Directions for using **AnalysisTemplatev3**

From this Web site, you can download two types of Excel files:

1. River Data files

There is a single Excel workbook for each of 11 river stations that are included in our monitoring program. Each workbook contains data for the period of record for that station. These files are read-only files, as downloaded from the Download Page. Once they are downloaded, they may be copied and modified. To assure that the files have not been inappropriately modified by users and to receive data updates as they become available,. we request that individual users download these files from our Web site rather than received them from other users.

2. An Analysis Template

The AnalysisTemplatev3 is an Excel 2003 Workbook that will help you analyze the data in the River Data files. This template contains macros that were developed to be compatible with Office 2003. Therefore, if you are using Office 2007 software, this version of the Analysis Template will NOT operate correctly, so please use AnalysisTemplatev4 which has been developed to be compatible with Office 2007. In order to download and operate this program, you must set the Macro Security to medium level and click Enable Macros when your computer asks whether or not to open the file.

To set the Excel macro security level to medium, open an Excel workbook, under the Tool menu, select Options. Under the Options menu, select Security, and under Security select Macro Security. Set the Macro Security at Medium.

The Macros in this program are protected. For information on the Macros, contact the Project Director (David Baker at dbaker@heidelberg.edu).

AnalysisTemplatev3 – Operating Instructions

1. Download the Excel River Data files and the AnalysisTemplatev3 file to your own computer and place them in a single folder. See the Download Page. You may download as many of river data files as you would like.

2. Do not change the names of any of the files. These specific river file names and the AnalysisTemplatev3 file name are referred to in the macros. Alteration of the names will cause the analysis program to fail.

3. Do not open the AnalysisTemplatev3 file by double clicking it in the folder. If you do, you may be prompted to open each river file that you choose to analyze. Instead, open any other Excel file first, then, under the File menu at the top of the page, select Open and navigate to the folder containing the river data files and AnalysisTemplatev3 file. You may then double click on the AnalysisTemplatev3 file. If you open it this way, it will automatically open any river files it needs that are available in that folder.

Download Section of Web Site

Access to RiverData Files and the AnalysisTemplatev3 File

1. Comments on Download Security and Updates

2. Directions for Use of AnalysisTemplatev3.

3. Download RiverData files and AnalysisTemplatev3

   a. AnalysisTemplatev3
   b. CuyahogaData
   c. GrandData
   d. GreatMiamiData
   e. HoneyCreekData
   f. MaumeeData
   g. MuskingumData
   h. RaisinData
   i. RockCreekData
   j. SanduskyData
   k. SciotoData
   l. VermilionData

AnalysisTemplatev3 – Operating Instructions

1. When you open the AnalysisTemplatev3 workbook, you will be prompted to enable the macros. Select enable macros and proceed to open the workbook.

2. The appearance of the AnalysisTemplatev3 workbook when you open it will depend on the worksheet that was open when you closed the program and how you closed it, i.e. whether or not you saved changes when you closed the program. If you click on the Menu worksheet at the far left of the worksheet list at the bottom of the worksheet, the adjacent page will appear on the screen.

3. The Menu page allows you to select among the following eight analytical options:
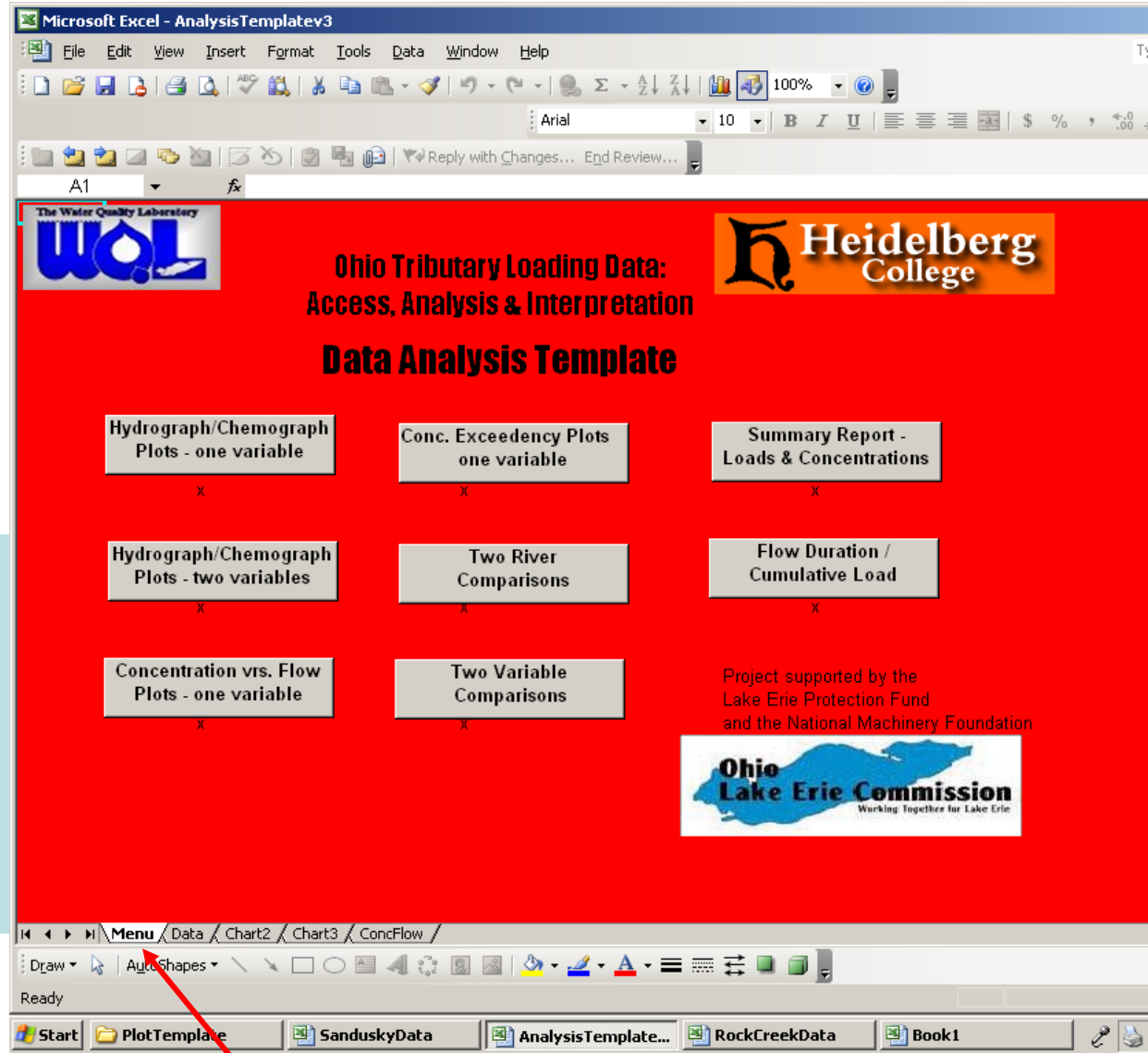
1. Hydrograph/Chemograph Plots – one variable

2. Hydrograph/Chemograph Plots – two variables

3. Concentration vs. Flow Plots – one variable

4. Concentration Exceedency Plots – one variable

5. Two River Comparisons (Concentration Exceedency)

6. Two Variable Comparisons

7. Summary Report – Loads & Concentrations

8. Flow Duration / Cumulative Load

1. Click on the analytical option that you want to use.

2. If you want to change to another analytical option, return to the menu and click on it.

3. The next eight pages show the template for each of the eight analytical options.

Click on the Menu worksheet to open the Data Analysis Template page as shown above.

Option #1 – Hydrograph-Chemograph Plots – One Variable

1. Select the River/tributary that you want to examine. The river data file must be in the same folder as the AnalyisTemplatev3 folder.

2. Select the parameter that you want to examine. There are seven parameter options including Flow, SS,TP, SRP, NO23, TKN & Chloride.

3. Type in the Beginning Date and the Ending Date for the period you want to examine. These dates can range from a single day, week or month, to the entire period of record. The dates may be entered in a variety of formats, but will be converted to the form shown in the Select Data Range boxes. These are excel cells, so you must hit "enter" after you have typed in the dates.

4. Click on the Get and Plot Data box.

5. A new Chart will appear along with a new set of data in the Data worksheet. Examine the chart and data set. Previous Charts will be empty.

6. If you want to save the Chart and Data worksheet, click the "Save Most Recent Data and Graph to New File" box. You may then open the new workbook, name it and save it to a file of your choice.

Chart produced by the above menu choices.
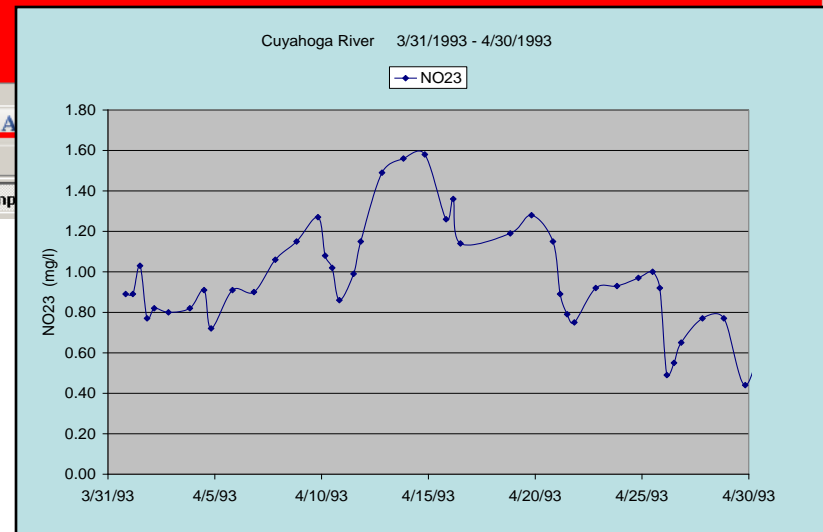
Option #2 – Hydrograph-Chemograph Plots – Two Variables

1. Select the River/Tributary.

2. Select the first parameter. The Y-axis scale for this parameter will be on the left.

3. Select the second parameter. The Y-axis scale for this parameter will be on the right.

4. Type in the Beginning and Ending dates.

5. Click on the "Get and Plot Data" cell.

6. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

7. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File".

8. If you want to use this option (here Option #2) to analyze a new set of choices, click on the "Hydro2" worksheet and the Option #2 menu will reappear. (Note for Option #1, the name for the worksheet is "Hydro1". Each analytical option worksheet has its own abbreviation in the list of worksheet names.

9. If you want to shift to a different analysis option, click on the "Menu" worksheet to return to the analytical option choices.

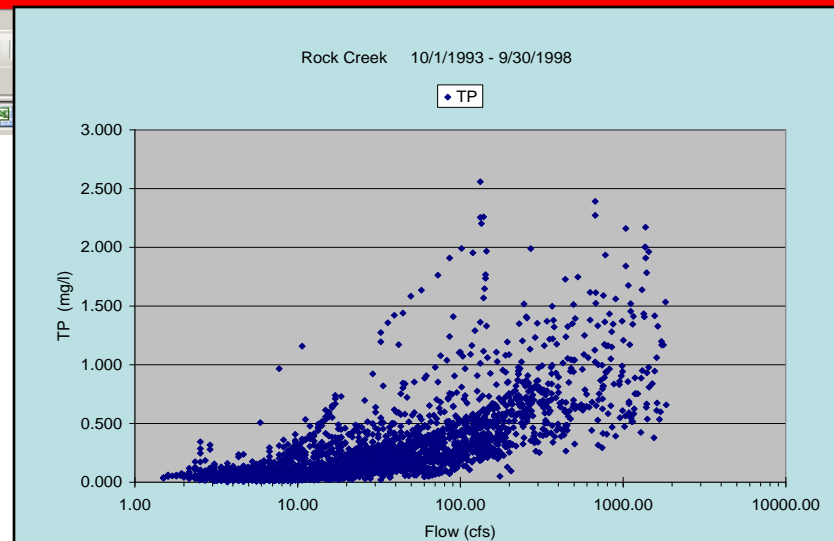Chart produced by the above menu choices.
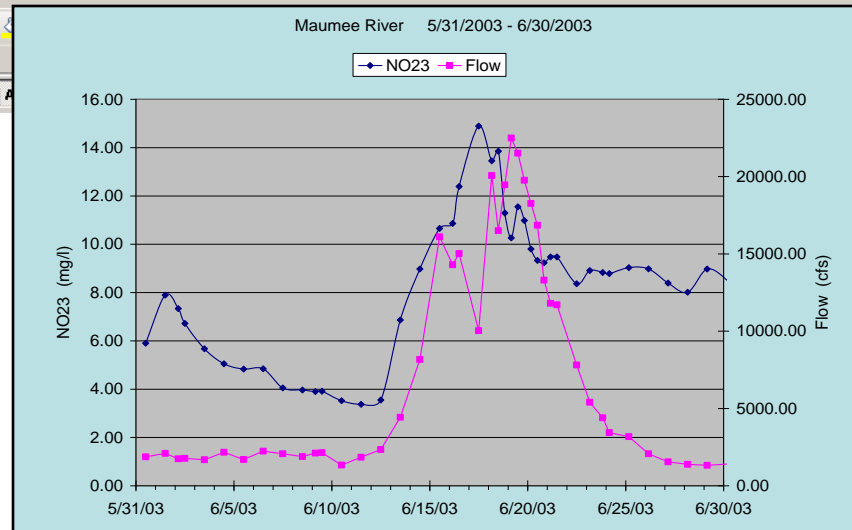
Option #3 –
Concentration vs. Flow
Plots – One Variable

1. Select the River/Tributary.

2. Select the parameter.

3. Type in the Beginning and Ending dates.

4. Click on the "Get and Plot Data" cell.

5. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

6. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File."

7. If you want to use this option (here Option #3) to analyze a new set of choices, click on the "Conc/Flow" worksheet and the Option #3 menu will reappear.

8. If you want to shift to a different analysis option, click on the "Menu" worksheet to return to the analytical option choices.

General Comment: As you analyze multiple data selections in a particular analysis worksheet, such as Concentration vs. Flow, multiple empty Chart worksheets will accumulate in the Workbook. Only the most recent Chart will contain a graph and that graph will be linked to the data in the Data worksheet. You must manually delete the empty Chart worksheets using the Delete Sheet option under the Edit menu of Excel. This applies to all of the analysis worksheets that produce charts.
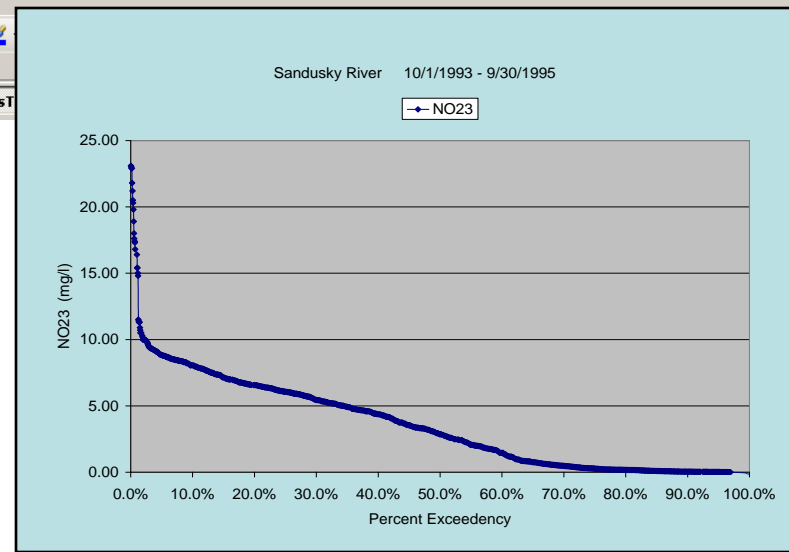
Chart produced by the above menu choices.

Option #4 – Concentration Exceedency – One Variable

1. Select the River/Tributary.

2. Select the parameter.

3. Type in the Beginning and Ending dates.

4. Click on the "Get and Plot Data" cell.

5. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

6. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File."

7. If you want to use this option (here Option #4) to analyze a new set of choices, click on the "Exceed1" worksheet and the Option #4 menu will reappear.

8. If you want to shift to a different analysis option, click on the "Menu" worksheet to return to the analytical option choices.

9. If you are interested in specific points on the concentration exceedency graph, such as the percent of time Nitrate exceeded 10 mg/L during the selected time interval, go the Data worksheet and scan down the ranked Nitrate concentration and percent exceedency columns to get the exact values.

Chart produced by the above menu choices.

Option #5 – Two River Comparison (exceedency)

Note: This option will let you compare concentration exceedency curves for two rivers on the same graph for a given parameter and date range.

1. Select River/Tributary #1

2. Select River/Tributary #2

3. Select the parameter.

4. Type in the Beginning and Ending dates.

5. Click on the "Get and Plot Data" cell.

6. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

7. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File".

8. If you want to use this option (here Option #5) to analyze a new set of choices, click on the "TwoRiver"" worksheet and the Option #5 menu will reappear.

9. If you want to shift to a different analysis option, click on the "Menu" worksheet to return to the analytical option choices.

10. If you are interested in specific points on the concentration exceedency graphs, such as the percent of time TP exceeded 0.17mg/L, go the Data worksheet and scan down the ranked TP concentrations and percent exceedency columns to the desired concentration.
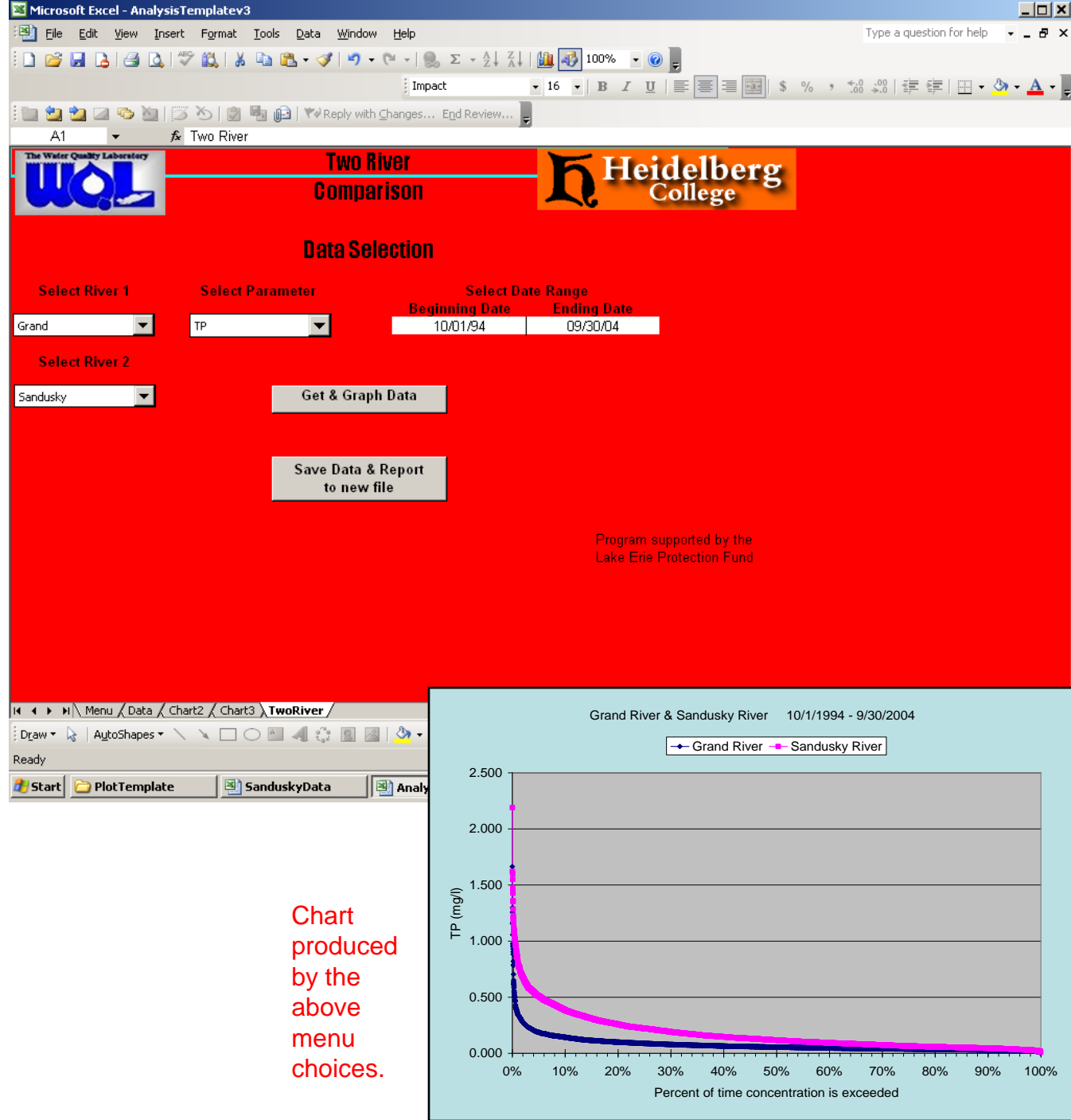

Chart produced by the above menu choices.

Option #6 – Two variable Comparison

Note: This option allows you to examine the relationship between any two parameters, using either linear or logarithmic scales for either axis.

1. Select the River/Tributary.

2. Select the first parameter (x-axis).

3. Select the second parameter (Y-axis).

4. Type in the Beginning and Ending dates.

5. Select linear or logarithmic scale for the x-axis.

6. Select linear or logarithmic scale for the y-axis.

7. Click on the "Get and Plot Data" cell.

8. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

9. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File."

10. If you want to use this option (here Option #5) to analyze a new set of choices, click on the "TwoVariable" worksheet and the Option #6 menu will reappear.

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Chart produced by the above menu choices.

Option #7– Summary Report of Loads and Concentrations

Note: This option produces a report rather than a chart.

1. Select the River/Tributary.

2. Select the Parameter.

3. Type in the Beginning and Ending dates.

4. Click on the "Get and Report Data" cell.

5. A new Report worksheet will be created and the Data worksheet will be updated with the selected data.

6. If you want to save the Report and Data, click on the "Save Data and Report to a New File."

7. If you want to use this option (here Option #7) to analyze a new set of choices, click on the "Summary" worksheet and the Option #7 menu will reappear.

8. A sample Report is shown to the left. The procedures used for the calculations of Total Loads, Unit Area Loads, Flow weighted mean concentration, and Time weighted mean concentration are described in the River Chemistry Tutorial.

9. Since the Date Range may not be equal to one year, an annualized unit area load has be calculated by multiplying the observed unit area load by 365/Time Interval Covered by the Sample Time Windows.

Report produced by the above menu choices.

Summary Report of
Loads & Concentrations

Data Selection

Select River/Tributary	Select Parameter	Select Date Range	
		Beginning Date	Ending Date
Cuyahoga	TP	10/01/00	09/30/02

Get & Report Data

Save Data & Report to new file

Program supported by the
Lake Erie Protection Fund

Summary Loading and Concentration Report

River:	**Cuyahoga River**		
Parameter:	**Total Phosphorus**		
Starting Date:	**October 1, 2000**		
Final Date:	**September 30, 2002**		
Number of Samples:		**913**	
Total Load:	**336,034.4** kg	**740,955.7** lbs	
	336.0 metric tons	**370.5** short tons	
Unit area load	**1.83** kg/ha	**1.64** lbs/acre	
Annualized Unit Area l	**0.99** kg/ha	**0.88** lbs/acre	
Flow weighted mean concentration:		**0.272**	mg/L
Time weighted mean concentration:		**0.225**	mg/L
Time interval between beginning and ending date:		**730.0**	days
Time interval covered by sample time windows:		**674.5**	days
Percent of time covered by sample time windows:		**92.4%**	
Observed discharge volume:		**1,235,641.5**	thousand m3
		504,961.8	cfs-days

Option #8 – Flow Duration and Cumulative Load

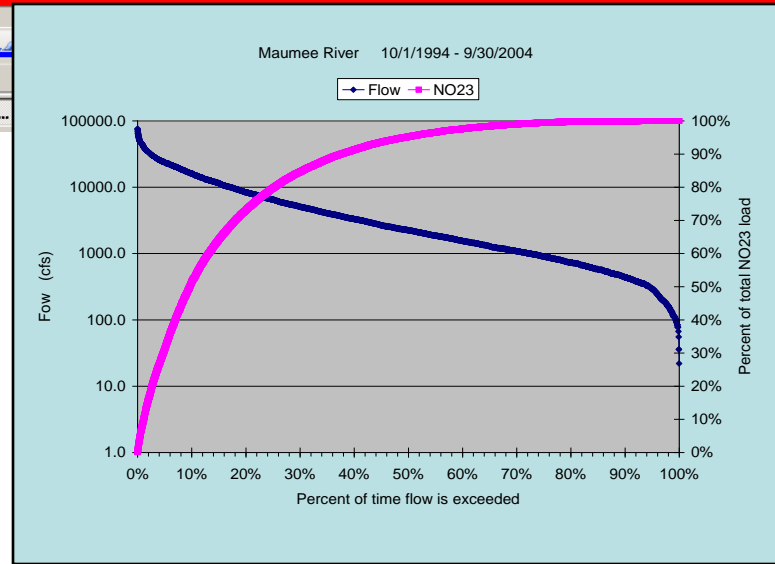Note: This option shows the quantitative relationship between pollutant export and streamflow.

1. Select the River/Tributary.

2. Select the parameter.

3. Type in the Beginning and Ending dates.

4. Click on the "Get and Plot Data" cell.

5. A new Chart worksheet will be created and the Data worksheet will be updated with the selected data.

6. If you want to save the graph and data, click on the "Save Most Recent Data and Graph to a New File."

7. If you want to use this option (here Option #8) to analyze a new set of choices, click on the "FloDur" worksheet and the Option #8 menu will reappear.

8. If you want to shift to a different analysis option, click on the "Menu" worksheet to return to the analytical option choices.

9. For more information on the interpretation and plotting of Flow Duration curves and Percent of Total Load curves, go to the River Chemistry Tutorial section on "Relationships between Pollutant Loading and Stream Flow."

Chart produced by the above menu choices.

Some additional characteristics of the Analysis Templatev3 program

1. The workbooks that are produced to save the Data and Chart or Report outputs are labeled Workbook 1, Workbook 2, Workbook 3, etc. by the Analysis Template Program. Only the Chart or Report Pages of those workbooks contain the name of the river/tributary. The Data page does not contain name of the River. It is advisable to open, save and rename the Workbooks promptly after creating them.

2. The Data page contains all the data called for by the selections you have made on the analysis option you are using. These columns represent the output of the "Get Data" portion of the program. This includes the DateTime information for each sample.

   The Data Page also contains the columns that are produced by any calculations and sorts of the data that are necessary for creating the Charts or Report called for by the analysis option you are using.

3. Familiarity with the Excel Chart program will allow you to modify any of the Charts produced by the AnalysisTemplatev3 program. These modifications can aid in further data interpretation or make the Charts more useful for particular applications, such as use in educational programs or reports.