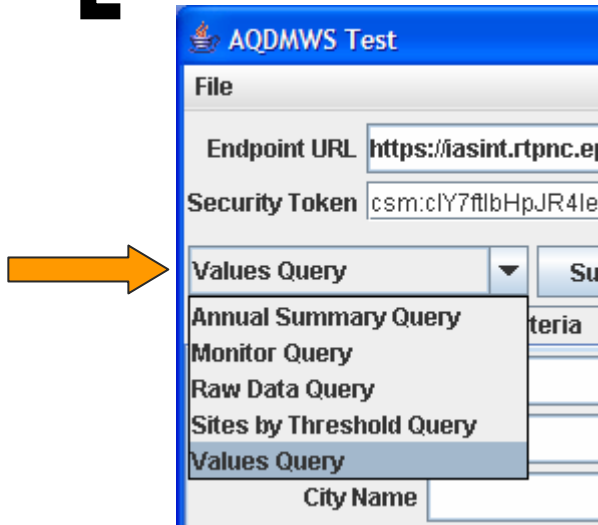
2 – Enter you CDX user ID and Password

3 – The “Security Token” field will be populated

4 – Select your “Endpoint URL” (the AQS Data Mart) from the pulldown



B - Build your Query



AQDMWS Test

File

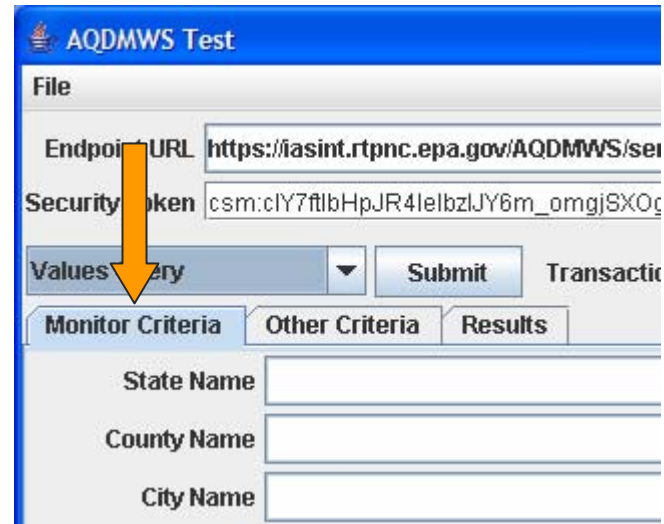
Endpoint URL

Security Token

Values Query

- Annual Summary Query
- Monitor Query
- Raw Data Query
- Sites by Threshold Query
- Values Query

City Name



AQDMWS Test

File

Endpoint URL

Security Token

Values Query

Monitor Criteria Other Criteria Results

State Name

County Name

City Name

1 – Select the query you want to run: Values Query

2 – Using the pulldowns, populate the first tab with valid combinations (see the last page for valid combinations)

NOTE – every time you request a pull down menu, there may be a delay as the database is actually being queried

For our example, we'll select:

Illinois

Cook County

Criteria pollutants

See the next page for the how the completed screen should look.



B - Build your Query Example

AQDMWS Test

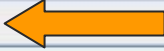
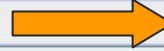
File



Endpoint URL

Security Token

Values Query Transaction ID

Monitor Criteria | Other Criteria | Results

State Name  

County Name  



City Name

Tribal Name

AQS Site Identifier

EPA Region Number

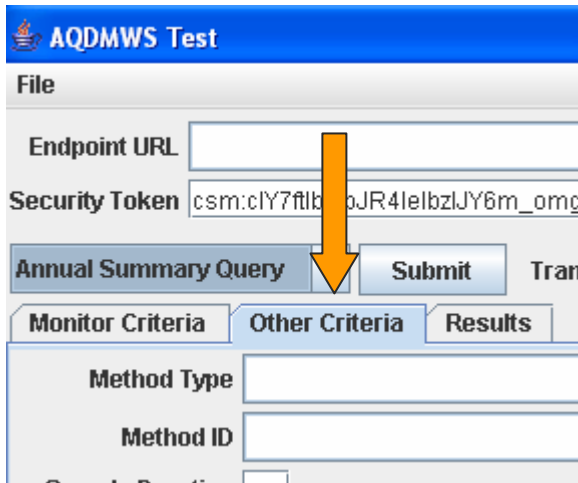
	Min.	Max.
Location Latitude	<input type="text"/>	<input type="text"/>
Longitude	<input type="text"/>	<input type="text"/>

Substance Type  

Substance Name

Monitor Type

B - Build your Query Cont'd



The screenshot shows the 'AQDMWS Test' application interface. The 'Other Criteria' tab is selected, and an orange arrow points to the 'Submit' button. The interface includes fields for 'Endpoint URL', 'Security Token', 'Method Type', and 'Method ID'. The 'Submit' button is highlighted, and the 'Other Criteria' tab is active.

3 – Select the second tab (“Other Criteria”)

4 – Using the pulldowns, populate the fields

For our example, we’ll select:

The week beginning May 10, 2005

Leave the time blank to indicate all values for those days

The returned values in local (not GMT) time (Local is the default if you leave this blank)

Data from AQS (currently the only valid selection)

The value to be returned: Daily Max

And include data representing “exceptional events” in the returned file

See the next page for the completed screen

B – Build Example, Tab 2

AQDMWS Test

File

Endpoint URL

Security Token

Values Query Transaction ID

Monitor Criteria **Other Criteria** Results

Method Type

Method ID

Sample Duration

✓ Begin Date (mm/dd/yyyy)

✓ Begin Time (hh:mm:ss)

✓ End Date (mm/dd/yyyy)

End Time (hh:mm:ss)

✓ Time Zone Type

✓ Data Source

✓ Statistic Name

Relational Operator

Threshold Value

Include All POCs Monitor Type Duration Measurement Metadata
 Event Data Method Locational Metadata

C – Consume the Service

The screenshot shows the 'AQDMWS Test' application window. The 'Endpoint URL' is 'https://iasdev.rtpnc.epa.gov/AQDMWS/services/QualityDataMartSOAPPort'. The 'Security Token' is 'csm:cly7flbHpJR4lelbzJY6m_omgjSXOgThYSrrQQOBNXSJfcrFzCOWcnJBNnJDXu.SakwQtbvAWOC6xV'. The 'Annual Summary Query' dropdown is set to 'Annual Summary Query'. The 'Submit' button is highlighted with an orange arrow. The 'Transaction ID' field contains '1003'. The 'Status' and 'Download' buttons are also visible. Below the form, there are tabs for 'Monitor Criteria', 'Other Criteria', and 'Results'. The 'Method Type' is 'Federal Reference - Methods for sampling and analyzing the ambient air for an air pollutant that is'. The 'Method ID' field is empty.

1 – Click the submit button

2 – You will be assigned a transaction ID

3 – Click on Status as often as you like to see how the job is progressing

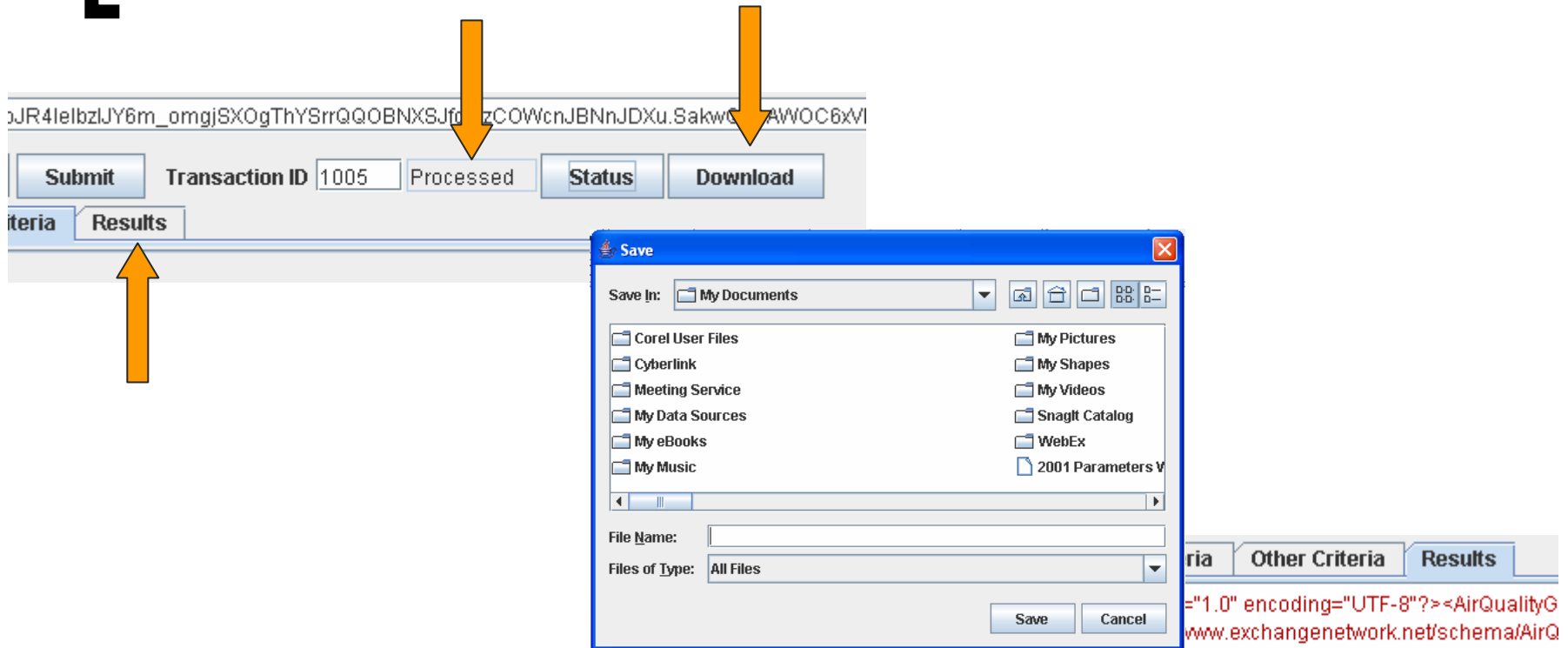
The screenshot shows the 'AQDMWS Test' application window after the 'Submit' button has been clicked. The 'Transaction ID' field now contains '1005'. The 'Status' button is highlighted with an orange arrow. The 'Submit' button is now disabled. The 'Other Criteria' and 'Results' tabs are visible. The 'Method Type' is 'Federal Reference - Methods for sampling and analyzing the ambient air for an air pollutant that is'. The 'Method ID' field is empty.

When the button stays depressed, it is waiting for a response

When it returns to its normal appearance, the status has been updated

OR you can wait for an email to be sent to you letting you know that your job is complete. The email will be sent to the address you signed on with as your user ID, and will contain a link that you can use to download your results.

D – Download the Response



1 – When status = “Processed” click on Download

2 – You will be prompted as to where to save the resulting XML file

Be sure to use a “.xml” extension

3 – And it will be displayed in the results tab

NOTE – if the status comes back as “Failed” you can also click on Download to see your error message.

```
="1.0" encoding="UTF-8"?><AirQualityG  
www.exchangenetwork.net/schema/AirQ  
xmlns:xsi="http://www.w3.org/2001/XMLSchema-  
xsi:schemaLocation="http://www.exchangenetwork.ne  
http://hermes.rtp.epa.gov/schema/AQS/GeoCodedDat  
itudeMeasure>41.689195</sc:LatitudeMeasure><sc:l  
alue>178</VerticalMeasureValue><VerticalMeasureU  
erDescription>Suspended particulate  
(TSP)</AQSPParameterDescription><Date>2005-05-11  
Maximum Sample Measurements</StatisticName><s
```

[E – Enjoy the Results]

- Good news
 - Data is returned in XML
 - Worldwide standard data format
- Bad news
 - Data is returned in XML
 - Not designed for humans to read
- There are three ways to enjoy these results
 - Using Stylesheets
 - Using Spreadsheets
 - Using XML (you're on your own on this one)
- Read on...

E – Enjoy Using Stylesheets

Don't be afraid of XML:

- It is easily formatted into a readable format using something called a “stylesheet”
- You probably have an XML stylesheet processor on your computer

Almost all web browsers are stylesheet processors (IE, Mozilla, etc.)

- We have provided a stylesheet for you to use

The stylesheet is on our web page and a link to it is already in the XML file

To view your data:

- 1 – Navigate to where you saved the .xml file
- 2 – Double click on it
- 3 – If you're lucky, it will open up as a table in your default web browser

If it does not, you can do one of the following...

- A – Associate the .xml extension with your web browser application
- B – Open the file from within your web browser (via the File menu)

Latitude Measure	Longitude Measure	Parameter	Data Source Reference ID	Date	Time
41.689195	-87.539318	Suspended particulate (TSP)	170310022111012	2005-05-10	00:00 C
41.689195	-87.539318	Lead (TSP)	170310022121282	2005-05-10	00:00 C

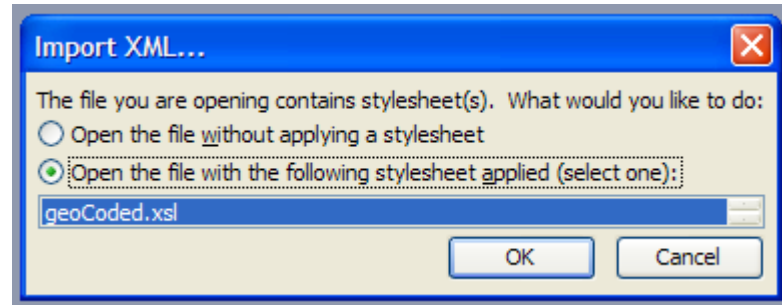
If you're using Internet Explorer, you can copy and paste the data into Excel

Columns and rows will be preserved

[E – Enjoy Using Spreadsheets]

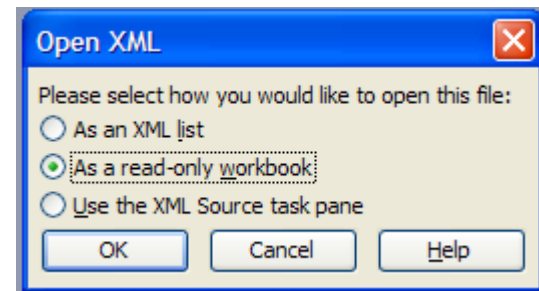
To view your data in MS Excel:

- 1 – Open Microsoft Excel 2003
- 2 – Open the .xml file
- 3 – Choose the option that says:
“Open with the following stylesheet applied”



OR (if the stylesheet is for some reason not available):

- 1 – Open Microsoft Excel 2003
- 2 – Open the .xml file
- 3 – Choose the option that says “As read-only workbook”



There are two things to note about this method:

- The headers will be harder to read (they are the path to the data element in the XML file)
- Each numerical column will be repeated with a suffix of “#agg”

Description of Fields in the “Geocoded” Format Returned from the Values Query

<i>Field</i>	<i>Description</i>
Latitude Measure	The monitoring site's angular distance north or south of the equator measured in decimal degrees.
Longitude Measure	The monitoring site's angular distance east or west of the prime meridian at Greenwich, UK, measured in decimal degrees.
Parameter	The name assigned in AQS to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.
Data Source Reference ID	The ID number of the site in the AQS system. This is for cross reference if you have data from another query or system.
Date	The calendar date. All annual summary data is assigned to January 01.
Time	The time of day. All daily summary data is assigned to midnight (00:00).
Time Zone	The time zone where the monitor resides.
Year & Day in Year	An alternate way of expressing the date that is more useful for indexing and sorting. Not yet populated.
Statistic Name	The name of a summary value or statistic requested in the query.
Measure Value	The measured or calculated value in the database for the requested statistic.
Measure Unit Name	The units of measure of the measure value.
Measurement Uncertainty	The total uncertainty associated with a reported measurement as indicated by the reporting agency.
Duration Description	The length of time that air passes through the monitoring device before it is analyzed (measured). So, it represents an averaging period in the atmosphere (for example, a 24-hour sample duration draws ambient air over a collection filter for 24 straight hours). For continuous monitors, it can represent an averaging time of many samples (for example, a 1-hour value may be the average of four one-minute samples collected during each quarter of the hour).

Continued on next page

Description of Fields in the “Geocoded” Format (Continued)

<i>Field</i>	<i>Description</i>
Observation Count	The number of observations (sample values) reported during the time in question (day or year).
Method Description	The text that describes the process and/or tools that manage storage, disposal, treatment, and other handling protocols designed for and/or used in taking the sample.
Monitor Type	An administrative classification for the monitor roughly indicating the monitoring network to which the monitor belongs. A monitor may have more than one type, and there is usually only one space to indicate this information in reports, so a hierarchy is used to select the most prevalent type for inclusion.
MDL	Method detectable limit (MDL) is the minimum detectable level of a sample concentration defined for the monitor and method.
Qualifier Description	Sample values may have qualifiers that indicate why they are missing or that they are out of the ordinary. Types of qualifiers are: null data, exceptional event, natural events, and quality assurance.
Horizontal Datum	The edition of North American Datum used as the basis for determining the site coordinates as listed by the agency reporting data to AQS.
Horizontal Accuracy Measure Value	Description of the accuracy of the site coordinates as listed by the agency reporting data to AQS.
Horizontal Accuracy Measure Unit	The units of measure of the horizontal accuracy.
Vertical Measure Value	The elevation above or below mean sea level (MSL) of the site as listed by the agency reporting data to AQS.
Vertical Measure Unit	The units of measure of the vertical measure.
Vertical Accuracy Measure Value	Description of the accuracy of the elevation as listed by the agency reporting data to AQS.
Vertical Accuracy Measure Unit	The units of measure of the vertical accuracy.

Valid Combinations for Tab 1

Monitor Criteria		Other Criteria	Results
State Name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
County Name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
City Name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tribal Name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQS Site Identifier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPA Region Number	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Location		Min.	Max.
Latitude	<input type="text"/>	<input type="text"/>	<input type="text"/>
Longitude	<input type="text"/>	<input type="text"/>	<input type="text"/>
Substance Type	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Substance Name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitor Type	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Location

Substance

- Only finest level of detail of selection will be maintained in display
- You can select a Substance (Parameter) Type first to narrow down the list of available Substance Names

[Query Construction Concepts]

- There are 4 facets to a query
 - Geography
 - Parameter (substance)
 - Time
 - Other AQS metadata
- Be judicious – there's a lot of data in the Data Mart

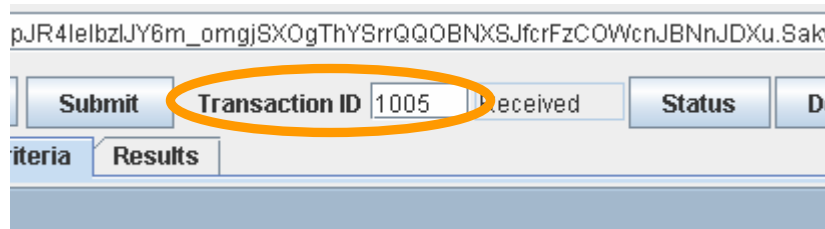
Description of Queries

<u>Query</u>	<u>Description</u>
Values	This is the most versatile query. It lets the user select from the most commonly requested values (raw, NAAQS averages, daily summary, and annual summary) and returns them in a latitude/longitude oriented schema. Only one kind of value/statistic can be returned with each query
Raw	This returns raw and NAAQS average data in the AQS Submission schema format. This format is indexed by tribe or state + county and does not contain latitude and longitude. It is provided primarily for the convenience of those familiar with the AQS system.
Annual Summary	Returns a group of annual aggregate statistics corresponding to the AQS “Annual Summary” reports. It uses the AQS Summary schema.
Monitor	Returns a list of sites and monitors with their metadata (including latitude and longitude) in the AQS Submission schema format that meet the user’s selection criteria.
Sites by Threshold	Returns a list of sites and monitors with their metadata (including latitude and longitude) in the AQS Submission schema format that meet a user selected threshold. For example, monitors in Idaho with an annual maximum greater than 10.

Advanced Topic – Retrieving Data From Long Running Jobs

- Q. What do you do if the query you built will take longer to run than you can wait on?
A. The Data Mart Interface is easy to use to get that data.

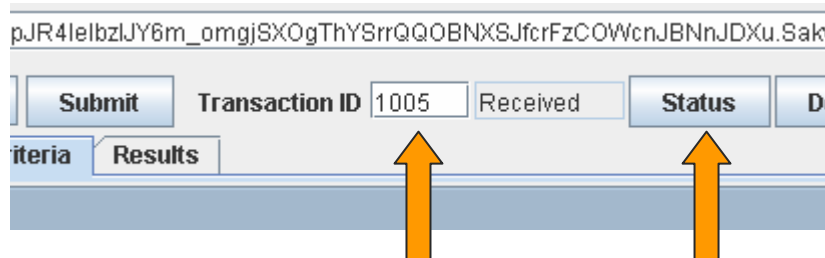
1 – When you initially submit the job, make note of the “Transaction ID”



Within 72 hours of submitting the job, you can get the results by:

- 2 – Open the client
- 3 – Authenticate and select an Endpoint URL
- 4 – Type in the Transaction ID and click the “Status” button

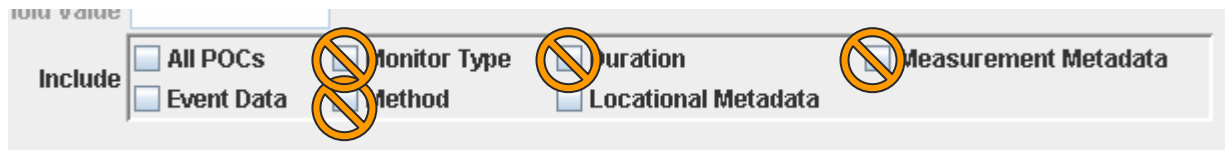
Note, if usage of the AQS Data Mart dramatically increases, we may have to cut back on the 72 hour time limit.



Additional Technical Notes

Most of the “options” on the second tab are not available for daily and annual summary values

****Your job will fail and you will get an error message when you press the download button if you select them****



If you have a long running job, your security token may “time out” before it completes. You will get a message to this effect when you hit the “Status” button. If this happens, you simply need to re-authenticate. Click on the “File” menu, and select “Authenticate”.



Do not attempt to type values into empty fields in the direct interface. This will result in a query error. However, after you have used the pull down menu to populate a pick-list, you may type characters to jump to entries in the list.

If you get an "access denied" error when you click on a link the Data Mart has emailed you and you are running Internet Explorer (IE) version 6 or 7, the file will properly display if you make the following change to you options:

1. From IE, select the menu pick "Tools / Internet Options"
2. Click on the Security tab.
3. Click the "Custom Level" button.
4. Scroll down to the "Miscellaneous" section.
5. Under "Access data sources across domains", select the "Prompt" checkbox.
6. Click OK until you exit the security dialogue.
7. Restart IE.