

# Appendix E

## Using HEC-DssVue

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# Appendix E

## Using HEC-DssVue

Included within the framework of ResSim is **HEC-DssVue**, a tool that allows you to access data stored in HEC-DSS database files. With HEC-DssVue, data may be plotted, tabulated, edited, and manipulated with over fifty mathematical functions. In addition to these functions, HEC-DssVue provides several utility functions, such as entering data sets into a database, renaming data sets, copying data sets to other DSS database files, and deleting data sets. You can launch HEC-DssVue from any ResSim module by choosing **HEC-DssVue** from the **Tools** menu.

DSS files refer to time-series data by *pathnames* representing records. Pathnames are separated into six parts (delimited by slashes "/") labeled "A" through "F." For "regular" time-series records, the naming conventions for describing the contents of the six pathname parts are:

- A** Project name
- B** Location or gage identifier
- C** Data variable, such as FLOW or PRECIP
- D** Starting date in the format 01JAN1980.
- E** Time interval
- F** Additional user-defined descriptive information

With HEC-DssVue, you can select data sets from a list of pathnames (or *catalog*) in the database and visualize the data in tabular or graphical form. The list of pathnames can be displayed as a straight list of pathnames, or as a list of pathnames separated into parts. You can refine the list by searching for either a string in the pathnames or for pathname parts.

In ResSim, you will use HEC-DssVue mainly as a viewing tool for DSS data. This Appendix will review some of the general functions in HEC-DssVue. For further detail, see the *HEC-DssVue User's Manual* (HEC, 2003b).

### E.1 The HEC-DssVue Data Selection List Window

HEC-DssVue is available from any of the ResSim modules. From the **Tools** menu, select **HEC-DssVue**. Figure E.1 shows the main window (the **Data Selection List**) of HEC-DssVue, using the **Condensed Catalog** option from the **View** menu to list the pathnames of the data records in the opened DSS file. Using the Condensed Catalog option, time-series data sets are abridged so that the date range for the entire data set is displayed in the "D-part" column.

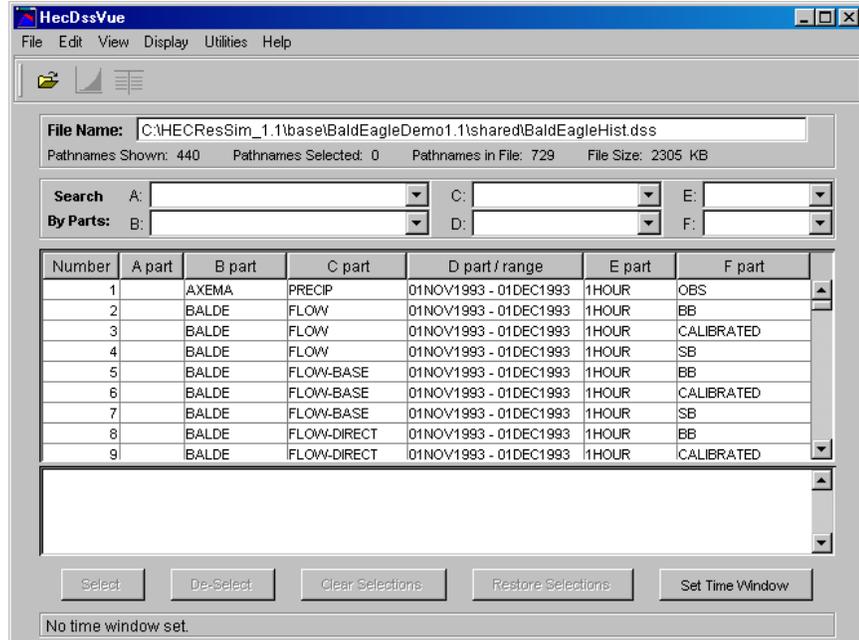


Figure E.1 HEC-DssVue - Data Selection List Window, Condensed Catalog Displayed

From the **View** menu, you can also choose to view the pathnames using all of the **Pathname Parts** (Figure E.2), in a **Pathname List** (Figure E.3), or with **No Pathnames** displayed.

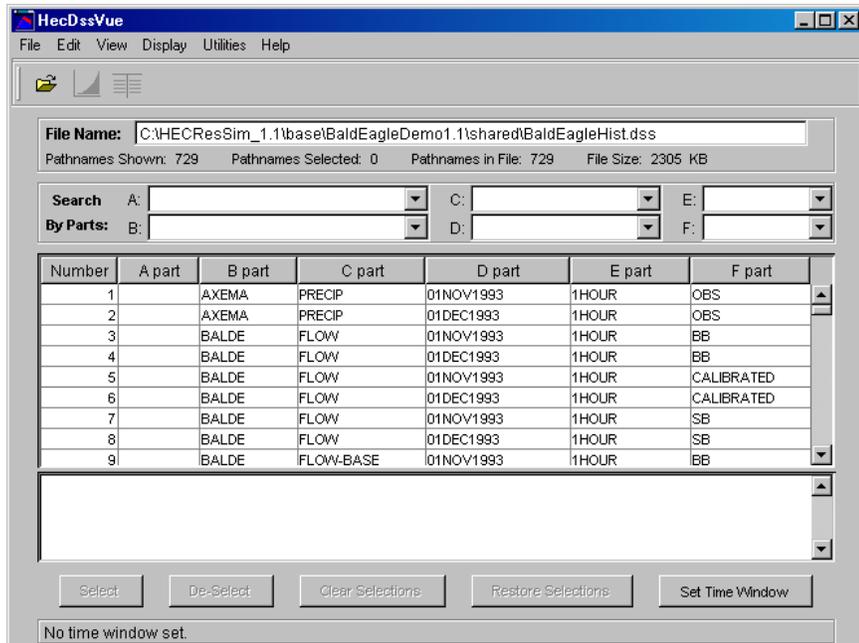
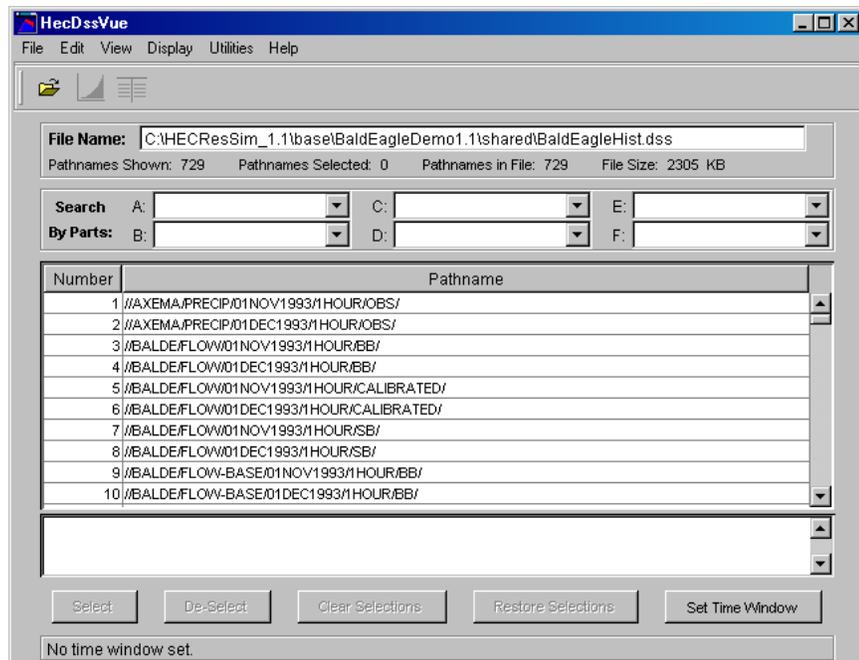


Figure E.2 HEC-DssVue - Data Selection List Window, Pathname Parts Displayed



**Figure E.3 HEC-DssVue - Data Selection List Window, Pathname List Displayed**

## E.1.1 Menu Options

Menu options in the HEC-DssVue Data Selection List window allow you to search for, select, and edit DSS data sets; control the display of pathnames; and access plots and tables, among other tasks. The HEC-DssVue menus are as follows:

- File** File menu commands are **New**, **Open**, and **Close**. The **File** menu also lists your most recently used files.
- Edit** Edit menu commands are **Undo**, **Cut**, **Copy**, **Paste**, **Delete**, **Edit Data**, and **Select All**.
- View** The **View** menu allows you to customize the display of DSS pathnames and search pathnames. Available commands are **Pathname List**, **Pathname Parts**, **Condensed Catalog**, **No Pathnames**, **Refresh Catalog**, **Search pathnames by string**, and **Search pathnames by parts**.
- Display** Use the **Display** menu to open plots and tables with the **Plot** and **Tabulate** commands.
- Utilities** The **Utilities** menu provides access to **Math Functions**, **Manual Data Entry (Time-Series and Paired Data)**, and it allows you to **Rename Records**, **Copy Records**, **Duplicate Records**, **Merge Files**, **Squeeze**, and view **DSS Status**.

## E.1.2 Menu Buttons

Menu buttons provide shortcuts to frequently used Menu commands:



Opens an HEC-DSS **File** (same as **Open** in the **File** menu).



Displays data as a **Plot** (same as **Plot** in the **Display** menu).



Displays data in **Tabular** form (same as **Tabulate** in the **Display** menu).

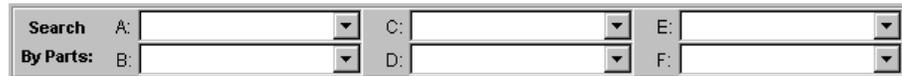
## E.1.3 Data Selection Fields and Buttons

The HEC-DssVue Data Selection List displays the **Filename** of the opened DSS file. Displayed beneath the filename are the number of pathnames shown in the list, the number of pathnames selected, the total number of pathnames in the database file, and the size of the database file (in kilobytes).

The HEC-DssVue Data Selection List also provides a search area where you can **Search Pathnames** (Figure E.4) or **Search Parts** (Figure E.5). You choose your search option from the **View** menu.



**Figure E.4 Search Pathnames Option**



**Figure E.5 Search by Parts Option**

Once you have opened a DSS file, its records appear in a list beneath the search area.

The complete pathnames of “selected” records appear in the Selection area beneath the list of all records.

Also, there are five buttons (Figure E.6) at the bottom of the Data Selection List window.



**Figure E.6 Data Selection List Buttons**

1. You select a record by highlighting it and clicking the **Select** button. Until you highlight a pathname, the Select button remains inactive.
2. To de-select the record, you highlight the record in the selected list, then click the **De-Select** button.

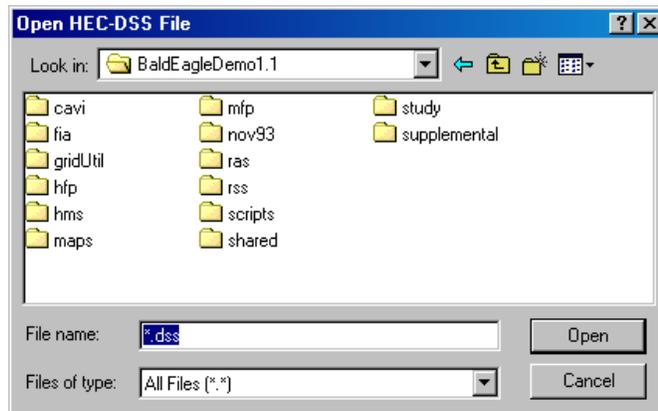
3. You can also de-select all selected records by clicking the **Clear Selections** button.
4. The **Restore Selections** button restores all selections you have most recently cleared or de-selected.
5. You can set the time window with the **Set Time Window** button, and subsequent plots, tables, statistics, etc., will reflect the time-series data within that specified time window.

## E.2 Opening a DSS Database File for Browsing

If you know the name of the DSS database **File** you wish to browse, you can type the **File** name (including the path) directly into the **File Name** box in the HEC-DssVue Data Selection List to open the DSS file.

Otherwise, choose **Open** from the **File** menu or click the  button to select the DSS database **File** you want.

An **Open HEC-DSS File** browser window will open, as shown in Figure E.7.



**Figure E.7 Open HEC-DSS File Browser**

In the **Open HEC-DSS File** browser window, use the standard Windows controls to browse to the DSS **File** that you wish to open, then click **Open**.

Once you have opened a DSS file, the HEC-DssVue Data Selection List window displays the filename, the number of pathnames shown in the list, the number of pathnames selected, the total number of pathnames in the database file, and the size of the database file (in kilobytes). The individual pathnames display in a table beneath the search area.

### E.3 Sorting DSS Pathnames by Parts

You can use the filters provided to sort DSS pathnames by parts.

Choose **Search pathnames by parts** from the **View** menu. Then, use the lists in the **Search By Parts** section of the HEC-DssVue Data Selection List to show the pathnames you want to select from. Click on the **blank cell** at the top of each list to show the unfiltered list.

### E.4 Selecting DSS Pathnames

Once you have filtered the listing of pathnames, you can select them by double clicking on the desired names in the list (which adds them to the box on the bottom of the Data Selection List window). You can also highlight the pathname(s) from the list then click the **Select** button. Until you select a pathname(s), the **Select** button remains inactive.

If you wish to select all of the pathnames, choose **Select All** from the **Edit** menu.

### E.5 Using Plots and Tables to Visualize DSS Data

Once the lower box contains all the pathnames you wish to display, you can access plots and tables.

To do this, you can select **Plot** or **Tabulate** from the **Display** menu, or you can click on the **Plot**  button or the **Tabulate**  button.

Figure E.8 shows an example plot and Figure E.9 shows the corresponding tabulated values produced using HEC-DssVue. The parameters for the plots are labeled and color-coded, date ranges are specified along one axis, and the units of measure are specified along the other axis. You can resize the plot window by grabbing the corner of the window and dragging it to the desired size. You can also select the **Zoom** tool  and then zoom in on the data by moving the mouse to a position on the graph, holding down the left mouse button, moving the mouse so that the new mouse position defines a rectangle of the area to enlarge, then releasing the mouse button. To zoom out, just right-click anywhere in the graph area. To view the tabular form of the plot, you can select the **Tabulate** command from the **File** menu of the Plot window.

HEC-DssVue tabulates data in a vertical scrolling window that shows the ordinate number (starting from the start date/time), the date and time stamp, and the values for the selected data sets. You can view the tabular data in plot format by selecting the **Plot** command from the **File** menu of the Table window.

In tables produced by the HEC-DssVue Data List Selector, you have several options for displaying the tabular data. From the table's **View** menu, you can choose to display commas in the number by selecting the

**Show Commas** command. You can also opt to display **Date and Time Separately**, which will split the date-time stamp into two columns. Another option is to display the **Date with 4 Digits**, instead of the default two. Also, you can set the precision of decimal places for your data by selecting **Show Decimal Places** and selecting the number of decimal places you wish to display.

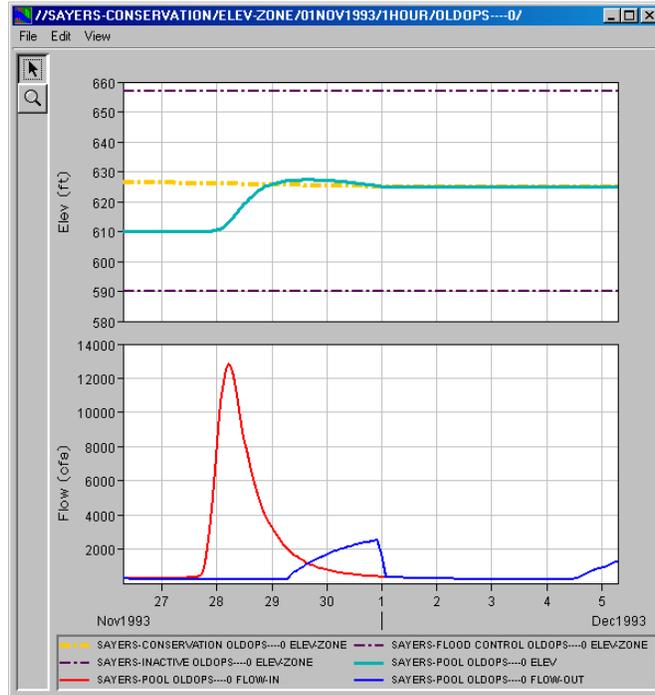


Figure E.8 Example Plot from HEC-DssVue

Ordinate	Date / Time	SAYERS-CON... ELEV-ZONE OLDOPS----0	SAYERS-FLO... ELEV-ZONE OLDOPS----0	SAYERS-INAC... ELEV-ZONE OLDOPS----0	SAYERS-POOL ELEV OLDOPS----0	SAYERS-POOL FLOW-IN OLDOPS----0	SAYERS-POOL FLOW-OUT OLDOPS----0
Units		ft	ft	ft	ft	cfs	cfs
Type		INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL	INST-VAL
1	26 Nov 93 07:00	626.47	657.00	590.00	610.13	291	255.0
2	26 Nov 93 08:00	626.46	657.00	590.00	610.13	290	255.0
3	26 Nov 93 09:00	626.45	657.00	590.00	610.13	289	255.0
4	26 Nov 93 10:00	626.43	657.00	590.00	610.12	289	246.0
5	26 Nov 93 11:00	626.42	657.00	590.00	610.12	288	242.0
6	26 Nov 93 12:00	626.41	657.00	590.00	610.12	288	242.0
7	26 Nov 93 13:00	626.39	657.00	590.00	610.12	287	242.0
8	26 Nov 93 14:00	626.38	657.00	590.00	610.12	286	246.0
9	26 Nov 93 15:00	626.37	657.00	590.00	610.12	286	246.0
10	26 Nov 93 16:00	626.35	657.00	590.00	610.12	285	246.0
11	26 Nov 93 17:00	626.34	657.00	590.00	610.12	284	246.0
12	26 Nov 93 18:00	626.33	657.00	590.00	610.10	284	246.0
13	26 Nov 93 19:00	626.32	657.00	590.00	610.10	283	246.0
14	26 Nov 93 20:00	626.30	657.00	590.00	610.10	282	246.0
15	26 Nov 93 21:00	626.29	657.00	590.00	610.10	282	246.0
16	26 Nov 93 22:00	626.28	657.00	590.00	610.09	281	246.0
17	26 Nov 93 23:00	626.26	657.00	590.00	610.09	281	246.0
18	26 Nov 93 24:00	626.25	657.00	590.00	610.09	281	246.0
19	27 Nov 93 01:00	626.24	657.00	590.00	610.09	282	246.0
20	27 Nov 93 02:00	626.22	657.00	590.00	610.09	283	246.0
21	27 Nov 93 03:00	626.21	657.00	590.00	610.07	285	246.0
22	27 Nov 93 04:00	626.20	657.00	590.00	610.07	286	246.0
23	27 Nov 93 05:00	626.18	657.00	590.00	610.07	288	246.0
24	27 Nov 93 06:00	626.17	657.00	590.00	610.07	290	246.0

Figure E.9 Example Tabulation from HEC-DssVue

## E.6 Editing Tabular Data in HEC-DssVue

In HEC-DssVue, you can edit the tabular data directly from a tabular data window. Selecting **Allow Editing** from the **Edit** menu of the table (Figure E.10) allows you to manually edit the data in the table.

You can also use shortcut menu commands to edit data in tables.

If you make any edits, HEC-DssVue prompts you to save changes to the data set when you close the window.

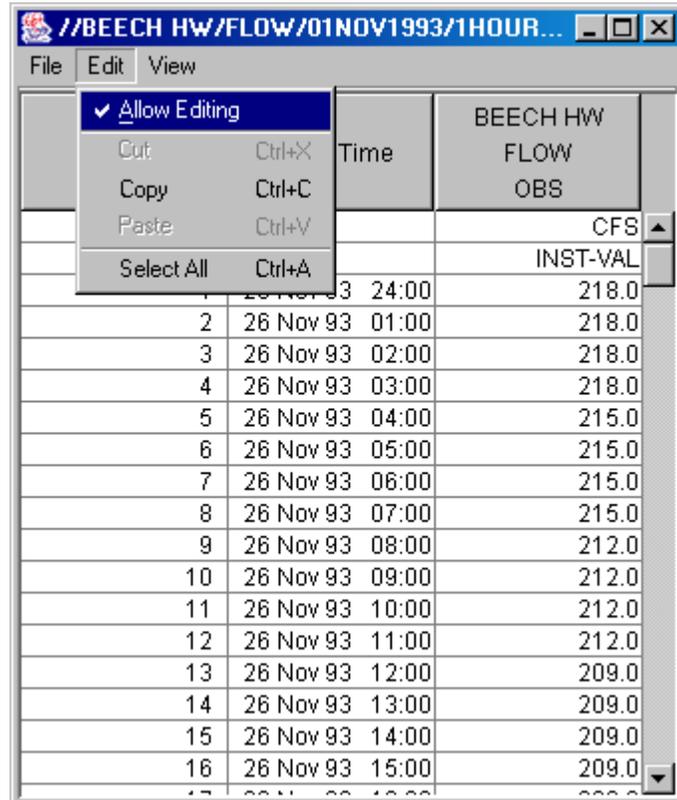


Figure E.10 Edit Menu -- Allow Editing Option

## E.7 Performing Math Functions in HEC-DssVue

To perform math functions in HEC-DssVue:

1. Select the data set on which you want to perform a math function.
2. Choose **Math Functions** from the **Utilities** menu. A dialog box will appear, as shown in Figure E.11.
3. As appropriate, select one of the six tabs (**Arithmetic**, **General**, **Time Conversion**, **Hydrologic**, **Smoothing**, and **Statistics**). You will most likely find that the information available from the **Statistics** tab is very useful when analyzing data and results. An example of the Statistics screen is shown in Figure E.12.

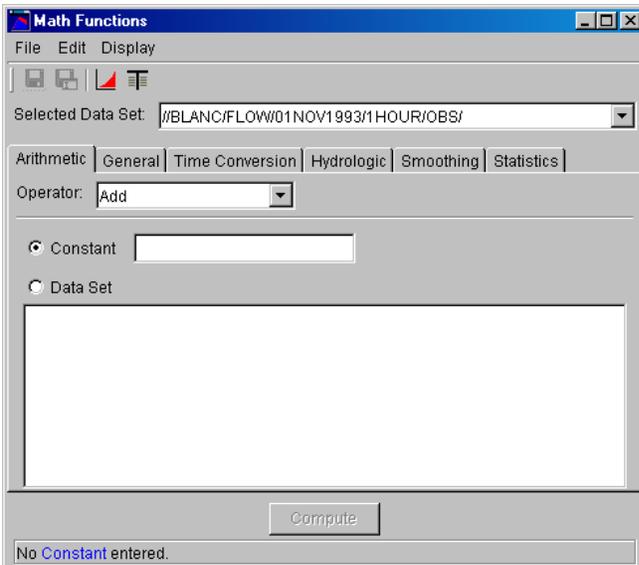


Figure E.11 HEC-DssVue Math Functions Dialog Box

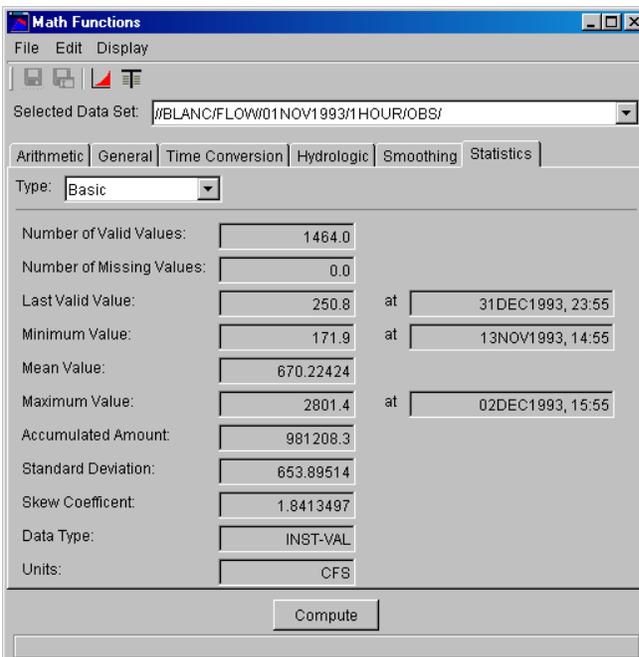


Figure E.12 HEC-DssVue Math Functions, Statistics Tab

4. After you have selected the appropriate math function and required parameters for the function, click the **Compute** button.
5. To view the results, click the **Plot** or **Tabulate** button and the results will be displayed as a comparison against the original data.

6. To save the new values in place of the original values, click the **Save** button  (or select **Save** from the **File** menu). HEC-DssVue will ask you to confirm that you wish to replace the original data.
7. To save the new values as a new record, click the **Save As** button  (or select **Save As** from the **File** menu). A **Save As** dialog box will open, as shown in Figure E.13. Enter the new pathname information and click **OK** to save the record.

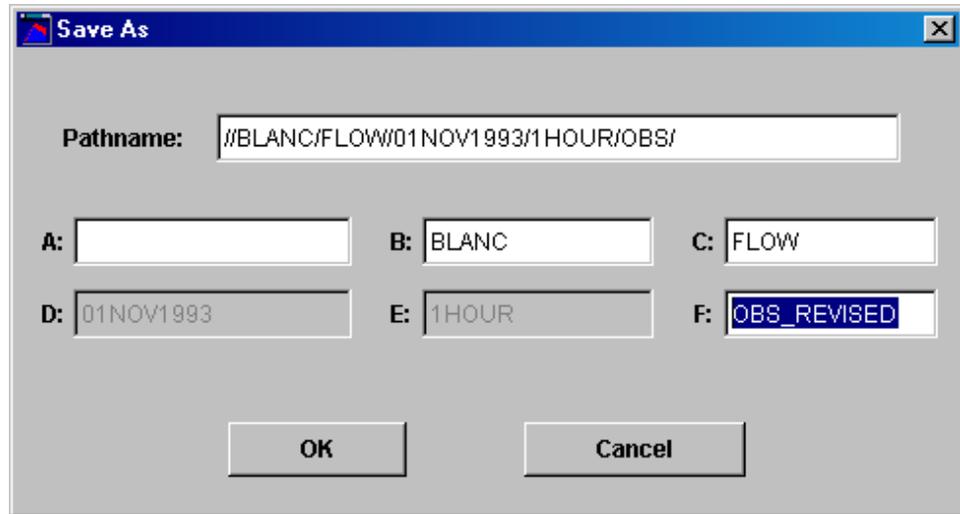


Figure E.13 HEC-DssVue Save As Dialog Box

There are many very useful math functions available in HEC-DssVue. This Appendix only covers the basic functionality for accessing the functions. The *HEC-DssVue User's Manual* (HEC, 2003b) is the primary reference for further information and details for using the Math Function Utilities.

## E.8 Entering Time-Series Data Manually in HEC-DssVue

To enter Time-Series data manually:

1. From the **Utilities** menu, choose **Manual Data Entry**, then select **Time Series...**. The **Manual Time Series Data Entry** dialog box (Figure E.14) will open.

The dialog box contains the following fields and controls:

- Pathname Parts:** A, B, C, D, E (dropdown menu showing '1 HOUR'), F.
- Pathname:** [Text input field]
- Start Date:** [Text input field]
- Start Time:** [Text input field]
- Units:** [Text input field]
- Type:** [Dropdown menu showing 'INST-VAL']
- Manual Entry / Automatic Generation:** Tabbed interface with 'Manual Entry' selected.
- Table:**

Ordinate	Date / Time
1	
2	
- Buttons:** Plot, Save, Cancel.

**Figure E.14 HEC-DssVue Manual Time Series Data Entry Dialog Box**

2. Type the **Pathname Parts** into the A, B, C, and F fields. DssVue will define the D-part of the pathname based on the dates/times you enter for the data. You must select an appropriate time interval (E-part) from the list. The complete pathname will automatically appear in the **Pathname** field. Alternately, you can enter the pathname into the **Pathname** field and the parts will appear in the **Pathname Parts** fields.
3. Enter the **Start Date** (e.g., 30 Mar 2002).
4. Enter the **Start Time** (e.g., 1400).
5. Enter the **Units** (e.g., cfs, feet, ...).

6. Select a record type from the **Type** list. Your options are PER-AVER, PER-CUM, INST-VAL, and INST-CUM.
7. Using the **Manual Entry** tab, the **Date/Time** fields will fill in automatically according to the start date and time you have entered; or, using the **Automatic Generation** tab, enter the **End Date** and **End Time**.
8. Using the **Manual Entry** tab, type the **data values** into the third column; or, using the **Automatic Generation** tab, enter the **Fill Value**.
9. To view the data in plot form, click the **Plot** button.
10. To save the new time-series record, click **Save**.

## E.9 Entering Paired Data Manually in HEC-DssVue

To enter Paired Data manually:

1. From the **Utilities** menu, choose **Manual Data Entry**, then select **Paired Data**. The **Manual Paired Data Entry** dialog box (Figure E.15) will open.

Ordinate	X ordinates	Y ordinates
Labels		
1		
2		
3		

Figure E.15 HEC-DssVue Manual Paired Data Entry Dialog Box

2. Type the **Pathname Parts** into the A, B, C, D, E, and F fields. The C-part name should reflect the X curve name - Y curve name. The complete pathname will automatically appear in the

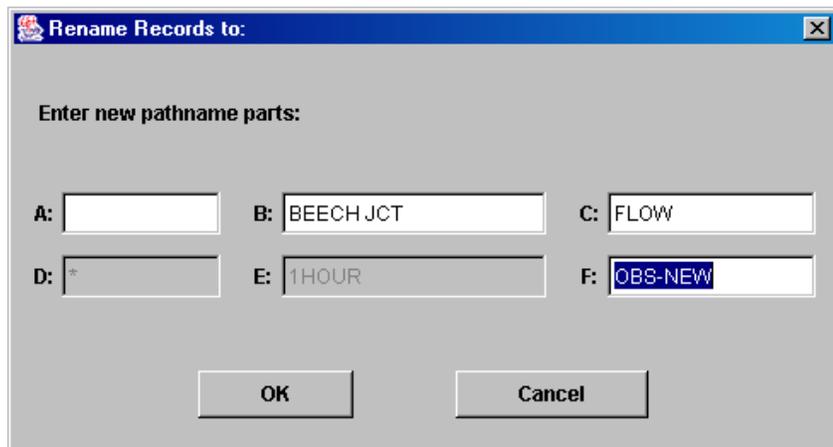
**Pathname** field. You can also enter the pathname into the **Pathname** field; the parts will appear in the **Pathname Parts** fields.

3. Select the **Number of Curves** (Y curves) from the list.
4. Enter the **X Units** and the **Y Units**.
5. Choose the **X Type** and **Y Type** scale from the lists. Available options are: Linear, Log, and Probability.
6. In the table, the **Y ordinates** column will split into individual columns according to the **Number of Curves** you have specified.
7. Type the data values into the **X ordinates** and **Y ordinates** columns.
8. To view the data in plot form, click the **Plot** button.
9. To save the new time-series record, click **Save**.

## E.10 Renaming DSS Records in HEC-DssVue

To Rename a DSS Record:

1. Select the record(s) either by double-clicking on it or by highlighting it then clicking the **Select** button. From the **Utilities** menu, select **Rename Records**. The **Rename Records to** dialog box (Figure E.16) will open.



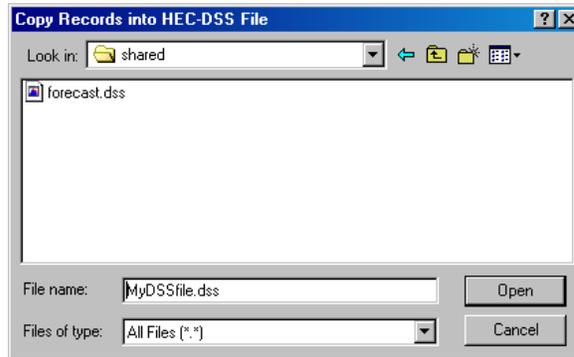
**Figure E.16 HEC-DssVue Rename Records Dialog Box**

2. Type the new **Pathname Parts** into the A, B, C, or F fields.
3. Click **OK**. A confirmation message will appear, stating that the record(s) has been renamed.

## E.11 Copying Records into a DSS File in HEC-DssVue

To Copy records into a DSS file:

1. Select the record(s) either by double-clicking on it or by highlighting it then clicking the **Select** button. From the **Utilities** menu, select **Copy Records**. The **Copy Records into HEC-DSS File** dialog box (Figure E.17) will open.



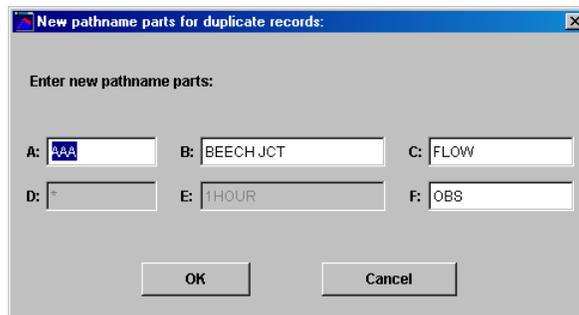
**Figure E.17 HEC-DssVue Copy Records into HEC-DSS File Dialog Box**

2. Type in a new DSS filename or select an existing DSS file into which you want to copy the record and click **Open**. A confirmation message will appear, stating that the record has been copied to the DSS file you specified.

## E.12 Duplicating Records in HEC-DssVue

To Duplicate a record:

1. Select the record(s) either by double-clicking on it or by highlighting it then clicking the **Select** button. From the **Utilities** menu, select **Duplicate Records**. The **New pathname parts for duplicate records** dialog box (Figure E.18) will open.



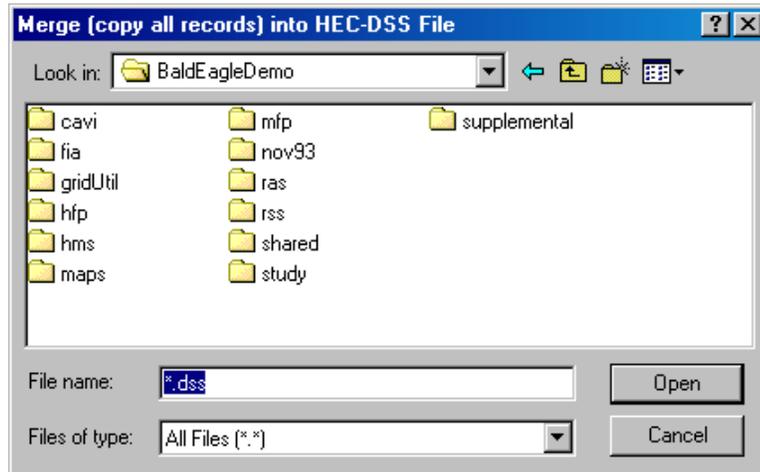
**Figure E.18 HEC-DssVue New Pathname Parts for Duplicate Records Dialog Box**

2. Type the new **Pathname Parts** into the A, B, C, or F fields.
3. Click **OK**. A confirmation message will appear, stating that the record(s) has been duplicated.

## E.13 Merging Records into a DSS File in HEC-DssVue

To Merge a record into a DSS file:

1. Select the record(s) either by double-clicking on it or by highlighting it then clicking the **Select** button.
2. Choose **Merge** from the **Utilities** menu. The **Merge (copy all records) into HEC-DSS File** dialog box (Figure E.19) will open.



**Figure E.19 HEC-DssVue Merge (copy all records) into HEC-DSS File Dialog Box**

3. Type in a new DSS filename or select an existing DSS file into which you want to merge the record(s) and click **Open**. A confirmation message will appear, stating that the record(s) has been merged into the DSS file you specified.

## E.14 Squeezing DSS Files in HEC-DssVue

When you delete or rename records, a HEC-DSS file can accumulate inactive space. The **Squeeze** command removes inactive space by copying all valid data to a new file then renaming the new file to the old filename. The **Squeeze** command also automatically re-adjusts the internal HEC-DSS table sizes to optimize access to data.

To squeeze a DSS file, open the file and select **Squeeze** from the **Utilities** menu. A window will appear indicating the status of the squeeze process, as shown by the example in Figure E.20. When the process is complete, a confirmation will appear (Figure E.21)

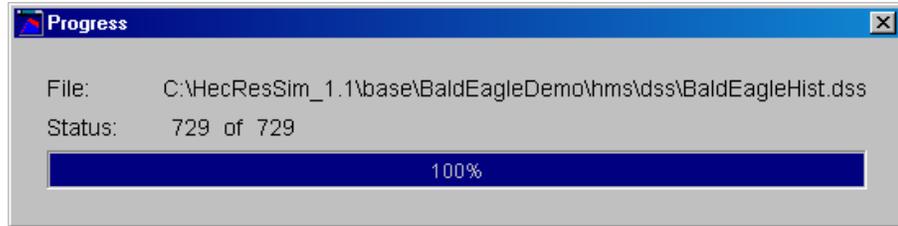


Figure E.20 HEC-DssVue Squeeze Progress Window (Example)

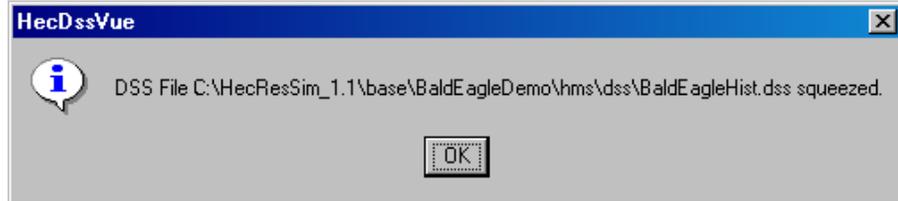


Figure E.21 HEC-DssVue Squeeze Confirmation Message (Example)

## E.15 Viewing DSS Status in HEC-DssVue

The **HEC-DSS File Manager Status** window displays the number of HEC-DSS files you have accessed during the current session and, for each file, the name and location, whether the file is currently open, the first and last times you accessed the file, and the total number of accesses. To view DSS Status, select **DSS Status** from the **Utilities** window. The **HEC-DSS File Manager Status** window will open (Figure E.22).

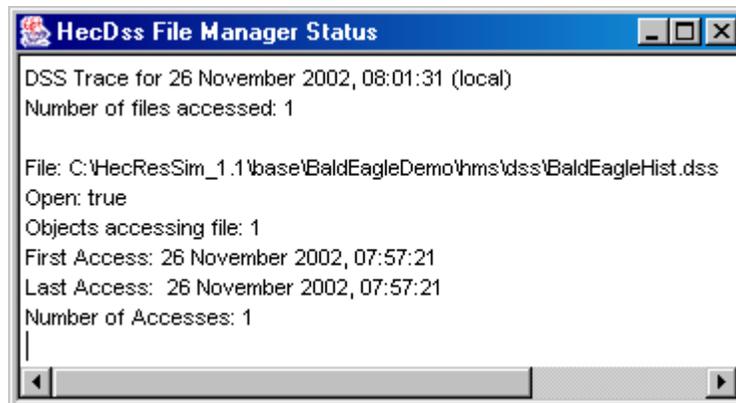


Figure E.22 HEC-DSS File Manager Status Window

## E.16 Deleting Records from a DSS File

To Delete records from a DSS file:

1. Select the record(s) either by double-clicking on it or by highlighting it then clicking the **Select** button.
2. Choose **Delete** from the **Edit** menu.
3. A confirmation message will appear asking you to verify the records to be deleted (Figure E.23)

4. If the list correctly identifies the record(s) to be deleted, select **Yes**, and a confirmation message will appear (Figure E.24) telling you the record(s) has been deleted. Otherwise, select **No**, and the records will not be deleted.

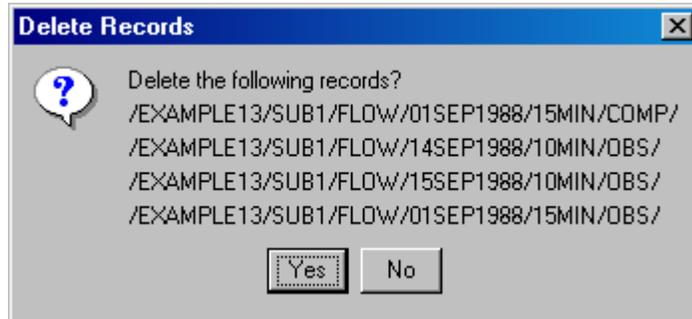


Figure E.23 Confirm List of Records to be Deleted

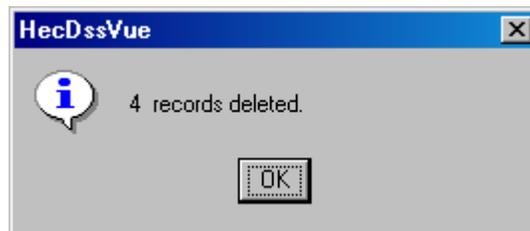


Figure E.24 Confirmation Message that Records have been Deleted

## E.17 Undoing Most Recent Revisions

There may be an occasion where you make a revision to your DSS file and then want to “undo” that revision. An **Undo** option is available from the **Edit** menu to undo the *LAST revision that you made* to your DSS file. For example, if you inadvertently delete a record, you can choose to “undo” that deletion, and the record will be restored.

## E.18 Printing Plots and Tables in HEC-DssVue

You can print plots and tables by selecting **Print** from the **File** menu of the plot and table windows. For more details on the printing capabilities, see Appendix F.

If you wish to change the appearance or the layout of the plots or tables, there are a number of options available to you.

In the plots, you can change the appearance of the lines by changing the line color and background color, and the font and style of the text labels. See Chapter 14, Section 14.5.2.2 for additional details for customizing plots.

