DRAINAGE DESIGN MANAGEMENT SYSTEM FOR WINDOWS

VERSION 5.3.0

TUTORIAL # 5

IMPORTING HEC-1STAND-ALONE INPUT FILE

KVL Consultants, Inc.

IMPORTING AND RUNNING HEC-1 STAND ALONE INPUT FILE

TABLE OF CONTENTS

No. Section **Page**

IMPORTING AND RUNNING HEC-1 STAND ALONE INPUT FILE

DATE UPDATED: MAY 16, 2016

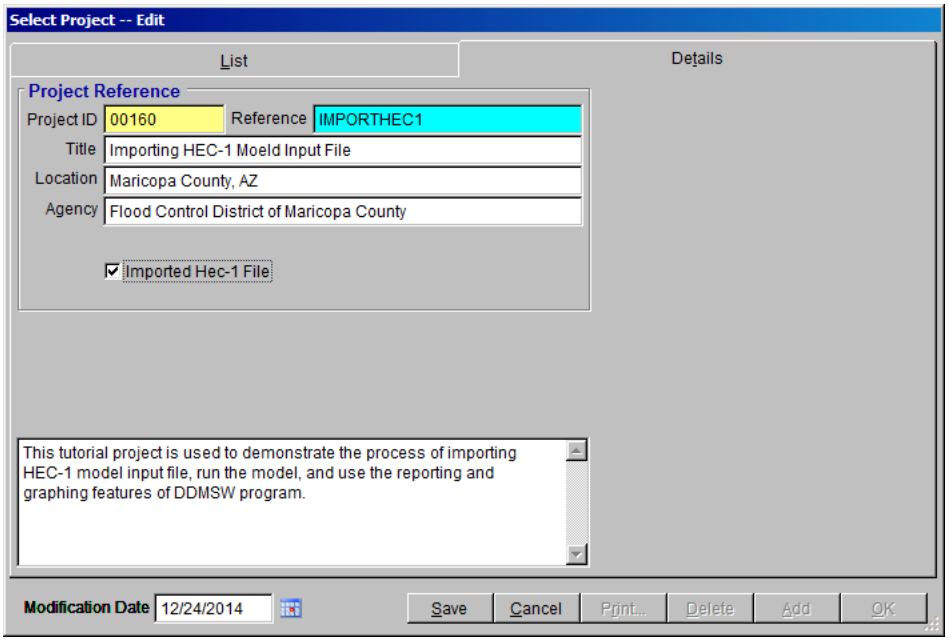
1.0 INTRODUCTION

This tutorial outlines the approach for importing an existing **HEC-1** model input file with the goal to use the reporting and graphing features of the **DDMSW** program without the supporting land use, soils, sub-basin and network datasets. What is needed in this tutorial is the **HEC-1** model input data file in ASCII format. This tutorial was developed using **DDMSW 5.3.0.**

2.0 CREATE A NEW PROJECT

After launching the **DDMSW** program, create a new project (***File ➔New Project***). Use a short name for the project in the ***'Reference'*** field. Please note that the ***'Reference'*** field can accept letters and numbers (no space) and can hold 20 characters.

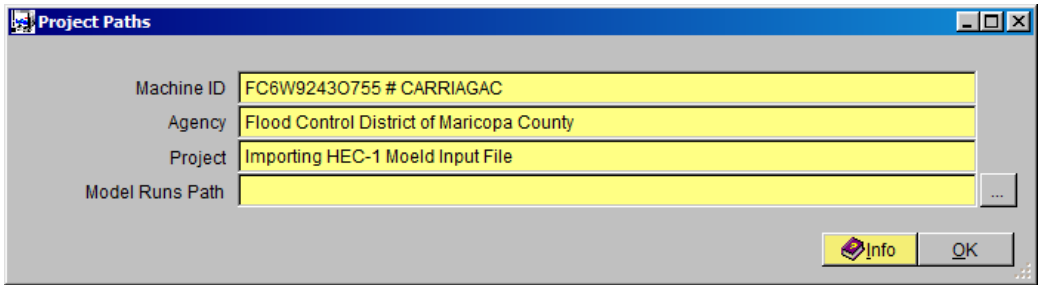
On the **SELECT PROJECT** form, enter '*IMPORTHEC1*' on the ***'Reference'*** textbox field and check the ***'Imported HEC-1 File'*** checkbox. Enter your notes or comments (Optional) in the provided Comment Box. Set your model creation date in the ***'Modification Date'*** textbox field using the current date.



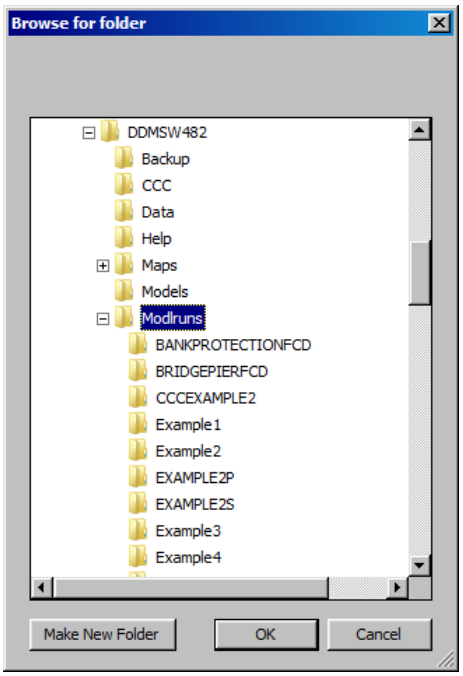
Press the ***'Save'*** button to save the new project information. Press the ***'OK'*** button to close the **SELECT PROJECT** form.

3.0 DEFINE THE MODEL RUNS PATH

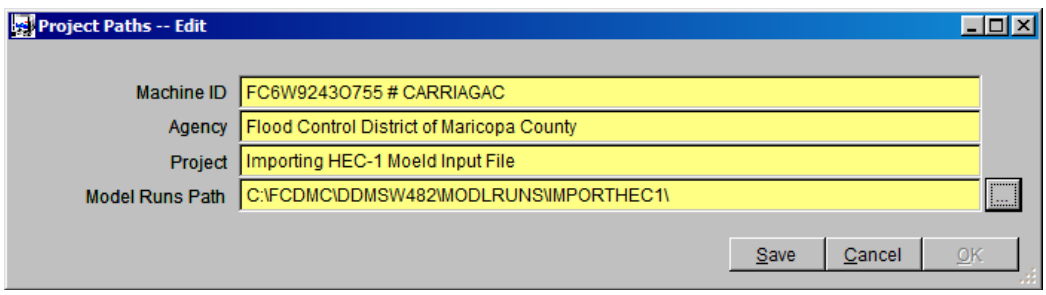
On the **PROJECT PATHS** form (***File ➔ Project Paths***), set the ***'Model Runs Path'*** by clicking the ellipse (***…***) button on the right side of the ***'Model Runs Path'*** textbox field.



On the **BROWSE FOR FOLDER** form, select the folder location to store and run your project models. If the preferred folder is not found, press the '***Make New Folder'*** to create a new folder. Rename the new folder to *'IMPORTHEC1'.*



Press ***'OK'*** when it is done.

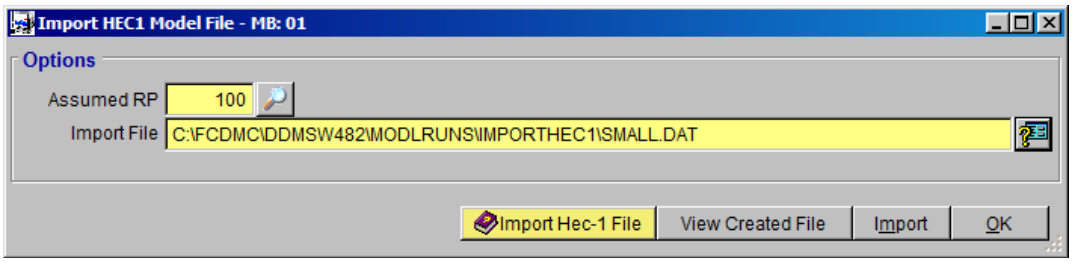


Press ***'Save'*** to accept the folder settings identified for '***Model Runs Path'***.

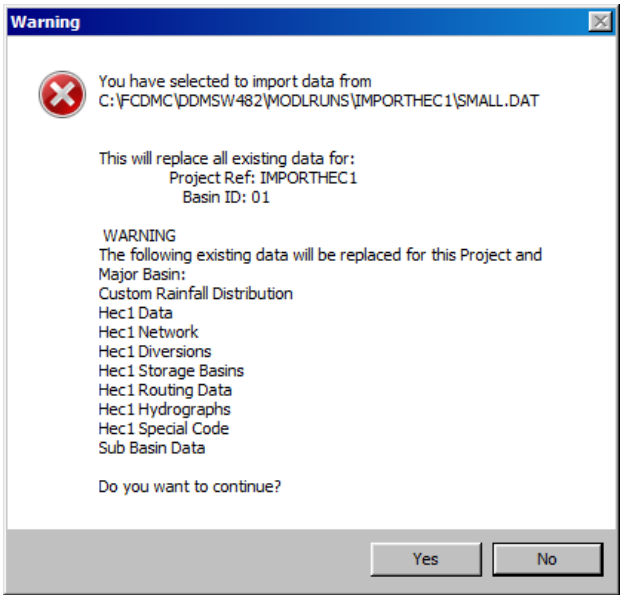
Press ***'OK'*** to close the **PROJECT PATHS** form.

4.0 IMPORT THE MODEL INPUT FILE

On the **IMPORT HEC1 MODEL FILE** form (***'Hydrology ➔ HEC-1 ➔ Import HEC-1 File'***), click the button on the right of the ***'Import File'*** textbox field to locate the location of the HEC-1 Model Input File to be used by the program. Find the HEC-1 model file, select it, and press ***'OK'.*** Press the ***'Import'*** button to import the selected file.



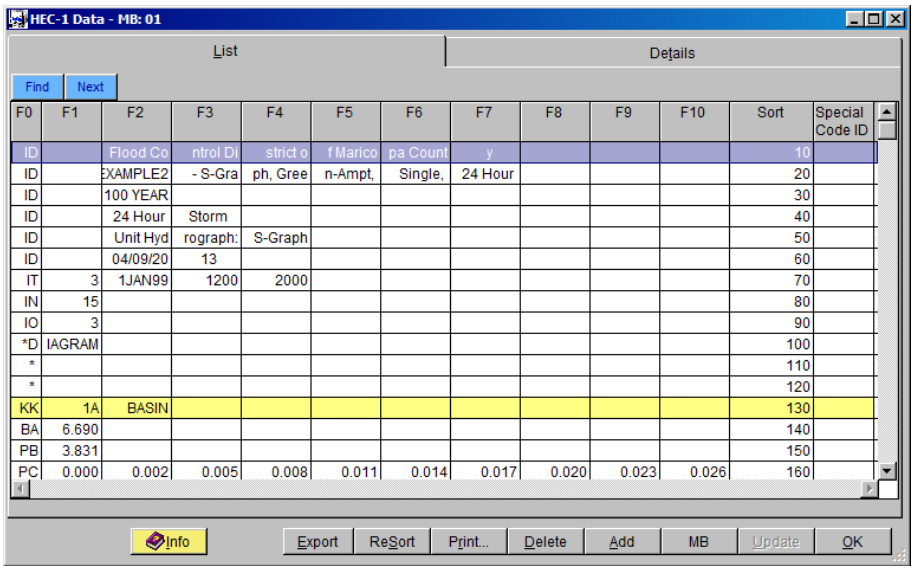
DDMSW will warn you that the program will replace all existing data with the current project data. Press ***'Yes'*** to continue.



After the Import process is complete, press ***'OK'*** to continue. On the **IMPORT HEC-1 MODEL FILE** form, press ***'OK'*** to close the form.

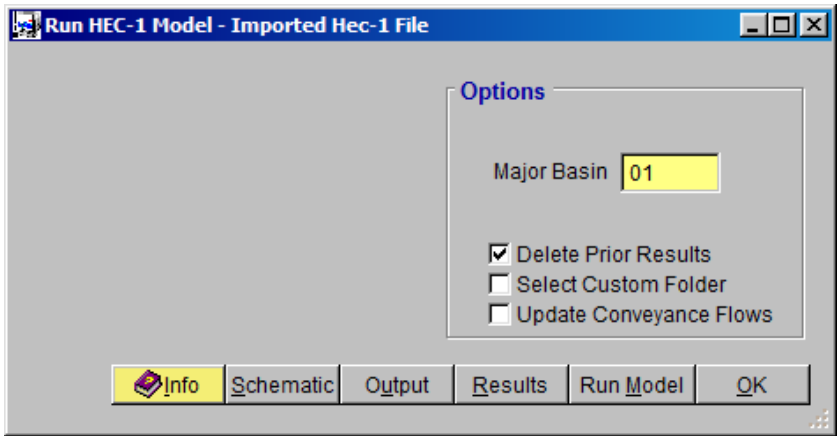
5.0 VALIDATE THE IMPORTED MODEL FILE

On the **HEC-1 DATA** form (***'Hydrology ➔ HEC-1 ➔ Data'***), review / validate the imported model to ensure that it is the right model. Make necessary modifications if necessary. Press the ***'OK'*** button to close the **HEC-1 DATA** form.

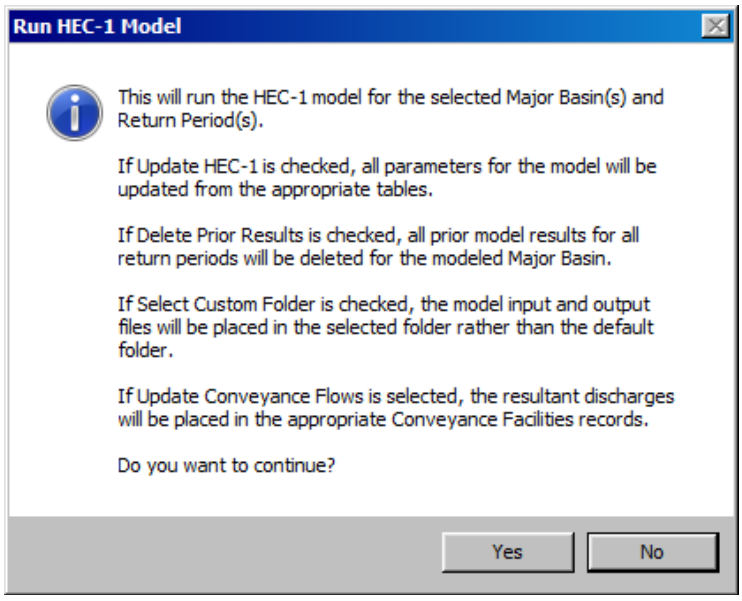


6.0 RUN THE MODEL

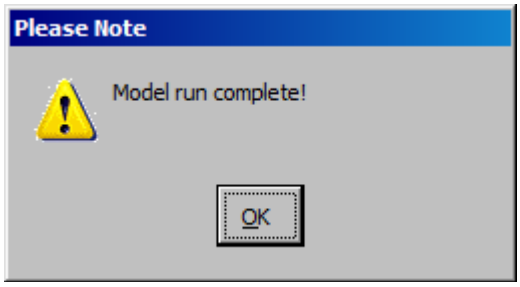
After the model file has been imported into a new project in **DDMSW**, the model can now be run. On the **RUN HEC-1 MODEL** form (***'Hydrology ➔ HEC-1 ➔ Model'***), check the ***'Delete Prior Results'*** check box and uncheck the ***'Select Custom Folder'*** and ***'Update Conveyance Flows'*** check boxes. Execute the model by pressing the ***'Run Model'*** button.



Click ***'Yes'*** to continue.

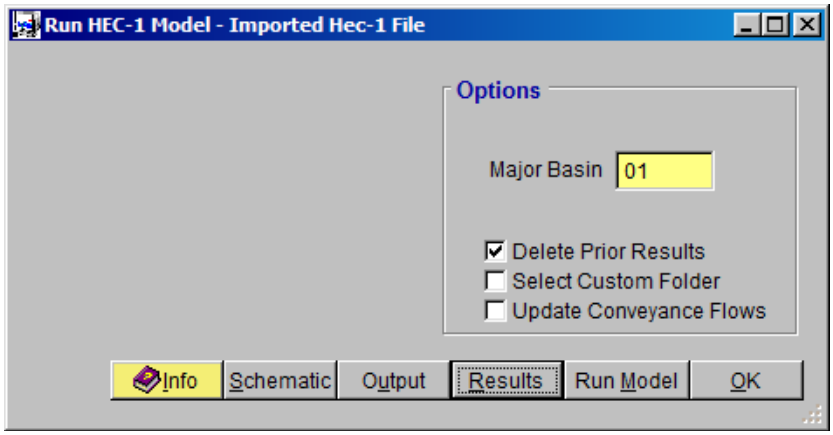


If the model run is successful, **DDMSW** will display the message, *'Model run complete!'* Press ***'OK'*** to close the dialog box.

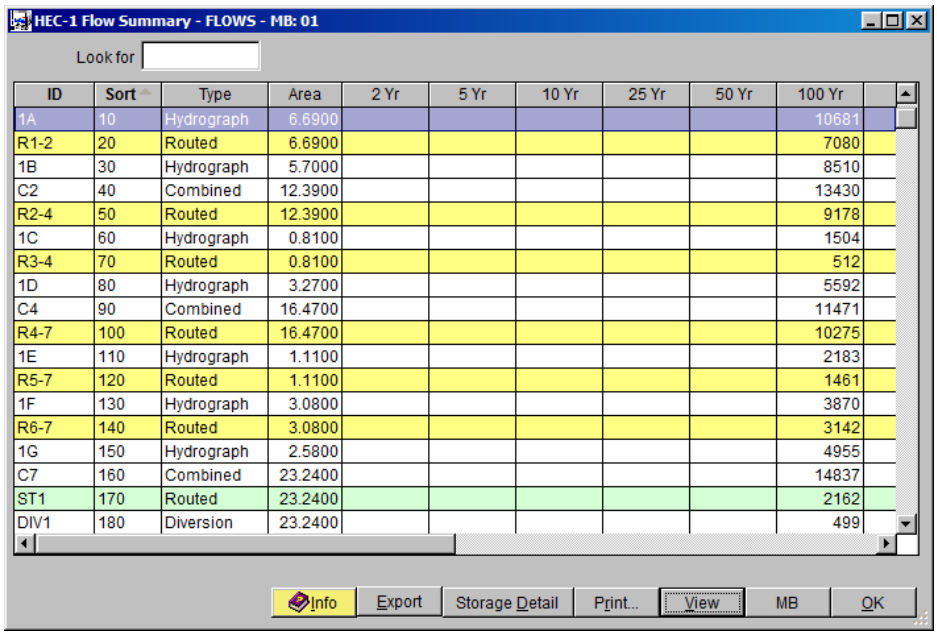


7.0 VIEW MODEL RESULTS

After the model is successfully executed by the program, model results can be viewed by clicking on the ***'Results'*** button on the **RUN HEC-1 MODEL** form.

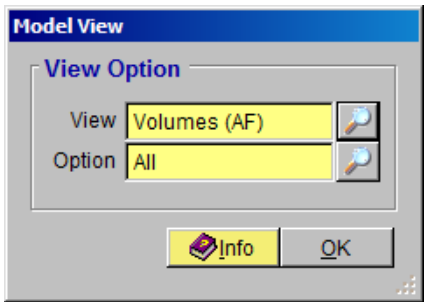


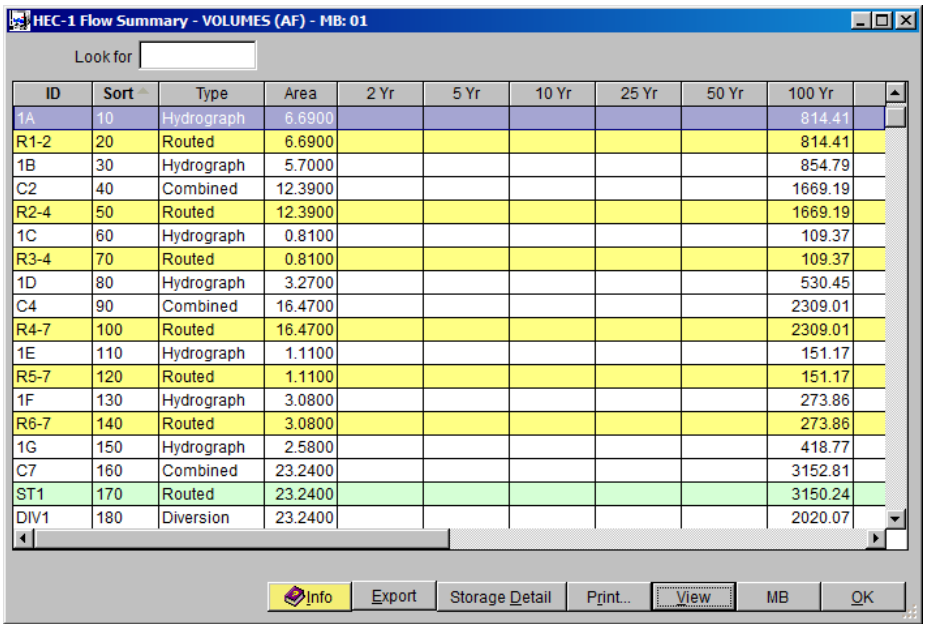
On the **HEC-1 FLOW SUMMARY** form, model results in tabulated format can be viewed.



ID	Sort	Type	Area	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
1A	10	Hydrograph	6.6900						10681
R1-2	20	Routed	6.6900						7080
1B	30	Hydrograph	5.7000						8510
C2	40	Combined	12.3900						13430
R2-4	50	Routed	12.3900						9178
1C	60	Hydrograph	0.8100						1504
R3-4	70	Routed	0.8100						512
1D	80	Hydrograph	3.2700						5592
C4	90	Combined	16.4700						11471
R4-7	100	Routed	16.4700						10275
1E	110	Hydrograph	1.1100						2183
R5-7	120	Routed	1.1100						1461
1F	130	Hydrograph	3.0800						3870
R6-7	140	Routed	3.0800						3142
1G	150	Hydrograph	2.5800						4955
C7	160	Combined	23.2400						14837
ST1	170	Routed	23.2400						2162
DIV1	180	Diversion	23.2400						499

To view model results other than the peak flows, click the ***'View'*** button on the form and on the **MODEL VIEW** form, users can select from *'Volumes (IN)'*, *'Volumes (AF)'*, and *'Attenuation/Velocity'*.

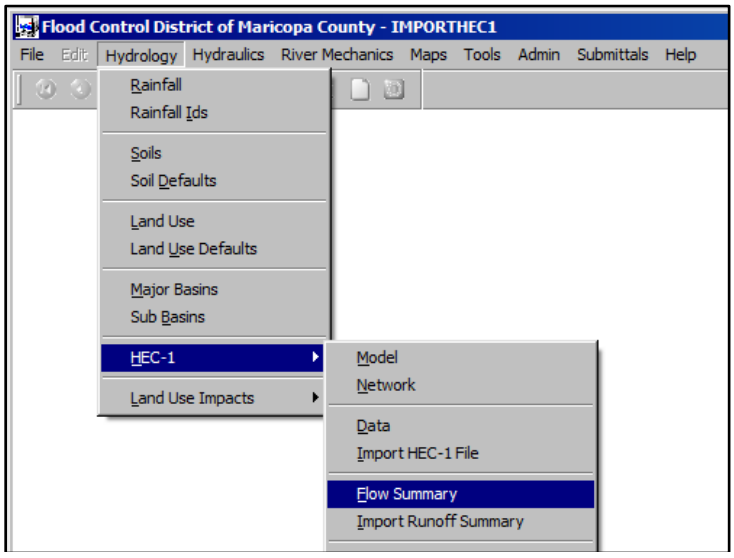




Also, users can select which model elements (*'All', 'Hydrograph', 'Routed', 'Combined',* and *'Storage'*) to view by pressing the Selector button on the right of the ***'Option'*** textbox field.

After exploring all possible options in viewing model results, click ***'OK'*** to close the **RUN HEC-1 MODEL** form

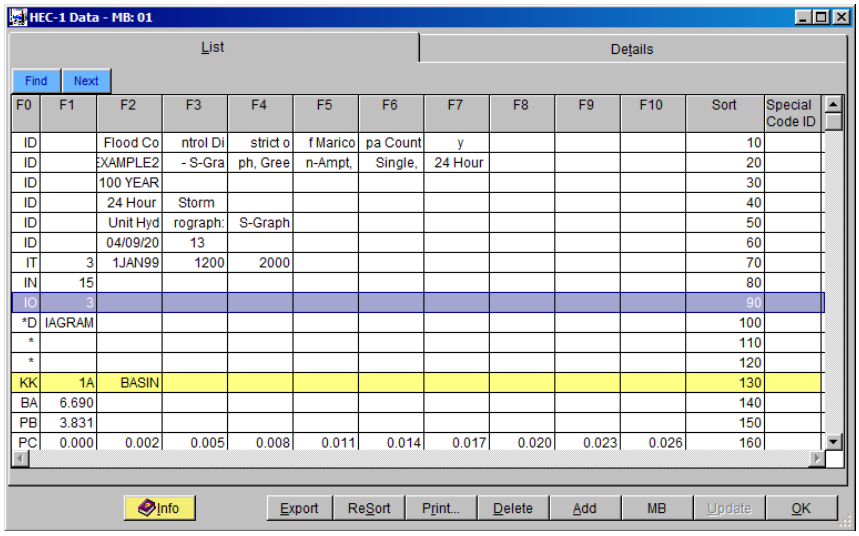
Alternatively, model results can be viewed by selecting ***'Hydrology ➔ HEC-1 ➔ Flow Summary'***.



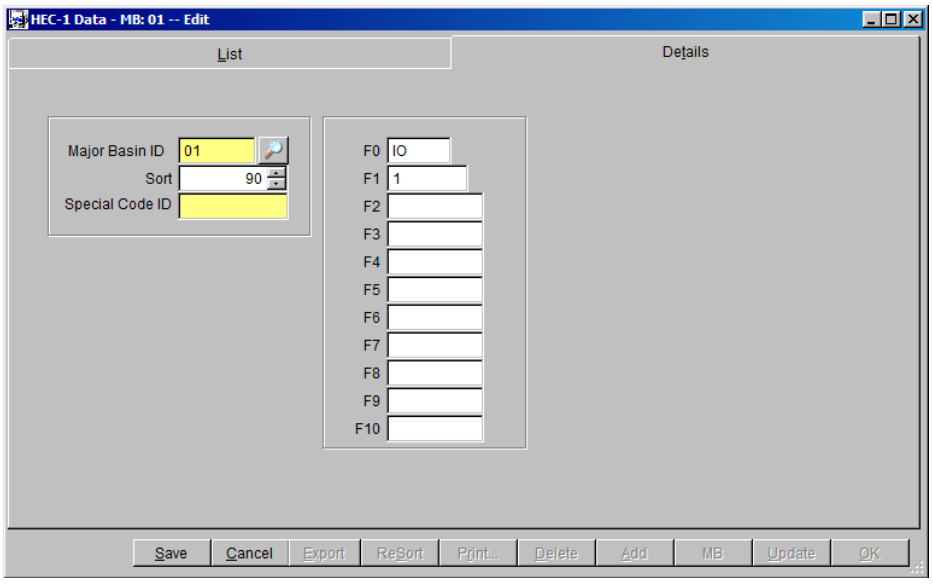
8.0 VIEW THE HYDROGRAPHS

To be able to view the hydrograph plot of any hydrologic element in the model,

it is essential that model output levels ***('IO')*** be specified at either '*1*' or '*2*' to instruct the program to print detailed results of the model. Using output levels of *'3'*, *'4'*, or *'5'* will not print the hydrographs in the model output and thus, the graphing tool will not be able to plot any hydrographs. To determine the ***'IO'*** parameter used by the model, the model data settings needs to be checked. This could be done by accessing the ***'List'*** tab of the **HEC-1 DATA** form (***'Hydrology ➔ HEC-1 ➔ Data').***



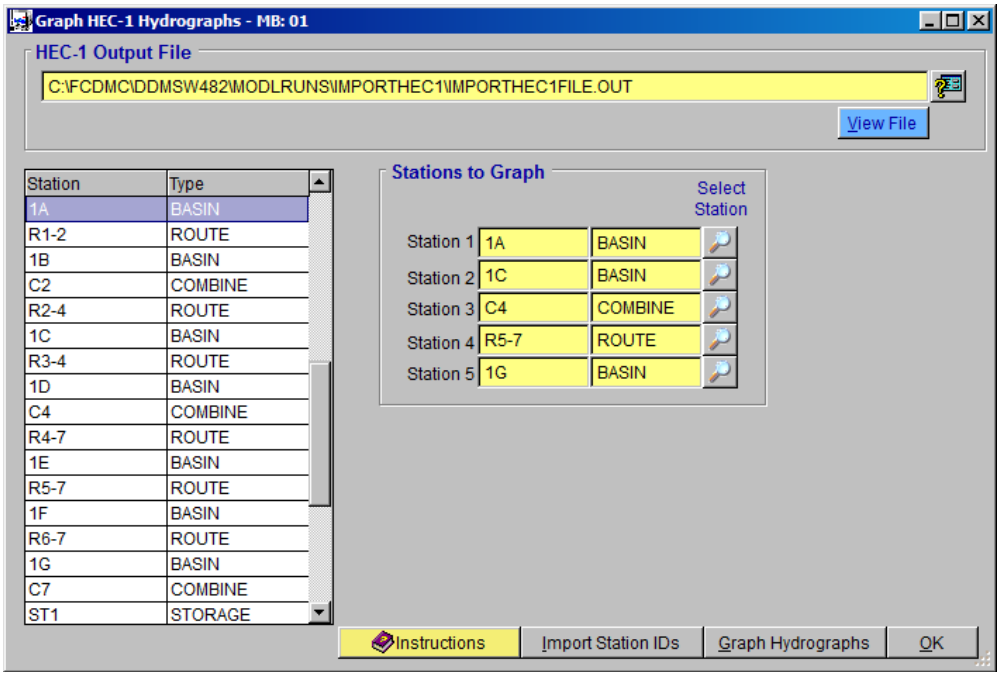
After selecting the ***'IO'*** card on the ***'List'*** tab of the **HEC-1 DATA** form, press the ***'Details'*** tab. On the ***'F1'*** textbox field, replace any values greater than *'2'* (e.g., *'3', '4',* or *'5'*) with either *'1'* or *'2'*.



Press ***'Save'*** to save the entered data and select the ***'List'*** tab to verify if the entered ***'IO'*** value is reflected on the modified form. Press ***'OK'*** to close the **HEC-1 DATA** form.

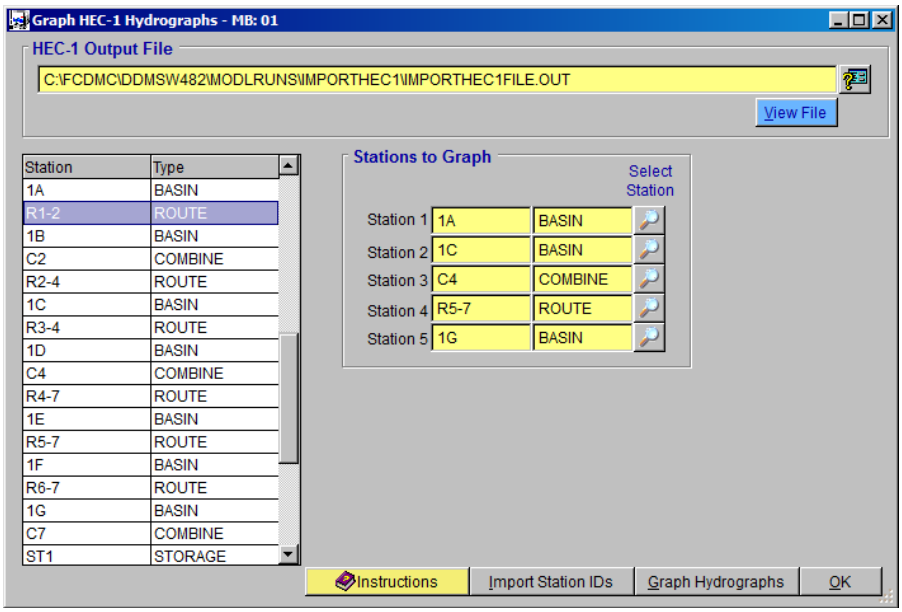
Run the new model with the updated IO data card (***'Hydrology ➔ HEC-1 ➔ Model ➔ Run Model'***).

To view the graphics, open the **GRAPH HEC-1 HYDROGRAPHS** form (***'Hydrology ➔HEC-1➔ Graph Hydrographs'***) and identify the model output to be used by the program by clicking the button on the right of the ***'HEC-1 Output File'*** textbox field.

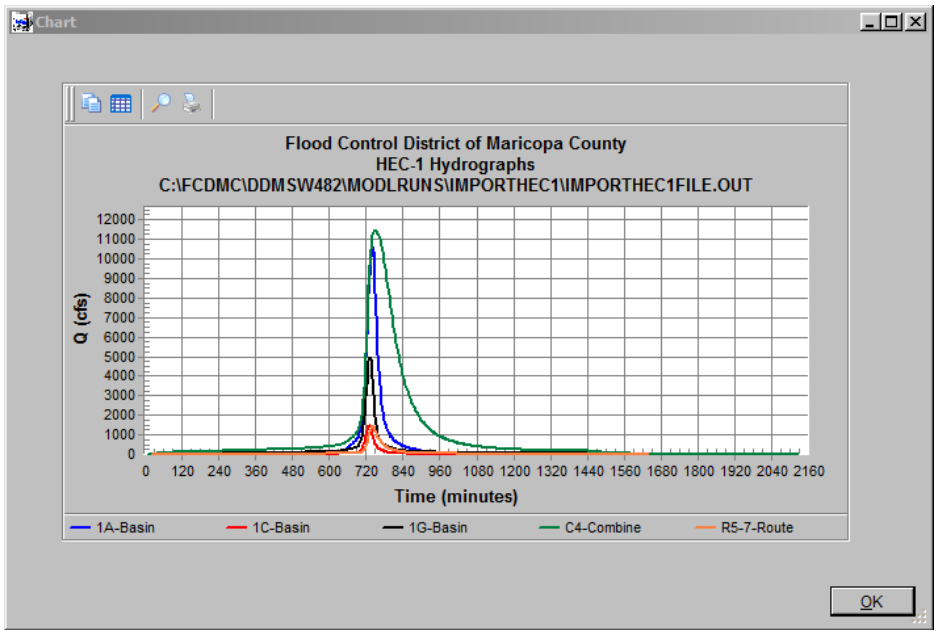


Once the model output file is identified and selected, press the ***'Import Station IDs'*** button to list all the Stations in the program. As shown, a maximum of five (5) station plots can be drawn and viewed at any time.

To select the Stations to be plotted, highlight any Station on the left and press the Selector buttons on the right. This action will list the selected stations to be plotted by the program.



To show the hydrograph plots of the selected stations, press the ***'Graph Hydrographs'*** button. Press ***'OK'*** to continue.



Press ***'OK'*** to close the **CHART** form. Press ***'OK'*** to close the **GRAPH HEC-1 HYDROGRAPHS** form.

9.0 NOTES

To perform modifications or changes on HEC-1 model, open the **HEC-1 DATA**

form (***'Hydrology ➔ HEC-1 ➔ Data'***). Highlight the line to change by clicking on it. Use the ***'Find'*** and ***'Next'*** buttons to search for a specific line. Press the ***'Find'*** button. A **FIND VALUE** pop-up window will appear. Since the ***'Find'*** function looks only in the ***'F1'*** column, only type in a value such as a basin name (*'1A'*), a routing channel name (*'R1-2'*), or a specific number like the ***IA*** value for a Green-Ampt Parameter (*'0.28'*). Press the ***'Save'*** button and then ***'OK'*** to perform the search. The ***'Next'*** button looks for the next line that contains the same ***'F1'*** content. When specific line to change is found, click the ***'Details'*** tab (or double-click on the line). Edit the HEC-1 field(s) by typing into the appropriate column(s) labeled by ***'F1'*** to ***'F10'***. Press the ***'Save'*** button to save your changes. You can get back to the line-by-line view of the data by clicking the ***'List'*** tab. When you are finished making changes, press the ***'OK'*** button to exit or close the **HEC-1 DATA** form.

10.0 MODELING UPDATE OPTIONS

Because the imported HEC-1 Model Input File does not have other datasets (i.e., Network, Rainfall, Sub Basins, Routing, Storage, and Diversions) to recalculate model parameters, the model cannot be updated. The only dataset that can be updated without impacting the results of the HEC-1 model is the Major Basin data (***'Hydrology ➔ Major Basin ➔ Update'***).

If the user desires to update the HEC-1 Model, it would be necessary to develop the **DDMSW** data for the Sub Basins, Land Use, and Soils. Please refer to another Tutorial document for this process.