

Tribal Data Toolbox: Free Comprehensive Data Base for Tribes

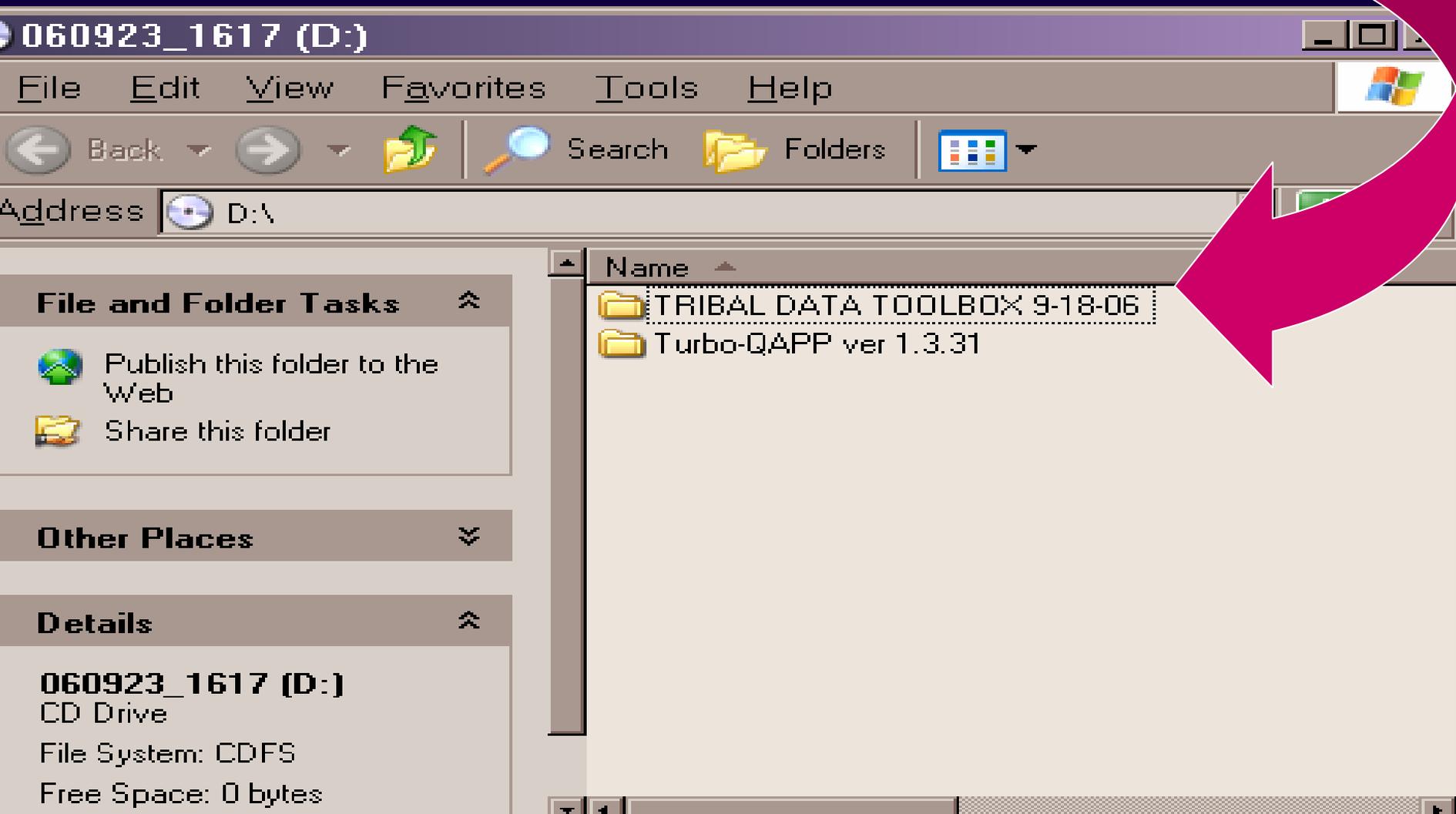
NAU Institute for Tribal Environmental
Professionals

Melinda.ronca-battista@nau.edu

Angelique.luedeker@nau.edu

**Includes AQS data
formatting!!!**

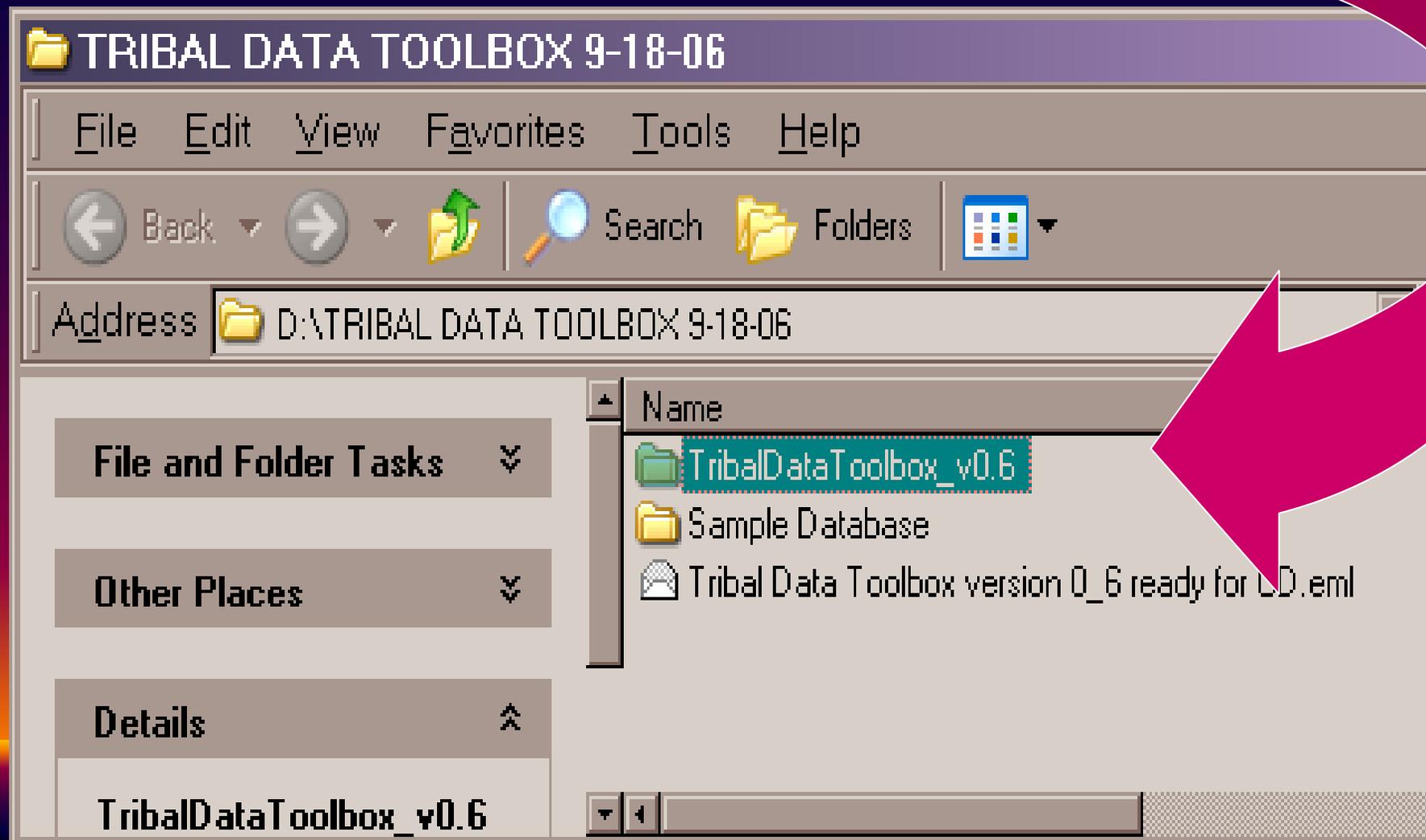
Version 0.6 on CD



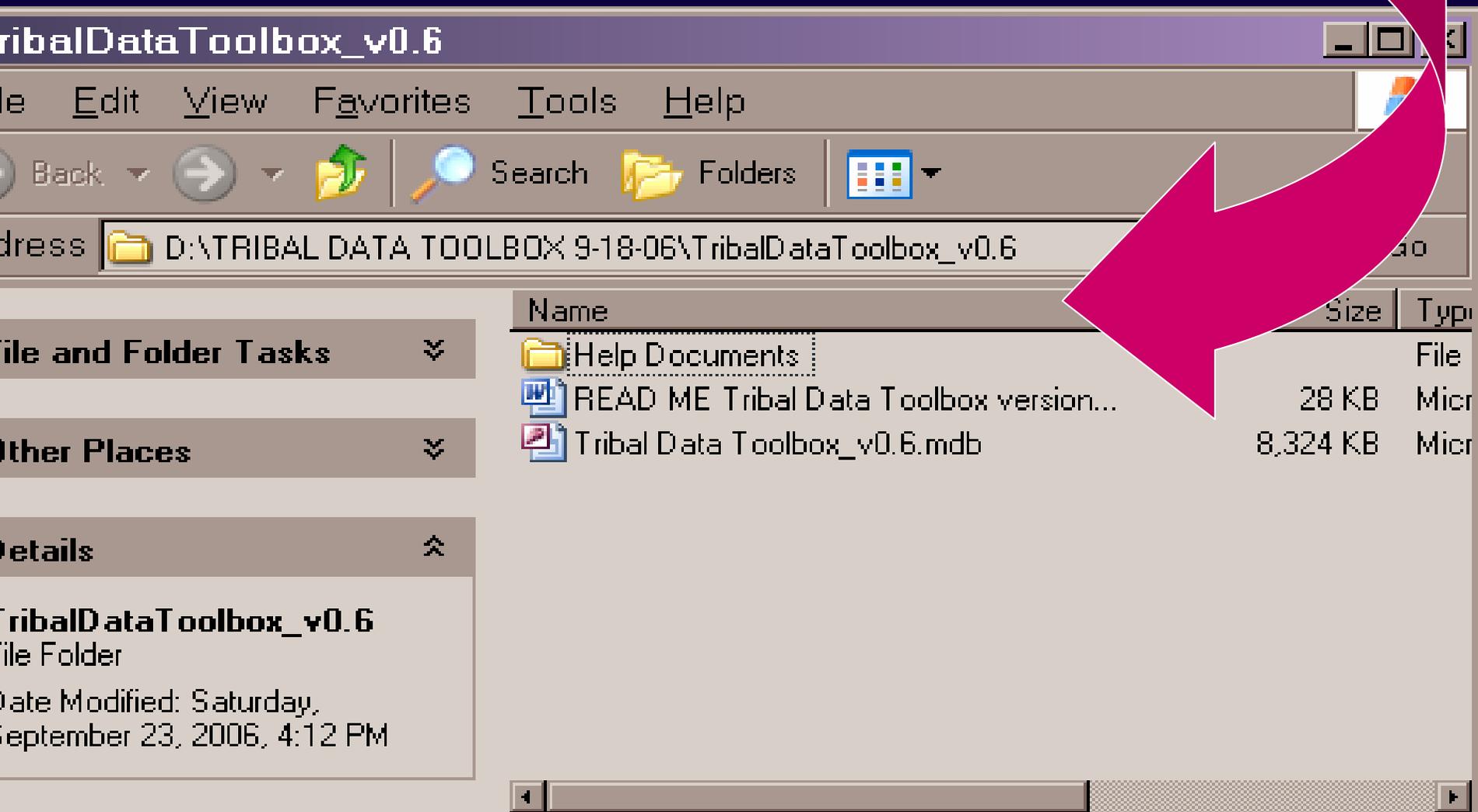
2 copies of the database on CD:

- **Sample Database** contains an example tribal air monitoring program with data
 - **TribalDataToolbox_v0.6** is empty for your use
 - Instructions for saving the database are printed on the paper included in the CD and in the “Read Me” file on the CD –
copy the *Toolbox_v0.6* folder to your C: drive
- 
- A silhouette of a tree is visible on the right side of the slide, set against a background of a sunset or sunrise with a gradient from orange to purple.

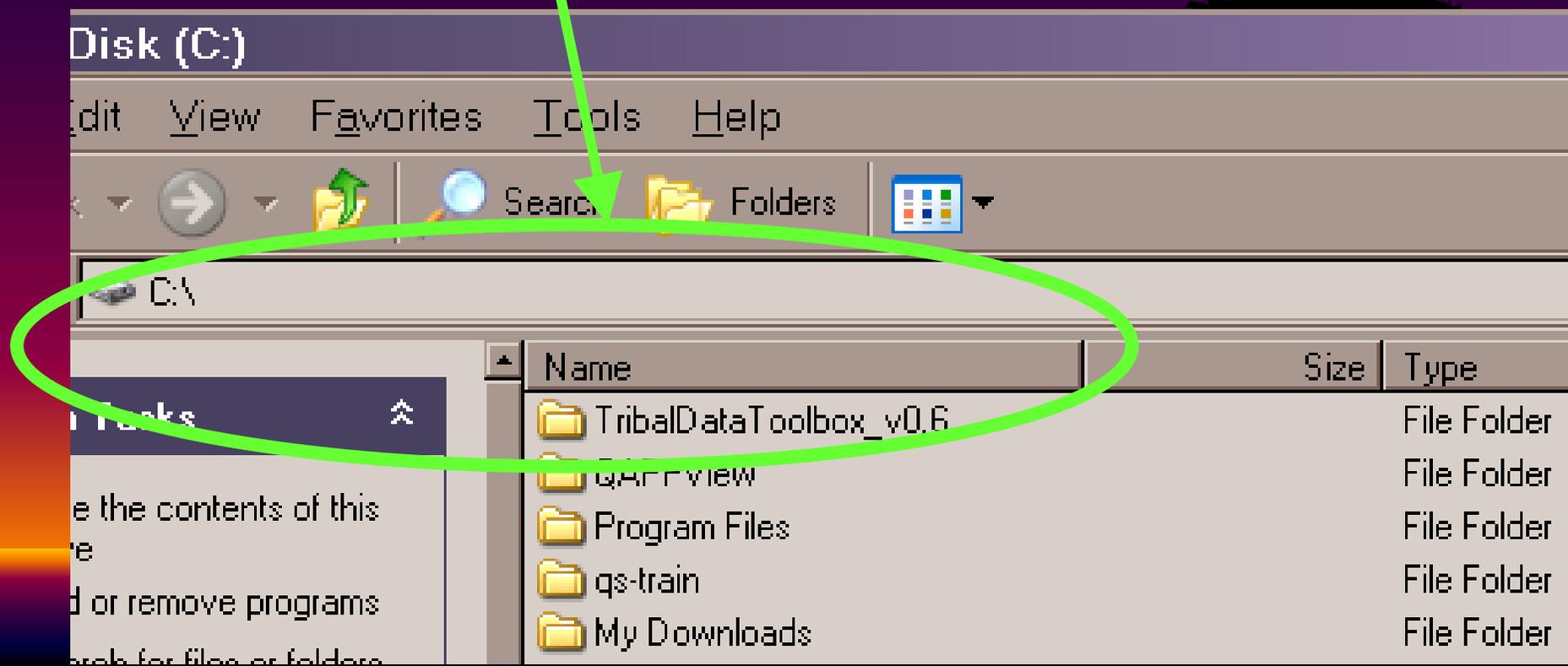
The “Read Me” file is within the blank database:



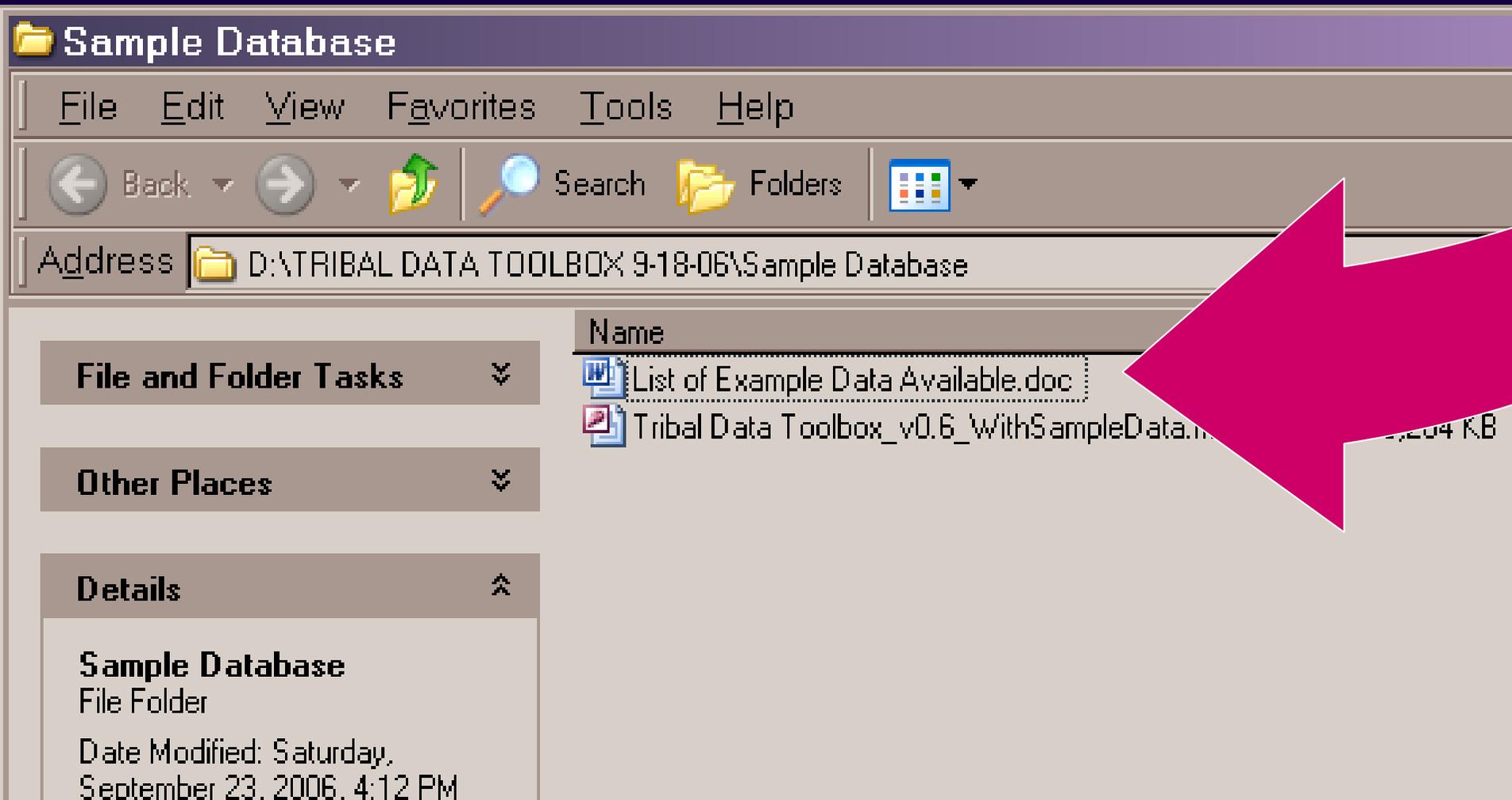
READ ME file is within folder:



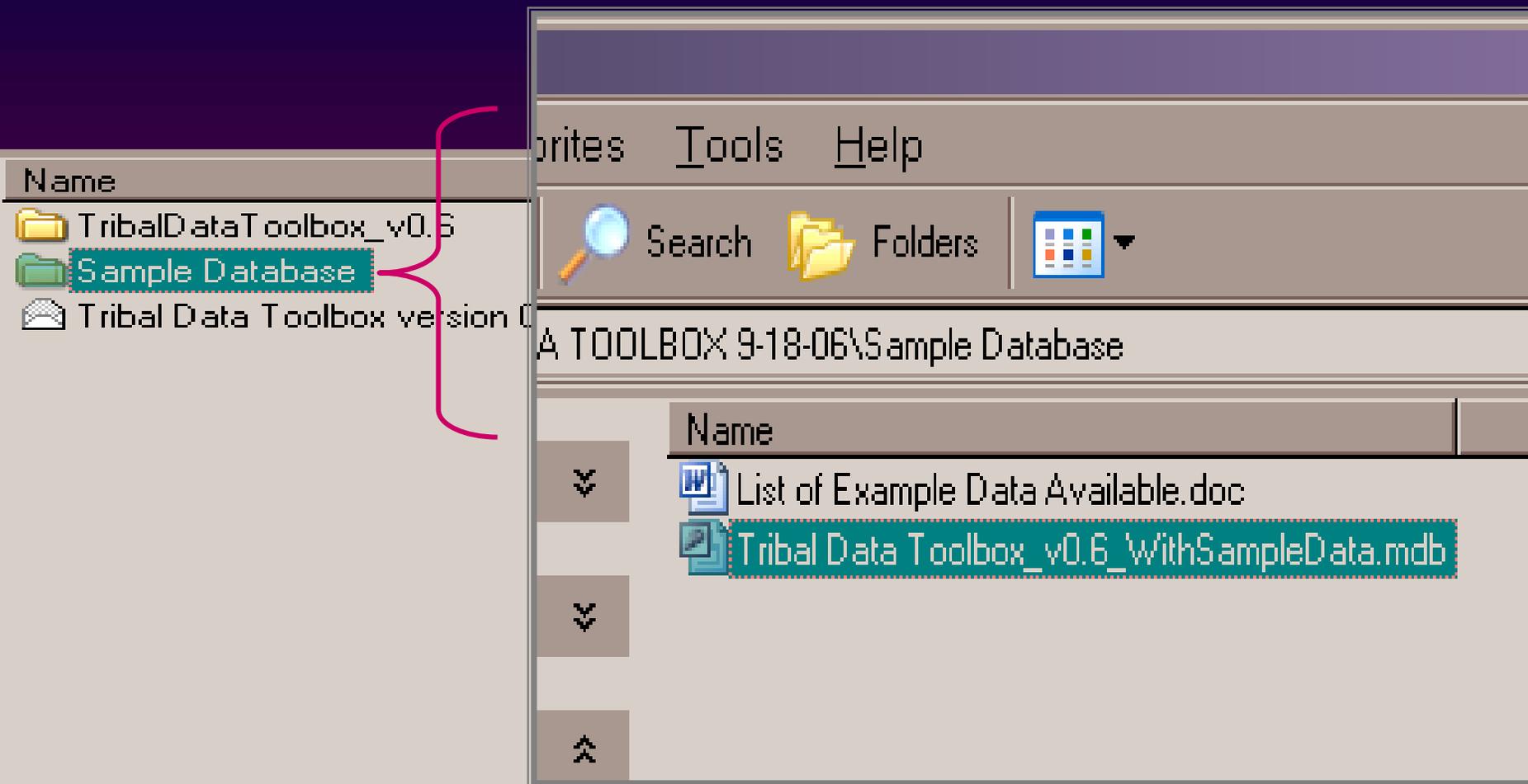
For the Help file hyperlinks to work, follow the Read Me directions and copy the ***Toolbox_v0.6*** folder to your C:\ drive:



Within the Sample Database there is a list of the example data (ozone, met, PM)



Open the Sample Database from your CD to see how the toolbox can be used:



Say “open” and “ok” to all questions, and you’ll open the Main Switchboard:

Main Switchboard

Administrative

Create New Monitoring Program

Modify or Add Site And Sampler Information

Modify or Add Personnel Information

Import Data From A Previous Toolbox Version

Data Operations

Continuous Based and Meteorological Monitoring

Filter Based Monitoring

Reporting

Quality Control and Data Reports and Charts

AQS Raw Data File Submittal

Administrative data management:

Main Switchboard

Administrative

Create New
Monitoring Program

Modify or Add Site
And Sampler
Information

Modify or Add
Personnel
Information

Import Data From A
Previous Toolbox
Version

Setting Up A New Air Monitoring Program

- Enter Personnel Data
- Enter Site Data
- Enter Sampler Data

[CLICK HERE FOR
HELP FILE](#)

Help files are hyperlinked:

Setting Up A New Air Monitoring Program

- Enter Personnel Data
- Enter Site Data
- Enter Sampler Data

CLICK HERE FOR HELP FILE

Help for Create New Monitoring Program Operations

Table of Contents:

[Introduction](#) (Page 1)

[Enter Personnel Data](#) (Page 2)

[Enter Site Data](#) (Page 2)

[Enter Sampler Data](#) (Page 3)

1. → From the Main Switchboard, click on the "Create New Monitoring Program" button under the Administrative category.

frm_Main_Switchboard : Form

Main Switchboard

Administrative	Data Operations	Reporting
Create New Monitoring Program	Continuous Based and Meteorological Monitoring	Quality Control Reports
Modify or Add Site And Sampler Information	Filter Based Monitoring	Quality Control Charts

To see the awesome power of the Data Operations, jump in:

Main Switchboard

Administrative

Create New
Monitoring Program

Modify or Add Site
And Sampler
Information

Modify or Add
Personnel
Information

Import Data From A
Previous Toolbox
Version

Data Operations

Continuous Based and
Meteorological
Monitoring

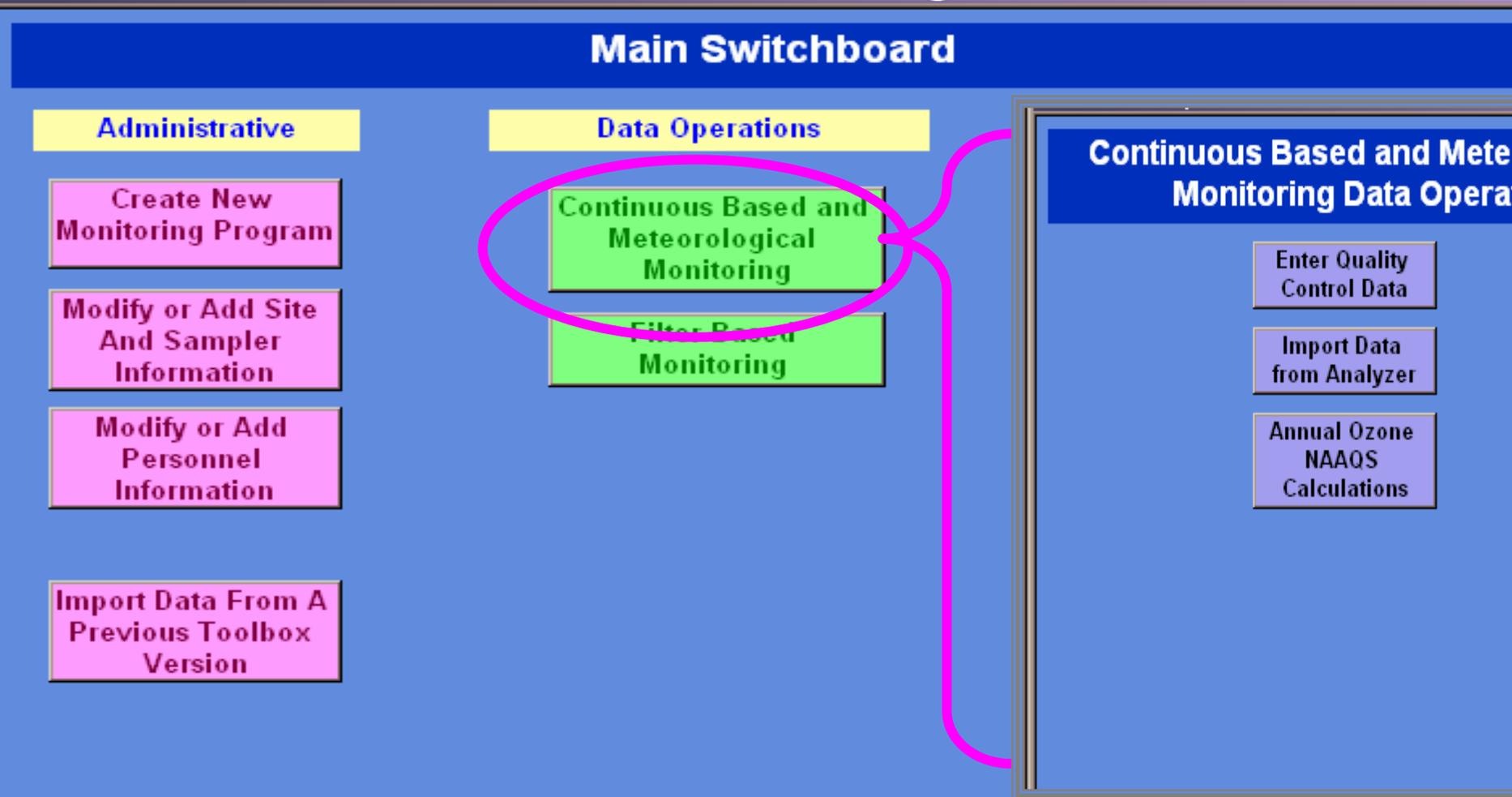
Filter Based
Monitoring

Reporting

Quality Control and Data
Reports and Charts

AQS Raw Data File
Submittal

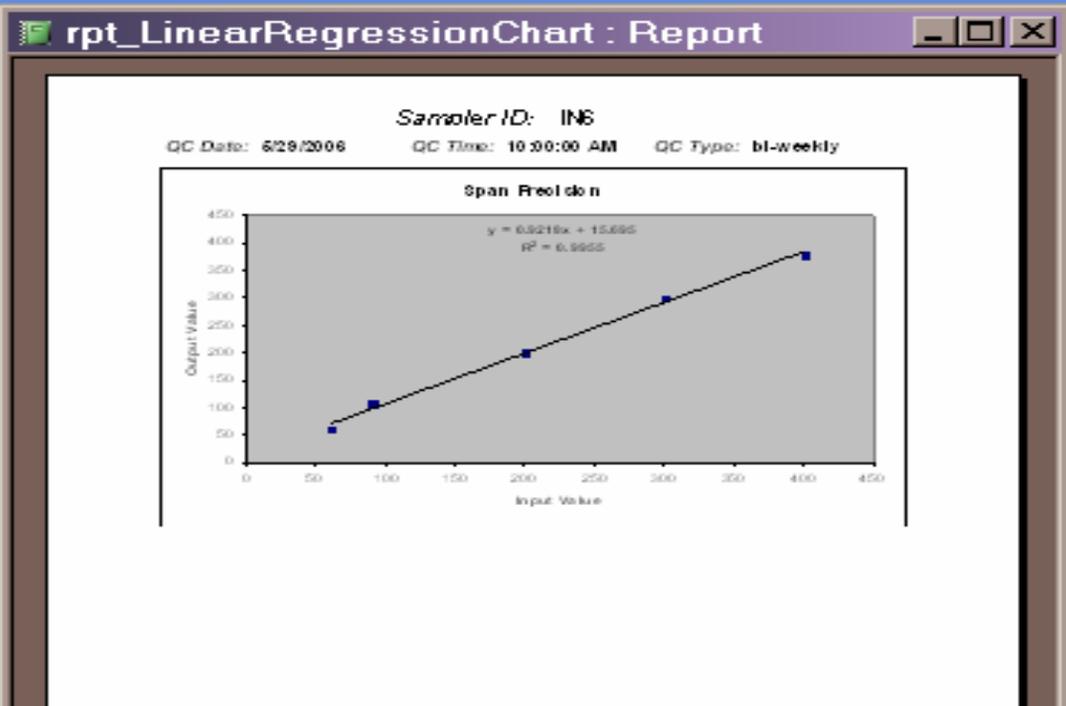
From Main Switchboard, click on Continuous Monitoring:



QC data entry and immediate flagging and charting:

Gaseous Pollutants Quality Control Data

Pollutant	Frequency	QC Employee	QC Organization	QC Date	QC Time	Site Name
O3	bi-weekly	ASQ	tribe	5/29/2006	10:00:00 AM	housing development
QC Device Make	QC Device Model	QC Device Sampler Number	QC Device Full Scale	Shelter Temperature		
API	49c	IN7	500			
Conc. Units	Zero Input	Zero Device Display	Zero DAS Output	Zero Qualifier		
PPB	0	0	0			
Span 1 Input	Span 1 Device Display	Span 1 DAS Output	Span 1 Precision (%)	Span 1 Qualifier		
90	108.25	108.25	20.28	L1S		
Span 2 Precision (%)	Span 2 Qualifier					
5.48						
Span 3 Precision (%)	Span 3 Qualifier					
Span 4 Precision (%)	Span 4 Qualifier					
Span 5 Precision (%)	Span 5 Qualifier					



Flag for level one span check

To see PM filter monitoring, go back to the main switchboard and click on:

The screenshot shows a software window titled "frm_Main_Switchboard : Form". The main content area is a "Main Switchboard" with a blue header. It is organized into three columns: Administrative, Data Operations, and Reporting. The Administrative column contains four buttons: "Create New Monitoring Program", "Modify or Add Site And Sampler Information", "Modify or Add Personnel Information", and "Import Data From A Previous Toolbox Version". The Data Operations column contains two buttons: "Continuous Based and Meteorological Monitoring" and "Filter Based Monitoring". The Reporting column contains two buttons: "Quality Control and Data Reports and Charts" and "AQS Raw Data File Submittal". A green arrow points from the text above to the "Filter Based Monitoring" button.

Administrative	Data Operations	Reporting
Create New Monitoring Program	Continuous Based and Meteorological Monitoring	Quality Control and Data Reports and Charts
Modify or Add Site And Sampler Information	Filter Based Monitoring	AQS Raw Data File Submittal
Modify or Add Personnel Information		
Import Data From A Previous Toolbox Version		

Every step of PM (this can be easily adapted for any sample collection data) is tracked:

Filter Based Monitoring Data Operations

Pre Field Placement

Enter QC and
Maintenance Check Data

Enter COC Data for
Unexposed Tared Filters

Post Field Placement

Enter Field Placement
Data from COC

Post Sample Collection

Enter Shipping Data
from COC

Enter Field Data Sheet
Information

Import Data from
Analyzer

Post Receipt of Lab Report

Import Data from
Weighing Lab



Sub-menus for each step:

Filter Based Monitoring Data Operations

Pre Field Placement

Enter QC and Maintenance Check Data

Enter COC Data for Unexposed Tared Filters

Post Field Placement

Enter Field Placement Data from COC

Post Sample Collection

Enter Shipping Data from COC

Enter Field Data Sheet Information

Import Data from Analyzer

Post Receipt of Lab Report

Import Data from Weighing Lab

Filter Based QC and Maintenance Check Data

Enter 5 Day Maintenance Check Data

Enter Monthly QC Check Data

Enter Quarterly FR QC Check Data

Enter Six Month Maintenance Check Data

Enter Annual Maintenance Check Data

[CLICK HERE FOR HELP FILE](#)

Drop-down lists, auto-complete makes accurate data entry easy;

Filter Based QC and Maintenance Check Data

Enter 5 Day Maintenance Check Data

Enter Monthly QC Check Data

Enter Quarterly FR QC Check Data

Enter Six Month Maintenance Check Data

Enter Annual Maintenance Check Data

[CLICK HERE FOR HELP FILE](#)

tblPM2_5MaintenanceFiveDay

5 Day Maintenance Check

Sampler ID	Pollutant	Maintenance Check Date	Maintenance Check Time	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

External Leak Check Comments Ext Leak Check

Clean WIIS Impactor Comments Clean Impactor

Passed 5 Day Check?:

Record: 1 of 1 (Filtered)

COC can be manually keyed in or imported from excel files:

Filter Based Monitoring Data Operations

Pre Field Placement

Enter QC and
Maintenance Check Data

Enter COC Data for
Unexposed Tared Filters

Post Field Placement

Enter Field Placement
Data from COC

Post Sample Collection

Enter Shipping Data
from COC

Enter Field Data Sheet
Information

Import Data from
Analyzer

Post Receipt of Lab Report

ChainOfCustody

Chain Of Custody for Filters

Part I - Tared Filter Receipt

Part II - Field Info

Part III - Shipping to Lab

Filter ID

COC Form ID

0

Filter Receipt Date

9/25/2006

Received By

Shipment Integrity OK

Weighing Lab

Airbill Number

Shipped from Lab to Tribe

Weighing Date

Date Filter Must Be Used B

courier

fedEx

paper airplane

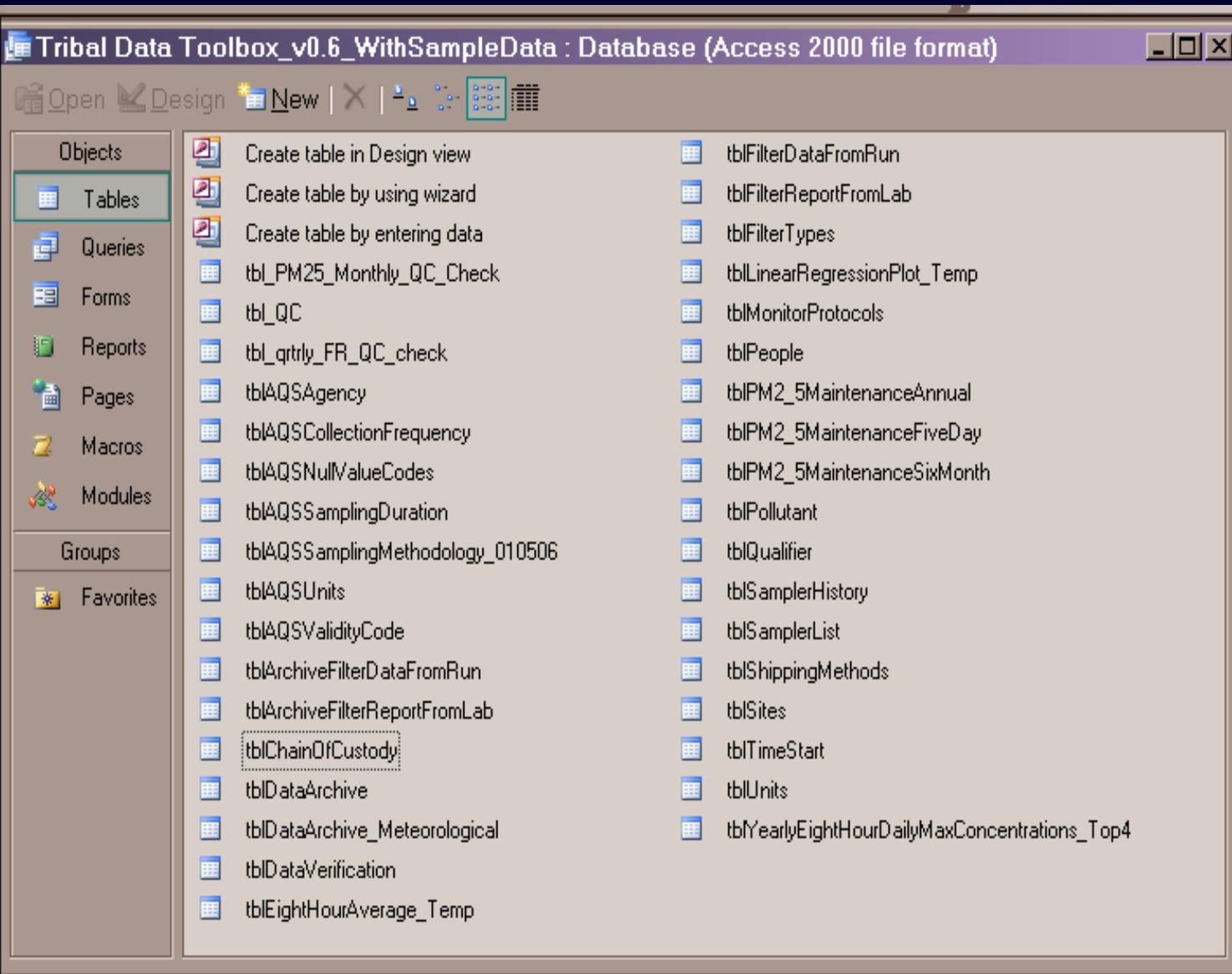
UPS

US mail

Notes at Tribal Office

On completion of Part I the weighing lab makes a copy and sends original with filter(s).

Where does this data go?



tables

How about reporting?

Main Switchboard

Administrative

Create New
Monitoring Program

Modify or Add Site
And Sampler
Information

Modify or Add
Personnel
Information

Import Data From A
Previous Toolbox
Version

Data Operations

Continuous Based and
Meteorological
Monitoring

Filter Based
Monitoring

Reporting

Quality Control and Data
Reports and Charts

AQS Raw Data File
Submittal

EMAIL ITEP

QC Reports and Charts:

Main Switchboard

Administrative

Create New
Monitoring Program

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And Sampler
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Modify or Add
Personnel
Information

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frm_QC_Reports : Form

Quality Control and Data Reports

Continuous Based Monitoring

Filter Based Monitoring

EMAIL ITEP

Form-based queries help you select data:

Continuous Ba

Input REQUIRED!

Site ID

Sampler ID

S1
S2
S4
S5

IN3

Pollutant

Sampling Year

O3

2003

2004
2005
2006

Select Range!

Between 5/14/2003

And 12/31/2003

Input REQUIRED!

Site ID

Sampler ID

S1
S2
S4
S5

IN3

Pollutant

Sampling Year

O3

2003

2004
2005
2006

Select Range!

Between 5/14/2003

Reports and Charts for Ozone:

Continuous Based Monitoring Reports and Charts

Input REQUIRED!

Ozone NAAQS Reports and Charts

You must run the annual NAAQS calculations for the sites and sampling years of interest before these reports and charts can be viewed. Click on the button below to run these calculations if you have not done so.

Ozone NAAQS Calculations

Eight Hour Averages Based on Selected Range:

- Report: Eight Hour Averages
- Chart: Eight Hour Averages, Individual Site
- Chart: Eight Hour Averages, All Sites

Daily Max Eight Hour Averages Based on Selected Range:

- Chart: Daily Max Eight Hour Averages, Individual Site
- Chart: Daily Max Eight Hour Averages, All Sites

Annual Summary Reports Based on Sampling Year:

- Report: Daily Max Eight Hour Averages
- Report: Four Highest Daily Max Eight Hour Averages
- Report: Three Year NAAQS Average

Ozone
Calculations

Site ID

S1
S2
S4
S5

Sampler ID

IN3

Pollutant

O3

Sampling Year

2003
2004
2005
2006

Select Range!

Between 5/14/2003

And 12/31/2003

Customizable reports:

Continuous Based Monitoring Reports and Charts

Input REQUIRED!

Ozone NAAQS Reports and Charts

You must run the annual NAAQS calculations for the sites and sampling years of interest before these reports and charts can be viewed. Click on the button below to run these calculations if you have not done so.

Ozone NAAQS Calculations

Eight Hour Averages Based on Selected Range:

- Report: Eight Hour Averages
- Chart: Eight Hour Averages, Individual Site
- Chart: Eight Hour Averages, All Sites

Daily Max Eight Hour Averages Based on Selected Range:

- Chart: Daily Max Eight Hour Averages, Individual Site
- Chart: Daily Max Eight Hour Averages, All Sites

Annual Summary Reports Based on Sampling Year:

- Report: Daily Max Eight Hour Averages
- Report: Four Highest Daily Max Eight Hour Averages
- Report: Three Year NAAQS Average

Daily Max
8-hr
average

Select Range!

Between 5/14/2003

And 12/31/2003

Site ID	Sampler ID
S1	IN3
S2	
S4	
S5	

Pollutant	Sampling Year
O3	2003
	2004
	2005
	2006

Report for ozone daily max at 1 site:

Daily Max Eight-Hour Average Ozone Concentrations (PPM) For the 2003 Sampling Year

Site ID: S2

Site Name: casino

Sampler ID: IN3

Monitoring Day	Maximum 8-Hour Average O3 Concentration (PPM)	Percentage of Valid 8-Hour Averages	Valid Ozone Monitoring Day?
5/14/2003	0.038	25	No
5/15/2003	0.052	100	Yes
5/16/2003	0.05	100	Yes
5/17/2003	0.056	100	Yes
5/18/2003	0.058	100	Yes
5/19/2003	0.045	100	Yes
5/20/2003	0.051	100	Yes
5/21/2003	0.052	100	Yes
5/22/2003	0.05	100	Yes
5/23/2003	0.056	100	Yes
5/24/2003	0.058	100	Yes

QC Reports and Charts:

Continuous Based Monitoring Reports and Charts

Input REQUIRED!

Site ID	Sampler ID
S1	IN3
S2	
S4	
S5	

Pollutant	Sampling Year
O3	2003
	2004
	2005
	2006

Select Range!

Between 5/14/2003
And 6/1/2003

Quality Control Reports and Charts

- Report: Quality Control Checks
- Chart: Shelter Temperature
- Chart: Zero Span Check
- Chart: Span Checks

QC Report for this 2-week check:

Continuous Monitoring Sampler QC Evaluation

Site Name: casino

Sampler ID: IN3

Pollutant: O3

Technician: Qat

QC Date and Time: 5/15/2003 7:45:00 AM

QC Frequency: bi-weekly

Shelter Temperature QC Check: PASS

Shelter Temperature (C): 26.5 (Shelter Temperature must be between 20 and 30 C to pass.)

Zero QC Check: PASS

Zero Input (PPB): 0

Zero Output (PPB): 0 (Absolute value of Output must be less than 0.01 PPM to pass.)

Point 1 Span Audit: PASS

Point 1 Span Input (PPB): 90

Point 1 Span Output (PPB): 100.5153

Point 1 Span Precision (%): 11.68 (Absolute value of Precision must be less than 15 to pass.)

Point 2 Span Audit: PASS

Point 2 Span Input (PPB): 400

Point 2 Span Output (PPB): 399

Charts with met data:

Continuous Based Monitoring Reports and Charts

Input REQUIRED!

Site ID	Sampler ID
S1	IN3
S2	
S4	
S5	

Pollutant	Sampling Year
O3	2003
	2004
	2005
	2006

Select Range!

Between

And

Hourly Pollutant Concentration versus Meteorological Data Charts

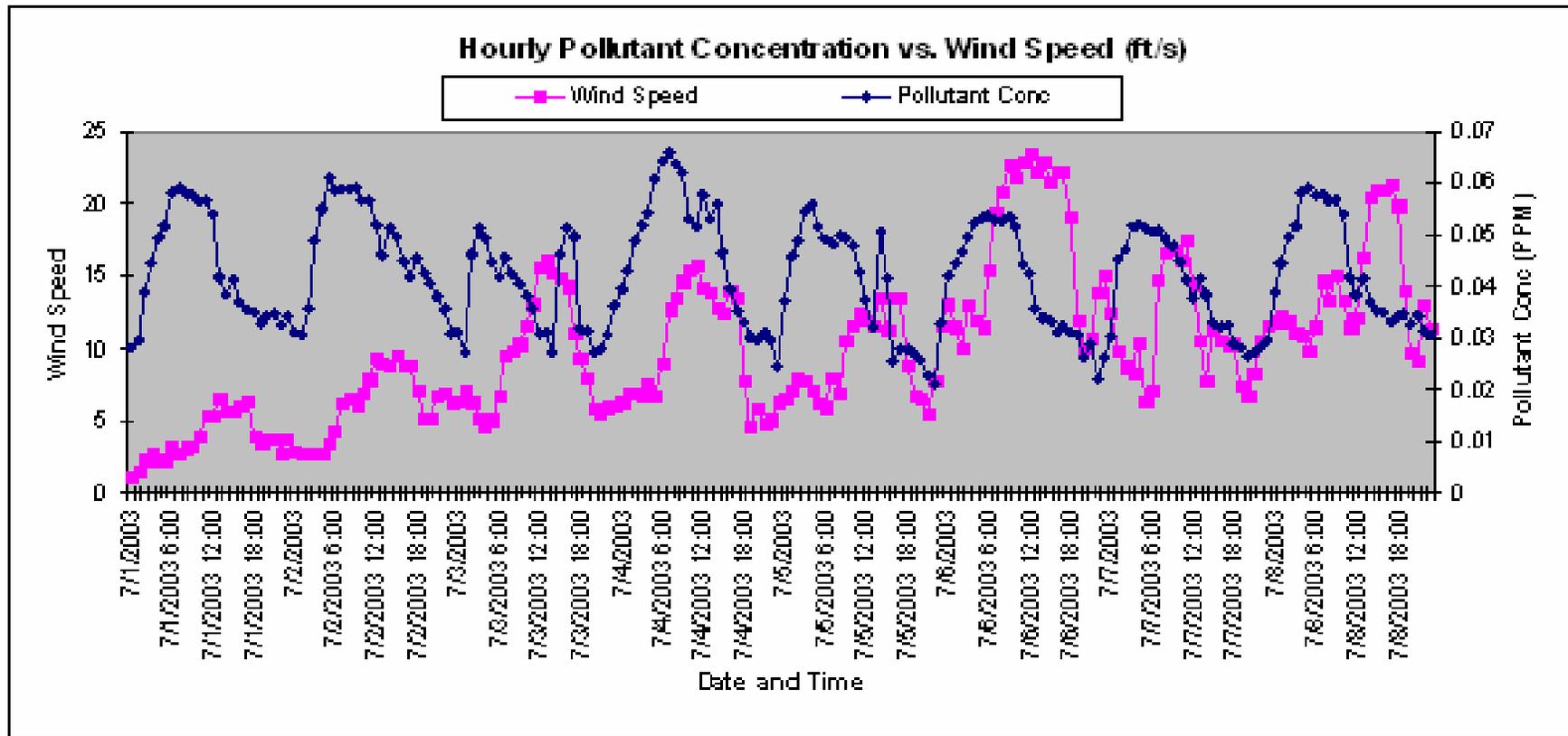
- Chart: Hourly Concentration
- Chart: Conc. vs. Temperature
- Chart: Conc. vs. Relative Humidity
- Chart: Conc. vs. Precipitation
- Chart: Conc. vs. Wind Speed
- Chart: Conc. vs. Barometric Pressure
- Chart: Conc. vs. Solar Radiation

Concentration vs. wind speed:

Site ID: S2

Sampler ID: IN3

Pollutant O3



AQS Formatting!

Main Switchboard

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AQS Raw Data File
Submittal

EMAIL ITEP

Toolbox has steps for adding the Protocol values that are a necessary 1st step for AQS entry:

AQS Submittal

You must import the Monitor Protocol report from AQS or manually enter Monitor Protocol data before you can generate AQS Raw Data files.

**Import Monitor Protocol Data
from AQS**

OR

**Manually Add Monitor
Protocol Data**

**Create Raw Data (RD) Files
for Quarterly AQS Submittals**

**[CLICK HERE FOR
HELP FILE](#)**



Recommended for new AQS users who have entered Monitor Protocol data in AQS or for users who have already been submitting data to AQS. See help file for information on how to generate the Monitor Protocol report from AQS.



Recommended for new AQS users who have not entered Monitor Protocol data in AQS or for experienced AQS users who have added a new site(s) or pollutant(s) to their monitoring network. See help file for information on the Monitor Protocol element of AQS.

Set up AQS data formatting:

Enter New Monitor Protocol Record

Input REQUIRED!

**FIRST TIME USERS! CLICK HERE
FOR HELP FILE!**

Tribe ID

AQS Site ID

Tribe ID	
117	Quinault Tribe of Quinault Reservation, WA
597	Ramona Band or Village of Cahuilla Mission Indians of California
F37	Rampart Village
435	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin
409	Red Lake Band of Chippewa Indians, Minnesota
538	Redding Rancheria, California
539	Redwood Valley Rancheria of Pomo Indians of California
653	Reno/Sparks Indian Colony, NV

Method

Reported Units

Sample Duration

After you are confident of your data validation, you can create and upload an AQS-formatted file:

Create AQS Raw Data Text File

FIRST TIME USERS! CLICK HERE FOR HELP FILE!

Input REQUIRED!

AQS Site ID	POC
0002	1
Parameter	
88101	
Method	
850	
Reported Units	
105	
Sample Duration	
7	

All preset AQS codes are already in the Toolbox in drop-down boxes

View the data anytime:

qryAQSDData_FilterPM25 : Select Query										
	AQSSiteCode	SiteID	Sample	FilterType	POC	Act Start Date	Act Start Time	PollutantCode	Calculate	AirC
▶	0002	S2	IN1	RO	1	1/1/2004	0:00	PM25-FILT	9.41667	ug/m
	0002	S2	IN2	CO	2	1/4/2004	0:00	PM25-FILT	11.0417	ug/m
	0002	S2	IN1	RO	1	1/4/2004	0:00	PM25-FILT	10.9959	ug/m
	0002	S2	IN1	RO	1	1/7/2004	0:00	PM25-FILT	16.888	ug/m
	0002	S2	IN2	CO	2	1/10/2004	0:00	PM25-FILT	2.50000	ug/m
	0002	S2	IN1	RO	1	1/10/2004	0:00	PM25-FILT	2.58333	ug/m
	0002	S2	IN1	RO	1	1/13/2004	0:00	PM25-FILT	5.04167	ug/m
	0002	S2	IN1	RO	1	1/16/2004	0:00	PM25-FILT	8.70833	ug/m
	0002	S2	IN2	CO	2	1/16/2004	0:00	PM25-FILT	8.08333	ug/m
	0002	S2	IN1	RO	1	1/19/2004	0:00	PM25-FILT	12.125	ug/m
	0002	S2	IN1	RO	1	1/22/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	1/22/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	1/25/2004	0:00	PM25-FILT	5.79167	ug/m
	0002	S2	IN2	CO	2	1/28/2004	0:00	PM25-FILT	7	ug/m
	0002	S2	IN1	RO	1	1/28/2004	0:00	PM25-FILT	6.39004	ug/m
	0002	S2	IN1	RO	1	1/31/2004	0:00	PM25-FILT	9.20833	ug/m
	0002	S2	IN1	RO	1	2/3/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/3/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/6/2004	0:00	PM25-FILT	5.58333	ug/m
	0002	S2	IN1	RO	1	2/9/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/9/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/12/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/12/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/15/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/15/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/18/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/18/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/22/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/22/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/25/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/25/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	2/29/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	2/29/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/1/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/1/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/4/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/4/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/7/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/7/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/10/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/10/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/13/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/13/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/16/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/16/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/19/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/19/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/22/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/22/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/25/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/25/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/28/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/28/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	3/31/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	3/31/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/3/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/3/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/6/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/6/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/9/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/9/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/12/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/12/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/15/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/15/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/18/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/18/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/21/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/21/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/24/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/24/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/27/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/27/2004	0:00	PM25-FILT		
	0002	S2	IN1	RO	1	4/30/2004	0:00	PM25-FILT		
	0002	S2	IN2	CO	2	4/30/2004	0:00	PM25-FILT		

With one click, prepare AQS-formatted data over any time period:

Create AQS Raw Data Text File

Any time period can be selected

Enter Range of Dates of AQS Submittal!

Note that data are submitted to AQS on a quarterly basis. Therefore, the date ranges are as follows:

- 1st Quarter: Between 01/01/YY And 03/31/YY
- 2nd Quarter: Between 04/01/YY And 06/30/YY
- 3rd Quarter: Between 07/01/YY And 09/30/YY
- 4th Quarter: Between 10/01/YY And 12/31/YY

Between And

- Inspect Data
- Create AQS RD File
-

Plans for revising this database:

frm_Main_Switchboard : Form

Main Switchboard

Administrative	Data Operations	Reporting
Create New Monitoring Program	Continuous Based and Meteorological Monitoring	Quality Control and Data Reports and Charts
Modify or Add Site And Sampler Information	Filter Based Monitoring	AQS Raw Data File Submittal
Modify or Add Personnel Information		
Import Data From A Previous Toolbox Version		

Use the blank database (ver. 0.6), then as we improve the database based on YOUR recommendations you can migrate your data from one version to the next easily.

The Tribal Data Toolbox gives you power to manage and report your data, however you want.

- Classroom and online courses planned
- Help files linked within the software or readable on their own
- Support available via email and phone
- Email us for updated versions and tutorials
- Melinda.ronca-battista@nau.edu
- Angelique.luedeker@nau.edu

TURBO-QAPP: Making QAPPs Work For You

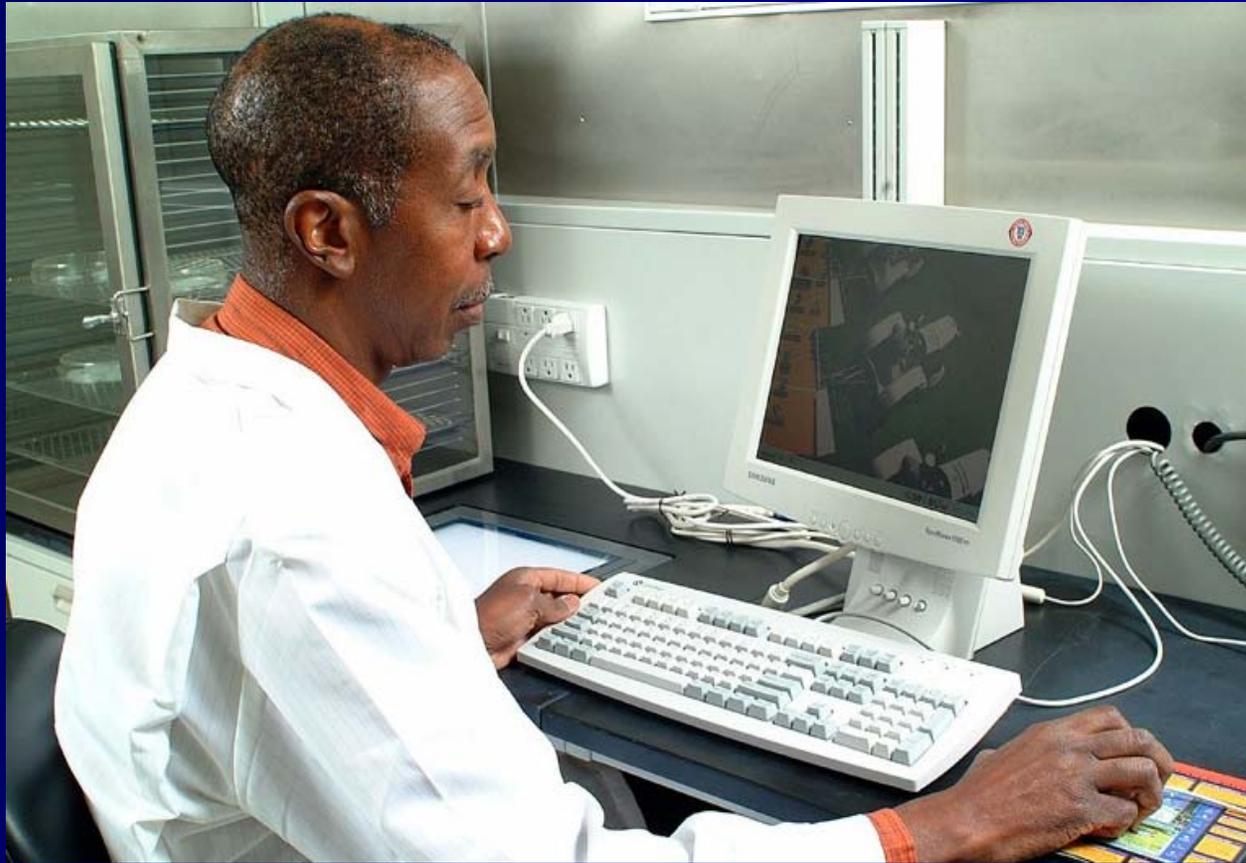
Melinda Ronca-Battista
NAU ITEP Tribal Air Monitoring Support
Center

Why is this needed?

- Everyone wants to start sampling, BUT
- Data gathered before a Quality Assurance Project Plan (QAPP) is in place is SUSPECT
- Small staff sharing duties, so QAPP writing is difficult
- QAPPs are *mandatory*



Writing a QAPP the old way:



If you are lucky:

- Everyone on the project writes and approves the QAPP
- The QAPP reflects what you actually plan to do and then do



The TAMS Center obtained \$50 k from EPA:

- The software designer for TEISS is completing the first test version of Turbo-QAPP
- OAQPS will “approve” it, so it will be acceptable* by all EPA regions
- Will be FREE to all tribes

The software makes it fun!

- STARTS with what must be the driving question—WHY are we making these measurements?
- Uses TAMS Center QAPP templates, so that example text can be used
- Tool tips, links, definitions, and references all included

Turbo-QAPP is flexible:

- Multiple pollutants
- All FRM and FEM options
- “other” category
- Various organization types, sizes, working relationships



Turbo-QAPP gives you confidence:

- Uses both EPA terms and their common sense translation—PLAN, DO, CHECK, FIX, WRITE IT DOWN
- Uses latest guidance from EPA
- Fully explained examples
- Excel formulas for copying
- Field data sheets, etc. for copying



New



Open



Report



Help

PROJECT POLLUTANTS

INTRODUCTION



Introduction to the QAPP

An EPA approved Quality Assurance Project Plan is required to implement any work funded by the EPA that involves the acquisition of environmental data generated from direct measurement activities, collected from other sources, or compiled from computerized databases and information systems.

This software will guide you through the creation of a Quality Assurance Project Plan (QAPP). A good QAPP is used to communicate the specifications for implementation of the project design and to ensure that the project's quality objectives are achieved.

Before you begin to create your QAPP you will need to select which kind of QAPP you will be writing. Select from Ambient Air or Other in the pick list below.

ENTER YOUR TRIBE NAME, TRIBAL OFFICE AND DEPARTMENT IN THE BOXES BELOW:

Creating a QAPP for ...

Enter Name of the Tribe **

Enter the name of your Tribal Office **

Enter the name of tribal department **

** These are your Organization, Office and Department names that will be repeated throughout the rest of the QAPP automatically, once you type them into these boxes.



Example text for each section:

Summary | Project Information | Project Schedule

[Description of work to be performed](#)

The measurement goal of this O₃ Ambient Air Quality Monitoring Program is to estimate the concentration, in units of parts per million (ppm), of O₃ in ambient air. The primary goal is to compare the O₃ concentrations to the 1-hour average and 8-hour rolling average NAAQS. The national primary and secondary ambient air quality standards for O₃ are 0.12 PPM for the 1-hour standard and 0.08 ppm for the 8-hour rolling average concentration measured in ambient air. The following sections describe the measurements required for the routine field activities for the network.

Accept Example Clear

Tip

 Summary of the work to be done and information, sampling locations, etc... briefly describe the measurement processes and techniques used to collect the information.

Walks the user through all 7 steps of the Data Quality Objectives Process

Stating the problem

Identifying the decision

Identify the inputs to the decision

Define the boundaries of your problem

Stating the problem

Data Quality Objectives are an important component of planning a data-gathering project. Basically, developing DQOs is a sort of systematic planning process to decide on what questions you have that you want to use your data to answer. This planning process can be a series of meetings held between the people involved in the project, and notes taken during those meetings. It can also be more formal, involving statistics and evaluating options and choices. The QAPP is where the process is documented. If you hold a series of meetings to go through this process, the results of your notes can be entered into the screens for element 7 in the form of brief (or lengthy) statements.

The first step of developing DQOs is to decide what condition exists that you are concerned about. In other words, what are the measurements? (This is called 'stating the problem.')

For example, you may be concerned with rising asthma rates in a community, or possible emissions from a coal burning plant, or want baseline conditions to be documented in case air quality changes.

STATE YOUR PROBLEM IN A FEW SENTENCES

There has been concern recently that air quality conditions have deteriorated on tribal land. This office has received reports of decreased visibility and there have been many more cases of asthma in the population in recent years. In addition, there is an increase in development and vehicle traffic, leading to concern about the air quality. We do not have information on whether conditions continue to change we will not be able to track whether changes in health or general visibility are related to air quality.

Tabs for each DQO step:

Stating the problem

Identifying the decision

Identify the inputs to the decision

Define the boundaries of your project

Decide

Identifying the decision

The 2nd step is to identify the decision(s) (if any) that will be made using the data. (This is called 'identifying the decision') You are not making a decision using the data. Possible decisions could be implementing no-burn days during predicted high PM concentrations, asking the power plant operators to supply you with more detailed information on the sulfur in their coal, deciding on the need to monitor air quality standards, or working with tribal government and EPA to make further measurements.

STATE WHAT DECISIONS (IF ANY) YOU WILL BE MAKING USING THIS DATA

The purpose of this air monitoring effort is to gather data for two purposes: first, to determine compliance with the NAAQS, and to serve as baseline data so that changes in air quality can be tracked. If air quality is found to exceed the NAAQS, the decision to be made is whether to make further measurements to determine the source of high pollutant concentrations.

Tips for each section:

Precision | Bias | Representativeness | Detection Limits | Completeness | Comparability | Accuracy

Comparability

Because of EPA's strict requirements on the monitor types, analyses, and sampling procedures, which our program is following, EPA has helped to ensure adequate comparability.

WARNING: THE PROVIDED INFORMATION IS THE SAME AS IN THE TEMPLATE

Accept Example Clear

Tip

 Comparability is a measure of confidence with which one data set can be compared to another. Good comparability is very important so that data sets from one part of the country can be compared to data from another part of the country, or so that your data from one year can be compared to data from another year.

Links to websites and included reference files:

Define the boundaries of your project | Deciding on a decision rule | Specifying tolerable limits on decision errors | Optimize the design

Specifying tolerable limits on decision errors

The 6th step is to decide how much risk you want to take in being "wrong" about your decision. There is going to be some error in your measurements, and you may not make measurements 24 hours a day, so you are really only estimating the "true" pollutant concentration. A statement of decision error could be "we accept that our annual average may be only within 10% of the true annual average, 95% of the time." (This is called "specifying tolerable limits on decision errors"). This is where, if you are making measurements to determine if your air meets the EPA's NAAQS, you can use what they have developed for data quality objectives. If you are making measurements for the sole purpose of determining if the air on your land meets the NAAQS, the example text below should suffice. If you are making other decisions, EPA does have a tool to calculate the statistics that is very useful and can give you an idea of how these calculations are done. Click the link below (*) to download the DEFT and the user's guide.

DESCRIBE YOUR LIMITS ON DECISION ERRORS

Data Quality Objectives are being developed by the EPA for a determination of whether or not a particular location meets the national ambient air quality standards. These data quality objectives are still in draft form (**). EPA decided that there should be a 5% (or less) chance of being wrong about whether a site meets or does not meet the standard. One possibility is if the true concentration is below the NAAQS but what you measure is above. This may be due to measurement bias, imprecision, or incomplete data. The other possibility is that the true concentration is above the NAAQS but your measurement is below. The general goal is to keep the rate of these decision errors (whether or not you have met the standard) to below 5%. In order to do this, EPA looked at all the data from the past few years in terms of bias and imprecision, and calculated that if each site keeps bias and precision both under 7%, this overall goal of limiting the decision error rate to 5% will be met. In this case, the DQO is a decision error rate of 5%, and this was translated by EPA into the measurement quality objective (MQO) for each individual site of 7%. This document does not describe the derivation of these objectives, nor how they have been translated into MQOs. The idea is that you can be confident that if you meet the MQOs of 7% for precision and 7% for bias, you can assume that the DQOs have been met.

WARNING: THE PROVIDED INFORMATION IS THE SAME AS IN THE TEMPLATE

Accept Example Clear

Tip

 (*) http://www.epa.gov/quality1/qa_docs.html
(**) [Ozone DQO Scenarios Report_3_25_04.pdf](#)

Back Next

Software walks user through:

- Writing a QAPP
- Integrating QA with planning and implementation of your project
- Frees you up to actually do the work and look at your data!



Uses the EPA Graded Approach, in which all 24 elements are not needed for all types of projects

Choosing your QAPP category

There are four categories of QAPP, each of these categories require different QAPP elements as described in the EPA guidance document R5. Please refer to the tip below to select your QAPP category. If you are unsure, choose category 1 until you confirm with your EPA regional QA Manager.

SELECT BELOW A CATEGORY FOR YOUR PROJECT:

Category

Selecting your category

Category	Typical Programs	Comments
Category 3	SPM, one time Studies	Quality Management Plan (QMP) and QAPP can be combined
Category 4	Education / Outreach	Contains the project objectives and goals as DQOs.

Warning : If you are unsure of which category to select, please verify with your EPA regional officer. Your EPA regional officer will help you decide the category to select.

Tip - In the following sections you will find:

Accept

Click this button if you are satisfied with the information and you wish to save it to the final

But a category 1 (NAAQS monitoring) does need all 24 elements:

PROJECT POLLUTANTS

Ozone (O3)

- ▶ I. INTRODUCTION
- ▶ II. CATEGORY
- ▶ **Element 6a (A6-1). POLLUTANT**
- ▶ Element 5 (A5). BACKGROUND
- ▶ Element 6b (A6-2). METHOD
- ▶ Element 6c (A6-3). DESCRIPTION
- ▶ Element 6f (A6-6). PROJECT LOCATION
- ▶ Element 4 (A4). ORGANIZATION
- ▶ Element 4b (A4-2). PROJECT ORGANIZATION
- ▶ Element 7a (A7-1). DATA QUALITY OBJECTIVES
- ▶ Element 7h (A7-8). DATA QUALITY INDICATORS
- ▶ Element 10a (B1-1). SAMPLING DESIGN
- ▶ Element 10d (B1-4). RATIONALE FOR THE DESIGN
- ▶ Element 11 (B2). SAMPLING METHODS
- ▶ Element 12 (B3). SAMPLE/DATA HANDLING
- ▶ Element 13 (B4). ANALYTICAL METHODS
- ▶ Element 14a (B5-1). QUALITY CONTROL
- ▶ Element 14d (B5-2). PRECISION CHECKS
- ▶ Element 14f (B5-4). ACCURACY OR BIAS CHECKS
- ▶ Element 15a (B6-1). INSTRUMENTATION
- ▶ Element 15b (B6-2). INSPECTION
- ▶ Element 16 (B7). INSTRUMENT CALIBRATION

Selecting the pollutant(s)

You must select at least one pollutant. If you choose more than one they will be incorporated QAPP. You can also decide to go through the writing process more than once and write one

- Ozone (O3)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO2)
- Nitrogen Dioxide (NO2)
- PM10 Filter-based standard conditions
- PM10- Continuous Local Conditions
- PM10 - Filter based local conditions
- PM2.5- Continuous Local Conditions
- PM2.5- Filter based local conditions
- PM Coarse- Local Conditions
- Other (lab analysis)
- Other (on site instrumentation analysis)

Insert the number of collocating monitors

1
1
1
1
1
2
1

Turbo-QAPP uses EPA numbering system and BOTH "real-world" and EPA terms

B10. DATA MANAGEMENT

B10. DATA MANAGEMENT SECTIONS

- ◆ Recording
- ◆ Transformation and Reduction (A)
- ◆ Transformation and Reduction (B)

How you will calculate and summarize your data

X

Emphasis on putting information into tables:

Enter the key personnel for your QAPP. Click on the New button to enter a new contact in the Key Personnel table below.

Table 4-1. Personnel Data

	Name	Position	Organization	Address, City, State, Zip code
▶	Melinda	Project Manager	NAU	
	Little Bear	Site Operator	Ronca Family	
	Lorna	QA Coordinator		

Delete All

Remove

View / Edit

1

3

New

Tip



The Key Personnel for your QAPP should include the following (if applicable): principal data user, for example, the tribal...

Project personnel are stored in rows, edited in a screen:

Key Personnel

Contact

Name :

Title/Position :

Second Title:

Do you want to include this contact for all selected Pollutants?

Include Contact?

Distribution List

Approval Sheet

WARNING: Remember to check the distribution list and/or approval sheet to include this contact in these sections

Enter Contact Information

Organization :

Address, City, State , Zip Code :

Telephone : Fax :

Email :

Enter Responsibilities for the Contact

Drop-down boxes with suggestions:

Key Personnel

Contact

Name :

Title/Position :

Second Title:

Include Contact:
 Distribution
 Approval S

for all selected Pollutants?

WA Distribution list and/or approval sheet to include this contact in these section

Enter Contact Information

Organization :

Address, City, State , Zip Code :

Telephone : Fax :

Email :

Enter Responsibilities for the Contact

Multiple pollutants and methods:

You must select at least one pollutant. If you choose more than one they will be incorporated in the same QAPP. You can also decide to go through the writing process more than once and write one QAPP per pollutant.

- Ozone (O3)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO2)
- Nitrogen Dioxide (NO2)
- PM10 Filter-based standard conditions
- PM10- Continuous Local Conditions
- PM10 - Filter based local conditions
- PM2.5- Continuous Local Conditions
- PM2.5- Filter based local conditions
- PM Coarse- Local Conditions
- Other (lab analysis)
- Other (on site instrumentation analysis)

Insert the number of Monitors per pollutant
monitors in this number.

1
1
1
1
1
2
1

Select if you want to choose the method by name, designation number or method code (i.e. Beckman 866; RFCA-0876-012; 012)

- Name
- Designation Number
- Method Code

The list below shows the component(s)

Ozone (O3)

Methods can be edited if you have a special situation (for example, the Alaska shelters due to the extreme cold)

The list below is based on the component(s) you selected in the previous panel. Select the method(s) you will be using.

- Advanced Pollution Instr. 400/400A/400E
- Beckman 950A
- Bendix 8002
- Columbia Scientific Industries 2000
- Dasibi 1003-AH, -PC, -RS
- Dasibi 1008-AH, -PC, -RS
- DKK-TOA Corp. GUX-113E, GUX-113E-1
- Ecotech ML9810/EC9810, -9810B, -9811, -9812
- Environics 300
- Environnement S.A O341M
- Environnement S.A O342M
- Environnement S.A SANOA
- Horiba APOA-360
- McMillan 1100-1
- McMillan 1100-2
- McMillan 1100-3

Add

Edit

Remove

Inspection of Equipment During Field Operations

Item	Inspection Frequency	Inspection Parameter	Action if Item Fails Inspection	Documentation ▲
Shelter temp.	Weekly, each visit	Thermometer	Check HVAC	Site logbook
Air Conditioner	Monthly	Adjust range	Check HVAC	Site logbook
Heater	Monthly	Thermostat	Repairman	Site logbook
Sample inlet	Every site visit	Clear opening	Clear obstruction	Site logbook
Meteorological sensors	Every site visit	Sensor output	Repair, calibrate	Site logbook
Sample pump	Each site visit	Vacuum	Repair	Site logbook
Dirty filter(s)	Each site visit	Clear flow	Clean	Site logbook ▼



Change Title

Delete All

Remove

View / Edit

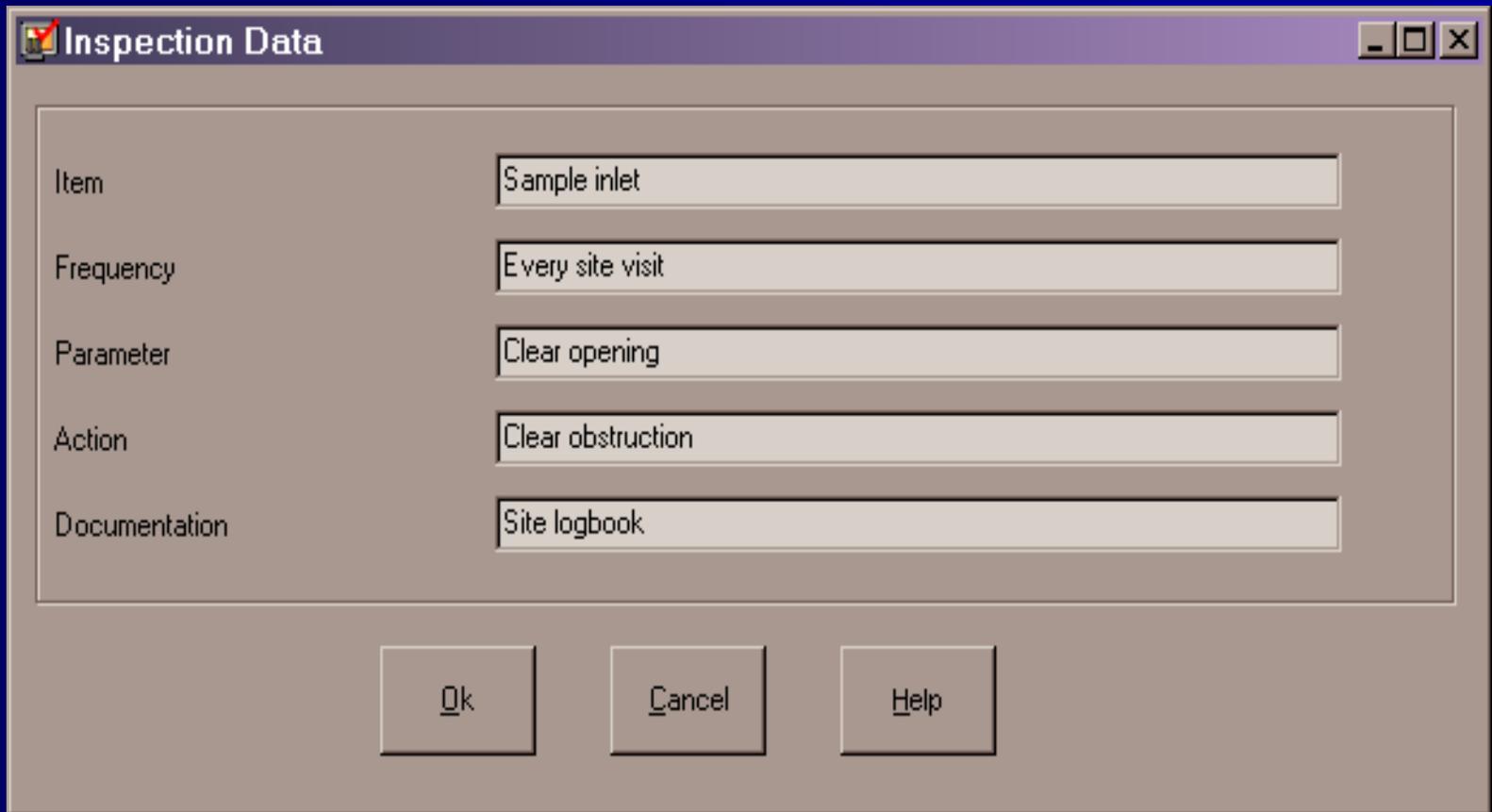


Tip



In the text field provided, give details of various equipment and component inspections. Fill or modify the table above to relate inspection information suit your program. You can change the names of the column and you can add rows to this table.

Each item is editable:



The screenshot shows a dialog box titled "Inspection Data" with a standard Windows-style title bar (minimize, maximize, close buttons). The dialog contains five rows of text input fields, each with a label on the left and a text box on the right. The fields are:

Item	Sample inlet
Frequency	Every site visit
Parameter	Clear opening
Action	Clear obstruction
Documentation	Site logbook

At the bottom of the dialog, there are three buttons: "Ok", "Cancel", and "Help".

Definitions

Calibration Hierarchy

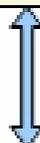
Local Primary Standards

Standards for Pressure and Temperature

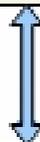
Calibration Hierarchy



NIST STANDARD REFERENCE PHOTOMETER



US EPA STANDARD REFERENCE PHOTOMETER

STANDARD THAT IS MOVED – A **TRANSFER STANDARD**

A transfer standard is a transportable device or apparatus, which, when used with associated operational procedures, is capable of accurately producing O_3 concentration standards of O_3 concentrations which are traceably related to a primary O_3 standard. The transfer standard is periodically interchanged for the ozone analyzer used to routinely measure ambient O_3 concentrations.

Annual 6-point verification and, if necessary, calibration—see the first row of the Calibration Criteria Table.

Compared every 3 months or at the beginning and end of ozone season, whichever is more frequent and possible. See the second row of the Calibration Criteria Table.

Use this space if you want to provide details to complement the diagram above such as specifying what type of apparatus you are using.

Network Reviews

Performance Evaluations

Technical Systems Audits

Data Quality Assessments

Others

Performance Evaluations

Performance evaluations are a type of audit in which the quantitative data generated in a measurement system are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory. They may involve side-by-side intercomparisons of concentrations or flow rate, but they result in quantitative numeric values. In general, the difference between the parameter from your instrument is compared against the parameter from the auditor's instrument and a statistic such as relative percent difference is calculated.

A performance evaluation is a quantitative comparison of results between the tribe's equipment and equipment calibrated by another primary standard. This is done through the EPA regional office in the form of participation in the National Performance Evaluation Program (NPEP). Successful participation requires an agreement of less than 15% between the auditor's equipment and the tribe's equipment. This Ronca Environmental Office will participate in NPEP as feasible and as arranged and agreed to with the EPA regional office.



Examples of report descriptions are provided for you to modify

3-tiered validation criteria for all methods:

Table 14-1. CRITICAL DATA TABLE

Requirement	Frequency	Acceptance Criteria	Information/Action
<p>A. Quality Control Check Zero/span check -level 1 for those systems that automatically update the slope and intercept after each check</p> <p>OR Zero/span check -level 1 for those systems that are set up to use a manual update to change the slope and intercept after each check</p>	Automatically, may be once nightly every two weeks	Zero drift $\leq \pm 2\%$ of full scale and span drift $\leq \pm 15\%$ Zero drift $\leq \pm 10$ to 15 ppb, and span drift $\leq \pm 15\%$	If results are outside these acceptance criteria, invalidate all data to the data from before the last check that produced acceptable results, and perform a multipoint calibration (see analyzer calibration requirement). If the level 1 checks continue to fail, then corrective action may be required by the manufacturer.
B. Precision manual OR Automated	Once every two weeks manual or automated	Goal is within 15% of "known" concentration for each check	Concentration of the checks = 0.08-0.10 ppm.
C. Completeness	Daily calculation	75% values from 9:01 AM to 9:00 PM (LST)	

Operational and systematic validation criteria:

Critical Criteria | Operational Criteria | Systematic Criteria

Systematic Criteria

Table 14-3. SYSTEMATIC DATA TABLE

Requirement	Frequency	Accuracy
Data Completeness	quarterly	≥ 95%
Standards Recertifications. Field Thermometer	1 /yr	0.1%
Standards Recertifications. Field Barometer	1 /yr	m
Standards Recertifications. Barometer accuracy		±
Standards Recertifications. Transfer standard for flow rate	1 /yr (at least)	±2% st
Standards Recertifications. Clock/timer Verification	1 /yr	ac

◀

Delete All Remove View / Edit

“Other” category

- Lab analysis option leads user thru elements needed in a QAPP that has samples sent to a lab
- Field analysis option leads user thru writing a QAPP for on-site probes

“Other” category guides you to enter all information and formats it:

The screenshot shows a software window with a list of pollutant categories on the left and a table on the right. The 'Other (lab analysis)' category is selected. A 'Pollutant Name' dialog box is open, showing the selected name in a text field.

Insert the number of Monitors per pollutant. C
monitors in this number.

<input type="checkbox"/> Ozone (O3)	
<input type="checkbox"/> Carbon Monoxide (CO)	
<input type="checkbox"/> Sulfur Dioxide (SO2)	
<input type="checkbox"/> Nitrogen Dioxide (NO2)	
<input type="checkbox"/> PM10 Filter-based standard conditions	
<input type="checkbox"/> PM10- Continuous Local Conditions	
<input type="checkbox"/> PM10 - Filter based local conditions	
<input type="checkbox"/> PM2.5- Continuous Local Conditions	
<input type="checkbox"/> PM2.5- Filter based local conditions	
<input type="checkbox"/> PM Coarse- Local Conditions	
<input checked="" type="checkbox"/> Other (lab analysis)	
<input type="checkbox"/> Other (on site instrumentation analysis)	

Pollutant Name [X]

Change Pollutant Name

Other (lab analysis)

OK Cancel

Turbo-QAPP lets you:

- Export into Word or .pdf at any point and save, edit, or print
- Not hassle with TOC, EPA numbering, document control headers
- Turbo-QAPP saves your project so that you can go back later and add additional methods, change siting, etc.

Tribes lead the way:

- START with QA (WHY are we making these measurements?)
- Early attention to QA help you SAVE time and \$
- Integrated pollutants/personnel
- Huge interest from state and local organizations
- EPA OAQPS is using TAMS Center model QAPPs in this software as applicable for states and locals



Turbo-QAPP evaluation and testing:

- Since August several dozen tribes have used the program
- Series of WebEx demos to EPA regions
- Available on CD here



About



QAPP View

Quality Assurance Project Plan

Version 1.3.31



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OK