User's Guide to ShowFlow

version 2.0

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DISCLAIMER OF WARRANTY

The ShowFlow software and documentation are provided "as is" without guarantee or warranty of any kind, expressed or implied. Neither the author nor The University of Texas at Austin will be liable for any damages, losses, or claims consequent to use of this software or documentation.

Typographical Conventions

type style	used for
PROGRAM	Program names are written in capitals, excepting ShowFlow. For example: SSGPLUME.
new term	Italic type usually signals a new term.
KEYBOARD	Small capitals are used to identify the names of keys on the keyboard like CTRL, F1, or ESC.
FILE.DAT	Filenames, including program modules appear in this font. For example: ShowFlow.C.

Part 1 System Requirements

Since ShowFlow is an application based in *Microsoft Windows*, there are several requirements of your system. ShowFlow version 2.0 is compatible with all modes of *Windows 3.0* or later.

HARDWARE:

- A personal computer with the Intel 80386 processor (or higher) and 2 megabytes (MB) or more of memory (640K conventional memory and at least 1024K of extended memory).
- A hard disk and at least one floppy disk drive (if installing from a floppy).
- A video monitor supported by *Windows*.
- A printer supported by *Windows* if you want to print.

SOFTWARE:

- *Microsoft Windows version 3.0* or later installed.
- *Windows* requires *MS-DOS or PC-DOS version 3.1* or later.

Although not required, it is advised that your machine be equipped with a math coprocessor and a mouse. The coprocessor will make ShowFlow and especially the model program run much faster, and the mouse makes using *Windows* fun and efficient.

Part 2 Installation

2.1 Packing List of Files

The following files are found on the ShowFlow diskette or installation archive:

SHOWFLOW.EXE	the ShowFlow program
SSGPLUME.EXE	the SSGPLUME model program
TESTDATA.*	example data files (* = PAR, DAT, and TXT)
SFHELP.WRI	the ShowFlow help file, which can be read using *Windows* WRITE, the standard word processor bundled with *Windows*.
README.TXT	information text file, which can be read by any text editor, including NOTEPAD. This file will contain information including any changes which have occurred since this writing.

Be sure to back up these files on another diskette and to write-protect the diskettes.

2.2 Copying Files

From DOS:

ShowFlow is available in all common diskette formats. The diskette contains several files, all of which are to be copied to one directory on the hard disk. Although ShowFlow can be run from a diskette, a hard disk is strongly recommended. After backing up the diskettes, make a sub-directory on the hard disk, choosing any name. For example, enter the DOS command:

```
C> MD C:\SHOWFLOW
```

where SHOWFLOW is the name of the ShowFlow subdirectory. Copy all of the files from the diskette into this directory with the DOS command:

```
C> COPY A:\*.* C:\SHOWFLOW
```

From *Windows*' File Manager:

The File Manager may also be used to setup the ShowFlow directory and files. Clicking on the hard

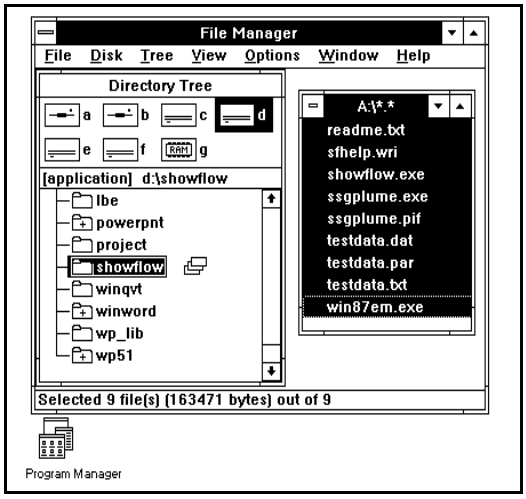

Figure 1 Copying files with File Manager. File Manager can be used to install the ShowFlow program on the hard disk.

disk icon (labelled "C") at the top of the Directory Tree window will produce a directory of the C disk. Create a subdirectory called "SHOWFLOW" on the hard disk with the "Create Directory..." command in the "File" menu. The new directory will appear in the tree in alphabetical order. Assuming that ShowFlow is being installed from a diskette in the A: drive, click on the diskette icon labelled "A", then double click on the "A:\" in reverse video in the directory tree to produce a directory window showing all of the files on the A diskette. Move this window to the side, and click again on the "C" hard disk icon to retrieve the directory tree of the C drive. Select all of the files in the "A:*.*" directory window by clicking once on the first one, then, holding down the SHIFT key, once on the last one. All of the selected files should appear in reverse video as in Figure 1. Now use the mouse to "drag" the selected files over to the SHOWFLOW directory on the C drive, as shown in the figure. *Windows* will copy the files.

The installation is now complete. For convenience, the ShowFlow and SSGPLUME programs may be added to a Program Manager group. With both the File Manager and Program Manager occupying different places on the screen as in Figure 2, simply drag the file name

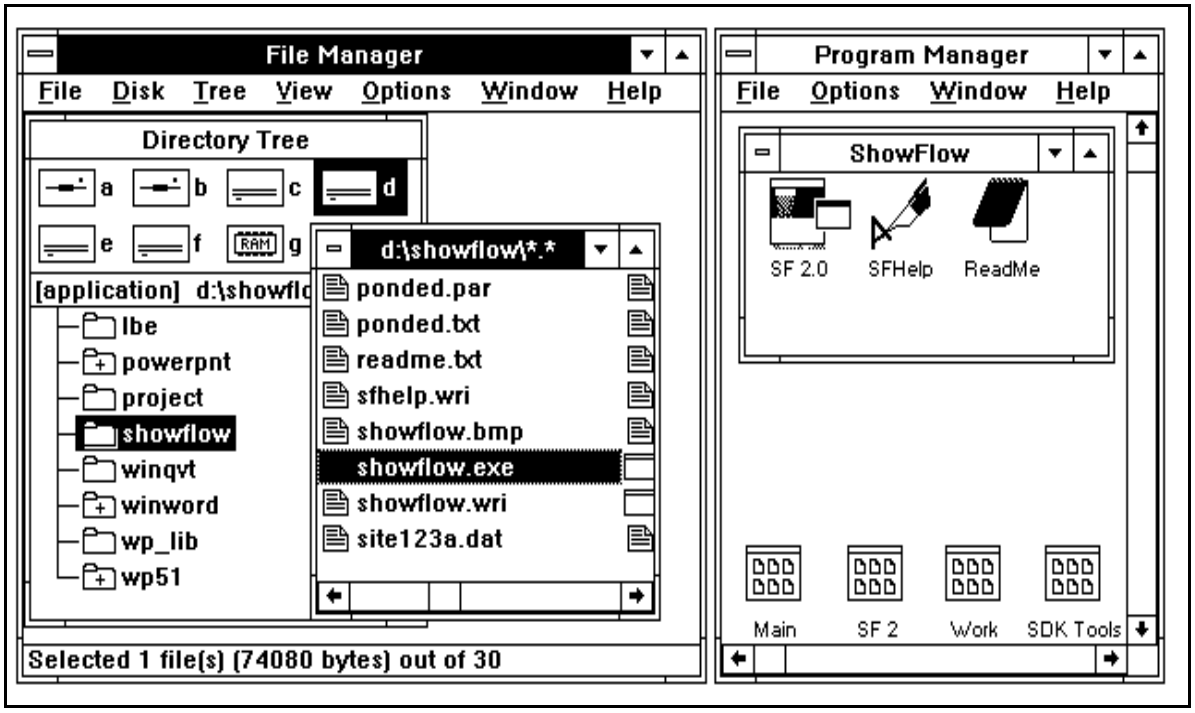

Figure 2 Adding ShowFlow to a group. The ShowFlow program can be installed in a Program Manager group by dragging SHOWFLOW.EXE from the File Manager.

SHOWFLOW.EXE to the desired Program Manager group, where it will appear as an icon. Similarly drag SFHELP.WRI and README.TXT to the ShowFlow group for easy reference.

Note that all the modeling work must be done in the SHOWFLOW directory, and that all active data files must be kept there.

Part 3 Using ShowFlow

3.1 Starting Up

Like other *Windows* applications, ShowFlow will appear in a Program Manager group as an icon, and can be started simply by double clicking with the mouse cursor on the icon.

ShowFlow can also be started from *Windows*' File Manager by double-clicking on the file named SHOWFLOW.EXE with the mouse pointer. If you do not have a mouse, choose "Run..." from the "File" menu (ALT+F and R) and enter "SHOWFLOW.EXE" in the prompt box. The screen will clear and the main window of ShowFlow will appear in the upper half of the screen.

In the standard *Windows*-style interface, a variety of menu options appears in a *menu bar* along the top of the ShowFlow window (Figure 3). These menu options are headings for related operations which will appear in the *pull-down menu* below each menu item. For more information on using the standard *Windows* interface, see the section on Using *Windows*, or consult the *Windows* documentation.

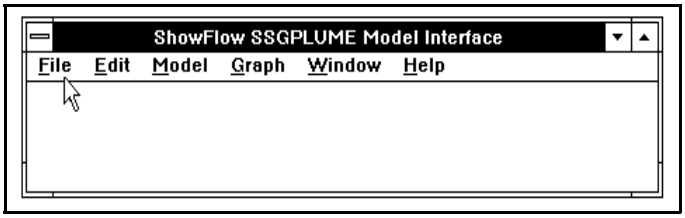

Figure 3 ShowFlow as it first appears.

When ShowFlow first appears on the screen, some menuitems are written in a lighter color, or *grayed*. This means that that command is not available at this time, since no data parameters have yet been loaded into the program. For example, the Save and Graph commands are grayed since no data yet exist to save or graph. The available options include File Open and Edit, to open an existing parameter file or edit one from scratch. Once data have been loaded, all of the menu options are available.

3.2 File Naming Conventions

ShowFlow uses several files which will appear in the local directory. SHOWFLOW.EXE is the ShowFlow program, and the plume model program is SSGPLUME.EXE.

Data files for the simulations will no doubt multiply rapidly, but they all share the same conventions: There are three files associated with each run, all with the same prefix (eight characters or fewer) but different extensions (three characters or fewer). *.PAR identifies a *parameter file*,

which is edited by ShowFlow and read by the model program as an input file. The model program generates the other two files: *.DAT and *.TXT. The *data file* contains data which ShowFlow uses to generate graphs, and the *text file* contains neatly formatted and labelled data for reference. These files may all be copied, moved, renamed, or deleted with no effect on ShowFlow.

3.3 Menu Commands

Every command available in ShowFlow is listed as a menu option either in the main menu bar, in a pull-down menu, or in the system menu which is accessed by clicking on the icon in the upper left corner of the window or by pressing ALT + SPACEBAR on the keyboard. Some commands are followed by an ellipsis (...), which means that more information will be requested before executing. Either this information is needed to continue or the user's confirmation is desired before embarking on an extended process. A menuitem may also have one letter underlined, or it may be followed by an *accelerator* (such as "Graph Results ^G"). These are shortcut codes for the keyboard and are described below in the Using *Windows* section about the Menu Bar and Pull-Down Menus. The user familiar with the program may find that the keyboard is often faster than the mouse.

The standard *Windows* interface adopted by ShowFlow is consistent with the Common User Access (CUA) standards adopted by a growing number of other computers.

Following is a summary of all commands available to ShowFlow:

File
- New
- Open...
- Save
- SaveAs...
- Close Graph
- Exit ShowFlow

Edit
- Edit Parameters...

Model
- Run Model...
- Select Model <

Graph
- Graph Results...
- Copy Graph
- Print Graph

Window
- Cascade
- Tile
- Arrange Icons
- Close All

Help
- Read Help File
- About the Model...
- About ShowFlow...

The System Menu
- Restore
- Size
- Move
- Minimize
- Maximize
- Close
- Switch to...

File

The File menu lists commands for manipulating files, and includes the option to Exit ShowFlow.

New

New clears the memory of parameters and file names, restoring ShowFlow to its startup state.

Open...

The Open dialog box (Figure 4) is used to open a parameter file. This file contains the input data, or parameters, for the model program. Once opened by ShowFlow, the parameters are available for editing or saving under a new name.

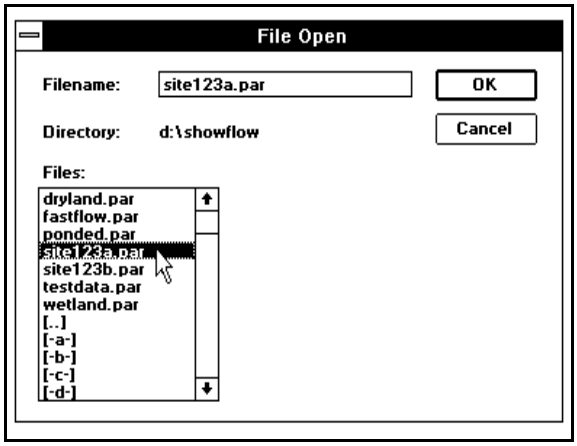

Figure 4 "File Open" dialog box. This dialog box shows a directory listing of relevant files.

Save

Save will save the current parameter settings under the current file name if they have changed since the last Save.

SaveAs...

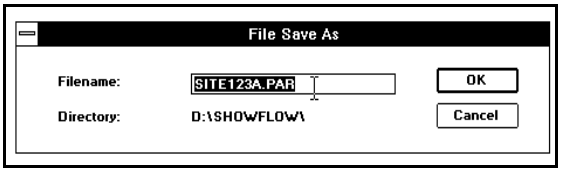

Figure 5 "File Save As" dialog box. ShowFlow uses the standard "SaveAs..." dialog box for saving a parameter file under a new name.

The SaveAs dialog box (Figure 5) will prompt for an alternate file name under which to save the current settings. When entering the name, it is sufficient to enter only the prefix (the first eight or fewer characters). ShowFlow will tack on the appropriate extension ".PAR".

Close Graph

This command removes the currently active graph window from the screen and from memory.

Exit ShowFlow

This is used to terminate ShowFlow, but remember that upon exiting, the screen will be cleared of all graphs.

Edit

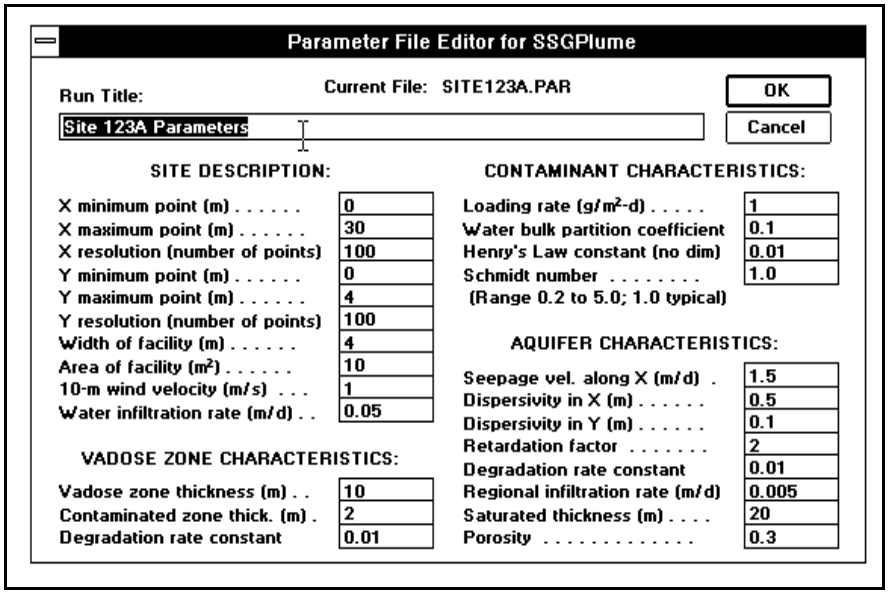

Figure 6 "Parameter File Editor" dialog box. This is a simple error-checking form for the entry of ShowFlow parameters.

Edit Parameters is the only option in this pull-down menu, activating the Parameter File Editor (Figure 6).

Model

Run Model Before the subprocess to run the model program is actually launched, the user will be prompted to save the parameter file if any changes have been made, and asked for a final confirmation (Figure 7). Although this may seem redundant, it is necessary to preclude accidentally running the model by casually clicking on the menu command. Running the model may be a lengthy process which should not be started by mistake.

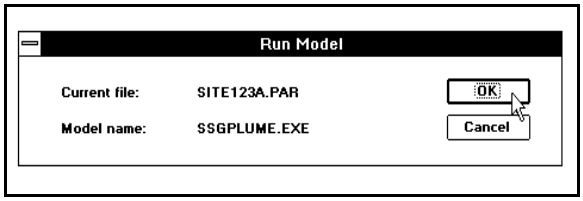

Figure 7 "Run Model" dialog box. This checks for confirmation from the user before executing the model program.

Select Model is only a hint of ShowFlow's future.

Graph

The **Display Graphs** dialog box (Figure 8) will prompt the user for which graphs to generate, and will draw them on the screen. If the results of another simulation are needed, simply Open the other file to make it current and try Graph Results again. If the .DAT file for the current name does not exist, the user will be prompted to run the model to generate the data file. If the model previously has already been run, then it need not be run again as long as the .DAT file is in the same directory.

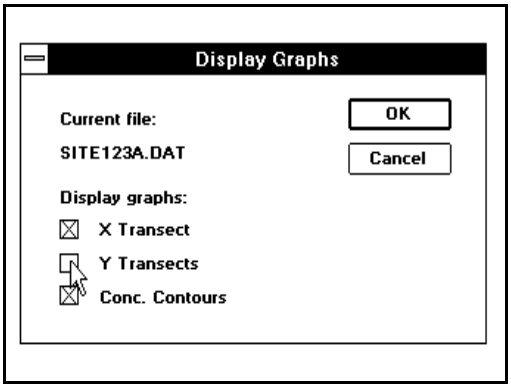

Figure 8 "Display Graphs" dialog box.

Copy Graph copies the contents of the graph window, in its current size and

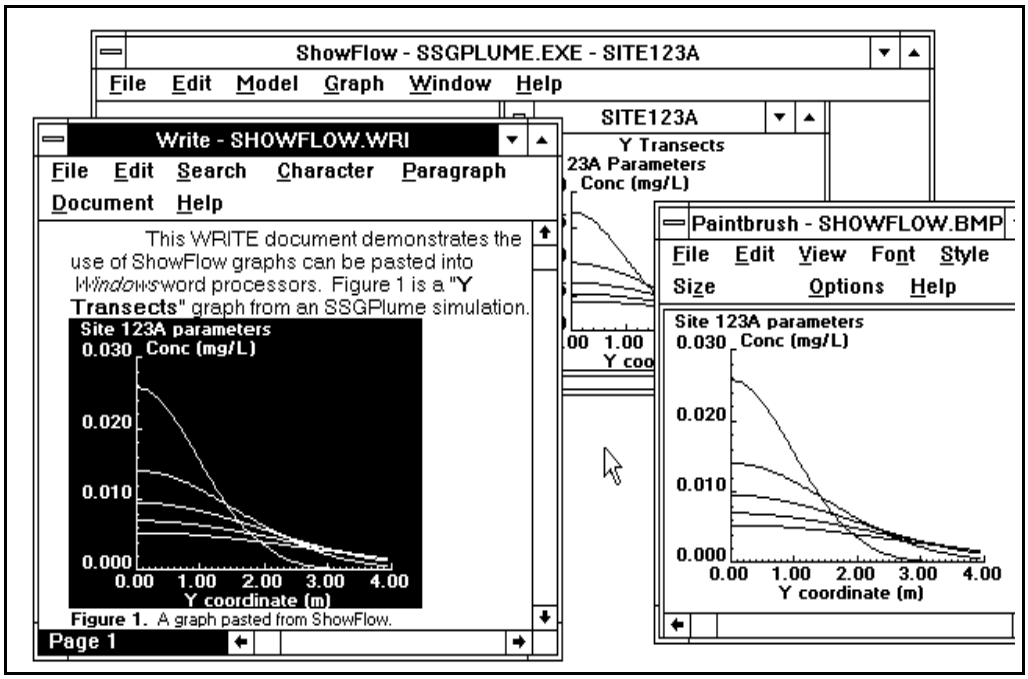

Figure 9 ShowFlow and other programs. The *Windows* Clipboard provides for the cutting and pasting of graphic images and other data between applications.

configuration, to the *Windows* Clipboard, a data storage facility available to all *Windows* applications. As illustrated in Figure 9, once copied to the Clipboard, the graph can be transferred to other applications such as PAINTBRUSH or WRITE using the "Paste" command from those applications. Nothing can be pasted into ShowFlow, but the graphs can be exported this way.

Print Graph prints a copy of the graph on whatever printer *Windows* currently recognizes. (Choice of printers is available through the *Windows* Control Panel). ShowFlow attempts to make an exact actual size copy of the graph window on the printed page, so what appears in the graph window is what will appear on paper. Small graphs print fairly quickly (several seconds) but larger ones will take longer since there are more points to transfer. A full-page graph will be scaled down to fit on the page, and may take several minutes, depending on the sophistication of the printer.

ShowFlow's print function does not support plotters or daisy-wheel printers, since they cannot print bitmaps.

Window

Cascade

Arranges the graph windows in a cascaded formation, as in Figure 10.

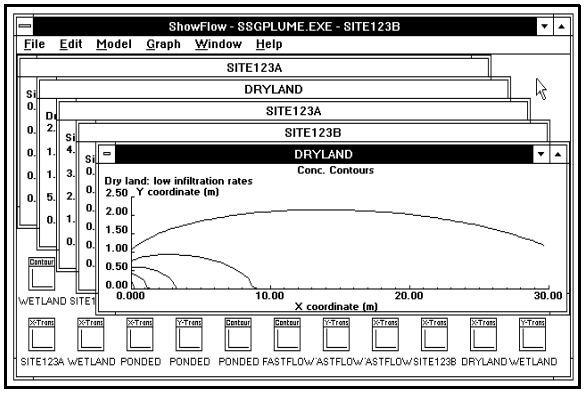

Figure 10 Cascaded ShowFlow graph windows.

Tile

Arranges the graph windows in a tiled formation, as in Figure 11.

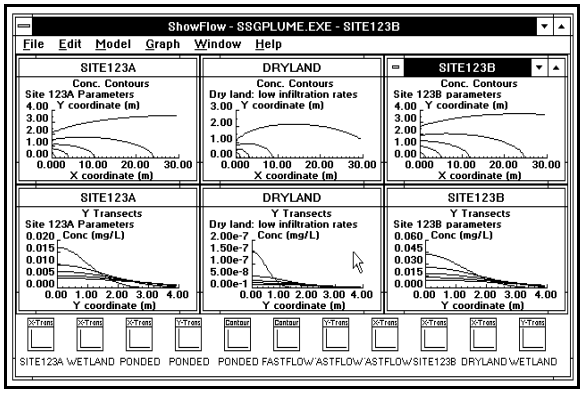

Figure 11 Tiled ShowFlow graph windows.

Arrange Icons

Neatly rearranges the graph icons.

Close All

Closes all of the graph windows and removes them from memory.

Help

Read Help File

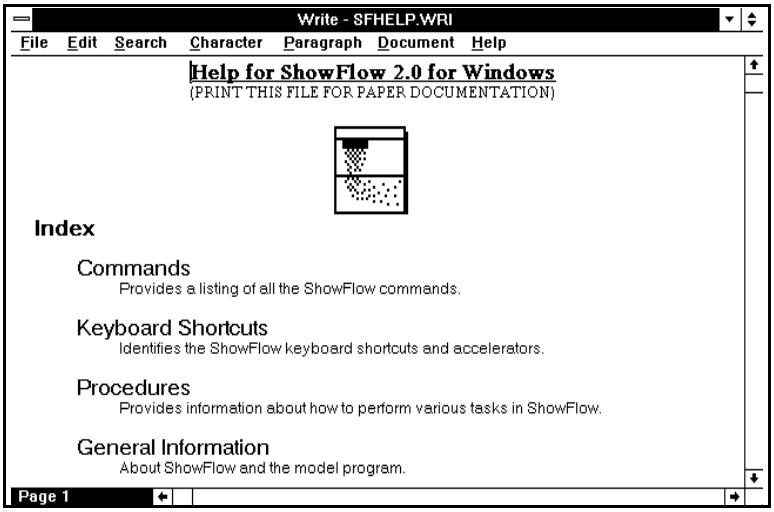

Figure 12 ShowFlow "Help" information in **SFHELP.WRI**.

With ShowFlow 2.0, the Help information has been moved to a separate document, SFHELP.WRI, which can be read using WRITE, the standard word processor which comes bundled with *Windows*. Figure 12 shows a sample of this Help file.

About the Model and **About ShowFlow**

The standard "About" dialog boxes provide information pertaining to the origins of the programs.

The System Menu

The system menu, common to all windows programs, is accessed by clicking on the spacebar icon in the upper left corner of the window or by typing ALT + SPACEBAR from the keyboard. In addition to choosing various modes of display of the window, the program may also be terminated. Since these functions are common to all *Windows* programs, they are covered in Part 4: Using *Windows*.

3.4 ShowFlow Procedures

Y ***Opening an existing file***

! Choose the "Open..." option from the "File" menu. The Open dialog box will list the relevant file names in the default directory, as shown in Figure 4.

! Scroll through the list of names using the scroll bar with the mouse, or the arrow keys on the keyboard.

! If the name of the desired file is listed here, double-click on the name to open it. (With the keyboard, type the name in the box and choose ENTER to open the file. If you decide not to open a file, choose ESC to cancel.)

Y ***Using the Parameter File Editor***

! Call the Parameter File Editor by choosing the "Edit" and "Edit Parameters..." option from ShowFlow's menu. See Figure 6.

! By default, the text in the Run Title box has been selected for editing. Any typing done now will replace what is in the Run Title box. The Run Title will appear as an identifying title on all three graphs. If you do not want to replace the text but rather edit it, use the mouse or the arrow keys to position the cursor in the box. The DELETE key will delete to the right of the cursor, and the BACKSPACE key to the left. To select some text for replacement use the mouse to "drag" over the text and change it to reverse video, as described in the Using *Windows* section.

! Move to the other text fields beside each parameter description with either the mouse or the TAB key. (To move backwards, use SHIFT + TAB.) Edit the contents of each window as desired. For the model SSGPLUME numeric values are free format so that the values 0.005, .005, 5e-3, and 5.0E-3, are all acceptable versions of 5×10^{-3}.

! Accept the new values by choosing the "OK" pushbutton (ENTER). "Cancel" (ESC) will abandon any changes made. Each field will be tested for illegal characters or out-of-range values, in which case an error message will appear as in Figure 13. After acknowledging this message with "OK", the user will have the opportunity to edit the offending field where ShowFlow has moved the prompt.

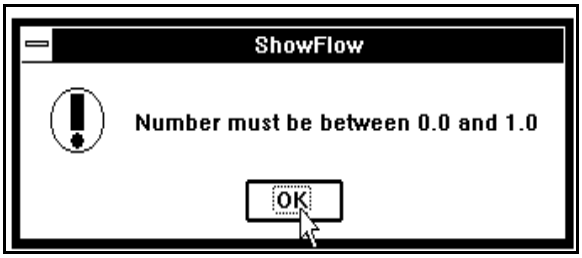

Figure 13 Data entry error message. ShowFlow scans the parameter data for illegal and out-of-range values so that the user may correct them easily.

! After exiting the Parameter File Editor, the changes are in ShowFlow's memory, but *they are not saved to a file*. Use the "Save" or "SaveAs" commands to save them.

NOTE: To view the underlying graphs while assigning values to the parameters, the Editing window (like any other) can be almost entirely moved off the screen by dragging its title bar. See references to the Move command in Using *Windows*.

Y *Creating, Running, and Graphing a Model Simulation*

- **!** Open an existing parameter file for a template if desired by following the procedure for Opening an existing file.

- **!** Call the Parameter File Editor by choosing "Edit" and "Edit Parameters..." from the ShowFlow menu (or use the accelerator ^E).

- **!** Enter data in the Parameter File Editor as described in the next section, and "OK" (ENTER) to exit the editor.

- **!** Save the file under a new name with the "SaveAs" command from the ShowFlow "File" menu. When asked for a new file name, enter a name of up to eight characters. There is no need to add the .PAR extension, as ShowFlow will do this. If you want to save the file without changing the name, simply choose the "Save" option from the "File" menu.

- **!** Choose "Run" and "Run Model..." to execute the model program. A dialog box will appear to confirm the name of the file and the name of the model program before proceeding. To run it, choose "OK" (ENTER); otherwise choose "Cancel" (or ESC) and the focus will be returned to the main window.

- **!** To generate graphs of the data, choose "Graph" and "Graph Results..." to get the graph dialog box.

- **!** Choose which graphs to make by clicking on the check boxes. An "X" in the box means that it has been selected. To do this from the keyboard, press the TAB key to move the highlight to the desired checkbox and SPACEBAR to turn the check on or off.

- **!** Choose "OK" to draw the graphs. This may take a few seconds during which ShowFlow replaces the arrow cursor with an hourglass. This means that the program is busy and will not accept input until the arrow returns.

- **!** To close a graph, choose "Close" from the graph window's system menu, or double-click with the mouse on the system menu icon in the upper left corner. Closing unneeded graphs makes more room in memory for other graphs or programs.

Y *Copying a Graph to the Clipboard*

- **!** Generate a graph as described above.

! From the **Graph** menu, choose the "Copy Graph" option. This copies the graph to the Clipboard and replaces any previous Clipboard data.

! To see the contents of the Clipboard at any time, run the Clipboard program **CLIPBRD.EXE** which comes with *Windows*.

! To paste the graph into another application, find the "Paste" command in that application's menu, if available. It should be listed under the "Edit" pull-down menu. Figure 14 shows a ShowFlow graph pasted into PAINTBRUSH.

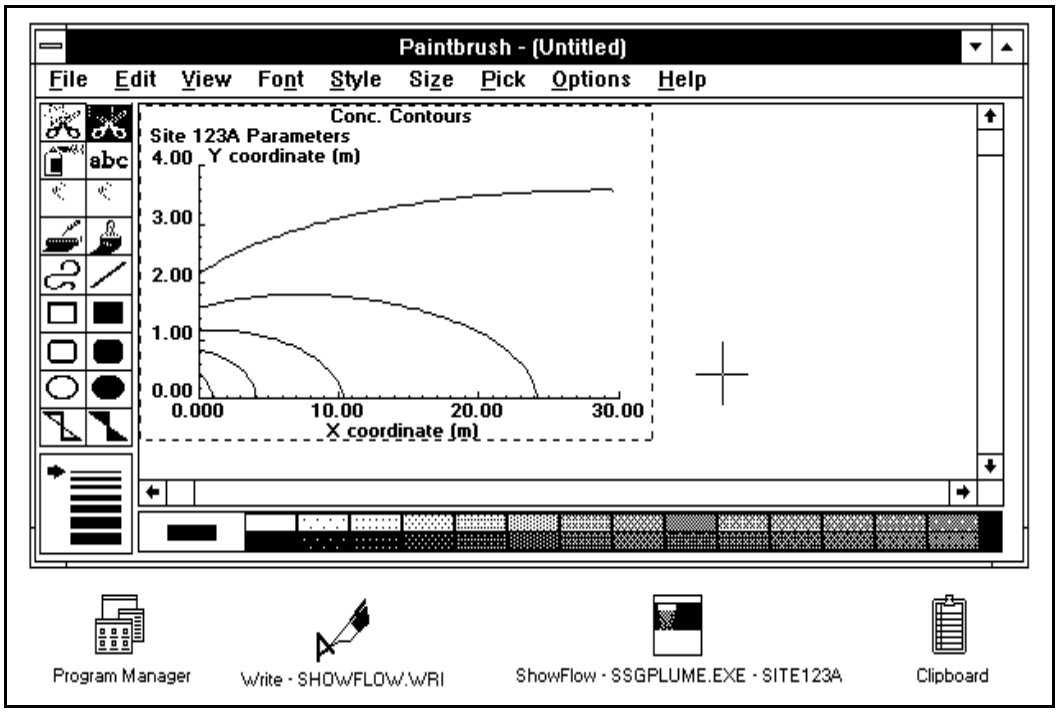

Figure 14 Cutting and pasting graphs. ShowFlow graphs can be pasted into PAINTBRUSH and other programs via the Clipboard.

! Bitmaps copied to the Clipboard can be saved as *.CLP files as well, so that graphs may be kept for later use.

Y *Printing a Graph*

! Generate a graph as described above.

! From the **Graph** menu, choose the "Print Graph" option.

! After a few seconds, a message reading "Sending graph to print manager." will appear, with the option to cancel the print job. Unless the job is to be cancelled, wait until

the message disappears. This means that the image has been sent on its way and ShowFlow is ready to continue.

Note that small graphs will print relatively quickly but that larger images will take longer. A full-page graph may take several minutes, depending on the sophistication of the printer and printer driver software, and on availability of free memory and hard disk space.

Y *Running a Batch of Simulations*

- Create a series of parameter files with unique names for all the simulation runs. This may be done efficiently in ShowFlow by alternating between the Edit and SaveAs functions. HINT: Do not use the New command, but rather recall the current parameters and change only those desired, including the Run Title line.

- Create a DOS batch file to run the simulations consecutively. This file can be made using any text or program editor, such as *Windows* NOTEPAD (which may be run concurrently with ShowFlow), and should be given the extension .BAT to identify it as a batch file. The text of the file is simply a series of commands which would be entered at the DOS command level to run the simulations. For example:

```
SSGPLUME RUN1.PAR RUN1.DAT RUN1.TXT
SSGPLUME RUN2.PAR RUN2.DAT RUN2.TXT
SSGPLUME RUN3.PAR RUN3.DAT RUN3.TXT
SSGPLUME RUN4.PAR RUN4.DAT RUN4.TXT
SSGPLUME RUN5.PAR RUN5.DAT RUN5.TXT
SSGPLUME RUN6.PAR RUN6.DAT RUN6.TXT
```

  This file could be named DORUNS.BAT and would execute six runs of the SSGPLUME program, which can be run with the three file names as command line arguments. To begin the runs, exit *Windows* to the DOS prompt and type DORUNS to run the batch file. In this way, the computer can execute dozens of simulations while you do something else.

- After the runs are completed, restart *Windows* and ShowFlow.

- Open a file in the list and graph the data. Squeeze the graph to a small size and move it out of the way of new graphs. The title line should remain visible for identification as in Figure 15.

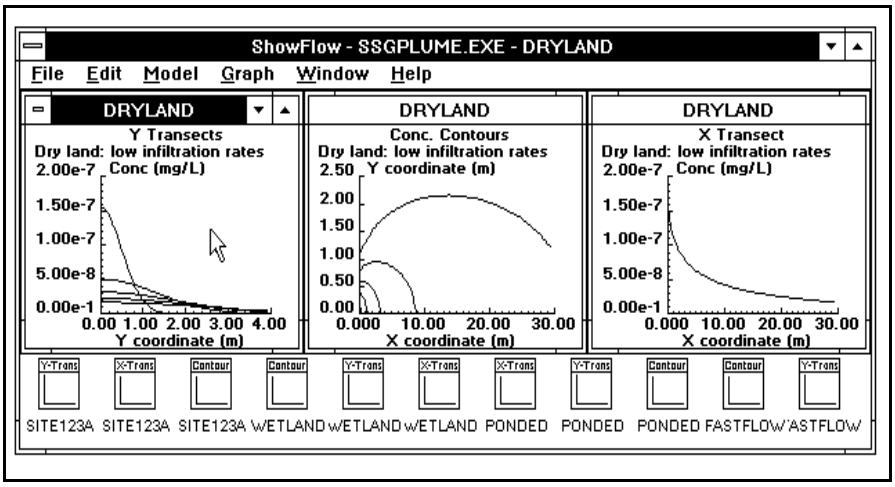

Figure 15 Multiple simulations. Several graphs can share the screen as both graph windows and icons.

! Similarly generate graphs for the other files.

! Now all of the graphs are on the screen and results can be compared by arranging the graph windows side-by-side and stretching the scales, as in Figure 16.

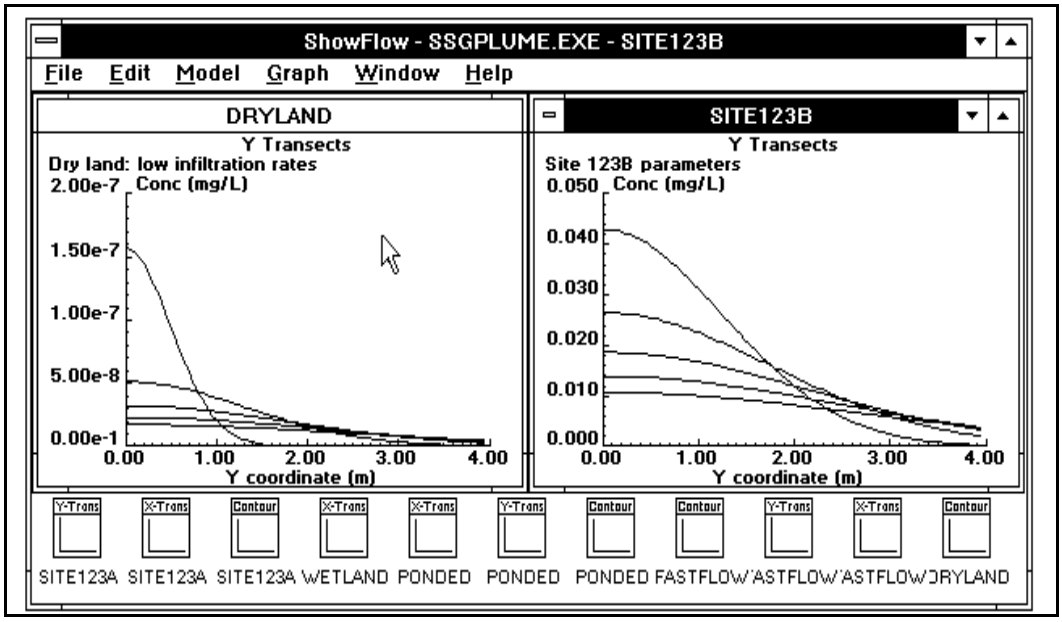

Figure 16 On-screen comparison of results. Results from several simulations can be compared on the screen.

! To review the parameter settings for a particular run, open the file in question and view the data using the Parameter File Editor.

NOTE: Each graph on the screen consumes 1 to 2 KB of memory which is freed on closing the graph window. With several graphs and/or other applications running, ShowFlow may determine that there is not enough free memory to create another graph. In this case, the user will be asked to terminate something to create more room in memory.

Y ***Exiting ShowFlow***

To exit any *Windows* program, double-click with the mouse on the system menu in the upper left corner. If any work has not been saved, ShowFlow will alert the user to save it before the program closes down.

Part 4 Using *Windows*

The best information on using *Windows* is available in the *Microsoft* documentation which came with your *Windows* package. The following information is for the convenience of the user.

4.1 The Program Manager

When *Windows* starts (with the `WIN` command from the DOS prompt) it presents a window entitled "Program Manager". The Program Manager is an icon-based application manager, which arranges applications in *groups* (Figure 17).

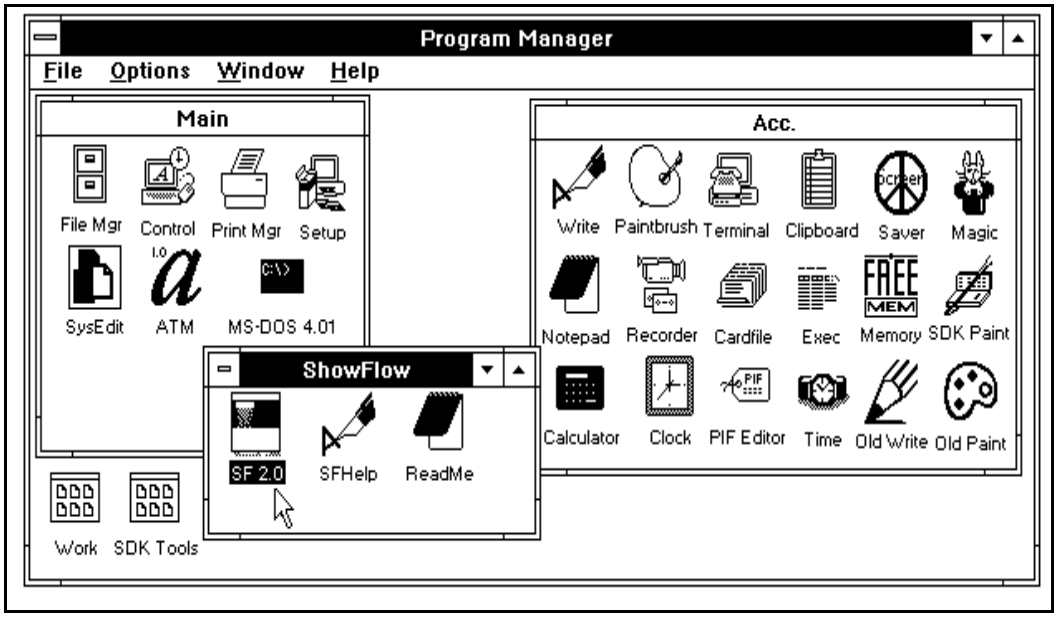

Figure 17 ShowFlow group in Program Manager.

A group of applications is not a directory -- it does not contain files but only iconic references to applications or files which may exist anywhere on the system. The icon for a particular application may appear in more than one group without duplicating the file on the system. In this way especially the Program Manager is a great enhancement to DOS since it eliminates the need for duplication of programs on the hard disk or for an absurdly long path variable. Every application on the system can be made accessible to one or more groups, so that a text editor, for example, can be run from a general purpose group, a program development group, and a system maintenance group without making a copy for each.

4.2 The File Manager

The File Manager is a text-based file management system. The principal window (Figure 1) contains a directory tree for the current drive, and directory windows which may be generated by double-clicking on the directory name in the tree. Since several directories can be accessed and displayed on the screen, files and even entire directories can be moved and copied simply by dragging them around with the mouse. The experienced DOS user will appreciate the significance of this immediately, since the task of moving a directory in DOS can be quite cumbersome. With both the File Manager and Program Manager sharing the screen, files and applications can be added to Program Manager groups simply by dragging the filename from a directory window to a group window.

Files use standard DOS file names, though *Windows* recognizes several default file name extensions. For example, double-clicking on a *.TXT file will cause *Windows* to automatically load the text editor NOTEPAD and display the file in the NOTEPAD program. Similarly, *.BMP and *.PCX files are associated with PAINTBRUSH , *.WRI with WRITE, and so on. This feature can be extremely handy at times, especially when the NOTEPAD or PAINTBRUSH program is not immediately available -- *Windows* will know where to find it. The user can add new associations with the "Associate..." command in the "File" menu.

4.3 Starting a *Windows* Application

After locating a *Windows* program (it will have an *.EXE extension like most other programs), it can be started by double-clicking with the mouse on the name listed in the directory. (If you do not have a mouse, choose "File" and "Run..." from the menu and type the name of the program in the box provided.) Once started, the program can be temporarily moved out of the way by shrinking it to an icon on the bottom of the screen with the "Minimize" command. This way the program can be recalled in the same configuration. Any number of *Windows* applications may be run concurrently, provided there is enough memory.

4.4 Exiting a *Windows* Application

To exit any *Windows* program, double-click with the mouse on the system menu in the upper left corner. If any work has not been saved, you will be prompted to save it before the program closes down.

4.5 The Menu Bar and Pull-down Menus

The pull-down menus are activated by either clicking with the mouse or typing the underlined letter while holding down the ALT key. For example, to see the "File" menu, press ALT + F or click with the mouse on the word "File". Items from the pull-down menu can be chosen by clicking with the mouse or simply pressing the underlined letter, this time without the ALT key.

4.6 The System Menu

The system menu, common to all windows programs, is accessed by clicking on the spacebar icon in the upper left corner of the window or by typing ALT + SPACEBAR from the keyboard. In addition to choosing various modes of display of the window, the program may be terminated as well.

Following is an explanation of System Menu commands:

Restore

Restore returns the window to its previous size on the screen after Maximizing or Minimizing it. Double-clicking on an icon Restores the window from its minimized state. From its maximized (full screen) state, click on the small box with two arrows in the extreme upper right corner.

Size

The size of the window is most easily changed by dragging with the mouse, but may also be done from the keyboard using the Size command. *Windows* provides a four-headed arrow cursor, enabling the arrow keys to move the borders of the window. Pressing ENTER will disengage the sizing function.

Move

Similar to the Size command in function, the Move command allows for repositioning the window on the screen via the keyboard.

Minimize

To reduce the window and all its associated windows (such as ShowFlow graphs) to an iconic state, choose the Minimize option. A shortcut to minimize is to click on the small box with a down arrow in the upper right corner of the window. The up arrow next to it will Maximize the window.

Maximize

Maximizing a window makes it use the entire screen. A shortcut to maximize is to click on the small box with an up arrow in the upper right corner of the window. The down arrow next to it will Minimize the window. Once maximized, one arrow box changes slightly, displaying two arrows. This box will Restore the window to its previous dimensions.

Close

The Close function terminates the program, exactly as the Exit function in the File menu does.

Switch to... (CTRL + ESC)

The "Switch to..." command is used to switch between currently running applications. It invokes the Task List, which allows for switching the focus to another task even if it is not currently occupying the screen.

4.7 Accelerators

A shortcut for most commands is available via the keyboard. For example, the shortcut for the "Run" command is indicated by the "^R" next to the command. This is called an "accelerator" key, and is activated by pressing CTRL + R. Other command accelerators are as follows:

New	CTRL + N
Open	CTRL + O
Save	CTRL + S
SaveAs	CTRL + A
Exit	CTRL + X
Edit	CTRL + E
Run	CTRL + R
Graph	CTRL + G
Copy Graph	CTRL + INSERT
Print Graph	CTRL + P
Help	F1
Tile	SHIFT + F4
Cascade	SHIFT + F5

4.8 Dialog Boxes

The boxes which may pop up after entering certain commands are called dialog boxes, and they are *Windows* way of getting needed information to or from the user. They may be as simple as the "About" box, which displays information about the program, or they may be rather complex with many fields and a variety of response options. Dialog box controls are classified as pushbuttons, radiobuttons, checkboxes, listboxes, and the like, and most will indicate whether they have the *focus* by displaying the cursor or a highlighted border. After some experimentation, the function of the various controls will become apparent.

The logic behind the controls is standardized, and most *Windows* applications will follow the standard uses. For example, to exit a dialog box, click on a pushbutton labelled "OK" (or use the ENTER key), or "Cancel" (ESC), or something similar. A common type of dialog box is the "Yes/No/Cancel" type, displayed if unsaved data exist when the program tries to terminate (see Figure 18). Answering "Yes" tells the program to save the file and proceed with the exit, "No" will not save the file but will still exit, and "Cancel" will do neither, returning focus to the program. Dialog boxes are most easily handled with the aid of a mouse, but also support keyboard commands.

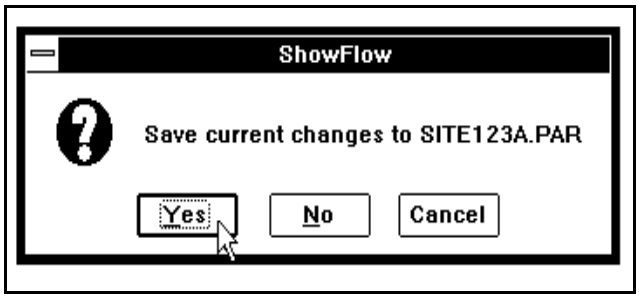

Figure 18 "Yes/No/Cancel" message box. This appears if new work has not been saved.

Dialog Boxes and The Mouse

Using the mouse in a dialog box is intuitive. To move to a field, simply position the cursor over it and click. Selecting text in a field is done by "dragging" the mouse over it: the highlighted text will be replaced by whatever is entered from the keyboard. Some fields, like list boxes (the Open box has one of these) use scroll bars, which have several functions: drag the thumbtrack (the little square box) with the mouse, click with the mouse on the arrows at the ends (line up/down) or click between the ends and the thumbtrack (page up/down).

Dialog Boxes and The Keyboard

The keyboard can be used to navigate around a dialog box by using the TAB and SHIFT + TAB keys to hop from control to control. Whichever control is active will usually be highlighted or will contain the cursor. Checkboxes and radiobuttons are switched on and off with the SPACEBAR. Scrolling through listboxes is done with the PAGE UP/PAGE DOWN and arrow keys, 8 and 9.

4.9 About Icons

The small images displayed in the Program Manager groups and at the bottom of the *Windows* screen are icons, which represent programs or files associated with them. These programs can be activated by the Restore command which will restore the program to its windowed state exactly as it appeared before. Double-clicking on an icon is a shortcut for restoring the program. Icons are most useful when running several applications at once and maintaining your position in all of them.

To transform a program to its iconic state use the Minimize command from its system menu or choose the small down arrow box in the upper right corner of the window.

4.10 Using the Clipboard

The *Windows* Clipboard is a facility used for the temporary storage of information. This information can be in the form of text, bitmaps, metafiles, etc., and can be exchanged between different applications. ShowFlow uses the Clipboard to copy graphs so that they can be imported into other *Windows* applications, and any application which has the commands "Cut", "Copy", or "Paste" probably uses the Clipboard for these operations. The contents of the Clipboard can be viewed at any time using the CLIPBRD program which comes with *Windows*.

Clipboard images may further be saved in a *.CLP file to be retrieved at a later time. This is useful for saving graphs so that ShowFlow will not be needed to regenerate them.

4.11 *Windows* Procedures

Y ***Changing The Window Focus***

If multiple applications are on the screen, only one is active at any one time. The active window may have a differently colored title bar or border (the colors can be adjusted through the Control Panel), and is said to have the *focus*. Changing the focus with the mouse is as easy as clicking in a different window, but using the keyboard is trickier, involving key combinations like ALT + ESC, SHIFT + ALT + ESC, ALT + TAB, and SHIFT + ALT + TAB.

The easiest way to change the focus is with the "Switch to..." command on the system menu (see section 4.5 The System Menu). The keyboard accelerator for this command is CTRL + ESC.

Navigating among the graph windows of ShowFlow, (which are called *child windows*) is made easy by selecting the **Next** command from the graph's system menu, accessed via ALT + HYPHEN.

Y ***Editing Text***

Dragging means to position the cursor at a starting point, then, while holding down the mouse button, move to the other end of the selection. Conventionally, whatever is in reverse video will be deleted with the DELETE key or will be replaced by whatever is entered from the keyboard. This is standard *Windows* practice and holds for most *Windows* applications.

Y ***Sizing a Window With the Mouse***

To change the size of a window, move the mouse cursor to an edge or corner border of the window. When it is directly over the edge, it will change shape to a small double-headed arrow, indicating the allowed directions of movement. While pressing the mouse button down, drag the cursor to another position on the screen and an outline of the border will follow. When the mouse button is released, the window will be redrawn to fill the new size.

Y ***Moving a Window With the Mouse***

To move an entire window without changing its size, position the cursor over the caption bar at the top of the window. Press the mouse button down and drag the window across the screen. When the button is released, the window will be redrawn in its new location.

Y ***Using ShowFlow with Other Windows Applications***

One of the distinct advantages of using the *Windows* interface is that data can be exchanged between applications. A few examples of other applications using ShowFlow's data follow:

PAINTBRUSH

Windows' standard PAINTBRUSH program is capable of editing bitmaps, or graphic images. Along with various drawing tools, it provides several scalable character fonts for text. Graphs generated by ShowFlow can be copied to the Clipboard (see "Copy Graph" command) and pasted into PAINTBRUSH while both programs occupy the screen. Once in PAINTBRUSH, the graph can be dressed up with fancier text labels, colors, or arrows, for example.

WINDOWS WRITE

This is the standard *Windows* word processor, which does a nice job with simple documents. WRITE also can import ShowFlow graphs and text files (generated by the model) via the Clipboard, and insert them directly into the document.

WINDOWS NOTEPAD

The standard *Windows* ASCII file editor is NOTEPAD, which is useful for viewing the text file (with the .TXT extension) created by the model. This file may also be printed from NOTEPAD for a hard copy reference. Parts of the .TXT file, for instance the information about parameter settings, may be transferred to another document or report (in WRITE or another word processor) by cutting and pasting via the Clipboard.