United States
Department of
Agriculture

Forest Service

**Northeastern Forest
Experiment Station**

General Technical
Report NE-205

NED/SIPS User's Manual

Northeast Decision Model
Stand Inventory Processor
and Simulator

Version 1.00

Brian T. Simpson
R. Peter Kollasch
Mark J. Twery
Thomas M. Schuler

Abstract

This user's manual describes the use of the NED/SIPS computer program. NED/SIPS is a stand-based program for managing forest inventory data and for performing analyses upon those data. It allows the user to enter and edit field-collected data; to simulate the use of certain standard cutting practices; to project stand growth into the future with any of the four incorporated growth simulators; and to generate a wide variety of reports, including species-by-diameter tables, stand-summary reports, cut-comparison tables, stand-development summaries, and economic analyses, all using the same data. A diskette containing the NED/SIPS program is included.

The Authors

BRIAN T. SIMPSON, forester, Northeastern Forest Experiment Station, Morgantown, West Virginia, received his bachelor's degrees in geology and forest resources mangement and his master's degree in forestry from West Virginia University.

R. PETER KOLLASCH, computer specialist, Northeastern Forest Experiment Station, Burlington, Vermont, received his bachelor's in mathematics from St. Mary's College of Minnesota and master's in computer science from the University of Iowa.

MARK J. TWERY, research forester/Project Leader, Northeastern Forest Experiment Station, Burlington, Vermont, received his bachelor's degree in theater arts from Oberlin College and a master's in forest ecology from the University of Massachusetts and a Ph.D. in silviculture from Yale University.

THOMAS M. SCHULER, research forester, Northeastern Forest Experiment Station, Parsons, West Virginia, received his bachelor's degree in forestry from Purdue University and a master's degree in silviculture from Colorado State University.

Acknowledgements

The authors would like to thank the many people who have made contributions to the development of this product. Particularly, Dr. David Marquis, who began the Northeast Decision Model project and greatly influenced the design of this computer program; Neil Lamson for his contributions in testing the program, reviewing this user's manual, and his suggestions for improving the user friendliness of NED/SIPS; and Susan Stout for her work in reviewing the user's manual.

Manuscript received for publication 29 March 1995

USDA FOREST SERVICE
5 RADNOR CORP CTR STE 200
PO BOX 6775
RADNOR PA 19087-8775

June 1995

NED/SIPS User's Manual

Northeast Decision Model
Stand Inventory Processor
and Simulator

Version 1.00

Brian T. Simpson
R. Peter Kollasch
Mark J. Twery
Thomas M. Schuler

Disclaimer

NED/SIPS was developed at the Northeastern Forest Experiment Station (NEFES), U.S. Department of Agriculture, Forest Service. The four included growth simulators, FIBER, NE-TWIGS, OAKSIM, and SILVAH, were also developed at NEFES. The economic analysis routine was adapted from NE-TWIGS, and was originally developed for TWIGS by the Department of Forest Resources, University of Minnesota (UMFR) with partial funding from the Forest Resources Systems Institute (FORS). This routine is used with permission of the authors.

This software is in the public domain and the recipient may not assert any proprietary rights thereto nor represent it to anyone as other than a Government-produced program, with the exception of the economic routine, which is copyrighted by UMFR and FORS.

NED/SIPS is provided "as is", without warranty of any kind, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this program for a specific application.

In no event will NEFES nor UMFR be liable for any damages, including lost profits, lost savings, or other incidental or consequential damages arising from the use or inability to use this program.

The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture or the Forest Service of any product or service to the exclusion of others that may be suitable.

Table of Contents

Table of Figures

SECTION 1 OVERVIEW

1.1 What You Need to Read

Regardless of your computer experience, you should at least read the following sections in this manual.

- SECTION 1 OVERVIEW
- SECTION 2 INSTALLATION
- SECTION 3 QUICK START

1.2 Purpose of NED/SIPS

NED/SIPS is an initial product of the development of the Northeast Decision Model (NED). This computer program, subtitled Stand Inventory Processor and Simulator (SIPS), provides an effective means of creating, managing, and analyzing forest inventory records at the stand level. Its user-friendly interface relieves the pain of entering and editing stand inventory data, and once data are entered, a host of analytical tools are available to help understand the data. A variety of reports can be generated describing the vegetation structure, timber value, and economics of the stand. The user may apply any of a set of standard treatments to the stand, design a customized cutting scheme, and utilize one of the four incorporated stand growth simulators to show what the stand may look like in the future.

Some features of NED/SIPS are:

- User-friendly interface featuring "pull-down" menus and context-sensitive help.
- Access to four growth and yield simulators using the same data file format. These four simulators, NE-TWIGS, SILVAH, OAKSIM, and FIBER, were all developed independently by scientists within the Northeastern Station for use in the Northeast.
- Overstory summary tables for common measures of stand characteristics (that is, density, species composition, volume, and so on).
- User-selected prescriptions from standard even-age and uneven-age management practices in addition to user-defined cutting algorithms.
- Economic analyses of incomes and expenses over the planning horizon.

1.3 Who Should Use NED/SIPS?

The NED/SIPS program is intended for use by a wide range of organizations and individuals, including national and state forestry organizations, forest industries, private organizations, and educational groups. The design of the program, however, does assume certain fundamental knowledge of forestry and natural resource management.

1.4 Technical Support (Getting Help)

To make NED/SIPS easier to use;

- Go through Quick Start provided in Section 3. This will introduce you to many of the features of NED/SIPS.
- Read this manual and keep it handy as a reference as you begin to use NED/SIPS.
- Use the context-sensitive HELP function key, [F1], as you encounter questions while running NED/SIPS. It is particularly helpful in explaining the coded values needed for some input fields. Hitting [F1] twice will always bring up a list of general help topics that can then be selected for additional help.
- As you navigate through the menu system, pay close attention to the status line at the bottom of the display. The message will provide a brief explanation of each menu item and each data field.
- Look through the README.DOC file included on the distribution diskette. We will include any last minute updates to NED/SIPS not included in the manual.
- Finally, if the sources above do not answer your questions, we will be glad to help you through any problem you may have with the program. Our address and phone number is:

USDA Forest Service
Northeastern Forest Experiment Station
George D. Aiken Forestry Sciences Laboratory
P.O. Box 968
Burlington, VT 05402
Telephone: 802-951-6774
Fax: 802-951-6368
DG: S24L04A

1.5 Typographical Conventions

Throughout the manual we use special notation to represent certain keystrokes. In general, keys that should be pressed are identified by pictures. For example:

[ENTER] = the ENTER key
[↓] = the DOWN ARROW key
[PG DN] = the PAGE DOWN key
[F1] = the F1 function key
[SPACE] = the space bar

Menu item selections are represented in the following manner:

Data->Stand Data->Retrieve = menu items with "hot key" in bold type.

SECTION 2 INSTALLATION

2.1 System Requirements

To use NED/SIPS, you should have the following hardware and software:

- An 80386-, or 80486-based machine with at least 1 megabyte of free hard disk space. NED/SIPS supports math coprocessors if they are present. NED/SIPS will execute on a standard 8086-based machine (that is, the original IBM PC or XT compatibles), but the execution speed is slow, and we are no longer testing the program on that version of the personal computer.

- DOS version 3.3 or later.

- 550K of main memory (RAM).

NED/SIPS is designed to use Expanded (EMS) or eXtended (XMS) memory if either is available. The availability of either will significantly enhance the performance characteristics of NED/SIPS. The program utilizes the RTLink Plus® virtual memory management system, which allows a large program to run in a smaller amount of memory. As such, the program code has been split into small "pages" that are swapped in and out of conventional memory as needed by an internal memory manager.

2.2 Installation

An easy-to-use installation program is provided to install NED/SIPS and several supporting files on your hard drive. To install NED/SIPS, insert the NED/SIPS diskette into the floppy drive. Make that floppy drive the active drive by typing A: or B: and press [ENTER], type INSTALL and press [ENTER].

As the installation progresses, you will be prompted to choose the drive, directory, and so on , in which to install NED/SIPS. Each prompt will provide default values that you can accept by pressing [ENTER] or by changing the value and pressing [ENTER] to proceed with the installation.

Files that will be installed on your drive include:

NED0001
INSTALL.OLB
INSTALL.EXE - NED/SIPS installation program files.
EZILOGO.TXT
EZI.CFG
DFCON.EXE - Converts SILVAH format files to NED/SIPS format
NED.EXE - NED/SIPS executable file.
NED.DEF - Default user data file.
NED.HLP - NED/SIPS help text file.
NED.NDX - NED/SIPS help word index file.
NETWIGS.INC - file necessary to run the NE-TWIGS growth simulator.
BETA.TAB - file necessary to run the FIBER growth simulator.
TSAMPLE.NEM - a sample NED/SIPS stand data file.

NEDSIPS.ICO - an icon file for use with Microsoft® Windows™[1]
NEDSIPS.PIF - an information file for use with Microsoft Windows
EZGRP.EXE - Creates NED/SIPS group in Microsoft Windows

[1] Microsoft and MS-DOS are registered trademarks, and Windows is a trademark of Microsoft Corporation in the United States and other countries.

SECTION 3 QUICK START

This section is for users who have more computer experience and want to jump right into the NED/SIPS program. However, before you start this section, read the Overview in Section 1and perform the disk installation described in Section 2. Then, scan the function key descriptions in Section 4.5.

The Quick Start section is designed to familiarize you with common NED/SIPS procedures and current functions. After completing this section, you will have retrieved a data file, generated some common reports, projected a stand into the future with one of four growth and yield simulators, performed a silvicultural prescription, and utilized the function keys. It can be completed in less than one hour.

3.1 Starting NED/SIPS

Before running NED/SIPS, you should make the directory (ex. NED) where the NED/SIPS program and supporting files are stored the current directory. The following DOS commands will suffice:

CD\NED [ENTER]

To begin the NED/SIPS program, type

NED, and press [ENTER] .

If running NED/SIPS in **Windows**, double click the NED/SIPS icon. See Appendix H for operating tips when running NED/SIPS in **Windows**.

The first window displayed will show the NED/SIPS version number and the introductory title. Before proceeding, try using the context-sensitive HELP key, [F1] . The help message is displayed in a window or box on your screen. Now, exit the help window by pressing [ESC] .

Proceed to the next window by pressing any key. The second screen or window provides an address and phone number for information and assistance. Again, press any key to continue.

Just before the next window appears, a "WORKING" message quickly flashes in the bottom right corner of your screen. This message merely informs you that NED/SIPS is performing a task. In this case, it is retrieving some default data values.

The third window informs you that NED/SIPS has found and retrieved the user data file **NED.DEF**. When NED/SIPS is started, it always looks for this user data file in the current directory. If the file **NED.DEF** is not found in the current directory, NED/SIPS will default to internal settings. Even though NED/SIPS always searches for and retrieves **NED.DEF** when it is started, you may choose to retrieve other user data files using the menu system. This file contains default settings that the program will use when running. The user data file can be edited and customized for your needs. (See Editing a User Data File in Section 5.2.2). For example, you could specify board-foot timber values for your area, or customize the species codes you use.

At this point, press [F8] to see the history log of the current session (Fig. 1). In a pop-up window, you will see the time you started the NED/SIPS program, assuming the date and time on your system are correct. Notice that the user data file **NED.DEF** has been read into memory. The history log can be quite helpful for tracking your sessions. We recommend that you access it any time you are unsure of your current session activities. Press [ESC] to exit the history log display.

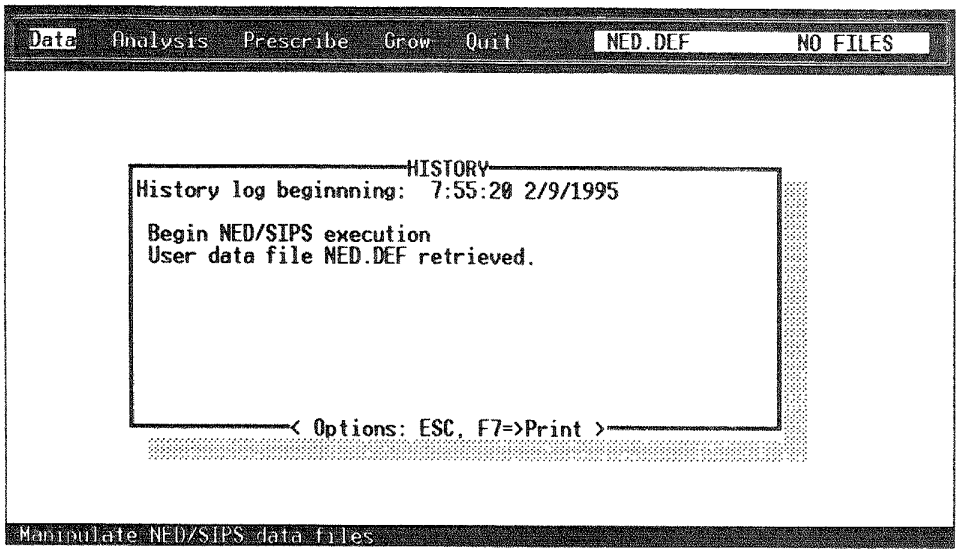


Figure 1. – NED/SIPS history log display.

3.2 Data Manipulation

The first step in most NED/SIPS sessions is to input data. Data can be entered from the keyboard or retrieved from an existing file. For practice, start by retrieving data from an existing stand data file. A sample stand data file **TSAMPLE.NEM** has been provided with the NED/SIPS program, which has been copied to your hard disk by the installation procedure already completed in Section 2.

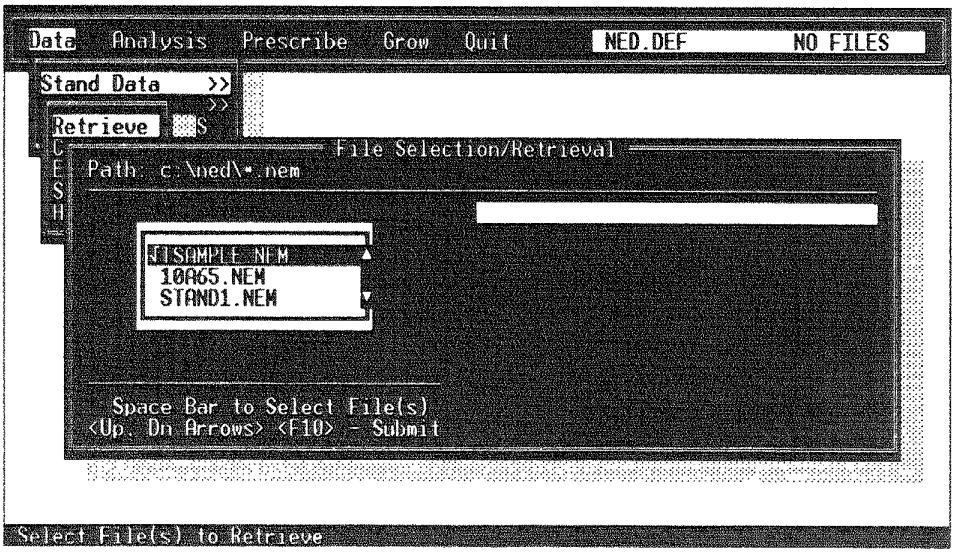


Figure 2. -- File Selection/Retrieval window.

Menu Item: Data→Stand Data→Retrieve

Purpose: To retrieve one or more stand data files through the "File Selection/Retrieval" window.

Operation: The sequence of menu items just selected displays a window on your screen titled "File Selection/Retrieval" (Fig. 2). At the top of this window is the path showing the directory where NED/SIPS will look for files with the ".NEM" extension. Also, notice that a list of the stand data files that are in this directory is displayed within this window. This list is the file selection list. To select a file, move the cursor (using the arrow keys) to the file **TSAMPLE.NEM**, and press SPACE . A check mark will appear next to the file name. Although it is possible to select up to 20 files at once, for your first session, keep it simple and select only one. Now press F10 to place that file in the input list and press F10 again to submit the file**TSAMPLE.NEM** for retrieval. The status message at the bottom of the screen tells you that NED/SIPS is retrieving the selected file. When the retrieval is completed, the file name will appear on the right side of the menu bar at the top of the screen.

Again, press F9 to see what you have just done. Since last checking the history log, NED/SIPS has appended your recent activities.

The history log now shows that you have retrieved a data file and that NED/SIPS has automatically created a new output file, **TSAMPLE.PRN**. The output file name is derived from the root name of the data file retrieved with a ".PRN" file extension. All output (reports) requested will be written to this file. Press ESC when you are finished viewing the history log display.

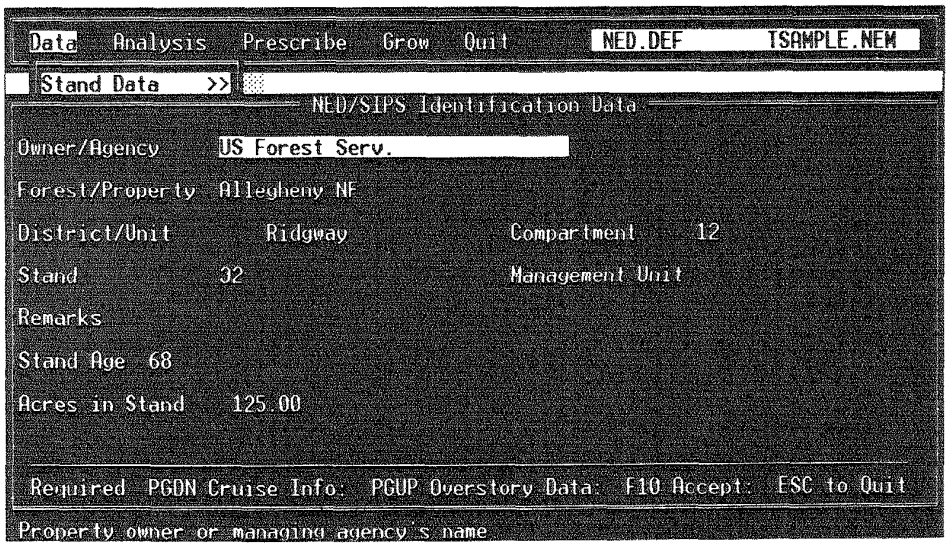


Figure 3. -- NED/SIPS Identification Data window.

Next, take a look at the data you just retrieved. To view and or edit the data, just select the menu item Edit. The opening screen contains the identification data (Fig. 3). Note that the arrow keys move the cursor from field to field and that context-sensitive help F1 is available for each field.

If necessary, navigate to the **Owner/Agency** field by pressing [↑] as many times as needed or simply by pressing [HOME]. Try changing the information in this field -- type in your name. Notice, when you start to type, the previous text in the field is replaced by the text you are typing in the field. To edit the data in any field without completely retyping it, press [F2] to start editing and use [ENTER] to quit editing and accept the changes to that field.

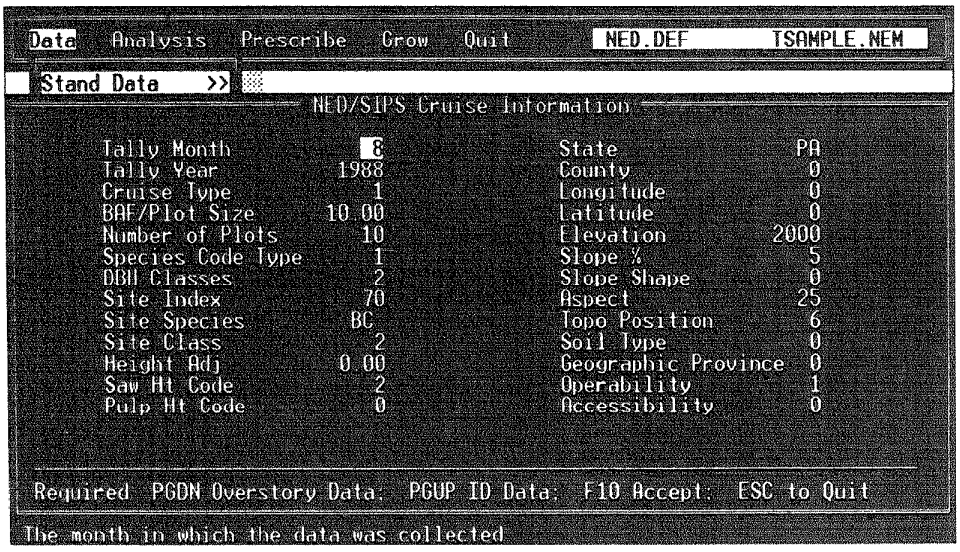


Figure 4. -- NED/SIPS Cruise Information window.

Now press [PG DN] to go to the second data window, titled "NED/SIPS Cruise Information" (Fig. 4). Notice that the labels for some fields are highlighted in yellow (or bright white on monochrome monitors) in this window. These fields are required for processing, and NED/SIPS will not allow you to proceed if they are not completed. To analyze cruise data, NED/SIPS must know the cruise type, since several types are permitted, and the plot size for fixed-area plots or the basal area factor for prism plots. The data have already been entered for this file. To examine it further, navigate to the **Cruise Type** field using the arrow keys. The code in this field should be a "1". Get help on this field by pressing [F1]. You can see from the help screen that the code in this field correlates to a fixed-area cruise with plots separated on the tally sheet. Exit help by pressing [ESC] and move to the **BAF/Plot Size** field. The "10.00" in this field must represent a basal area factor of 10 because we know that the data are from a prism cruise.

Refer to the help text by pressing [F1] for further documentation of fields that are not documented here.

Now press [PG DN] to go to the next data window titled "NED/SIPS Overstory Data" (Fig. 5). Fields are: **Obs. No.** (observation number), **Spp** (species code), **DBH** (tree diameter), **Count**, **Stat** (tree status), **Tim** (timber code), **Saw Grd** (tree grade), **Saw and Pulp Heights**, **Saw and Pulp Defect**, **WLD** (wildlife code), **Prod** (product), **CC** (crown class), and **Vig** (vigor). The required fields (labeled in yellow) for each record are **Spp**, **DBH**, and **Count**. A brief look at each of these required fields follows.

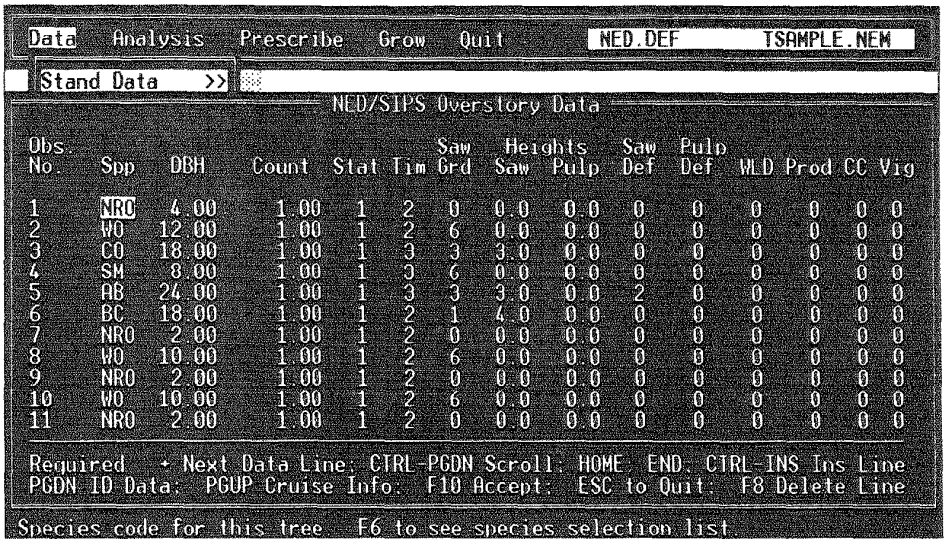


Figure 5. -- NED/SIPS Overstory Data window.

Species - Species can be entered in one of three coded formats; 1 - user-defined (numeric), 2 - user-defined mnemonic (alpha), and 3 - Forest Survey. The type of code that you want to use for data entry must be specified in the **Species Code Type** field in the previous "Cruise Information" window. For this file, the correct species code type is 1. To enter a species code, just type it in the **Spp** column.

If you are not sure about a species code, with the cursor in the Spp column, press F6 to display a list of species. You can use this list to find and select the desired species. Make your species selection by moving the highlight bar to the desired species and press ENTER. The species code of the correct code type will be written in to the field. See Appendix A, for a complete list of tree species supported by NED/SIPS.

The user-defined mnemonic code and the user-defined numeric codes can be changed to reflect your commonly used codes by editing the user data file (See Editing a User Data File, Section 5.2.2).

DBH - Diameter breast height in inches. DBH can be entered in 1- or 2-inch diameter classes or as the actual measurement down to 1/10 of an inch.

Count - Number of trees for this observation. The count should be the number of trees with the same species, dbh, quality, and so on. entered on a plot tally sheet. Standardizing count to a per-acre basis before entry is not required. NED/SIPS does not standardize data until it is necessary to use the data on a per unit of area basis. Standardization (called Processing in NED/SIPS) occurs when an action such as an analysis, a prescription, or a growth simulation is requested or when multiple data files are retrieved at the same time. This conditional standardization allows you to retrieve data to edit without changing the "counts" from your original cruise tally sheets.

Help F1 is especially useful for fields that require a code rather than an actual measurement. After viewing help for some of the overstory fields, finish the editing

session. Press F10 to accept all changes. Any changes you made during this editing session are still in effect. However, the disk file is not updated until you specifically save the data file. Select the Data->Stand Data->Save option to save the file to disk. If you have not saved the changes when you exit or when the file is processed, NED/SIPS will ask you if you want to save the edited file. NED/SIPS will not warn you a second time that data have not been saved. **Therefore, we strongly recommend that you save your data immediately after entry or after making any changes to your data file (while the data are still in original, unprocessed form) before you proceed in NED/SIPS.**

3.3 Generating Overstory Reports

Return to the main menu by pressing ESC until you can no longer backup through the menu choices.

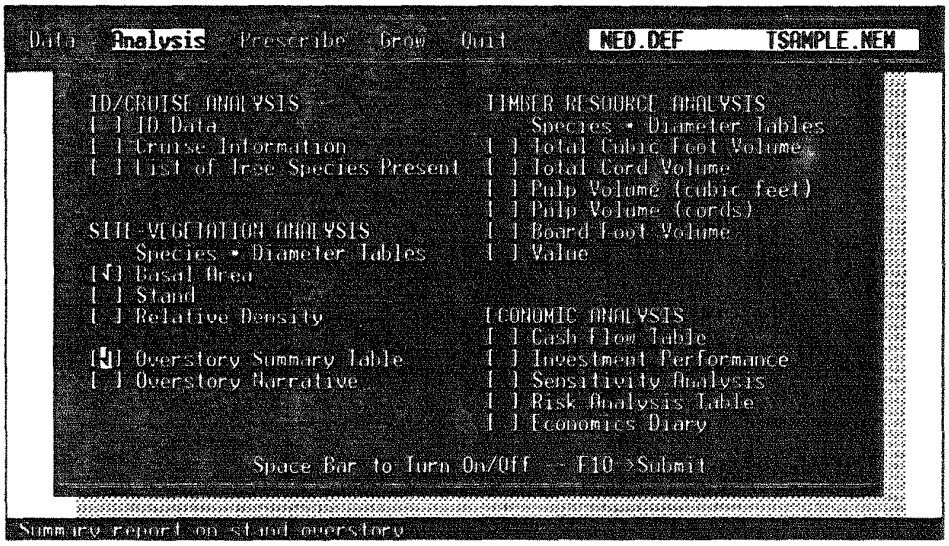


Figure 6. --NED/SIPS Analysis checklist window.

After performing your cruise, entering the data, and saving the data to a file, you will probably want to process the data and get some analyses. NED/SIPS is capable of summarizing overstory cruise data for a multitude of stand parameters. To generate an overstory report, select Analysis from the menu bar. The Analysis checklist window will be displayed (Fig. 6).

Checklists allow you to select any number of reports. You select a report by moving the cursor with the arrow keys and pressing SPACE when the cursor is next to the item of interest. Reports can be toggled off in the same manner.

Select an "Overstory Summary Table" and a "Species * Diameter Basal Area" table. Use your arrow keys and SPACE to select. If you select the wrong one, just hit SPACE again to toggle that report off. Check marks appear next to the reports that are requested. Press F10 to generate the reports.

At this point, pay attention to the bottom of the screen. Status messages will appear informing you of what NED/SIPS is doing. You should see that the program is first processing your data,

generating the requested reports, and writing the reports to the output file. The reports are directed to your screen and are automatically written to the output file (with the .PRN extension).

You may scroll through the entire report in sections by pressing PG UP, PG DN, ↑, or ↓ as needed or by pressing F7 to print the report. Your printer must be defined as LPT1. If you are not sure about your printer definition, just try printing the report now. NED/SIPS will warn you if your printer is off line or not properly configured. Appendix F contains sample outputs that you should have generated from these two analyses. Scan the reports to get familiar with the stand characteristics. Pressing ESC terminates viewing the report and returns to the menu system.

Now that you know the current overstory characteristics, allow the stand to grow for 20 years and then look at the overstory characteristics again.

3.4 Growing a Stand

Again, return to the main menu bar by pressing ESC until you can no longer backup through the menu choices. Then select the Grow menu item. First, you should specify a growth simulator to use. There are two ways to select a simulator: manually by selecting the simulator name in the menu, or automatically by allowing NED/SIPS choose the appropriate simulator. For this session, allow NED/SIPS to select the most suitable simulator based on the forest type, geographic province, and the state in which your stand is located . NED/SIPS has determined forest type for you by processing the data when you selected the reports in the previous section.

Automatic simulator selection can be performed by selecting from the main menu bar:

Grow→Select Simulator→Auto

NED/SIPS responds by informing you that SILVAH has been selected and requests your confirmation to proceed. Press Y or ENTER to submit your approval. If you disapprove of NED/SIPS selection, return to the menu to select a simulator manually.
Now you need to specify the growth specifications. Select the menu item: Growth Specs

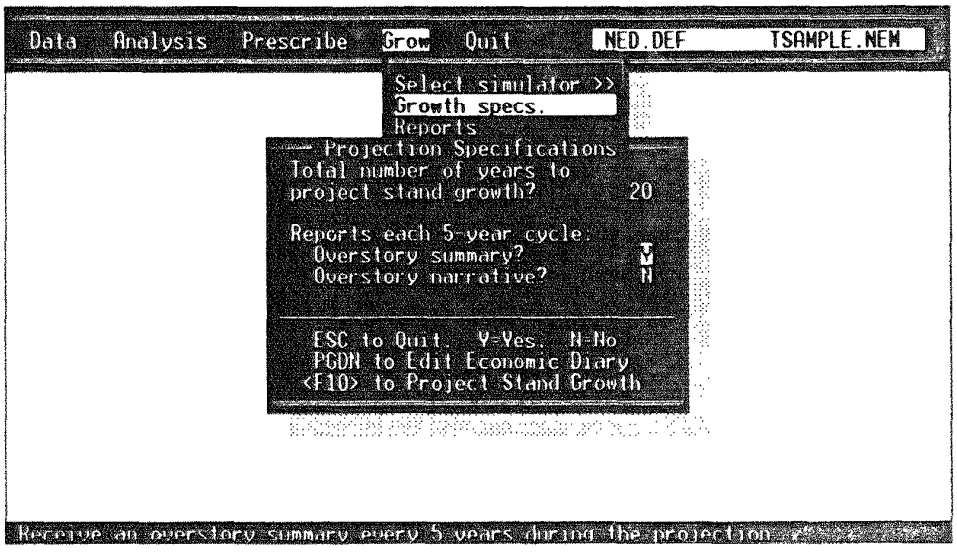


Figure 7. -- NED/SIPS Growth Specs. Projection Specifications window.

The Growth Specifications table is generated on your screen allowing you to specify general projection options. Grow the stand for 20 years. So, type 20 [ENTER] for **Total number of years to project stand growth?** (Fig. 7). Also, request an overstory summary report for each 5-year growth increment by typing [Y] in the space next to overstory summary. Press [ENTER] .

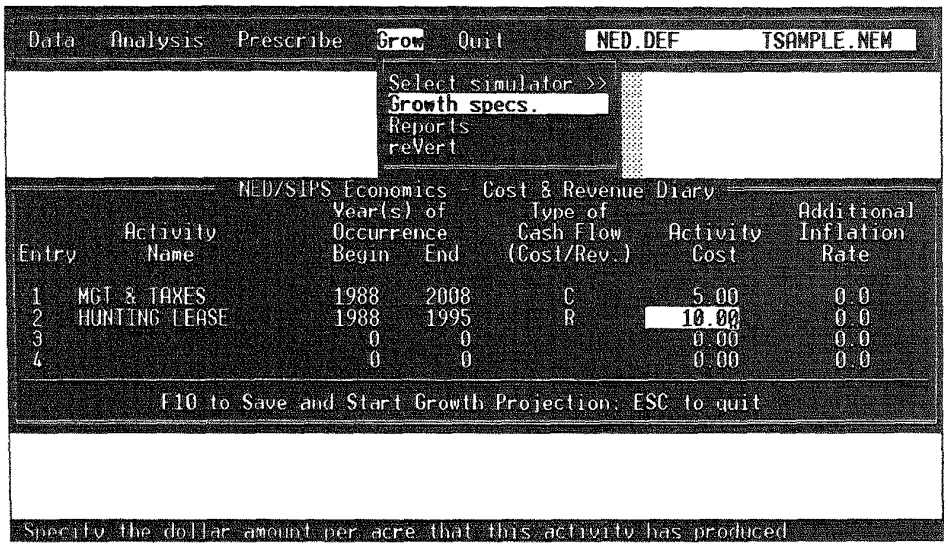


Figure 8. -- Economics - Cost and Revenue Diary window.

Press [PG DN] to see the "NED/SIPS Economics - Cost and Revenue Diary" (Fig. 8).

For this exercise, you do not need to enter any additional information here. NED/SIPS will automatically enter any revenue associated with a sale and enter the associated costs if they are defined in the User Data file. The "Cost and Revenue Diary" is primarily for periodic or one-time costs or revenues.Press [F10] to begin the simulation. You could have chosen to start the projection at any time after entering the number of years to project. As the simulation proceeds, you should see several status messages appear in the status line at the bottom of the screen telling you what is currently happening. During the projection, the simulator pauses to display any overstory summary reports that you requested at the start of the projection for each 5-year period. Note the changes to basal area, number of trees, and relative density reflecting 20 years of development as predicted by the SILVAH simulator. **Press [ESC] when you are finished viewing the overstory summary to allow the simulation to proceed.**

When the projection is completed, you will see the menu windows with the growth specifications message at the bottom of the screen. Now, press [ESC] until only the menu bar is displayed at the top of the screen.

3.5 Performing a Silvicultural Prescription

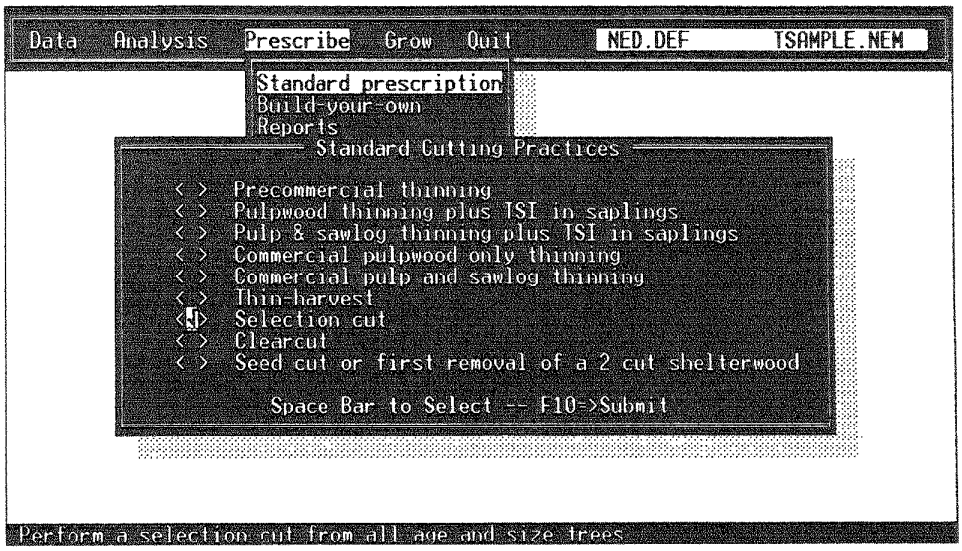


Figure 9. -- Standard Cutting Practices window.

To perform a silvicultural prescription, first select Prescribe→Standard prescription from the menu bar. Next, a list of the standard cutting practices (Fig. 9) will be displayed. Move your cursor to **Selection Cut** and press SPACE to select it. Then press F10 to submit.

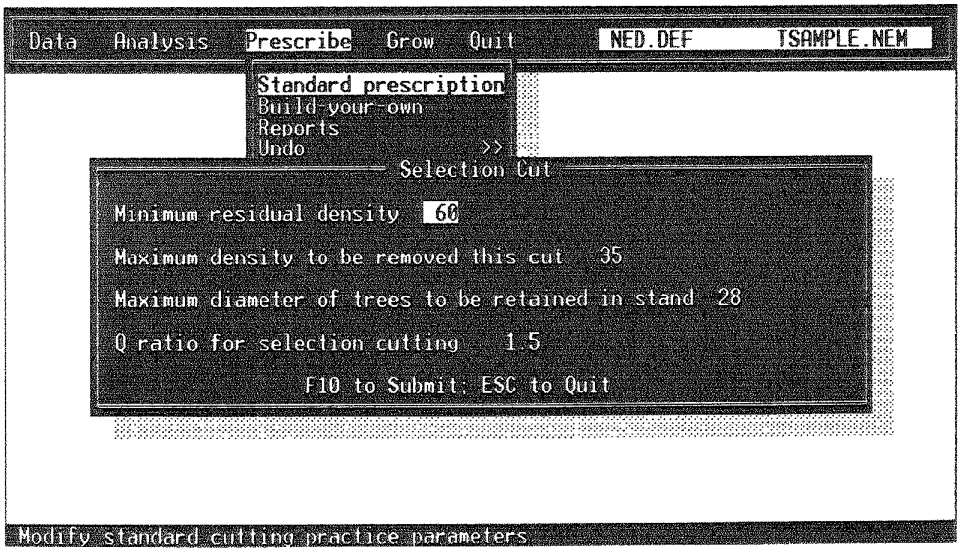


Figure 10. -- Selection Cut parameters window.

Next you may modify the Selection Cut parameters (Fig. 10). For this exercise, assume these parameters are acceptable and press F10 to perform the cut.

Once again, notice the status message and the flashing WORKING at the bottom of the screen. When this operation is completed, you may see the word DONE flash in the same location as WORKING.

To examine the effects of the cutting procedure, select the menu item:

Reports

This will generate the Prescription Analysis Reports checklist. Select the **Cut Comparison Table** (Appendix F) and press F10 to submit. The report, which shows original, cut, and residual stand parameters, will be directed to your screen and written to the output file.

After growing the stand and performing the selection cut, you may want to get additional reports such as an economic analysis based on the costs and revenue generating activities associated with managing the stand. These activities are entered in the Economics Diary either by the NED/SIPS program or the user. You may want to adjust inflation rates and some pre-determined costs such as taxes, sale preparation, and sale administration costs before getting the economic analyses. To make these adjustments, you must edit the economics parameters in the user data file by selecting Data→User Data→Edit from the menu system.

To request economic analysis reports, you must return to the main menu bar and select Analysis. The Analysis checklist that will be displayed includes the available economic reports. Move the cursor to "Cash Flow Table" and press SPACE. Move the cursor to "Investment Performance" and press SPACE. Press F10 to submit your selections.

The requested economics reports will be generated . The cash flow analysis shows the costs and revenues that occurred for each year of the projection as well as the total and cumulative costs and receipts and annual and cumulative net revenue. The investment performance report shows various measures of the performance of your investment such as NPV, EAI, SEV, and benefit/cost ratio.

3.6 Ending a NED/SIPS Session

To terminate this session of NED/SIPS, return to the main menu and select Quit. At this point, you will be asked if you really want to quit NED/SIPS. If you do, press ENTER because a Y is already entered as the default response to this question. Before returning to DOS, NED/SIPS will write the history log and the error log to the output file, which for this session is **TSAMPLE.PRN**. This file also will contain copies of all of the reports that you requested during this session.

SECTION 4 NED/SIPS REFERENCE

The NED/SIPS program provides a user-friendly system of "pull down" menus and checklists that allow easy access to all of its features. Function keys provide context-sensitive help, editing capabilities, directory switching, viewing of program execution errors, output handling, and viewing the history of program activity.

4.1 Starting and Stopping NED/SIPS

Before starting the NED/SIPS program, it is essential that the directory containing the NED/SIPS program and its supporting files (in most cases it will be called NED) be designated as the current directory. During execution, the NED/SIPS program needs access to several companion files such as the help files (NED.HLP,NED.NDX) to run properly. NED/SIPS automatically searches for these files in the current directory. If the files are not located there, NED/SIPS will not be able to perform some functions or simply fail.

To make the NED directory the current directory, type (for example):

C: [ENTER]
CD\NED [ENTER]

Type **NED** [ENTER] to start the NED/SIPS program.

NOTE: If you plan to use NED/SIPS with a gray-scale VGA monitor, we recommend you run NED/SIPS in monochrome mode. To run NED/SIPS in monochrome mode, at the DOS prompt type:

NED M [ENTER]

On a gray-scale monitor, running the NED/SIPS program using the **NED M** start-up option will make some colors or shades of gray show up better than running it in normal color mode. This command is not necessary when using a monochrome or true color monitor because the NED/SIPS program will determine the type of monitor that you have and run accordingly.

The opening banners will appear on the screen when the NED/SIPS program is started. Pressing [ENTER] or any other key will take you through the opening banners to the main menu.

To get out of NED/SIPS and return to the operating system (DOS), use the **Q**uit option in the main menu. You can use the arrow keys to move the highlight bar to **Q**uit and press [ENTER] or type [Q]. If you have not been previously warned, NED/SIPS will ask you if you want to save any changes that you made to a NED/SIPS data file or user data file. It also will ask you if you are sure that you want to quit. If you do not want to quit, type [N] and you will return to the menu bar. A yes answer, or [Y], will take you out of NED/SIPS to DOS.

4.2 The Menu System

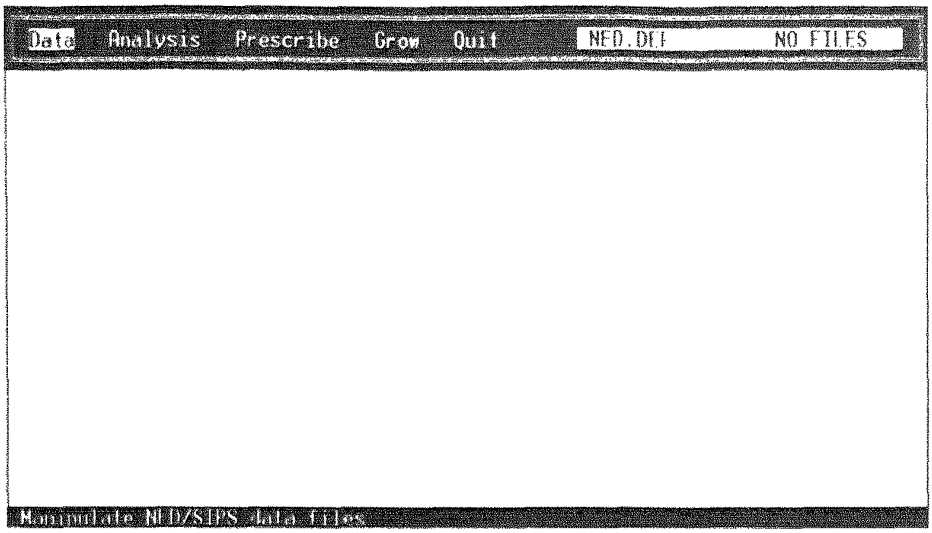


Figure 11. -- NED/SIPS main menu display.

Figure 11 shows the display as it will appear on your computer screen. At the top of the screen, the **menu bar** contains the first level of menu items: Data, Analysis, Prescribe, Grow, and Quit. You can select a menu item by using the left and right arrow keys to move the highlight bar to the desired menu item and pressing ENTER or by typing the highlighted capital letter found in each menu word. Each item selected will display a "pull down" menu window that will contain either menu items or commands. Additional menu items are indicated with two arrows (>>) on the right hand side of the menu window. These arrows inform you that there is another window level containing commands that you can execute.

The names of the current user data and stand data file are displayed to the right of the menu items. When NED/SIPS is started, the default user data file **NED.DEF** is loaded and the name is displayed on the screen. Also, initially displayed on the right is "NO FILES", which means that there are no stand data files currently loaded. If you create a new stand data file, you will see "NEW FILE" displayed on the screen. This area of the screen is continually updated with the names of the data files as you load or create them.

At the bottom of the screen is the status bar. The NED/SIPS status bar serves several purposes. It provides brief descriptions of menu items or variable fields. It also provides help or special instructions on certain items or fields. Or, it can provide a short message about what NED/SIPS is doing such as retrieving a data file or processing data, and so on. Also, at the bottom right of the screen, you will see the flashing "WORKING" message when NED/SIPS is performing lengthy operations such as data processing, growth projection, or prescriptions. When NED/SIPS is finished, the message "DONE" will flash in this box. On some machines, this will happen too fast to see it.

4.3 Selection Screens

Some windows in the NED/SIPS menu system are checklist selection screens where you will make data file or report selections using "check boxes". In this type of window, selections are made by moving the cursor using ↑, ↓, ←, or → to the desired file name or report. Pressing SPACE will

mark your selection with a check mark on the left. Press F10 to submit your selections to NED/SIPS and perform a command (for example, retrieve a data file).

4.4 Viewing/Printing Reports

The reports that you select will be generated, written to a file with extension **.PRN** and with the same name as the current stand data file (for example, **TSAMPLE.PRN**), and displayed automatically on the screen. If you want to send the report or reports currently displayed on the screen to a printer, press F7.

4.5 Helpful Keys

The NED/SIPS program utilizes function keys F1 through F10 as well as certain other keys and key combinations. Each key and its function are listed below. While some keys are available at all times, such as the F1 key, others are only active at certain times and on certain fields.

4.5.1 F1 HELP

The F1 key is probably the most important key in the NED/SIPS program. When F1 is pressed, a window displays the indexed help message for the current position that you are in while running NED/SIPS. Help is available throughout the NED/SIPS program for individual menu items, data input fields, NED/SIPS report checklists, or other fields where your input is required.

Another feature of the help system is the help topics window. To see the list of available help topics, press F1 twice. The help topics include Description of Function Keys, Special Function Keys, NED/SIPS Processing Sequence, Silvicultural Prescriptions, Growth Prediction, and Stand Analysis and Reports.

Press ESC to exit the help screen.

Some help screen messages are too long for the window and you must use the up and down arrows to scroll through the text.

4.5.2 F2 EDIT

F2 is the edit key. If you are in a data or query field and need to correct an error, press F2 and move the cursor to the desired space and retype the character. When you are finished correcting the mistake, press ENTER and move to the next field. After you leave the field in which the correction was made, the edit mode is automatically turned off. To edit another field, you must move to that field and press F2 again. However, in some fields it is not necessary to press F2.

4.5.3 [F3] CHANGE DIRECTORY

[F3] allows you to change the current directory path that the NED/SIPS program is using for data file storage (stand data files, user data files). This key is only active in the data file retrieval windows. The path may be set to the directory where your NED/SIPS program is stored or the path specified in the user data information "Data Drive and Path" field (See User Data File, Section 5.2). To use [F3], you must be in the stand data file or user data file retrieval window.

When retrieving a stand data file, the "Select File List" window is displayed. At the top of this window is the path field showing the current path that NED/SIPS will use to search for the selected files to retrieve. To change this path, press [F3]. The path field will now become highlighted and the cursor will be flashing at the beginning of the path. To change the entire path name, type the new directory name. When finished, press [ENTER]. NED/SIPS will now check the new path name to see if it is an existing path on your computer. If it is not, a red warning window with the message "Invalid Directory" will appear and the path field will be reset to the previous path name. To enter a correct path, hit any key, press [F3] again, which makes the path field highlighted and puts the cursor in that field, and retype the path name. It is important to remember that the path that you have entered will not become the path used for subsequent file retrievals. It is only valid for the current data file retrieval. If you want to make the new path name permanent so that it will be used for other stand data file retrievals, edit the "Data Drive and Path" field in the user data file (See Editing a User Data File, Section 5.2.2).

4.5.4 [F4] FILE LIST

[F4] is the file list key. Like [F3], you must be in a data file retrieval window to use [F4]. Pressing [F4] will list the files with the displayed extension. For example, on the right end of the path you will see an extension such as *.NEM. When you press [F4], NED/SIPS will list all files in that directory path with the .NEM extension. This list will appear in a small window within the "Select File List" window. To select a given file, move the highlight bar to the desired file name and press [SPACE]. A check mark will appear beside that file name marking it as a selected file.

NOTE: Upon entering a "Select File List" window, the files in the current path will be displayed automatically. Use [F4] when the list of available files is not currently displayed.

4.5.5 [F5] ERRORS

[F5] can be used to view a list of error and warning messages issued by NED/SIPS during execution. These messages will inform you of problems during execution of the NED/SIPS program. Possible messages include warnings about data inconsistencies, projection warnings, and general program execution problems. Each error log begins with a date and time stamp. To get a printed copy of the error log file, press [F7] while you are viewing it to send it to an on-line printer.

4.5.6 F6 SEE SPECIES CODE LIST

F6 can be used to display the list of available species codes. This key is only active in the species code column of the overstory data window and in the species code column of the build-your-own treatment window. When the list is displayed, you can select one of the species by moving the scroll bar to the desired species and pressing ENTER. The appropriate species code will be entered in the species code field.

NOTE: You can use this key to see if you have entered the correct code. Just enter the code you think is right, then press F6. If the code you entered is on the list, it will come up highlighted. If not, you can search the list for the correct code.

4.5.7 F7 SEND VIEWED OUTPUT TO PRINTER

F7 allows you to send the output that you are viewing to an on-line printer. The NED/SIPS program will check to make sure that there is a printer connected. If not, a warning message will appear informing you to check your printer status. The NED/SIPS program is capable of using printers configured on port LPT1 only. This key is only active when viewing reports or the error or history log

4.5.8 F8 DELETE

F8 performs the delete function in two separate contexts. It can be used to remove a file name from a selection list or to delete an overstory observation entry. With F5 and F4, it can be used in file retrieval (stand data file, user data file) windows. After a file or group of files has been selected, a selection list of files is built and displayed to the right of this window when F10 is pressed. If you choose to remove one or more files from the selection list, move the highlight bar to the desired file name and press F8.

NOTE: It is important to remember that pressing F8 does not remove or delete the file from the disk, it only removes it from the selection list displayed in the "Select File List" window.

F8 also can be used in the overstory data form to delete an entire observation. To delete a line, move the cursor anywhere in the line that you want to remove and press F8.

4.5.9 F9 HISTORY

F9 is similar to F5 except that it allows you to view the history or sequence of steps performed while you are running NED/SIPS. The history log records any action taken by the user or the NED/SIPS program such as data file retrieval, growth projection, prescription, or report selection. It also records the simulator used for growth projection. Also, because the history log is displayed on the screen, you can use F7 to print a copy.

4.5.10 F10 SUBMIT

F10 is used to tell NED/SIPS that you are finished making a selection or some other entry, and now the program can perform the necessary task.

4.5.11 + KEY

+ is used while editing overstory data to "jump" to the next line. It saves keystrokes when you do not want to enter a value in every field.

4.5.12 INS INSERT

Inserts a character in a field.

4.5.13 DEL DELETE

Deletes a character in a field.

4.5.14 PG DN

Scrolls one page down.

4.5.15 PG UP

Scrolls one page up.

4.5.16 CTRL PG DN

Scrolls cursor down in the form (window) being edited.

4.5.17 CTRL PG UP

Scrolls cursor up in the form (window) being edited.

4.5.18 CTRL INS

Inserts an observation in the overstory data form.

4.5.19 SPACE

Select a report or file in a checklist window.

4.5.20 HOME

Moves cursor to the beginning of a form being edited.

4.5.21 END

Moves cursor to the end of the form being edited.

4.5.22 TAB

Moves cursor to the field or line to the right.

4.5.23 SHIFT TAB

Moves cursor to the field or line to the left.

4.5.24 ESC

Has many functions, depending on where you are. In general, ESC means leave current action and return to the previous state.

4.5.25 ← →

In edit mode (usually after F2 is pressed), moves to the next character left or right. Otherwise, moves to the next field left or right.

4.5.26 ↑ ↓

Moves to the next field up or down.

5 DATA

ıenu bar item allows you to select and manipulate the two types of data files that the program uses: stand data files and user data files. Stand data files can be retrieved, created, ed, and printed. User data files can be retrieved, edited, saved, or printed. Select Data from ɔ display the next "pull-down" menu window.

Stand Data Files

ɔ data files contain detailed information about the stand including location, size, site ıcteristics, cruise type, and overstory cruise data. To perform operations on stand data, ɔt Stand Data with the scroll bar and press [ENTER] or type the highlighted letter, [S]. Another ɔw will be displayed that shows the operations that can be performed on a stand data file.

5.1.1 Retrieving a Stand Data File

Menu Item: Data→Stand Data→Retrieve

Purpose: Retrieve one or more NED/SIPS stand data files through the "File Selection/Retrieval" window.

Operation: To retrieve an existing stand data file, select Retrieve from the menu. At this point, the "File Selection/Retrieval" window (See fig. 2) will appear. When this window appears, all files with the **.NEM** extension in the specified path (at the top of the window) are put into a file list shown in the smaller window within this window. To select one or more of these files, move the highlight bar to each desired file name and press [SPACE]. A check mark will appear on the left side of each file you mark for retrieval. To cancel a file selection, follow the same procedure to remove the check mark. Press [F10] to add the selected file(s) to the retrieval list. This list will now appear on the right side in the window. When you have added all of the file names that you want to retrieve, press [F10] a second time to submit the file list for retrieval.

NOTE: When you retrieve more than one data file for processing, the data are combined and treated as one stand.

At the top of "File Selection/Retrieval" window, the **Path** shows the current drive and path and the file name extension ***.NEM** that NED/SIPS will use when it searches for files that match this extension. This path can be preset in the User data file (Data Path). If no path is specified, NED/SIPS will use the current directory that you are in when you start the NED/SIPS program. If you want to change the path, press [F3], to make the path line highlighted. Type in the new path name, press [ENTER]. The files with the extension matching the extension that you specified (on default, ***.NEM**) will be displayed automatically in a file list. If you know the name of the data file that you want to retrieve and the directory (path) where it is located, simply type it in the highlighted field. Press [F10] to accept the name and attach the path specified in the path line. The file name that you have entered will be displayed below and to the right of the path line in the window. Press [F10] again to submit the file name to NED/SIPS for retrieval.

If you wish to remove a file name from this list, move the highlight bar to the file that you want to remove from the list and press F8.

NOTE: F8 does not delete the file from the disk , it only removes it from the list of files that you selected.

If you do not want to retrieve any files, press ESC to exit the "Select File List" window and return to the Stand Data menu.

5.1.2 Creating and Editing a Stand Data File

Menu Item: Data→Stand Data→Create
Data→Stand Data→Edit

Purpose: To create or edit a NED/SIPS stand data file.

Operation: The data file create/edit system consists of three forms to enter information about the stand. The forms, in order of appearance are: Identification Data form, Cruise Information form, and the Overstory Data form.

The Identification Data form (Fig. 3) contains fields to enter stand identification information such as the owner, stand name, stand numbers, stand age, acreage, and any additional remarks which would help identify the stand.

The Cruise Information form (Fig. 4) contains fields to enter information about the cruise procedures used during the overstory data collection. Site characteristics such as location, site index, site species, site class, soil type, elevation, and slope also are specified on this form.

The Overstory Data form (Fig. 5) is used to enter overstory cruise data in tree list format. Individual tree information provided on this form includes species (**Spp**), **DBH**, **Count**, status (**Stat**), timber (**Tim**), grade (**Saw Grd**), Heights for sawlog and pulpwood, sawlog defect (**Saw Def**), pulpwood defect (**Pulp Def**), wildlife code (**WLD**), product code (**Prod**), crown class (**CC**), and vigor (**Vig**). The last four fields in the overstory data form are not currently used in NED/SIPS but will provide data for future versions of NED.

Species codes can be entered in whatever code type you are most comfortable with. You must specify the species code type you are using in the Cruise information form as (1) mnemonic, (2) user defined numeric, or (3) Forest Survey species codes. You must consistently use this type of species code while running NED/SIPS. If the cursor is on the species code field, you can press F6 to see a list of available tree species codes. This list can be used to make a species selection by moving the highlight bar to the desired species and pressing ENTER. Or you can see if you have entered a valid species code by entering a code in the species code field and then press F6. If the code that you entered is valid, the list will appear with that species highlighted.

At a minimum, species, dbh, and count are required for each tree entered in the list. If the overstory data were taken on individual plots, type a zero (0) in the species column to signify the end of each plot. When overstory data entry

is complete, enter an additional empty record with a -1 in the species column to mark the end of the overstory data. If you sampled a plot with no trees, designate the empty plot by using a species code of -NT and end the plot with a zero (0) as you would other plots.

Some special keys have been programmed to help make data entry easier. Examples of their usage are described here. Section 4.5 provides a complete list of helpful keys. When you have completed a line in the tree list with at least the minimum amount of data, use [+] to advance to the next line. When you have completed a field, press [ENTER]. The cursor will advance to the next field. You also may use the arrow keys to move up, down, left or right within the form. Other keys are available to help you maneuver in the forms. [HOME] will take the cursor to the beginning of the form; [END] will take the cursor to the end of the form. If you make a typing mistake while in the field, you can use [←] BKSP (backspace key) to erase the mistake and retype the entry. However, if you have left the field, move the highlight bar and cursor to the field with the mistake. Press [F2], which will put you in the edit mode. You can now use the arrow keys to move right or left within the field and correct the mistake. You may also use [INS] if you want to insert a character in the field entry or [DEL] to delete a character in the field entry.

When you have completed a form, you can move to the next form in several ways. If you are in the last field in a form, pressing [ENTER] will move you to the next form. Press [PG DN] to move to the next form regardless of what field you are in. [PG UP] will return you to the previous form. When you have finished data entry, press [F10] to accept your entries and return to the main menu. **NOTE: Pressing [F10] does not save your data file!** To save the data file that you have just created or edited, you must select **Save** from the menu system (described below). NED/SIPS will attempt to warn you when you are about to perform an action that will modify a newly created or edited stand data file which has not been saved.

NOTE: If you have just created a data file (and perhaps entered data for it) and have returned to the menu system (for whatever reason), use the **E**dit option rather than **C**reate to re-enter that data file. Using the **C**reate option again will clear the data you just entered!

5.1.3 Saving a Stand Data File

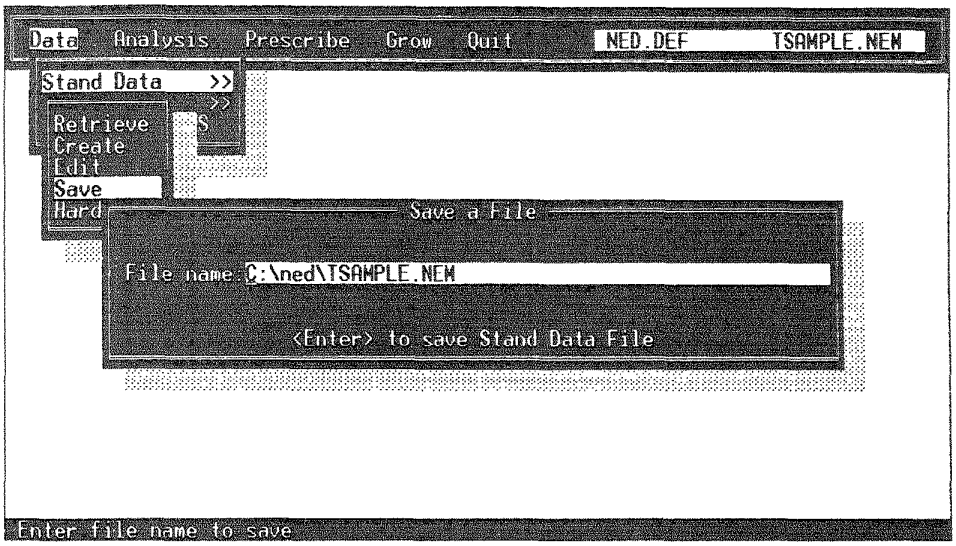


Figure 12. -- Save a File window.

Menu Item: Data→Stand Data→Save

Purpose: Saves a stand data file to a disk.

Operation: When you have finished creating or editing a stand data file, you MUST save it to a disk file by selecting Save from the Stand Data menu. The "Save a File" window (Fig. 12) will appear specifying the current drive, path, and file name. If you have been editing an existing file, the file name that you have edited will appear in this window. If the file is a new data file that you have created, a default name **DATAFILE.NEM** will appear in this window. You may edit the file name by pressing F2 to put you into the edit mode. Move the cursor using the arrow keys to the name and begin typing the new name in that field. Then press F10 to save the file. **NOTE: Use the extension .NEM for all NED/SIPS stand data files.**

5.1.4 Printing a Stand Data File

Menu Item: Data→Stand Data→Hardcopy

Purpose: To obtain a printed copy of a stand data file.

Operation: To print a copy of the stand data file, select Hardcopy from the NED/SIPS menu system. The printout of the data file will have each field labeled. The stand data file will appear on the screen and may be sent to the printer by pressing F7.

5.2 User Data Files

The user data file contains a variety of information used by the NED/SIPS program. The information includes default values for cruise information, data entry, data and output paths, growth simulator to use, log rule for sawtimber calculations, diameters for volume calculations, parameters for economic analysis, species codes, form class, timber values, and volume correction factors. You can develop a unique user data file to reflect the species codes, cruise methods, and timber market values that you are working with.

On startup, the NED/SIPS program automatically retrieves a user data file or if one is not found, it uses default values that are written into NED/SIPS. At times you may want to use a different user data file that you have customized for a specific owner or area. If so, retrieve that user data file.

5.2.1 Retrieving a User Data File

Menu Item: Data→User Data→Retrieve

Purpose: To retrieve a **user data file**.

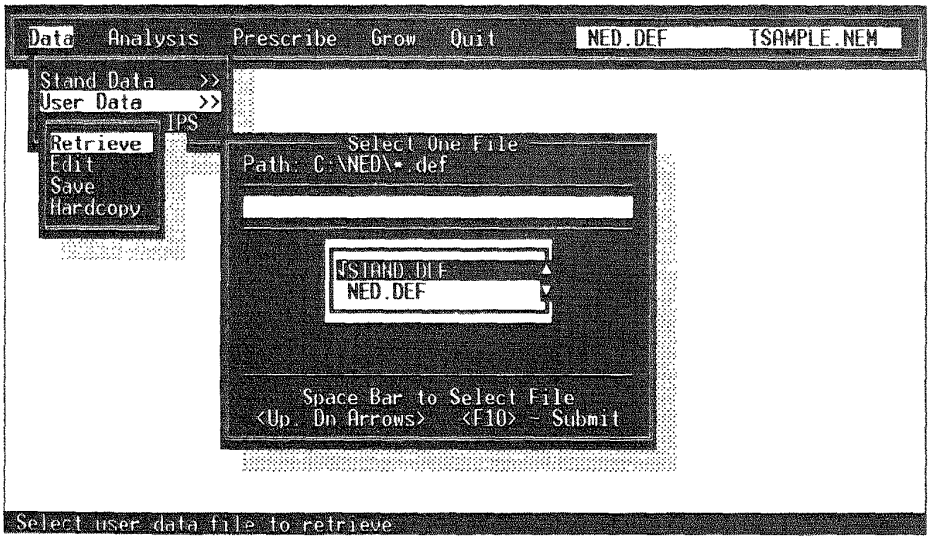


Figure 13. -- User Data file retrieval window.

Operation: To retrieve a user data file, select Retrieve from the User Data menu. A window similar to the "File Selection/Retrieval" window used during stand data file retrieval will appear only the title at the top will be "Select One File" (Fig. 13). At the top of this window, the **Path** displays the current path and the file name extension that NED/SIPS will use when it searches for user data files. If the path is not specified, NED/SIPS will use the current directory.

The user data files with the **.DEF** extension that are located in the path will be listed in the "File Selection/Retrieval" window. To select ONE of these files, move the highlight bar to the desired file name and press SPACE. To cancel a file, follow the same procedure. Upon selection of a file, a check mark will appear beside that file marking it for retrieval. Press F10 once to accept the

file that you have selected. If you choose not to retrieve a user data file, press [ESC] to exit the "Select One File" window and return to the main menu. Press [F10] again to submit the file name to be retrieved.

If you want to change the path, press [F3], type in the new path name, and press [ENTER]. The user data files located in the new path (if there are any) will be listed. Otherwise, a message will be displayed telling you that NED/SIPS did not find any user data files matching the .DEF extension.

If you know the name of the user data file that you want to retrieve, type it in the highlighted field. Press [F10] to accept the name and attach the path specified at the top of this window. Press [F10] again to submit the file name to NED/SIPS for retrieval.

5.2.2 Editing a User Data File

Menu Item: Data→User Data→Edit

Purpose: To edit a user data file.

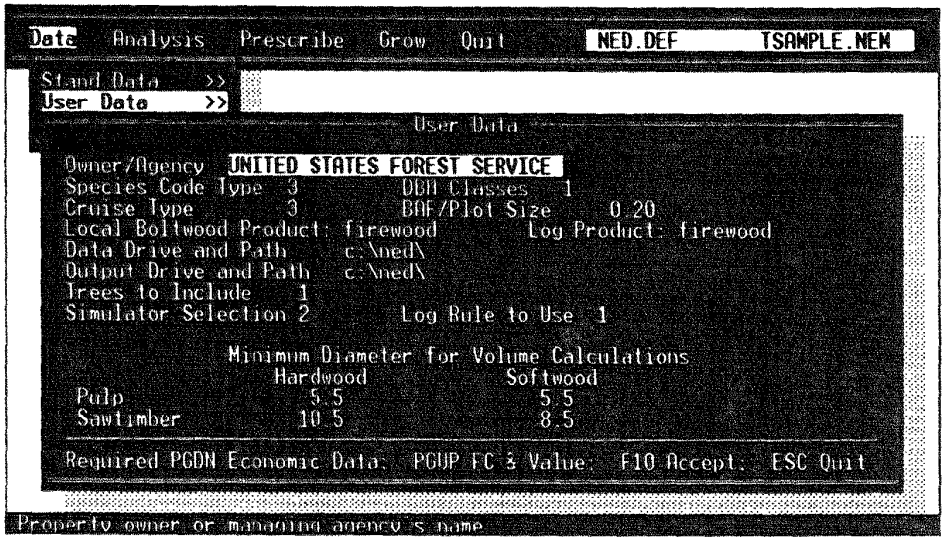


Figure 14. – User Data input window .

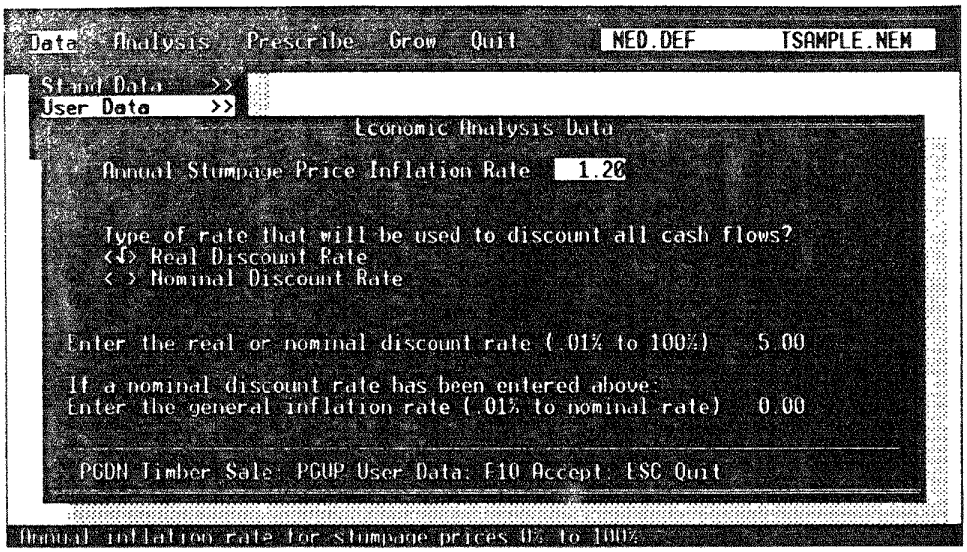


Figure 15. -- Economic Analysis Data window.

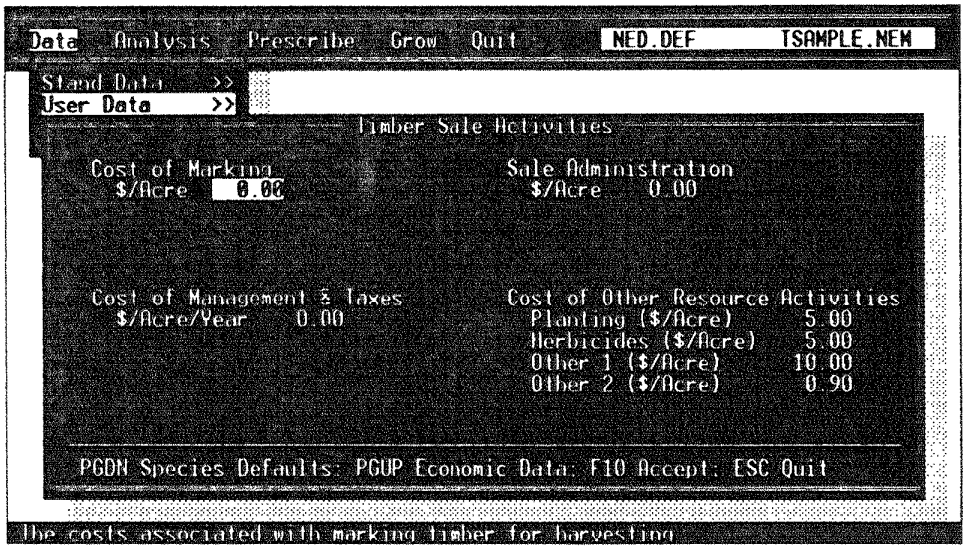


Figure 16. -- Timber Sale Activities window.

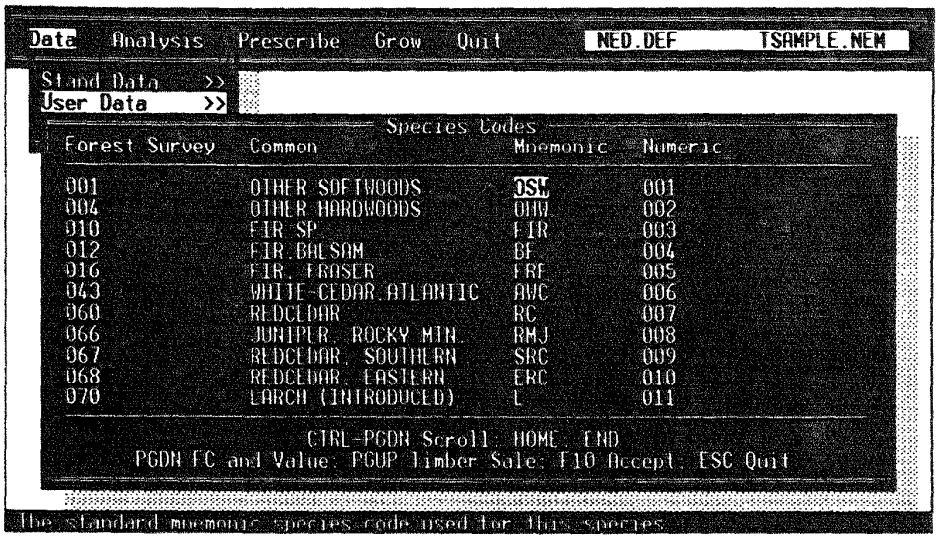


Figure 17. -- NED/SIPS Species Codes window.

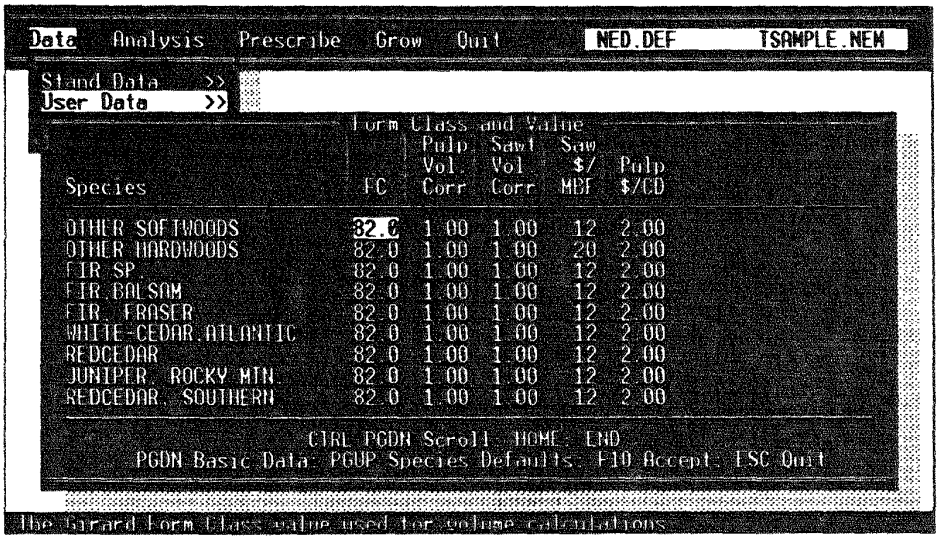


Figure 18. -- Form Class and Value window.

Operation: To edit a user data file, select Edit from the User Data menu. The user data file is divided into five separate forms. The forms, in order of display, are the User Data, Economic Analysis Data, Timber Sale Activities, Species Codes, and the Form Class and Value (Figs. 14 to 18). The User Data form (Fig. 14) allows you to enter information about owner, species code type, cruise types, local product names for boltwood and logs, default drives and paths for data files and output, default growth simulator to use for projections, the log rule to use for sawtimber volume calculations, and minimum diameter for hardwood and softwood pulpwood and sawtimber. The owner/agency, species code type, DBH classes, cruise type, and BAF/Plot size field values can be entered

here as default values and automatically written to corresponding fields in the stand data file entry forms when you create a new stand data file.

In the Economic Analysis Data form (Fig. 15), you may specify the stumpage price inflation rate, real or nominal discount rate and general inflation rate, if applicable. The Timber Sale Activities form (Fig. 16) contains inforation on costs associated with a timber sale such as marking and administration costs, and cost of management and taxes. The Species Codes form (Fig. 17) lists the species available to the NED/SIPS program. The species codes are presented as Forest Survey, Mnemonic, and Numeric along with the common name of each species. You can edit only the mnemonic and numeric species codes in this form. The Form Class and Value form (Fig. 18) enables you to specify the form class, pulpwood and sawtimber volume correction factors, and values for sawtimber (per Mbf) and pulpwood (per cord) for each species.

The first form to appear when you begin editing a user data file is the User Data form. To edit any of the other four forms, use [PG UP] and [PG DN] to move to the desired form. Inside the form, use the arrow keys to move to the field that you want to edit. [HOME] will take the cursor to the beginning of the form; [END] will take the cursor to the end of the form.

To edit a field, move the highlight bar to the field that you want to edit using the arrow keys. Press [F2] to enter the edit mode. Now you can use the left and right arrow keys to move within the field and make any corrections needed. Use [INS] if you want to insert a character in the field entry or [DEL] to delete a character in the field entry. When you have finished editing a field, press [ENTER] . The cursor will advance to the next field. If you decide to quit editing the user data file, press [ESC] and return to the main menu. If you make a typing mistake while in the field, use the [←] BKSP (backspace key) to erase the mistake and retype the entry. If you have left the field, move the highlight bar and cursor to the field with the mistake and correct it.

When you have completed a form, you can move to the next form in several ways. If the cursor is in the last field in a form, press [ENTER] to move to the next form. Or, press [PG DN] , if you have completed the fields that you want to edit and want to move to the next form. Press [PG UP] , to return to a previous form.

When you have finished editing the desired forms, press [F10] to accept your entries and return to the main menu. **NOTE: Pressing [F10] does not save your user data file!** To save the user data file that you have just edited, you must select **S**ave (See Section 5.2.3) from the menu system.

5.2.3 Saving a User Data File

Menu Item: Data→User Data →Save

Purpose: Save a User Data File to a disk.

Operation: When you are finished editing a user data file, you must save it by selecting Save from the menu. If you have been editing an existing file, the file name will appear in the "Save a File" window.

To edit the file name, move the cursor using the arrow keys to the name and re-enter the name or just begin typing the new name in that field. **Use the extension .DEF for all NED/SIPS user data files.**

Press F10 to submit the user data file name to be saved.

5.2.4 Printing a User Data File

Menu Item: Data→User Data→Hardcopy

Purpose: To obtain a printed copy of a User Data File.

Operation: The Hardcopy option allows you to view and print the user data file. Because the user data file is quite large, you may choose to print the entire file or selected portions. On selection of Hardcopy, a checklist window will appear allowing you to choose the parts of the user data file that you want to print. The printout is displayed on the screen. Press F7 to send the user data file to the printer.

5.3 About NED/SIPS

Menu Item: Data->About NED/SIPS

Purpose: To provide introductory information about NED/SIPS, and the User Registration Form.

Operation: To display opening banner of the NED/SIPS program. Press PG DN to display user registration form. Press F7 while viewing the form to print a hard copy that can be filled out and mailed to the address on the form. **NOTE:** By registering as a user, you can be assured of receiving information about program updates and additional information about the development of NED/SIPS and NED.

SECTION 6 ANALYSIS

Menu Item: Analysis

Purpose: To generate reports on your stand data.

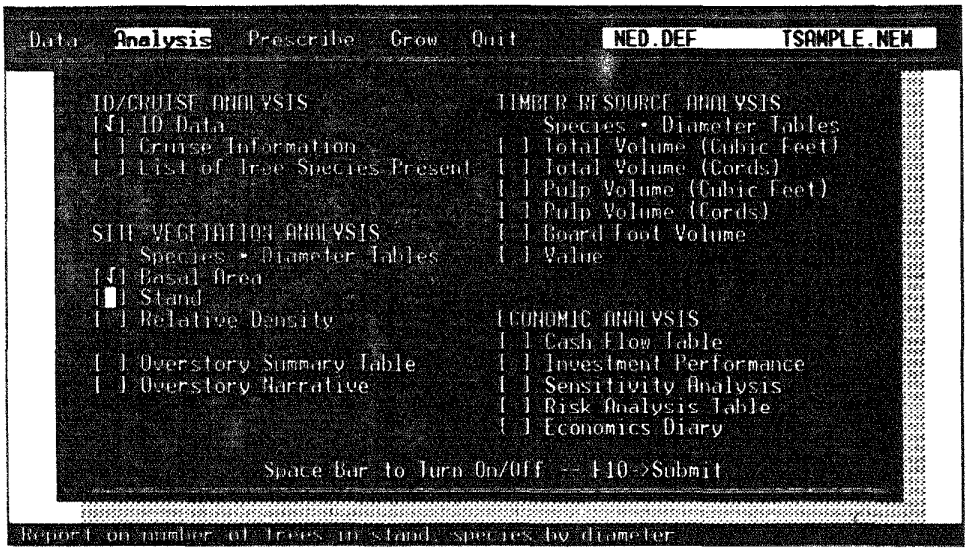


Figure 19. -- Analysis Menu window.

Operation: The Analysis menu (Fig. 19) allows you to select and generate reports on a wide variety of basic stand information. During a typical NED/SIPS session, you would use Analysis to obtain reports on the original stand conditions such as basal area or number of trees at time zero before any prescriptions or growth projections have been attempted. However, you can access Analysis to obtain reports on the residual or projected stand conditions after these procedures too.

Report selections are made by moving the cursor to the desired report and pressing SPACE. A check mark will appear to the left of the report name identifying it as a report to be created. Pressing F10 will generate the selected report. NED/SIPS will do two things to the reports that it generates: write them to the output file (your data file name with a .**PRN** extension), and display them on the screen. While you view the reports, you can press F7 to print the reports, provided, that you have a printer connected to the LPT1 parallel port on your computer.

You can generate other reports on stand conditions resulting from a silvicultural prescription or a growth projection by selecting the Reports option within the Prescribe or Grow sub-menus. These reports are discussed in the Prescribe, (Section 7) and Grow Section 8) sections.

6.1 ID/Cruise Analysis

ID Data - This report describes the stand and provides information about the owner, location, forest type, site quality, and accessibility. The information provided is both derived and obtained directly from the data that you provide in the stand data file.

Cruise Information - The cruise information report provides statistical information about the cruise. Your cruise data must be separated into plots to obtain this report.

List of Tree Species Present - This report lists the tree species found in the current stand data. Species are listed by common name and mnemonic (user defined), forest survey, and numeric (user defined) species codes.

6.2 Site Vegetation Analysis

The basal area, stand, and relative density reports are presented in the species-by-diameter table format with the diameters listed along the left margin and the species listed along the top margin in order of descending basal area. Diameters are printed in the 1- or 2-inch diameter class depending on the class that you choose for this stand. The species codes will be printed in your choice of forest survey, mnemonic, or numeric codes. Species and diameter class codes are entered in the stand data file. Each report lists up to 10 species per page with additional species printed on subsequent pages.

Basal area - shows basal area in square feet per acre, by species and diameter.

Stand - shows number of trees per acre.

Relative Density - shows percentage of relative density per acre.

Overstory Summary Table - This report displays totals and species totals for various stand parameters including basal area, number of trees, species composition, diameters, relative density, age, Q factor, volume, and value. Species are listed along the top margin from left to right in order of descending basal area. As in the species-by-diameter reports, species are represented in the species code type selected by the user in the stand data file.

Overstory Narrative - This report provides a narrative description of your stand.

6.3 Timber Resource Analysis

The following reports are presented in the species-by-diameter table format described above.

Total Volume (Cubic Feet) - total cubic-foot volume per acre includes pulpwood and sawlogs.

Total Volume (Cords) - total cord volume per acre includes pulpwood and sawlogs.

Pulp Volume (Cubic Feet) - pulp cubic-foot volume per acre.

Pulp Volume (Cords) - pulp cord volume per acre.

Board-Foot Volume - Board-foot volume per acre. Volumes are calculated using one of three user selected log rules; Doyle, Scribner, or International 1/4".

Value - value of the timber resources on the stand in dollars per acre.

6.4 Economic Analysis

The economic analysis reports are normally generated after some activity is done on the stand such as a prescription or a growth projection.

Cash Flow Table - a report showing the cash outflows and revenues generated from activities performed on the stand.

Investment Performance - a report showing various measures of investment performance including Net Present Value (NPV), Equivalent Annual Income (EAI), Soil Expectation Value (SEV), Benefit/Cost Ratio, Payback period, Real Internal Rate of Return, and Nominal Rate of Return.

Sensitivity Analysis - a report showing the sensitivity of the investment performance parameters to changes in input values.

Risk Analysis Table - a report showing the percentage of change needed in each ecomonic diary entry to make Net Present Value (NPV) a zero value.

Economics Diary - a printed copy of the current economic diary showing all applicable entries of costs and revenues associated with managing the stand.

NOTE: The computations performed to produce these economic analyses depend heavily on some of the values stored in the user data file. To produce meaningful economic reports, it is important for the user to ensure that those values accurately reflect conditions relevant to the property under analysis. The default values provided in the **NED.DEF** file are unlikely to produce meaningful results.

SECTION 7 PRESCRIBE

The Prescribe option in NED/SIPS enables you to select and perform a silvicultural treatment. NED/SIPS provides two treatment methods: perform a standard silvicultural treatment (Section 7.1), or build-your-own treatment (Section 7.3). These procedures were adapted from the SILVAH program. Therefore, you may want to consult the publications relating to SILVAH (Marquis 1986, Marquis and Ernst 1992, Marquis and others 1992) for further information.

7.1 Standard treatments

Menu Item: Prescribe→Standard prescription

Purpose: To perform a standard silvicultural treatment.

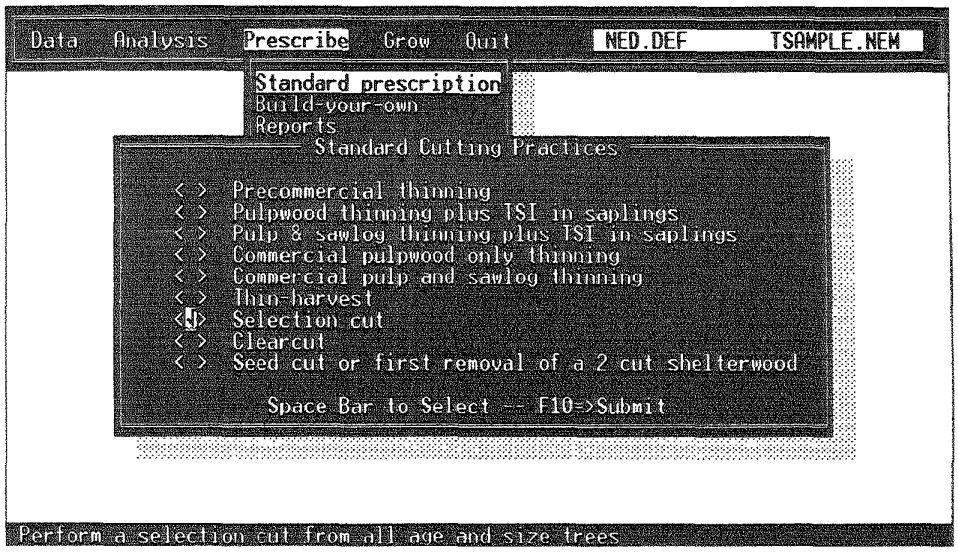


Figure 20. -- Standard Cutting Practices window.

Operation: The standard prescription method allows you to select one of nine standard silvicultural treatments (Fig. 20). Your objectives, stand structure, species composition, and all other relevant factors should be taken into consideration before selecting one of the standard cutting procedures. The treatment can be modified by regulating the minimum residual density and the maximum density to be removed using the selected treatment. The maximum amount to remove will prevent excessively heavy cuts in stands that are at or above full stocking. If the cut is an uneven-age cut, you will be asked to specify the maximum tree size and the "Q" factor for the cut. If the cut is an even-age cut, you will be asked to specify the proportion of removals to come from below the medial stand diameter. Again, this controls the residual stand structure, and you need to understand the silvicultural implications of these parameters to use these options wisely. If you are unsure, use the NED/SIPS default values for these parameters. A brief description of each of the individual cutting procedures is provided.

As the cut densities are removed, NED/SIPS determines if the cut target can be attained with trees of unacceptable growing stock (UGS). We define UGS as a tree not capable of producing sawtimber at any time or not expected to survive. For each diameter class, NED/SIPS will always remove UGS before removing acceptable

growing stock (AGS). AGS is defined as a tree capable of producing sawtimber when it reaches appropriate size and is expected to survive at least 15 years. Trees can be classified as AGS and UGS in the **Tim** column of the overstory data input form.

7.1.1 Selection Cut

The **selection cut** algorithm distributes the cut according to user-specified parameters: target residual relative density, the maximum tree size, and the "Q" value. The target residual density is first distributed into diameter classes and compared with the actual relative densities in each class. If a deficiency exists, the algorithm will carry the deficiency into the next lower diameter class in an attempt to achieve the target residual density in nearby classes. The adjustment for deficiencies will continue until the target residual relative density is met.

7.2 Even-age cutting procedures

The even-age cutting procedures (7.2.1 to 7.2.7) described here are similar to the selection cut in that the amount to remove is specified by you. The cut distribution is determined by the procedure selected. In each procedure, you specify a proportion of removals to come from below the stand diameter. NED/SIPS calculates the relative density to be cut as the current density minus the target density. Then the cut is allocated to diameter classes in decreasing proportion from smallest to largest, first below, then above the stand diameter. The target cut for each size class is compared to the density available, and adjustments in adjacent classes are made. Once the cut distribution is adjusted for deficiencies within broad size classes, it is then adjusted again by preferencing all UGS before any AGS tree is cut.

7.2.1 Pre-commercial thin

If you select a **pre-commercial thin**, you will be asked to specify the percentage of cut density to come from below medial stand diameter for the entire stand. The percentage of cut to remove from below the medial stand diameter controls the structure of the residual stand. Unless you understand the principal here, it is best to use the 75 percent default value that NED/SIPS prescribes. Using a lower value will result in cutting more large trees, thus reducing the average diameter. Much of the prescribed cut will be in sapling-size trees, and the operation may require an investment. If you choose to do precommercial work in young stands, you should also consider selecting and releasing desirable crop trees.

7.2.2 Pulpwood thinning plus Timber Stand Improvement (TSI) in saplings

This intermediate even-age procedure attempts to remove 25 percent of the targeted cut density from the sapling-size class (1 to 4 inch diameter classes) and 75percent of the density from the pole-size class (5- to 11-inch diameter classes). This cut is appropriate in stands nearing commercial size, but with high ($\geq$ 20 sq. ft.) basal area in the sapling sizes. The cut will include both sapling and pole sizes, and may result in a net income in locations with strong pulpwood markets.

7.2.3 Pulp and sawlog thinning plus TSI in saplings

This intermediate even-age procedure attempts to remove 25 percent of the targeted cut density from the sapling-size class, 35 percent from the pole size class, and 40 percent from the sawtimber size class (12- to 40+ inch diameter classes).

7.2.4 Commercial pulpwood only thinning

This intermediate even-age procedure attempts to remove 100 percent of the targeted cut density from the pole-size class.

7.2.5 Commercial pulp and sawlog thinning

This intermediate even-age procedure attempts to remove 50 percent of the targeted cut density from the pole-size class and 50 percent from the sawtimber-size class.

7.2.6 Thin - harvest

This even-age procedure attempts to remove 45 percent of the targeted cut density from the pole-size class, 30 percent from the 12- to 18-inch diameter classes, and 25 percent from the 19- to $\geq$ 40-inch diameter classes.

7.2.7 Clearcut

This procedure removes 100 percent of the trees from all size classes.

7.2.8 Seed cut or first removal of a two cut shelterwood

This even-age procedure attempts to remove 30 percent of the targeted cut density from the pole-size class, 50 percent from the 12- to 18-inch diameter classes, and 20 percent from the 19- to $\geq$ 40- inch diameter size classes.

7.3 Build-Your-Own Treatment

Menu Item: Prescribe→Build Your Own

Purpose: To perform a user-defined cutting treatment.

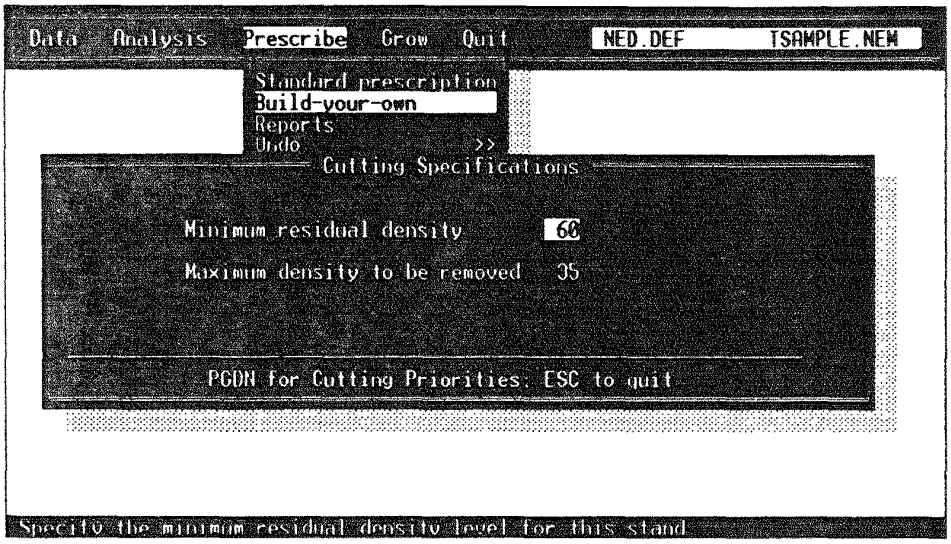


Figure 21. -- Build-Your-Own Prescription Cutting Specifications window.

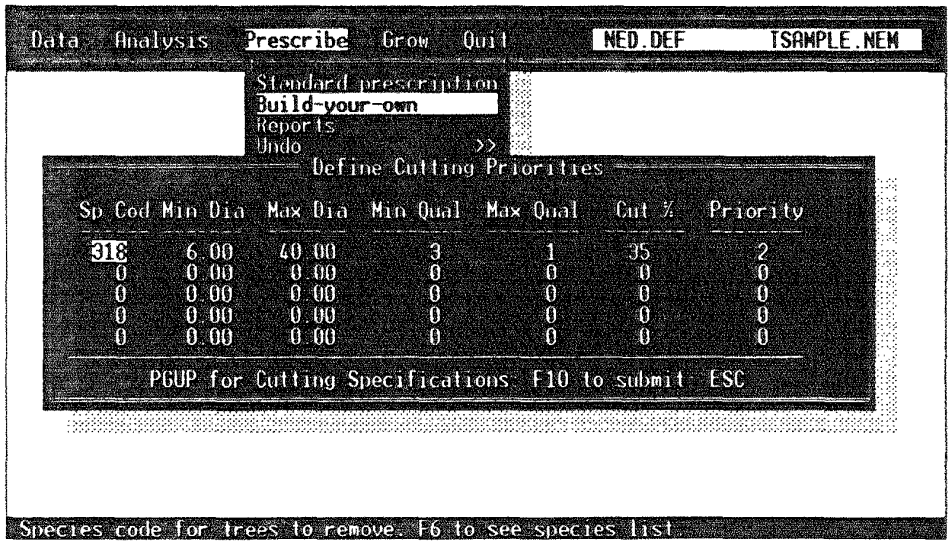


Figure 22. -- Build-Your-Own Prescription Define Cutting Priorities window.

Operation: Using the Build-Your-Own option, you can specify the species, size, and quality of trees that you want to cut. As in the Standard Prescriptions, you must first set certain treatment density parameters. In this example, you will specify the minimum residual density and the maximum density to be removed. Once you have set these parameters, press [PG DN] to enter the cutting specifications form (Fig. 20).

Figure 22 illustrates the cutting priority form in NED/SIPS. Using this form, you can build almost any kind of cut that you desire. The form consists of seven columns. The first column, **Sp Cod**, lets you specify the species of trees to be removed. The type of species code entered in this column must be consistent with the type of species codes (Forest Survey, Mnemonic, or Numeric) that you have been using throughout a particular NED/SIPS session. For example, if you commonly use mnemonic codes such as WO for White Oak when running NED/SIPS, you would enter the tree species in this form using the mnemonic code. [F6] is available in this column to see a list of the species codes. As an added feature, you may want to remove all species in the specified size range by entering **999** in the species code column. NED/SIPS will then cut all `trees according to the other parameters described below. The second and third columns, **Min Dia** and **Max Dia**, define the minimum and maximum diameters to be cut. If you wish to remove trees of only one diameter class, you would enter the same value for both columns. Quality constraints can be specified in columns four and five, **Min Qual** and **Max Qual**. Like the diameter class columns, minimum (lowest) and maximum (highest) qualities are specified using the same codes as the tree timber code in the overstory data where 1 is a potential crop tree, 2 is acceptable growing stock (AGS), 3 is unacceptable growing stock (UGS). Also, like the diameter columns, you would enter the same value in each column to cut trees of only one quality class. The sixth column, **Cut %**, specifies the percentage of relative density to remove for the specified species, diameter, and quality parameters. Finally, the seventh column, **Priority**, specifies the priority of the cut with regard to the minimum residual density that you specified. However, a priority value of 1 will cut the trees without regard to the minimum residual density value that you set, even though the resulting stand will be understocked. Priority values of 2 to 20 will cut the trees only until the minimum residual density value has been reached.

The only difference between cutting priorities 2 through 20 is that trees specified in each are removed in sequence. All priority 2 trees are removed first, and lower priorities will continue to be executed only if there is still excess residual density. Thus, it would be possible to specify several cutting priorities and not be able to execute them because of the residual density guidelines.

You are not required to have a cutting priority of 1, thus all of your cuts can be subject to residual density guidelines. Alternatively, you can specify several cuts that all have a cutting priority of 1. You will find that with a little practice it is possible to remove even individual trees from a stand with this cutting specification interface.

Do not forget to use the context-sensitive help [F1] feature of NED/SIPS on each of the individual fields as you get familiar with this cutting specification interface.

7.4 Reports

Menu Item: Prescribe→Reports

Purpose: To select and generate reports on silvicultural treatment.

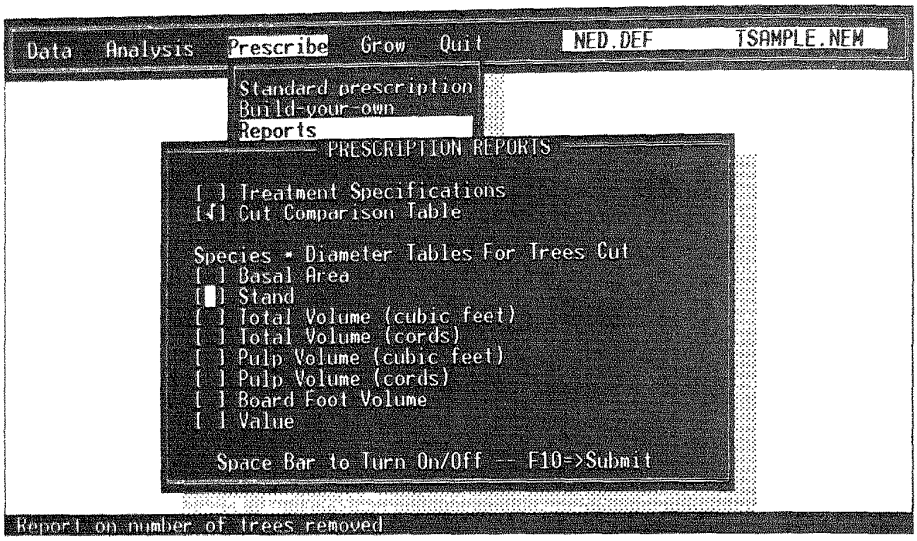


Figure 23. -- Prescription Reports selection window.

Operation: The reports available to the user through the Reports option under Prescribe are shown in Figure 23. The treatment specifications report provides information about the board-foot and cord volume removed, instructions for timber marking, and cutting specifications. The cut comparison table shows initial, cut, and residual stand parameters including volumes, basal area, and number of trees. Species by diameter tables are also available showing values for trees that were removed.

7.5 Undo

Menu Item: Prescribe→Undo

Purpose: To reverse a silvicultural treatment performed on your stand.

Operation: The Undo option under Prescribe provides two methods to reverse a silvicultural treatment: revert or uncut. Revert will undo everything that you have done to your stand data including prescriptions and growth projections and return to the original conditions that existed when you created (and saved) or retrieved a data file. Uncut reverses only the last silvicultural prescription that you performed on the stand data. So, if you try a cut and do not like the results, you may reverse the operation and try another. This saves you from duplicating the same steps that you took to get to the precut stand conditions, which may have been quite involved.

SECTION 8 GROW

The Grow menu option allows you to simulate stand growth using one of the four incorporated growth simulators. You may select one of these simulators or allow NED/SIPS to make the choice for you based on your stand's forest type, state, and geographic province. Also, you will specify the number of years that you want to simulate growth, select reports on the simulation, and enter economic information in the economic diary form.

8.1 Growth Simulators Supported

NED/SIPS incorporates the growth simulation modules of the four programs listed below:

- SILVAH (Version 4.0) (Marquis 1986, Marquis and Ernst 1992)
- NE-TWIGS (Version 3.0) (Hilt and Teck 1989, Teck 1990)
- FIBER (Version 2.0) (Solomon and others 1987)
- OAKSIM (June 1987) (Hilt 1985a, 1985b)

8.2 Cautions for Using Growth Simulators

Tests performed on these four simulators have shown that they generally work best in the forest type and region for which they were developed. Some, however, did produce reasonable results in other forest types and regions (Schuler and others 1993). Nevertheless, you should always exercise caution when using a simulator in a forest type or region for which it was not intended.

NED/SIPS contains an extensive species list. Many of these species were not included in the original data sets that were used to develop the growth and yield equations for the simulators. An attempt has been made to classify the added species within each simulator as correctly as possible for use with its growth and mortality equations. Whenever possible, this classification was performed by the simulator developers themselves.

Because NED/SIPS handles a more extensive species list than the original growth simulators, we cannot guarantee that running the same data in the original growth simulator will produce exactly the same results as with NED/SIPS. However, if the species in your data are fully supported in the selected simulator, the results should be comparable.

8.3 Growth Simulator Selection

Menu Item: Grow→Select Simulator

Purpose: To select a growth simulator to use for stand growth projection.

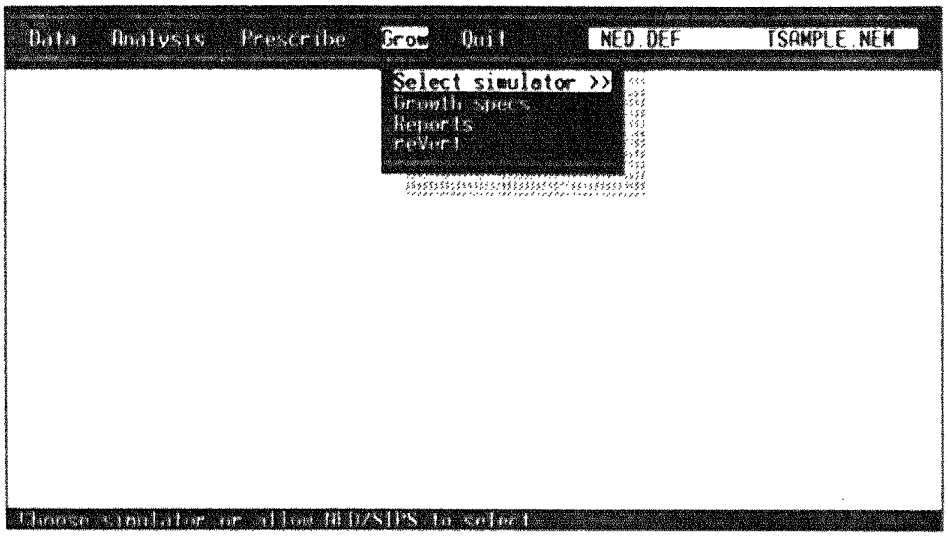


Figure 24. -- Grow select simulator window.

Operation: Growth simulator selection can be made either automatically by the NED/SIPS program or manually from the menu system (Fig. 24). The automatic simulator selection algorithm in NED/SIPS uses the stand's forest type and location to choose an appropriate growth simulator. If the user makes the simulator selection manually, the simulator checking algorithm will check for the compatibility of the chosen simulator with the stand's forest type and location. If an incompatibility exists, a warning will be posted. However, the user will have the freedom to proceed at his or her own risk with the chosen simulator.

The automatic simulator selection and simulator compatibility checking algorithms in NED/SIPS were developed from the tests mentioned in Section 8.2. The simulator selection algorithm will choose the one that performed best when tested in a given forest type and region. The simulator checking algorithm compares your simulator choice with those simulators that performed poorly in your stand's forest type and location during the testing procedures.

If you wish to allow the NED/SIPS program to choose the appropriate growth simulator, select Auto from the simulator selection menu window. After the NED/SIPS program has made its selection, a message will be displayed informing you of the selection and prompting you for approval. If you disapprove of the selection, type [N] at the prompt and press [ENTER]. You may override NED/SIPS's choice and make your own simulator selection.

In most situations, you will probably want to select the growth simulator yourself. Select the desired simulator from the menu list window by typing the highlighted letter or moving the scroll bar to the desired simulator name and press [ENTER].

8.4 Growth Specifications

Menu Item: Grow→Growth Specs.

Purpose: To specify the length of time to project the growth of a stand.

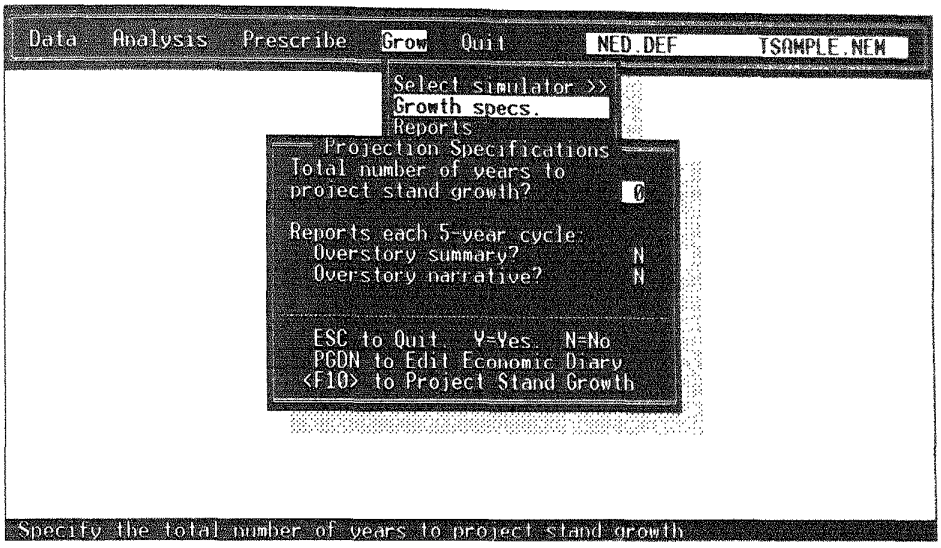


Figure 25. -- Grow Projection Specifications window.

Operation: The "Projection Specifications" window will appear (Fig. 25) on the screen. On the first line, you can enter the total number of years that you want to project the stand. In this window, you can also choose to receive certain reports at 5-year intervals throughout the projection period by entering [Y] beside the desired report. If you are satisfied with your projection specifications at this point, press [F10] to begin the simulation process.

The second level of the projection specifications option is the economics diary, which allows you to enter any additional costs and revenues that you would incur during the projection period in the management of this stand. To display the Economics Diary window, press [PG DN] .

8.5 Economics Diary Entries

The economic analysis routine of NED/SIPS was initially developed for the TWIGS programs by the Department of Forest Resources, University of Minnesota (UMFR). The Forest Resources Systems Institute (FORS) provided partial funding for the economic analysis enhancements. These routines are used with permission.

The Economics module and Economics Diary in NED/SIPS were adapted from the economics routines in TWIGS, specifically NE-TWIGS (Hilt and Teck 1989, Teck 1990).

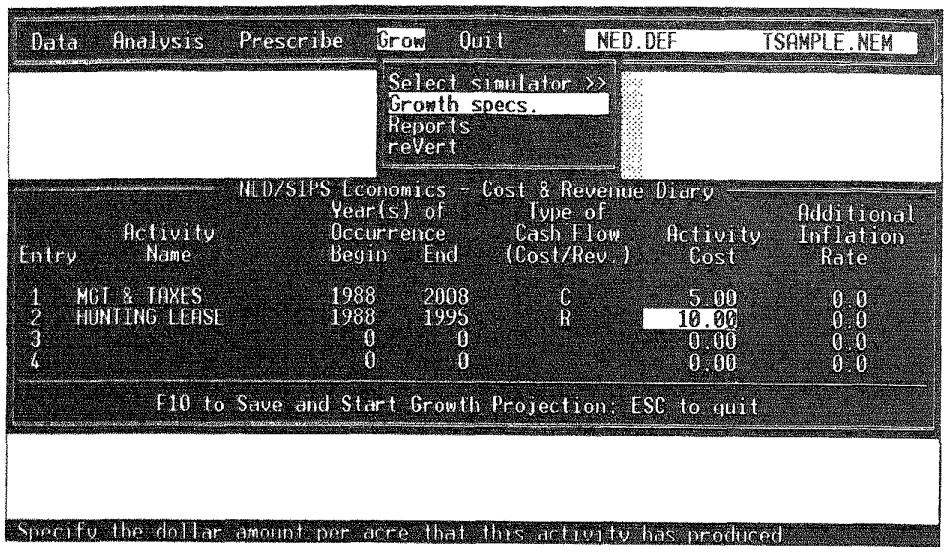


Figure 26. -- Grow Economics Diary window.

The "Economics Diary" (Fig. 26) is a log of costs incurred by the landowner and revenues generated by management activities such as timber harvesting. Entries in the diary can be made by the NED/SIPS program or the user. During execution of NED/SIPS, certain types of costs and revenues are entered in the diary by the NED/SIPS program. These entries include values set by the user in the user data file such as property taxes (MGT AND TAXES), timber sale costs such as sale administration and sale preparation (Marking, etc), and timber sale revenues (SALE INCOME). Timber sale revenues written to the diary are calculated based on current values per MBF for each species (entered in the user data file) and the calculated volume that has been cut.

Entries in the diary also can be made by the user. Some examples of costs and revenues that would have to be entered by the user include revenue from hunting leases, and costs associated with land maintenance.

8.5.1 Entering Cost and Revenue Activities

Menu Item: Grow→Growth Specs and press PG DN .

Purpose: To enter and edit the Economics Diary.

Operation: The diary allows you to enter up to 30 cost and revenue entries. Figure 26 shows the Economics Diary as it appears in the NED/SIPS program. The seven fields in the diary, from left to right, are: **Entry** number, **Activity Name**, **Beginning Year of Occurrence**, **Ending Year of Occurrence**, **Type of Cash Flow**, **Activity Cost**, and **Additional Inflation Rate**. These entries are described below.

Entry - Entry is the activity number from 1 to 30. This field cannot be edited by the user.

Activity Name - The activity name is what you are calling the activity. In this field, you may enter up to 20 characters. For example, if you lease your land for hunting you might enter "HUNTING LEASE" in this field.

Year(s) of Occurrence (BEGIN) - The next field is where you would enter the year in which the activity first occurred. For example, if you received income from a hunting lease beginning in 1966, enter **1966** in this field. The year must within the range from the beginning year of the projection to the end of the projection. For example, if you tallied the stand in 1965 and wanted to project it for 20 years to 1985, then the valid years would be within the range from 1965 to 1985.

Year(s) of Occurrence (END) - The ending year of occurrence is the last year in which the activity occurred. For example, in the case of the hunting lease, the last year that you received income from the lease was in 1969. Of course, you would enter **1969** in this field. The beginning year and ending year of occurrence can be the same year if the cost or revenue was considered a single occurrence or a periodic occurrence at that cash flow amount. For example, if you planted trees on your land in 1967 that cost was incurred only once during the projection period (1967). Therefore, the beginning year of occurrence would be 1967 and the ending year would be 1967.

Type of Cash Flow (Cost/Revenue.) - The fifth field in the economics diary is the "Type of Cash Flow". This field is used to specify whether the activity was a cost or a revenue. If the activity cost the landowner money, enter a **C** in this column. If the activity earned the landowner money, enter an **R**. In Figure 26, the hunting lease is a revenue for the landowner.

Costs are classified into three different groups: annual, periodic, and single. Annual costs occur each year in 2 or more consecutive years and are constant throughout. In other words, the cost is the same each year that the activity occurs. An example of an annual cost would be property taxes. A periodic cost occurs more than once during the projection but not in consecutive years. A periodic cost also can be a cost that does occur in consecutive years, but the cash flow (dollar amount) varies from year to year. Examples of periodic costs may be the cost for planting new trees on the land several times during the projection or on a Christmas tree farm on which trees are planted each year. The costs of trees and labor increases each year. A single cost occurs once during the life of the projection. An example of a single cost is that paid for the land at the beginning of the projection period (Miner et al 1988).

Certain costs and other economic parameters are set by the user in the user data file and used by NED/SIPS in the economic analysis. The economic parameters (and costs) that you can specify are stumpage price inflation rate, real or nominal discount rate, general inflation rate, cost of marking (sale preparation) in $/acre, sale administration in $/acre, cost of management and taxes in $/acre, and values for each timber species.

Revenues are any income from activities performed on your land such as a timber sale, selling Christmas trees raised on your land, or income from leasing your land for hunting. With the exception of income from a timber sale (SALE INCOME), you will have to enter these revenue generating activities into the Economics Diary.

Activity Cost - The next field is the value of the activity. This is the amount of money that the activity cost the landowner or earned for the landowner. In

Figure 26, the revenue gained by the landowner for leasing his land was $10.00.

Additional Inflation Rate - The last field permits you to enter any adjustment in the inflation rate. This amount, expressed as a percentage, can be above or below the general inflation rate. That is, a positive value or a negative value. For example, if the inflation rate rose 1 percent above the general inflation rate, enter **1.0** in this field. Conversely, if the rate fell 1 percent, enter a **-1.0** in this field.

8.5.2 Saving Your Diary Entries

After completing the economics diary, press F10 to submit your diary entries and start the specified growth projection for the stand. There is no way to save your economic diary entries to a file. Therefore, multiple projections with the same diary entries will require you to re-enter the costs and revenues for each execution.

8.6 Reports

Menu Item: Grow→ Reports

Purpose: To select and generate growth simulation reports.

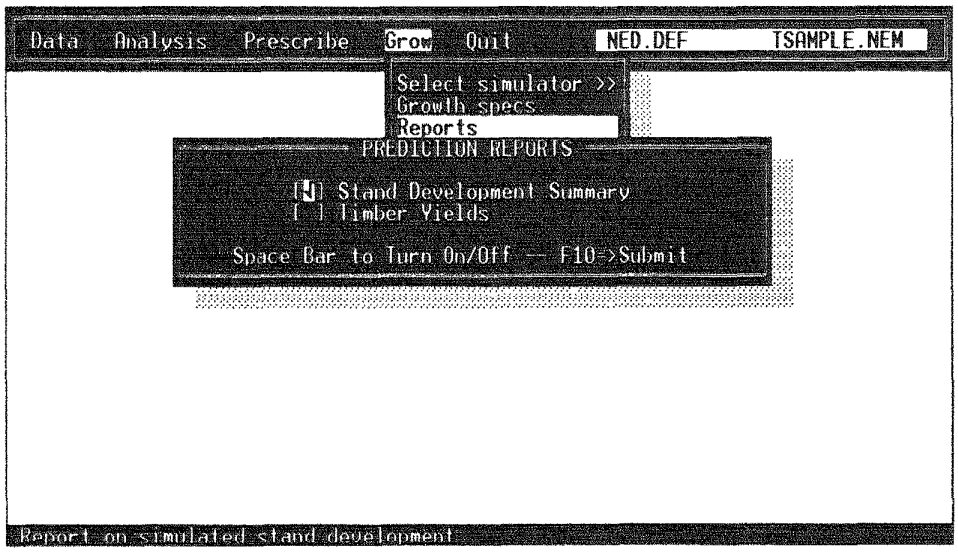


Figure 27. -- Grow Prediction Reports window.

Operation: NED/SIPS provides two reports based on the growth simulation (Fig. 27). The first is a stand development summary that provides stand parameter values for each 5-year growth period . This summary will also contain information about any silvicultural treatment that is performed during the growth projection showing cut and residual values. The second report, Timber Yields, reports on the timber yields as a result of a growth simulation. After making all of your report selections, press F10 to generate the reports.

8.7 Revert

Menu Item: Grow→reVert

Purpose: Returns the stand to original conditions.

Operation: The reVert menu option allows you to "ungrow" the stand and return to the original conditions before any prescriptions or growth projections have been performed. The NED/SIPS essentially re-retrieves your data file in this operation. This feature allows you to grow the stand using different simulators and projection lengths.

ECTION 9 QUIT

lenu Item: Quit

urpose: Ends a NED/SIPS session and returns to the computer's operating system.

peration: You will be asked to confirm that you really want to quit. Type [Y] (the default) or press [ENTER] to confirm your request.

Literature Cited

Hilt, Donald E. 1985a. **OAKSIM: An individual-tree growth and yield simulator for managed, even-aged, upland oak stands.** Res. Pap. NE-562. Broomall, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 21 p.

Hilt, Donald E. 1985b. **User's Guide to OAKSIM: An individual-tree growth and yield simulator for managed, even-aged, upland oak stands.** Gen. Tech. Rep. NE-104. Broomall, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 22 p.

Hilt, Donald E.; Teck, Richard M. 1989. **NE-TWIGS: An individual-tree growth and yield projection system for the northeastern United States.** The Compiler. 7(2): 10-16.

Marquis, David A. 1986. **SILVAH: A stand analysis, prescription, and management simulator program for hardwood stands of the Alleghenies.** In: Wiant, Harry V., Jr.; Yandle, David O.; Kidd, William E., Jr. eds. Forestry microcomputer software symposium; 1986 June 30-July 2; Morgantown, WV. Morgantown, WV: West Virginia University: 224-240.

Marquis, David A.; Ernst, Richard L. 1992. **User's Guide to SILVAH: stand analysis, prescription, and management simulator program for hardwood stands of the Alleghenies.** Gen. Tech. Rep. NE-162. Radnor, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 124 p.

Marquis, David A.; Ernst, Richard L.; Stout, Susan L. 1992. **Prescribing silvicultural treatments in hardwood stands of the Alleghenies (Revised).** Gen. Tech. Rep. NE-96. Radnor, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 102 p.

Miner, Cynthia L.; Walters, Nancy R.; Belli, Monique L. 1988. **A Guide to the TWIGS program for the North Central United States**. Gen. Tech. Rep. NC-125. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 105 p.

Schuler, Thomas M.; Marquis, David A.; Ernst, Richard L.; Simpson, Brian T. 1993. **Test of four growth simulators for the Northeastern United States.** Res. Pap. NE-676. Radnor, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 14 p.

Solomon, Dale S.; Hosmer, Richard A.; Hayslett, Homer T., Jr. 1987. **FIBER Handbook: A growth model for spruce-fir and northern hardwood forest types.** Res. Pap. NE-602. Broomall, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 19 p.

Teck, Richard M. 1990. **NE-TWIGS 3.0: An individual-tree growth and yield projection system for the northeastern United States.** The Compiler. 8(1): 25-27.

Additional References

Bragg, William 1992. **Relative density**. Unpublished documentation on file at the USDA Forest Service, Northeastern Forest Experiment Station, RWU-4454, Burlington, VT.

Marquis, David A. 1977. **Volume tables for Allegheny hardwoods, (4110-FS-NE-1108-93)**. Progress Report dated Jan. 21, 1977, on file at the Forestry Sciences Laboratory, Northeastern Forest Experiment Station, Warren, PA.

Scrivani, John A. 1989. **An algorithm for generating "exact" Girard Form Class Volume Table Values**. Northern Journal of Applied Forestry. 6(3):140-142.

Appendix A.--NED/SIPS Tree Species Code List

Common Name[a]	Forest Survey[a]	Mnemonic	Numeric
Other Softwoods	001	OSW	001
Other Hardwoods	004	OHW	002
Fir Sp.	010	FIR	003
Fir, Balsam	012	BF	004
Fir, Fraser	016	FRF	005
Cedar, Atlantic White	043	AWC	006
Redcedar	060	RC	007
Juniper, Rocky Mtn.	066	RMJ	008
Redcedar, Southern	067	SRC	009
Redcedar, Eastern	068	ERC	010
Larch (Introduced)	070	L	011
Tamarack (Native)	071	TAM	012
Spruce	090	S	013
Spruce, Norway	091	NS	014
Spruce, Engelmann	093	ES	015
Spruce, White	094	WS	016
Spruce, Black	095	BS	017
Spruce, Blue	096	BLS	018
Spruce, Red	097	RS	019
Pine	100	P	020
Pine, Jack	105	JP	021
Pine, Sand	107	SP	022
Pine, Shortleaf	110	SHP	023
Pine, Slash	111	SSP	024
Pine, Spruce	115	SLP	025
Pine, Longleaf	121	LLP	026
Pine, Ponderosa	122	POP	027
Pine, Table Mountain	123	TMP	028
Pine, Red	125	REP	029
Pine, Pitch	126	PP	030
Pine, Pond	128	PNP	031
Pine, Eastern White	129	EWP	032
Pine, Scotch	130	SCP	033
Pine, Loblolly	131	LBP	034
Pine, Virginia	132	VP	035
Pine, Southern	170	SOP	036
Baldcypress	221	BCY	037
Cedar, Northern White	241	NWC	038
Hemlock	260	H	039
Hemlock, Eastern	261	EH	040
Hemlock, Carolina	262	CH	041
Maple	310	M	042
Maple, Florida	311	FM	043
Boxelder	313	BXM	044
Maple, Black	314	BM	045
Maple, Striped	315	STM	046
Maple, Red	316	RM	047
Maple, Silver	317	SVM	048
Maple, Sugar	318	SM	049
Maple, Mountain	319	MM	050
Buckeye, Horsechestnut	330	BUC	051

Continued

Common Name[a]	Forest Survey[a]	Mnemonic	Numeric
Buckeye, Ohio	331	OBU	052
Buckeye, Yellow	332	YBU	053
Buckeye (Exc 331,332)	333	BEY	054
Ailanthus	341	AIL	055
Serviceberry	355	SVB	056
Pawpaw	367	PPW	057
Birch Sp.	370	B	058
Birch, Yellow	371	YB	059
Birch, Sweet	372	SB	060
Birch, River	373	RB	061
Birch, Water	374	WB	062
Birch, Paper	375	PB	063
Birch, Gray	379	GB	064
Amer. Hornbeam	391	AHB	065
Hickory Sp.	400	HS	066
Hickory, Water	401	WH	067
Hickory, Bitternut	402	BH	068
Hickory, Pignut	403	PH	069
Pecan	404	PCN	070
Hickory, Shellbark	405	SLH	071
Hickory, Shagbark	407	SGH	072
Hickory, Black	408	BKH	073
Hickory, Mockernut	409	MH	074
Chestnut, American	421	ACN	075
Chinkapin, Allegheny	422	ACK	076
Chinkapin, Ozark	423	OCK	077
Chinkapin	430	CK	078
Catalpa	450	CAT	079
Catalpa, Southern	451	SCT	080
Catalpa, Northern	452	NCT	081
Hackberry Sp.	460	HBY	082
Sugarberry	461	SBY	083
Hackberry	462	HAC	084
Redbud, Eastern	471	ERB	085
Yellowwood	481	YW	086
Dogwood, Flowering	491	DOG	087
Hawthorn	500	HAW	088
Persimmon, Common	521	PER	089
Beech, American	531	AB	090
Ash	540	A	091
Ash, White	541	WA	092
Ash, Black	543	BA	093
Ash, Green	544	GA	094
Ash, Pumpkin	545	PA	095
Ash, Blue	546	BLA	096
Waterlocust	551	WL	097
Honeylocust	552	HL	098
Loblolly-Bay	555	LBY	099
Coffeetree, Kentucky	571	KCT	100
Silverbell	580	SLB	101
Holly, American	591	HOL	102
Butternut	601	BUT	103
Walnut, Black	602	BW	104
Sweetgum	611	SG	105
Poplar, Yellow-	621	YP	106

Continued

Common Name[a]	Forest Survey[a]	Mnemonic	Numeric
Osage-Orange	641	OOR	107
Magnolia Sp.	650	MAG	108
Cucumbertree	651	CUC	109
Magnolia, Southern	652	SMG	110
Sweetbay	653	SWB	111
Magnolia, Bigleaf	654	BGM	112
Apple Sp.	660	APP	113
Mulberry Sp.	680	MUL	114
Mulberry, White	681	WMB	115
Mulberry, Red	682	RMB	116
Tupelo	690	TUP	117
Tupelo, Water	691	WTU	118
Tupelo, Ogeechee	692	OTU	119
Blackgum	693	BG	120
Tupelo, Swamp	694	STU	121
E. Hophornbeam, Ironwood	701	OST	122
Sourwood	711	SW	123
Paulownia	712	PAU	124
Redbay	721	RBY	125
Sycamore	731	AS	126
Aspen	740	ASP	127
Poplar, Balsam	741	BP	128
Cottonwood, Eastern	742	EC	129
Aspen, Bigtooth	743	BTA	130
Cottonwood, Swamp	744	SC	131
Cottonwood, Plains	745	PC	132
Aspen, Quaking	746	QA	133
Poplar, Silver	752	SPO	134
Cottonwood, Narrowleaf	753	NCW	135
Cherry, Plum Spp.	760	CH	136
Cherry, Pin	761	PNC	137
Cherry, Black	762	BC	138
Chokecherry	763	CC	139
Plums, Chry, Exc 762	764	PLM	140
Plum, Canada	765	CPL	141
Plum, Wild	766	WPL	142
Oak	800	OAK	143
Oak, White	802	WO	144
Oak, Swamp White	804	SWO	145
Oak, Scarlet	806	SO	146
Oak, Durand	808	DO	147
Oak, Northern Pin	809	NPO	148
Oak, Southern Red	812	SRO	149
Oak, Cherrybk, Swamp Red	813	CBO	150
Oak, Bear	816	BSO	151
Oak, Shingle	817	SHO	152
Oak, Turkey	819	TKO	153
Oak, Laurel	820	LO	154
Oak, Overcup	822	OCO	155
Oak, Bur	823	BRO	156
Oak, Blackjack	824	BJO	157
Oak, Swamp Chestnut	825	SCO	158
Oak, Chinkapin	826	CKO	159
Oak, Water	827	WTO	160
Oak, Nutall	828	NTO	161

Continued

Common Name[a]	Forest Survey[a]	Mnemonic	Numeric
Oak, Pin	830	PO	162
Oak, Willow	831	WLO	163
Oak, Chestnut	832	CO	164
Oak, Northern Red	833	NRO	165
Oak, Shumard	834	SUO	166
Oak, Post	835	PSO	167
Oak, Delta Post	836	DPO	168
Oak, Black	837	BO	169
Oak, Live	838	LVO	170
Oak, Bluejack	840	BLO	171
Oak, Scrub	899	SBO	172
Locust, Black	901	BL	173
Willow	920	WLW	174
Willow, Peachleaf	921	PWL	175
Willow, Black	922	BWL	176
Willow, Diamond	923	DWL	177
Sassafras	931	SAS	178
Ash, Amer. Mountain	935	AMA	179
Ash, Euro. Mountain	936	EMA	180
Basswood	950	BSW	181
Basswood, American	951	BAS	182
Basswood, White	952	WBS	183
Elm	970	ELM	184
Elm, Winged	971	WEL	185
Elm, American	972	AEL	186
Elm, Cedar	973	CEL	187
Elm, Siberian	974	SBE	188
Elm, Slippery	975	SEL	189
Elm, September	976	SPE	190
Elm, Rock	977	REL	191
Elm, Tung-Oil	980	TOE	192
Sparkleberry	981	SPK	193
Chinaberry	983	CHB	194
Elm, Water	984	WEL	195
Smoketree	985	SMK	196
Mesquite	986	MES	197
Alder	350	ALD	198
Devils-Walking Stick	353	DWS	199
Fringetree	475	FRT	200
Dogwood, Alt.-Leaved	492	ADW	201
Hazelnut, American	501	AHZ	202
Autumn/Russian Olive	535	AOL	203
Witch-Hazel	585	WHZ	204
Sumac, Winged	864	WSU	205
Sumac, Smooth	865	SSU	206
Sumac, Staghorn	866	SUM	207
Sumac, Poison	868	PSU	208
Juniper, Common	061	CJP	209
Mountain Laurel	606	MLR	210
Rhododendron	855	RHO	211
Unknown Shrub	998	USH	212

[a]Cannot be edited by the user.

Appendix B.--NED/SIPS Error Messages.

Allocation error: amount = XXX, size = XXX.
Stand data saved to file SAVEDATA.NEM.
The NED/SIPS program tried to allocate memory, but there was not enough available. This is a fatal error, but before exiting, NED/SIPS attempts to save the current stand data to the file SAVEDATA.NEM. You may be able to recover any lost stand data by reloading this file and saving it, or by renaming this file. Refer to the history log file to understand what form these data will be in. The user may wish to optimize memory usage by running the MEMMAKER program (if using DOS 6.0 or above). Users of earlier DOS versions may be able to make more memory available by configuring the EMM386 or another memory manager program. Refer to your DOS manual for details on these programs. Before making any such configuration changes, be sure to make backup copies of your original CONFIG.SYS and AUTOEXEC.BAT files.

INSUFFICIENT MEMORY FOR TASK
The NED/SIPS program tried to allocate memory for a specific task, but there was not enough memory available. Print the history log file and the error log file to see which operations used the memory. Also, check the computer's memory to see what is available and if any programs can be turned off to free up some of your memory.

 # PLOTS ENTERED NOT = PLOTS COUNTED
The number of overstory plots specified in the cruise information does not equal the observed number encountered when NED/SIPS was retrieving the overstory data in the stand data file. Check your data for the number of plots and correct the **Number of plots** value. Each plot should be separated by entering a zero in the species code column of the overstory data.

MAX. No. OF ERRORS FOUND, CHECK DATA!
NED/SIPS has logged the maximum number of errors (100) to the error log file. You should print the error log and try to correct these errors.

BAF/PLOT SIZE = 0 MUST SUPPLY A VALUE!
The BAF/Plot Size value was not entered or entered as zero. Overstory plot size must be specified for each stand data file. If you were retrieving only one data file, it will still be retrieved and you can edit the file and enter a BAF/Plot Size value.

If you were trying to retrieve more than one stand data file, BAF/Plot Size in one of the files that you chose to retrieve was found to be zero. The retrieval process was halted. Check each data file for a valid BAF/Plot size value. If you are editing the data file with a program other than NED/SIPS, BAF/Plot Size is found on line 9, columns. 6 and 7 in the stand data file structure. Then try to retrieve the data files again.

ERROR READING ID INFORMATION
NED/SIPS encountered a problem while trying to read the Identification information in your stand data file. This error stops the file retrieval and brings you back to the main menu of NED/SIPS. You should look at your data file with a text editor and check the position of the ID information in your data file. See Appendix C: Structure of NED/SIPS Stand Data File for correct column and line placement of Identification information, Lines 1 to 7. This error is likely to occur only if you have edited your data files outside of the NED/SIPS program.

ERROR READING CRUISE INFO.
NED/SIPS encountered a problem while trying to read the Cruise information in your stand data file. This error stops the file retrieval and brings you back to the main menu of NED/SIPS. See Appendix C: Structure of NED/SIPS Stand Data File for correct column and line placement of Cruise information, Lines 8 and 9. This error is most likely to occur if you have edited your data files outside of the NED/SIPS program.

ERROR READING SITE INFO.
NED/SIPS encountered a problem while trying to read the Site information in your stand data file. This error stops the file retrieval and brings you back to the main menu of NED/SIPS. See Appendix C: Structure of NED/SIPS Stand Data File for correct column and line placement of Site information, Lines 10 and 11. This error is most likely to occur if you have edited your data files outside of the NED/SIPS program.

ERROR READING OVERSTORY. INFO.
NED/SIPS encountered a problem while trying to read the Overstory information in your stand data file. This error stops the file retrieval and brings you back to the main menu of NED/SIPS. See Appendix C: Structure of NED/SIPS Stand Data File for correct column and line placement of Overstory information, beginning on line 18. This error is most likely to occur if you have edited your data files outside of the NED/SIPS program.

DBH NOT IN DIAMETER CLASS SPECIFIED
DBH entered is not within the diameter class that was specified in the DBH class code specified in the cruise information. DBH must be entered as 1 inch, 2 inch, or actual diameter down to tenths or hudredths of an inch according to the DBH class code used.

NO. OF SPECIES > 30. EXCESS = OHW
The maximum allowable number of different species is 30. This number has been exceeded. The additional species have been reclassified as other hardwoods (OHW).

DBH EXCEEDS 40" MAX. DIAMETER
The diameter (DBH) exceeded 40 inches. For processing purposes, the diameter has been reset to 40 inches.

INVALID TIMBER CODE, RESET TO 2 (ags)
The timber code was invalid. You may see the acceptable codes by pressing F1 (Help) on the timber code (**TIM**) field in the data file forms.

INVALID WILDLIFE CODE
The wildlife code was invalid. You may see the acceptable codes by pressing F1 (Help) on the wildlife code (**WL**) field in the data file create/edit forms.

SAWLOG MERCH. HT. > 80 FT.
The sawlog merchantable height was entered as > 80.

PULP MERCH. HT. > 80 FT.
The pulpwood merchantable height was entered as > 80.

TMBR. PROD. CODE <> RANGE
An illegal code was entered for timber product code. You may see acceptable codes by pressing F1 (Help) on the timber product code (**Prod**) field in the data file create/edit forms.

SAWLOG GRADE OUT OF RANGE
The value entered for sawlog grade was out of the acceptable range. You may see a list of acceptable values by pressing F1 (Help) on the sawlog grade (**Saw Grd**) field in the Overstory Data window.

CROWN CLASS OUT OF RANGE
The value entered for crown class grade was out of the acceptable range. You may also see a list of acceptable values by pressing F1 (Help) on the crown class (**CC**) field in the Overstory Data window.

STATUS OUT OF RANGE
The value entered for tree status was out of the acceptable range. You can see a list of acceptable values by pressing F1 (Help) on the status (**Stat**) field in the Overstory Data window.

ILLEGAL OVSTY. CRUISE TYPE
An illegal value for overstory cruise type was entered. You may see a list of acceptable values by pressing F1 (Help) on the **Cruise Type** field in the Cruise Information window.

MISSING/ILLEGAL SAWLOG HT. CODE
A missing or illegal value was entered for sawlog height code. You may see a list of acceptable values by pressing F1 (Help) on the **sawlog height code** field in the Cruise Information window.

MISSING/ILLEGAL PULPWD HT. CODE
A missing or illegal value was entered for pulpwood height code. You may see a list of acceptable values by pressing F1 (Help) on the **pulpwood height code** field in the Cruise Information window.

GROWTH OF A TREE EXCEEDED MAX DIA
The growth of a tree during a SILVAH projection exceeded the maximum allowable diameter.

NE-TWIGS ERROR OR WARNING MESSAGES

ERROR READING NETWIGS.INC FILE
An error occurred while reading the "NETWIGS.INC" initialization file for the NE-TWIGS simulator. If you intend to use NE-TWIGS simulator, you must make sure that this file is in the same directory where the NED/SIPS program is stored.

NO LIVE TREES IN TREE LIST
There are no live trees in the tree list.

MAXIMUM NUMBER OF SPECIES EXCEEDED
The maximum number of species has been exceeded.

NO PROJECTION, BATOT <= 0.0
There was no projection performed or projection stopped because the total basal area fell to zero (0.0).

FIBER ERROR OR WARNING MESSAGES

BASAL AREA <20 SQ.FT. PROJ. HALTED
The growth projection using FIBER was halted because the basal area fell below 20 square feet due to cutting and/or mortality.

SI <> RANGE, DEFAULT SI USED
The site index was out of the acceptable range. Therefore, a default site index will be used during the FIBER growth projection.

FOREST TYPE INCOMPATIBLE W/FIBER
The forest type of your stand is incompatible for use with the FIBER growth simulator. However, you can continue with the growth simulation.

TREES < 5" AND > 30" WILL BE LOST
The FIBER simulator can only use trees between 5 inches and 30 inches in diameter. Therefore, the growth of any trees outside of this range will not be simulated.

YEARS <> MULTIPLE OF 5, ADJUSTED
The number of years specified to project growth using FIBER is not a multiple of 5, it has been adjusted.

OAKSIM ERROR OR WARNING MESSAGES

OAKSIM SI OUT OF RANGE (50 - 85)
The site index value specified is outside of the range for which OAKSIM was developed.

NO SI SPEC, 65 USED FOR OAKSIM PROJ
There was no site index specified for this stand. Therefore, a site index value of 65 will be used during the OAKSIM projection.

OAKSIM AGE OUT OF RANGE (30-120)
The stand age specified to be used in the OAKSIM simulation is out of range.

NO AGE SPEC, EQUIV AGE USED, OAKSIM
There was no age specified for this stand. Therefore, an estimated age will be used for the OAKSIM simulation.

OAKSIM PROJ. MUST BE MULT. OF 5
The OAKSIM simulator can only project in multiples of 5 years. The projection length specified is not a multiple of 5 years.

DBH < 2.6 WHICH IS OAKSIM MIN.
The minimum allowable diameter for the OAKSIM simulator is 2.6 inches. The diameter for this tree was less than 2.6 inches.

ROUNDING TREE COUNT FOR OAKSIM
The count (number of trees) has been rounded to the nearest whole tree.

OAKSIM:AGE & EFF. AGE OUT OF RANGE
The ages were out of range for the OAKSIM simulator.

GROWTH SIMULATION WARNING MESSAGES

SILVAH CHOSEN, BUT UNTESTED
SILVAH was chosen as the simulator, but is untested for the stand's forest type and location.

NETWIGS CHOSEN, BUT UNTESTED
NE-TWIGS was chosen as the simulator, but is untested for the stand's forest type and location.

FIBER CHOSEN, BUT UNTESTED
FIBER was chosen as the simulator, but is untested for the stand's forest type and location.

INCOMPATIBLE GROWTH SIMULATOR
The growth simulator used is incompatible with the stand's forest type and location.

NETWIGS INCOMPATIBLE, BUT ACCEPTABLE
NE-TWIGS chosen or used as the simulator. However, it is incompatible with this forest type, but can still be used with caution.

Appendix C.--Structure of the NED/SIPS Stand Data and User Data Files.

Structure of NED/SIPS Stand Data File

Line	Column	Type	Description
1	1-10	Alpha	NED/SIPS version number
2	1-30	Alpha	Owner/Agency
3	1-30	Alpha	Forest/Property
4	1-20	Alpha	District/Unit
4	21-30	Alpha	Compartment
5	1-15	Alpha	Stand
5	16-30	Alpha	Management Unit
6	1-30	Alpha	Remarks (Line 1)
7	1-30	Alpha	Remarks (Line 2)
8	1	Numeric	Blank
8	2	Numeric	Blank
8	3	Numeric	Blank
8	4-5	Numeric	Blank
8	6-7	Numeric	Blank
8	8-9	Numeric	Blank
8	10-12	Numeric	Stand Age
8	13-20	Numeric	Acreage
8	21-22	Numeric	Tally Month
8	23-26	Numeric	Year
8	27	Numeric	Species Code Type
8	28	Numeric	DBH Classes
9	1-4	Numeric	Height Adjustment
9	5	Numeric	Cruise Type
9	6-11	Numeric	BAF/Plot Size
9	12-14	Numeric	Number of Plots
9	15	Numeric	Sawlog Height Code
9	16	Numeric	Pulp Height Code
9	17-21	Numeric	Zeros
10	1-4	Numeric	Longitude
10	5-8	Numeric	Latitude
10	9-10	Numeric	State Code
10	11-13	Numeric	County Code
10	14-16	Numeric	Site Species
10	17-19	Numeric	Site Index
10	20-21	Numeric	Site Class
10	22-23	Numeric	Geographic Province
10	24-27	Numeric	Soil Type
11	1-4	Numeric	Elevation
11	5-7	Numeric	Aspect
11	8-9	Numeric	Percent Slope
11	10-11	Numeric	Slope Shape
11	12-13	Numeric	Topographic Position
11	14-15	Numeric	Operability
11	16-17	Numeric	Access
12	1-2	Numeric	Blank or Zeros
12	3-4	Numeric	Blank or Zeros
12	5-6	Numeric	Blank or Zeros
12	7-8	Numeric	Blank or Zeros
12	9-10	Numeric	Blank or Zeros
12	11-13	Numeric	Blank or Zeros
12	14-16	Numeric	Blank or zeros
12	17-19	Numeric	Blank or Zeros

Continued

Structure of NED/SIPS Stand Data File

Line	Column	Type	Description
13	1	Numeric	Blank or Zeros
13	2	Numeric	Blank or zeros
13	3	Numeric	Blank or Zeros
13	4	Numeric	Blank or Zeros
13	5	Numeric	Blank or Zeros
13	6-7	Numeric	Blank or Zeros
13	8-9	Numeric	Blank or Zeros
14			Blank
15			Blank
		Regeneration Data [a]	
16	1-3	Numeric	0(Zero)
16	4-5	Numeric	0(Zero)
16	6-8	Numeric	-1
		Overstory Data [b]	
18+	1-3	Numeric	Forest Survey Species Code
18+	4-8	Numeric	Diameter at Breast Height (DBH)
18+	9-16	Numeric	Count
18+	17	Numeric	Product Code
18+	18	Numeric	Wildlife Code
18+	19-23	Numeric	Sawlog Height
18+	24-28	Numeric	Pulpwood Height
18+	29	Numeric	Product Code
18+	30	Numeric	Sawlog Grade
18+	31	Numeric	Sawlog Defect
18+	32	Numeric	Pulpwood Defect
18+	33	Numeric	Crown Class
18+	34	Numeric	Vigor
18+	35	Numeric	Status
18+	36-39	Numeric	Obs. Number

[a] Enter 0 0 -1 to serve as a place holder for future regeneration data.

[b] The Overstory data begins on the second line after the end of the regeneration data.

Structure of NED/SIPS User Data File

Line	Columns	Type	Description
1	1-30	Alpha	Owner/Agency
2			Blank
3	1-5	Numeric	Species Code Type
3	6-10	Numeric	DBH Classes
3	11-15	Numeric	Cruise Type
3	16-20	Numeric	BAF/Plot Size
4	1-40	Alpha	Name of Local Boltwood Product
5	1-40	Alpha	Name of Local Log Product
6	1-40	Alpha	Data Drive and Path
7	1-40	Alpha	Output Drive and Path
8			Blank
9	1-5	Numeric	Trees Included
9	6-10	Numeric	Zero
9	11-15	Numeric	Log Rule
9	16-20	Numeric	Simulator Selection
10	1-6	Numeric	Hardwood Pulp, Min. Diam.
10	7-12	Numeric	Hardwood Sawtimber, Min. Diam.
10	13-18	Numeric	Softwood Pulp, Min. Diam.
10	19-24	Numeric	Softwood Sawtimber, Min. Diam.
11	1-5	Numeric	Stumpage Price Inflation Rate
11	6-10	Numeric	Cost of Marking, $/Acre
11	11-15	Numeric	Cost of Mgt. and Taxes $/Ac/Yr
11	16-20	Numeric	Cost of Sale Admin., $/Acre
11	21-25	Numeric	Cost of Planting, $/Acre [a]
11	26-30	Numeric	Cost of Herbicicdes $/Acre
11	31-35	Numeric	Costs of Other Resource Acts [b]
11	36-40	Numeric	Costs of Other Resource Acts [c]
11	41-45	Numeric	Real or Nominal Discount Rate
11	46-50	Numeric	General Inflation Rate
11	51-55	Numeric	Real Discount Rate Flag [d]
11	56-60	Numeric	Nominal Discount Rate Flag [e]
12-223	1-3	Alpha	Forest Survey Species Code [f]
12-223	6-9	Alpha	Mnemonic Species Code
12-223	10-12	Alpha	Numeric Species Code
223-435	1-3	Numeric	Species Grp for Pulpwood Heights [f]
223-435	4-6	Numeric	Species Grp for Sawlog Heights [f]
223-435	7-9	Numeric	Species Group for Grade Dist'n [f]
223-435	10-12	Numeric	Species Group for Value [f]
223-435	13-15	Numeric	Species Grp for Relative Density [f]
223-435	16-18	Numeric	Species Grp for Diameter Growth [f]
223-435	19-21	Numeric	Species Group for Mortality [f]
223-435	22-24	Numeric	Form Class for Sawlog Volume
223-435	25-28	Numeric	Corr. Factor for Pulpwood Vol.
223-435	29-32	Numeric	Corr. Factor for Sawlog Vol.
223-435	33-36	Numeric	Stumpage Price/MBF for Sawtimber
223-435	37-40	Numeric	Stumpage Price/MBF for Veneer [g]
223-435	41-45	Numeric	Stumpage Price/Cord for Pulpwood
223-435	46-50	Numeric	Stumpage Price/Cord, Boltwood or other Bulk Product [g]
223-435	51-53	Numeric	Stumpage Price/MBF for Construction or Local Use Logs [g]

[a] Not currently used in the economic analysis.
[b] This field will contain the real or nominal discount rate according to which type of rate is chosen.
[c] The general inflation rate is entered only when the nominal discount rate is chosen.
[d] This flag is used when the real discount rate is chosen. It has a value of 1 when chosen, 0 otherwise.
[e] This flag is used when the nominal discount rate is chosen. It has a value of 1 when chosen, 0 otherwise.
[f] Cannot be edited in NED/SIPS Data→User Data File→Edit mode.
[g] Not used in NED/SIPS Version 1.00.

Appendix D.--Sample Field Tally Forms.

Identification Data

Owner/Agency									
Forest/Property									
District		*Compartment*							
Stand		*Mgmt. Unit*							
Remarks									
Remarks									
Stand Age		*Stand Acreage*							
Tally Month		*Tally Year*		*Cruise Type*		*BAF/Plot Size*		*No. Plots*	
Species Code Type		*DBH Classes*		*Ht. Adj*		*Saw Ht Code*		*Pulp Ht Code*	
Site Index		*Site Species*		*Site Class*					
State		*County*		*Longitude*		*Latitude*			
Geographic Province						*Soil Type*			
Elevation		*Aspect*		*Slope %*		*Slope Shape*	*Topo Position*		
Accessibility				*Operability*					
Miscellaneous Information:									

NED/SIPS 3/95

☐ - Required data for NED/SIPS.

Overstory Tally

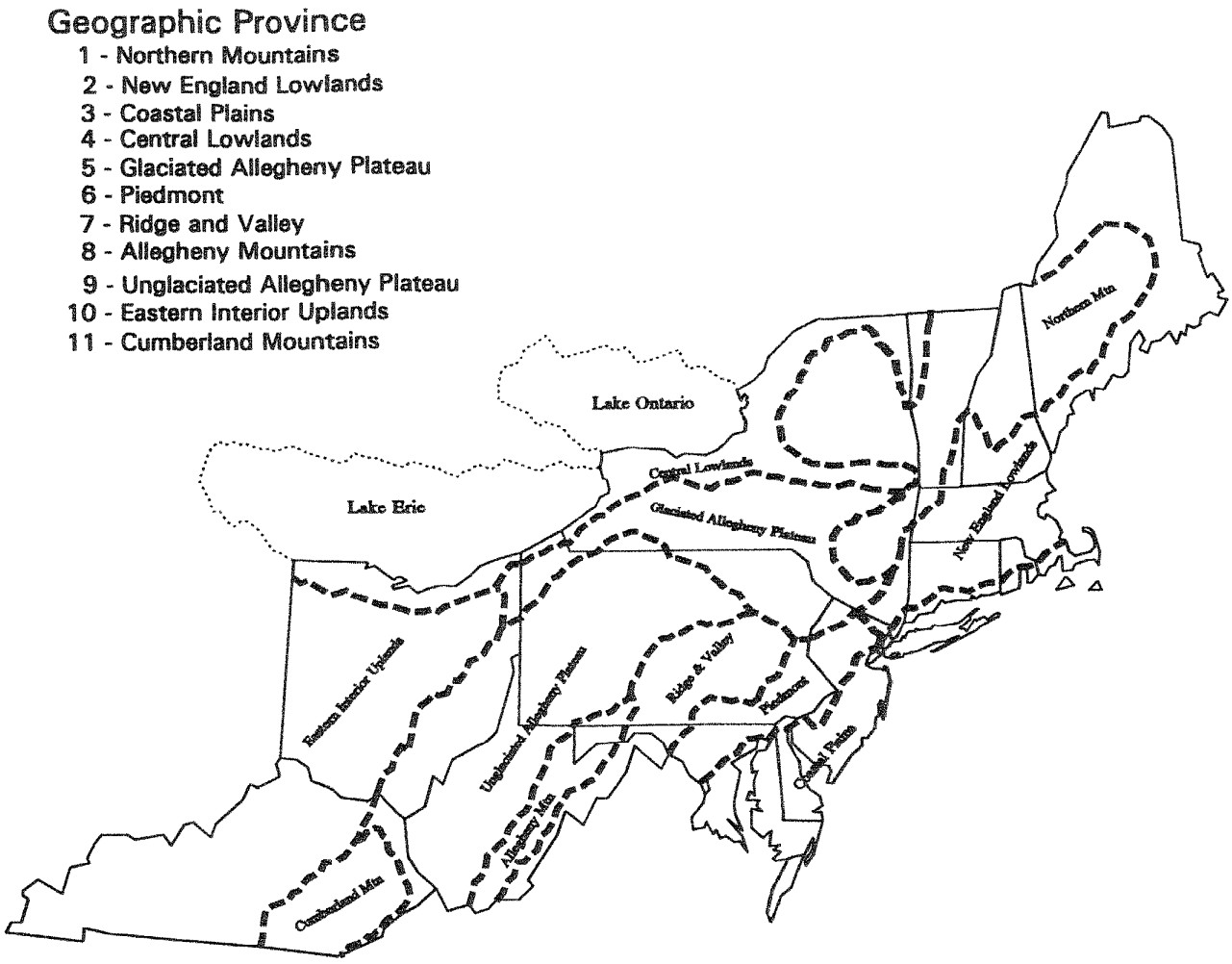
Species	Dbh	Count	Status	Timber Code	Sawlog Grade	Saw Ht.	Pulp Ht.	Sawlog Defect	Pulpwood Defect	Wildlife Code	Product code	Crown Class	Vigor

Species	Dbh	Count	Status	Timber Code	Sawlog Grade	Saw Ht.	Pulp Ht.	Sawlog Defect	Pulpwood Defect	Wildlife Code	Product code	Crown Class	Vigor

☐ - Required data for NED/SIPS

NED/SIPS 3/95

Appendix E.--Map of Geographic Provinces of the Northeast.



Appendix F. -- NED/SIPS Sample Output

```
NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

    A STAND INVENTORY PROCESSOR AND GROWTH SIMULATOR
      FOR FORESTS OF THE NORTHEASTERN UNITED STATES
  DEVELOPED BY THE NORTHEASTERN FOREST EXPERIMENT STATION


---------------  Identification  ---------------

     OWNER/AGENCY       --  US Forest Serv.
     FOREST/PROPERTY    --  Allegheny NF
     DISTRICT/COUNTY    --      Ridgway
     COMPARTMENT        --  12
     MGMT UNIT          --
     STAND              --  32
     REMARKS            --
     REMARKS            --

------------------  Location  ------------------

     GEOGRAPHIC PROV.   --  NOT SPECIFIED
     STATE              --  PENNSYLVANIA
     COUNTY             --    0
     LATITUDE           --      degrees,  0 minutes
     LONGITUDE          --      degrees,  0 minutes


---------------  Dates and Files  --------------

     DATE TALLIED       --      AUG/1988
     DATE PRINTED       --  24/APR/1995
     STAND DATA FILE -- c:\ned\TSAMPLE.NEM
     USER DATA FILE -- NED.DEF


-------------  Type/Size/Density  --------------

     FOREST TYPE        --  (1012) NORTHERN HARDWOOD-OAK
     STAND SIZE         --  SMALL SAW
     RELATIVE DENSITY   --  GE 95%


---------------  Stand/Site Data  --------------

     ACRES IN STAND     --  125.00
     STAND AGE          --  68
     SITE               --  70 FOR BC
     SOIL TYPE          --
     ELEVATION          --  2000
     ASPECT             --    25
     SLOPE%             --     5
     OPERABILITY        --  NO LIMITATIONS
     ACCESSIBILITY      --

<==========================================>
```

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

CRUISE INFORMATION-SAMPLING ERROR
ORIGINAL STAND

Mean basal area : 116.00
BA Range : 15.54
Sampling error : 13.39
# of plots required to be within 15% of mean : 0.
# of plots required to be within 10% of mean : 8.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

TREE SPECIES PRESENT IN STAND
ORIGINAL STAND

COMMON NAME	MNEMONIC	FOREST SURVEY	USER DEFINED
MAPLE, SUGAR	SM	318	049
OAK, NORTHERN RED	NRO	833	165
OAK, CHESTNUT	CO	832	164
CHERRY, BLACK	BC	762	138
OAK, WHITE	WO	802	144
BEECH, AMERICAN	AB	531	090
MAPLE, RED	RM	316	047

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

BASAL AREA TABLE (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

BASAL AREA - SQ. FT. PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	13.0	7.0	6.0	.0	.0	.0	.0	.0
4	5.0	2.0	3.0	.0	.0	.0	.0	.0
6	5.0	3.0	.0	2.0	.0	.0	.0	.0
8	13.0	3.0	.0	7.0	.0	.0	.0	3.0
10	15.0	6.0	3.0	.0	.0	6.0	.0	.0
12	12.0	3.0	.0	.0	3.0	3.0	.0	3.0
14	13.0	3.0	.0	.0	.0	4.0	3.0	3.0
16	13.0	.0	.0	7.0	6.0	.0	.0	.0
18	9.0	.0	.0	3.0	6.0	.0	.0	.0
20	12.0	.0	6.0	.0	3.0	.0	3.0	.0
22	3.0	.0	3.0	.0	.0	.0	.0	.0
24	3.0	.0	.0	.0	.0	.0	3.0	.0
SAPS	18.0	9.0	9.0	.0	.0	.0	.0	.0
POLES	33.0	12.0	3.0	9.0	.0	6.0	.0	3.0
SM SAW	38.0	6.0	.0	7.0	9.0	7.0	3.0	6.0
MED SAW	24.0	.0	9.0	3.0	9.0	.0	3.0	.0
LG SAW	3.0	.0	.0	.0	.0	.0	3.0	.0
TOTAL	116.	27.	21.	19.	18.	13.	9.	9.
TOT AGS	70.	13.	21.	2.	18.	13.	2.	1.
TOT UGS	46.	14.	0.	17.	0.	0.	7.	8.
SPECIES%	100.	23.	18.	16.	16.	11.	8.	8.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

STAND TABLE (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

NUMBER OF TREES PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	595.9	320.9	275.0	.0	.0	.0	.0	.0
4	57.3	22.9	34.4	.0	.0	.0	.0	.0
6	25.5	15.3	.0	10.2	.0	.0	.0	.0
8	37.2	8.6	.0	20.1	.0	.0	.0	8.6
10	27.5	11.0	5.5	.0	.0	11.0	.0	.0
12	15.3	3.8	.0	.0	3.8	3.8	.0	3.8
14	12.2	2.8	.0	.0	.0	3.7	2.8	2.8
16	9.3	.0	.0	5.0	4.3	.0	.0	.0
18	5.1	.0	.0	1.7	3.4	.0	.0	.0
20	5.5	.0	2.8	.0	1.4	.0	1.4	.0
22	1.1	.0	1.1	.0	.0	.0	.0	.0
24	1.0	.0	.0	.0	.0	.0	1.0	.0
SAPS	653.	344.	309.	0.	0.	0.	0.	0.
POLES	90.	35.	6.	30.	0.	11.	0.	9.
SM SAW	37.	7.	0.	5.	8.	8.	3.	7.
MED SAW	12.	0.	4.	2.	5.	0.	1.	0.
LG SAW	1.	0.	0.	0.	0.	0.	1.	0.
TOTAL	793.	385.	319.	37.	13.	19.	5.	15.
TOT AGS	711.	351.	319.	6.	13.	19.	1.	3.
TOT UGS	82.	34.	0.	31.	0.	0.	4.	12.
SPECIES%	100.	49.	40.	5.	2.	2.	1.	2.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

RELATIVE DENSITY TABLE (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

RELATIVE DENSITY - %

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	83.1	9.6	73.6	.0	.0	.0	.0	.0
4	12.5	2.3	10.2	.0	.0	.0	.0	.0
6	5.9	3.0	.0	2.9	.0	.0	.0	.0
8	14.3	2.7	.0	8.9	.0	.0	.0	2.6
10	14.5	5.0	2.7	.0	.0	6.7	.0	.0
12	9.1	2.4	.0	.0	1.4	3.0	.0	2.3
14	10.4	2.3	.0	.0	.0	3.5	2.3	2.3
16	8.0	.0	.0	5.6	2.4	.0	.0	.0
18	4.4	.0	.0	2.2	2.2	.0	.0	.0
20	6.4	.0	3.3	.0	1.0	.0	2.1	.0
22	1.6	.0	1.6	.0	.0	.0	.0	.0
24	2.0	.0	.0	.0	.0	.0	2.0	.0
SAPS	95.6	11.9	83.7	.0	.0	.0	.0	.0
POLES	34.6	10.7	2.7	11.8	.0	6.7	.0	2.6
SM SAW	27.5	4.7	.0	5.6	3.8	6.5	2.3	4.6
MED SAW	12.4	.0	4.9	2.2	3.2	.0	2.1	.0
LG SAW	2.0	.0	.0	.0	.0	.0	2.0	.0
TOTAL	172.	27.	91.	20.	7.	13.	6.	7.
TOT AGS	132.	15.	91.	3.	7.	13.	1.	1.
TOT UGS	40.	12.	0.	17.	0.	0.	5.	6.
SPECIES%	100.	16.	53.	11.	4.	8.	4.	4.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

OVERSTORY SUMMARY TABLE
ORIGINAL STAND

SPECIES > ALL SP		SM	NRO	CO	BC	WO	AB	RM
				COMPOSITION -- BA, % OF BA, TREE				
TOT BA	116.0	27.0	21.0	19.0	18.0	13.0	9.0	9.0
SPECIES%	100.	23.	18.	16.	16.	11.	8.	8.
# TREES	793.	385.	319.	37.	13.	19.	5.	15.
				DIAMETERS AND AGES -- INCHES, YEAR				
DIAM	12.1	7.5	11.4	12.3	16.7	11.7	19.3	11.3
DIAM MER	13.9	10.0	18.0	12.3	16.7	11.7	19.3	11.3
QUAD DIA	5.2	3.6	3.5	9.7	16.0	11.3	17.9	10.4
YRS MAT	24.	53.	0.	38.	7.	42.	0.	33.
EFCT AGE	81.	67.	90.	82.	83.	78.	129.	57.
				STRUCTURE				
QFACTOR	1.44	1.52	1.25	1.37	1.24	1.71	1.27	1.46
WEIB C	.00	.00	.00	.00	.00	.00	.00	.00
				RELATIVE DENSITY - %				
REL DEN	172.	27.	91.	20.	7.	13.	6.	7.
AGS RDEN	132.	15.	91.	3.	7.	13.	1.	1.
				VOLUMES AND VALUES - INT 1/4" LOG RULE				
GTOT CDS	27.3	4.4	4.0	5.3	6.2	3.8	2.6	1.0
NTOT CDS	21.9	3.5	3.2	4.2	5.0	3.1	2.1	.8
PULP CDS	11.2	2.8	1.3	2.6	1.5	2.0	.6	.4
GRS BDFT	6797.	0.	1379.	1154.	2454.	472.	1062.	275.
NET BDFT	6226.	0.	1241.	1154.	2454.	472.	849.	55.
DOLLARS	1582.	6.	375.	40.	985.	146.	27.	5.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

OVERSTORY SUMMARY NARRATIVE
ORIGINAL STAND

This northern hardwood-oak stand is dominated by the following species:
SM , NRO, CO , BC , WO , AND AB ,
which together comprise 92. % of the basal area.

This is a small sawtimber stand, with average diameter of 12.1 inches.
Sapling trees too small to be merchantable do not represent
a significant proportion of stand stocking and need not be
included in any partial cuttings.

If this stand is managed under an even-age silvicultural system,
The several species groups will mature at markedly different times.
The average number of years to maturity is 24.
Effective stand age is about 81. years.

If this stand is managed under an all-age silvicultural system,
the distribution of diameters, proportion of sawtimber, and
density of shade-tolerant species
would make it difficult to apply selection cutting.

Relative stand density is 172. % of the average maximum stocking
expected in undisturbed stands of similar size and species composition.
This density is well above the optimum for best individual tree growth.
At this relative density, growth rate of the biggest trees is probably
moderate, while growth rate of the medium and smaller-sized trees
is probably poor and mortality due to crowding high.

Total growing stock amounts to 116. sq. ft. of basal area per acre.
Gross total volume in all trees, to a 4-inch top, is 27. cords per acre;
if divided into pulpwood and sawtimber, the net merchantable volume
is 11. cords of pulp wood and 6226. board feet of
sawtimber Int 1/4"log rule.
The total stand value is estimated to be about 1582. dollars per acre.

Trees of acceptable quality for future growing stock
provide a fully stocked stand by themselves.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET TOTAL CUBIC VOL - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

CUBIC FEET PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	46.	27.	0.	19.	0.	0.	0.	0.
8	149.	43.	0.	106.	0.	0.	0.	0.
10	261.	101.	53.	0.	0.	107.	0.	0.
12	172.	55.	0.	0.	60.	58.	0.	0.
14	253.	58.	0.	0.	0.	81.	52.	61.
16	280.	0.	0.	148.	132.	0.	0.	0.
18	201.	0.	0.	65.	136.	0.	0.	0.
20	260.	0.	133.	0.	70.	0.	57.	0.
22	68.	0.	68.	0.	0.	0.	0.	0.
24	59.	0.	0.	0.	0.	0.	59.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	456.	171.	53.	125.	0.	107.	0.	0.
SM SAW	705.	112.	0.	148.	192.	139.	52.	61.
MED SAW	529.	0.	201.	65.	206.	0.	57.	0.
LG SAW	59.	0.	0.	0.	0.	0.	59.	0.
TOTAL	1749.	283.	254.	338.	398.	246.	169.	61.
TOT AGS	1034.	67.	254.	30.	398.	246.	38.	0.
TOT UGS	715.	216.	0.	308.	0.	0.	130.	61.
SPECIES%	100.	16.	15.	19.	23.	14.	10.	3.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET TOTAL CORD VOL - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

CORDS PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	1.	0.	0.	0.	0.	0.	0.	0.
8	2.	1.	0.	1.	0.	0.	0.	0.
10	3.	1.	1.	0.	0.	1.	0.	0.
12	2.	1.	0.	0.	1.	1.	0.	0.
14	3.	1.	0.	0.	0.	1.	1.	1.
16	3.	0.	0.	2.	2.	0.	0.	0.
18	3.	0.	0.	1.	2.	0.	0.	0.
20	3.	0.	2.	0.	1.	0.	1.	0.
22	1.	0.	1.	0.	0.	0.	0.	0.
24	1.	0.	0.	0.	0.	0.	1.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	6.	2.	1.	2.	0.	1.	0.	0.
SM SAW	9.	1.	0.	2.	2.	2.	1.	1.
MED SAW	7.	0.	3.	1.	3.	0.	1.	0.
LG SAW	1.	0.	0.	0.	0.	0.	1.	0.
TOTAL	22.	4.	3.	4.	5.	3.	2.	1.
TOT AGS	13.	1.	3.	0.	5.	3.	0.	0.
TOT UGS	9.	3.	0.	4.	0.	0.	2.	1.
SPECIES%	100.	16.	15.	19.	23.	14.	10.	3.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET PULP VOLUME - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

CUBIC FEET PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	46.	27.	0.	19.	0.	0.	0.	0.
8	149.	43.	0.	106.	0.	0.	0.	0.
10	261.	101.	53.	0.	0.	107.	0.	0.
12	88.	26.	0.	0.	31.	31.	0.	0.
14	91.	25.	0.	0.	0.	25.	13.	28.
16	87.	0.	0.	55.	32.	0.	0.	0.
18	62.	0.	0.	25.	37.	0.	0.	0.
20	71.	0.	33.	0.	20.	0.	17.	0.
22	18.	0.	18.	0.	0.	0.	0.	0.
24	19.	0.	0.	0.	0.	0.	19.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	456.	171.	53.	125.	0.	107.	0.	0.
SM SAW	266.	51.	0.	55.	63.	56.	13.	28.
MED SAW	151.	0.	51.	25.	57.	0.	17.	0.
LG SAW	19.	0.	0.	0.	0.	0.	19.	0.
TOTAL	892.	221.	105.	205.	120.	163.	49.	28.
TOT AGS	497.	67.	105.	30.	120.	163.	12.	0.
TOT UGS	395.	154.	0.	175.	0.	0.	37.	28.
SPECIES%	100.	25.	12.	23.	13.	18.	5.	3.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET PULP CORD VOL - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

CORDS PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	1.	0.	0.	0.	0.	0.	0.	0.
8	2.	1.	0.	1.	0.	0.	0.	0.
10	3.	1.	1.	0.	0.	1.	0.	0.
12	1.	0.	0.	0.	0.	0.	0.	0.
14	1.	0.	0.	0.	0.	0.	0.	0.
16	1.	0.	0.	1.	0.	0.	0.	0.
18	1.	0.	0.	0.	0.	0.	0.	0.
20	1.	0.	0.	0.	0.	0.	0.	0.
22	0.	0.	0.	0.	0.	0.	0.	0.
24	0.	0.	0.	0.	0.	0.	0.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	6.	2.	1.	2.	0.	1.	0.	0.
SM SAW	3.	1.	0.	1.	1.	1.	0.	0.
MED SAW	2.	0.	1.	0.	1.	0.	0.	0.
LG SAW	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	11.	3.	1.	3.	1.	2.	1.	0.
TOT AGS	6.	1.	1.	0.	1.	2.	0.	0.
TOT UGS	5.	2.	0.	2.	0.	0.	0.	0.
SPECIES%	100.	25.	12.	23.	13.	18.	5.	3.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET BOARD FOOT VOLUME - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

INT 1/4" LOG RULE - BD. FT. PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
10	0.	0.	0.	0.	0.	0.	0.	0.
12	237.	0.	0.	0.	237.	0.	0.	0.
14	793.	0.	0.	0.	0.	472.	266.	55.
16	1670.	0.	0.	802.	868.	0.	0.	0.
18	1245.	0.	0.	352.	893.	0.	0.	0.
20	1565.	0.	822.	0.	457.	0.	287.	0.
22	419.	0.	419.	0.	0.	0.	0.	0.
24	296.	0.	0.	0.	0.	0.	296.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	0.	0.	0.	0.	0.	0.	0.	0.
SM SAW	2700.	0.	0.	802.	1105.	472.	266.	55.
MED SAW	3230.	0.	1241.	352.	1350.	0.	287.	0.
LG SAW	296.	0.	0.	0.	0.	0.	296.	0.
TOTAL	6226.	0.	1241.	1154.	2454.	472.	849.	55.
TOT AGS	4359.	0.	1241.	0.	2454.	472.	191.	0.
TOT UGS	1867.	0.	0.	1154.	0.	0.	658.	55.
SPECIES%	100.	0.	20.	19.	39.	8.	14.	1.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET BOARD FOOT VOLUME - BUTT LOG GRADE 1
(LIVE TREES ONLY) - ORIGINAL STAND

INT 1/4" LOG RULE - BD. FT. PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
10	0.	0.	0.	0.	0.	0.	0.	0.
12	237.	0.	0.	0.	237.	0.	0.	0.
14	0.	0.	0.	0.	0.	0.	0.	0.
16	868.	0.	0.	0.	868.	0.	0.	0.
18	893.	0.	0.	0.	893.	0.	0.	0.
20	867.	0.	411.	0.	457.	0.	0.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	0.	0.	0.	0.	0.	0.	0.	0.
SM SAW	1105.	0.	0.	0.	1105.	0.	0.	0.
MED SAW	1760.	0.	411.	0.	1350.	0.	0.	0.
LG SAW	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	2865.	0.	411.	0.	2454.	0.	0.	0.
TOT AGS	2865.	0.	411.	0.	2454.	0.	0.	0.
TOT UGS	0.	0.	0.	0.	0.	0.	0.	0.
SPECIES%	100.	0.	14.	0.	86.	0.	0.	0.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET BOARD FOOT VOLUME - BUTT LOG GRADE 2
(LIVE TREES ONLY) - ORIGINAL STAND

INT 1/4" LOG RULE - BD. FT. PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
10	0.	0.	0.	0.	0.	0.	0.	0.
12	0.	0.	0.	0.	0.	0.	0.	0.
14	0.	0.	0.	0.	0.	0.	0.	0.
16	0.	0.	0.	0.	0.	0.	0.	0.
18	0.	0.	0.	0.	0.	0.	0.	0.
20	411.	0.	411.	0.	0.	0.	0.	0.
22	419.	0.	419.	0.	0.	0.	0.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	0.	0.	0.	0.	0.	0.	0.	0.
SM SAW	0.	0.	0.	0.	0.	0.	0.	0.
MED SAW	830.	0.	830.	0.	0.	0.	0.	0.
LG SAW	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL	830.	0.	830.	0.	0.	0.	0.	0.
TOT AGS	830.	0.	830.	0.	0.	0.	0.	0.
TOT UGS	0.	0.	0.	0.	0.	0.	0.	0.
SPECIES%	100.	0.	100.	0.	0.	0.	0.	0.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET BOARD FOOT VOLUME - BUTT LOG GRADE 3
(LIVE TREES ONLY) - ORIGINAL STAND

INT 1/4" LOG RULE - BD. FT. PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
10	0.	0.	0.	0.	0.	0.	0.	0.
12	0.	0.	0.	0.	0.	0.	0.	0.
14	793.	0.	0.	0.	0.	472.	266.	55.
16	802.	0.	0.	802.	0.	0.	0.	0.
18	352.	0.	0.	352.	0.	0.	0.	0.
20	287.	0.	0.	0.	0.	0.	287.	0.
22	0.	0.	0.	0.	0.	0.	0.	0.
24	296.	0.	0.	0.	0.	0.	296.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	0.	0.	0.	0.	0.	0.	0.	0.
SM SAW	1595.	0.	0.	802.	0.	472.	266.	55.
MED SAW	639.	0.	0.	352.	0.	0.	287.	0.
LG SAW	296.	0.	0.	0.	0.	0.	296.	0.
TOTAL	2531.	0.	0.	1154.	0.	472.	849.	55.
TOT AGS	663.	0.	0.	0.	0.	472.	191.	0.
TOT UGS	1867.	0.	0.	1154.	0.	0.	658.	55.
SPECIES%	100.	0.	0.	46.	0.	19.	34.	2.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

VALUE - (SPECIES * DIAMETER)
(LIVE TREES ONLY) - ORIGINAL STAND

VALUE - DOLLARS PER ACRE

SPECIES > DIA.	ALL SP	SM	NRO	CO	BC	WO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	1.	1.	0.	0.	0.	0.	0.	0.
8	4.	1.	0.	3.	0.	0.	0.	0.
10	7.	3.	1.	0.	0.	3.	0.	0.
12	97.	1.	0.	0.	96.	1.	0.	0.
14	156.	1.	0.	0.	0.	142.	8.	5.
16	373.	0.	0.	25.	348.	0.	0.	0.
18	369.	0.	0.	11.	358.	0.	0.	0.
20	440.	0.	247.	0.	183.	0.	9.	0.
22	126.	0.	126.	0.	0.	0.	0.	0.
24	9.	0.	0.	0.	0.	0.	9.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	11.	4.	1.	3.	0.	3.	0.	0.
SM SAW	626.	1.	0.	25.	444.	143.	8.	5.
MED SAW	935.	0.	374.	11.	541.	0.	9.	0.
LG SAW	9.	0.	0.	0.	0.	0.	9.	0.
TOTAL	1582.	6.	375.	40.	985.	146.	27.	5.
TOT AGS	0.	0.	0.	0.	0.	0.	0.	0.
TOT UGS	0.	0.	0.	0.	0.	0.	0.	0.
SPECIES%	100.	0.	24.	3.	62.	9.	2.	0.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

PREDICTED STAND DEVELOPMENT REPORT
PROJECTED STAND:SILVAH USED FOR GROWTH SIMULATION

TYPE	YEAR	TPA	BA	RD	MD	MDM	EFF AGE	NET TOT CDS	NET PULP CDS	NET BDFT	VALUE $
Original	1988	793	116	172	12.1	13.9	81	22	11	6226	1582
Projected	1993	613	120	142	13.1	14.5	85	26	14	7186	1647
Projected	1998	474	126	124	14.1	15.2	89	28	15	8335	1927
Projected	2003	367	132	113	15.1	15.9	93	31	16	9497	2195
Projected	2008	284	138	107	16.1	16.7	97	34	17	10631	2442

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

PREDICTED TIMBER YIELD
PROJECTED STAND:SILVAH USED FOR GROWTH SIMULATION

SIMULATED TIMBER PRODUCT YIELD

YRS	DATE	TOTAL CORDS	PULP CORDS	MBF SAW	$ TOTAL
INITIAL STAND					
0	1988	22.0	11.0	6.2	1582.
FINAL STAND					
20	2008	34.0	17.0	10.6	2442.
TOTAL YIELD		34.0	17.0	10.6	2442.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

PRESCRIPTION TREATMENT SPECIFICATIONS
RESIDUAL STAND

******TREATMENT SPECIFIED BY USER:******

The volumes to be removed are:
4829. bd ft (Int 1/4" log rule) and 6.8 cords if an integrated sale or 14.7 cords if a pulpwood only sale.

MARKING INSTRUCTIONS

Reduce relative stand density to 66. %,
leaving 81. sq. ft. of basal area per acre.
Remove trees in the size classes shown below.

Cut 1. out of 3. trees from the pole size class.

Cut 1. out of 2. trees from the ssaw size class.

Cut 1. out of 2. trees from the msaw size class.

Cut 1. out of 2. trees from the lsaw size class.

About 74 % of the trees cut will be UGS.
This will result in removal of about 71 % of the UGS in this stand, and about 71 % of the merchantable-size UGS.

SPECIFICATIONS USED FOR THIS CUT ARE BASED ON
A SELECTION CUT

MINIMUM DENSITY	MAXIMUM REMOVED	STRUCTURE FACTOR	MAXIMUM DIAMETER	Q FACTOR
60	35		28	1.5

SPECIES	DIAM.	%CUT AGS	% CUT UGS	PRIORITY
ALL	10	0.	60.	3
ALL	12	26.	100.	3
ALL	14	0.	100.	3
ALL	16	0.	92.	3
ALL	18	0.	70.	3
ALL	20	0.	91.	3
ALL	22	12.	100.	3
ALL	24	63.	100.	3
ALL	26	18.	100.	3
ALL	28	0.	44.	3

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
PROJECTED TO : AUG/2008

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

PRESCRIPTION CUT COMPARISON TABLE
RESIDUAL STAND

	ORIGINAL	CUT	RESIDUAL
	BASAL AREA - SQ FT/Ac.		
SAPS	5.7	.0	5.7
POLES	29.5	9.1	20.4
SM SAW	44.1	20.2	24.0
MED SAW	42.0	19.6	22.4
LG SAW	16.8	8.3	8.5
TOTAL	138.2	57.2	81.0
	NUMBER OF TREES - #/Ac.		
# TREES	284.0	45.6	238.4
	DIAMETERS - IN.		
DIAM	16.1		15.1
DIAM MER	16.7		16.1
QUAD DIA	9.4		7.9
	RELATIVE DENSITY - %		
REL DEN	107.		66.
AGS RDEN	59.		51.
	BD FT INT 1/4", VALUE/Ac.		
GR. BDFT	10631.	4829.	5803.
NET BDFT	10631.	4829.	5803.
DOLLARS	2442.	674.	1768.

	ORIGINAL	CUT	RESIDUAL
	SPECIES COMPOSITION - %		
BC	20.		28.
WO	20.		20.
SM	17.		18.
NRO	13.		15.
CO	13.		10.
AB	9.		5.
	QUALITY -- % IN AGS		
% AGS	55.		76.
	AGES - YRS.		
YRS MAT	8.		11.
EFCT AGE	97.		92.
	STRUCTURE		
Q FACTOR	1.2		1.2
WEIB C	.0		.0
	CORD VOLUME/Ac.		
TOT CDS	42.0	18.3	23.7
NET CDS	33.6	14.7	18.9
PULP CDS	16.6	6.8	9.8

TOTAL STAND

	BD FT INT 1/4", VALUE		
GR. MBF	1328.9	603.6	725.4
NET MBF	1328.9	603.6	725.4
M DOLLAR	305.2	84.2	221.0

	CORD VOLUME		
TOT CDS	5247.	2289.	2958.
NET CDS	4197.	1831.	2366.
PULP CDS	2075.	855.	1221.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

BASAL AREA TABLE (SPECIES * DIAMETER)
TREES CUT

BASAL AREA - SQ. FT. PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0
10	5.2	.0	.0	1.8	.0	2.5	.0	.9
12	7.2	.0	1.4	3.4	.7	1.1	.0	.5
14	5.0	.0	.0	3.1	.0	.0	.2	1.7
16	8.2	.0	.0	3.1	.0	.2	1.9	3.1
18	7.9	.0	.0	1.3	.0	2.7	1.2	2.7
20	6.0	.0	.0	.0	.0	6.0	.0	.0
22	4.1	.8	.0	.0	.2	2.8	.4	.0
24	10.7	4.1	.0	.0	4.3	.0	2.3	.0
26	1.4	.2	.0	.0	.7	.0	.5	.0
28	1.5	.0	.0	.0	.0	.0	1.5	.0
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	5.	0.	0.	2.	0.	2.	0.	1.
SM SAW	20.	0.	1.	10.	1.	1.	2.	5.
MED SAW	18.	1.	0.	1.	0.	12.	2.	3.
LG SAW	14.	4.	0.	0.	5.	0.	4.	0.
TOTAL	57.	5.	1.	13.	6.	15.	8.	9.
TOT AGS	15.	5.	1.	1.	6.	0.	1.	0.
TOT UGS	42.	0.	0.	12.	0.	15.	7.	9.
SPECIES%	100.	9.	3.	22.	10.	27.	14.	15.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

STAND TABLE (SPECIES * DIAMETER)
TREES CUT

NUMBER OF TREES PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0
10	10.7	.0	.0	3.8	.0	5.1	.0	1.8
12	10.1	.0	2.0	4.7	.9	1.6	.0	.8
14	5.0	.0	.0	3.1	.0	.0	.2	1.7
16	6.3	.0	.0	2.3	.0	.1	1.5	2.3
18	4.7	.0	.0	.8	.0	1.6	.7	1.6
20	2.9	.0	.0	.0	.0	2.9	.0	.0
22	1.6	.3	.0	.0	.1	1.1	.1	.0
24	3.6	1.3	.0	.0	1.4	.0	.8	.0
26	.4	.0	.0	.0	.2	.0	.1	.0
28	.4	.0	.0	.0	.0	.0	.4	.0
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	11.	0.	0.	4.	0.	5.	0.	2.
SM SAW	21.	0.	2.	10.	1.	2.	2.	5.
MED SAW	9.	0.	0.	1.	0.	6.	1.	2.
LG SAW	4.	1.	0.	0.	2.	0.	1.	0.
TOTAL	46.	2.	2.	15.	3.	12.	4.	8.
TOT AGS	8.	2.	2.	1.	3.	0.	0.	0.
TOT UGS	37.	0.	0.	14.	0.	12.	3.	8.
SPECIES%	100.	4.	4.	32.	6.	27.	8.	18.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET TOTAL CUBIC VOL - (SPECIES * DIAMETER)
TREES CUT

CUBIC FEET PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	87.	0.	0.	30.	0.	43.	0.	15.
12	133.	0.	27.	61.	13.	21.	0.	10.
14	97.	0.	0.	59.	0.	0.	3.	34.
16	163.	0.	0.	60.	0.	3.	35.	64.
18	166.	0.	0.	27.	0.	59.	22.	58.
20	132.	0.	0.	0.	0.	132.	0.	0.
22	93.	19.	0.	0.	4.	63.	7.	0.
24	243.	98.	0.	0.	99.	0.	46.	0.
26	30.	4.	0.	0.	15.	0.	11.	0.
28	29.	0.	0.	0.	0.	0.	29.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	87.	0.	0.	30.	0.	43.	0.	15.
SM SAW	392.	0.	28.	181.	13.	24.	38.	109.
MED SAW	390.	19.	0.	27.	4.	254.	29.	58.
LG SAW	302.	102.	0.	0.	114.	0.	86.	0.
TOTAL	1172.	122.	28.	237.	131.	320.	152.	181.
TOT AGS	327.	122.	28.	16.	131.	2.	27.	1.
TOT UGS	845.	0.	0.	221.	0.	318.	126.	180.
SPECIES%	100.	10.	2.	20.	11.	27.	13.	15.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET TOTAL CORD VOL - (SPECIES * DIAMETER)
TREES CUT

CORDS PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	1.	0.	0.	0.	0.	1.	0.	0.
12	2.	0.	0.	1.	0.	0.	0.	0.
14	1.	0.	0.	1.	0.	0.	0.	0.
16	2.	0.	0.	1.	0.	0.	0.	1.
18	2.	0.	0.	0.	0.	1.	0.	1.
20	2.	0.	0.	0.	0.	2.	0.	0.
22	1.	0.	0.	0.	0.	1.	0.	0.
24	3.	1.	0.	0.	1.	0.	1.	0.
26	0.	0.	0.	0.	0.	0.	0.	0.
28	0.	0.	0.	0.	0.	0.	0.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	1.	0.	0.	0.	0.	1.	0.	0.
SM SAW	5.	0.	0.	2.	0.	0.	0.	1.
MED SAW	5.	0.	0.	0.	0.	3.	0.	1.
LG SAW	4.	1.	0.	0.	1.	0.	1.	0.
TOTAL	15.	2.	0.	3.	2.	4.	2.	2.
TOT AGS	4.	2.	0.	0.	2.	0.	0.	0.
TOT UGS	11.	0.	0.	3.	0.	4.	2.	2.
SPECIES%	100.	10.	2.	20.	11.	27.	13.	15.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
PROJECTED TO : AUG/2008

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET PULP VOLUME - (SPECIES * DIAMETER)
TREES CUT

CUBIC FEET PER ACRE

SPECIES >	ALL SP	BC	WO	SM	NRO	CO	AB	RM
DIA.								
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	87.	0.	0.	30.	0.	43.	0.	15.
12	70.	0.	15.	30.	7.	12.	0.	6.
14	44.	0.	0.	26.	0.	0.	1.	16.
16	71.	0.	0.	25.	0.	2.	16.	28.
18	70.	0.	0.	11.	0.	25.	9.	24.
20	55.	0.	0.	0.	0.	55.	0.	0.
22	36.	7.	0.	0.	2.	25.	3.	0.
24	92.	35.	0.	0.	39.	0.	18.	0.
26	11.	1.	0.	0.	6.	0.	4.	0.
28	11.	0.	0.	0.	0.	0.	11.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	87.	0.	0.	30.	0.	43.	0.	15.
SM SAW	185.	0.	16.	81.	7.	14.	17.	50.
MED SAW	161.	7.	0.	11.	2.	106.	12.	24.
LG SAW	114.	36.	0.	0.	44.	0.	33.	0.
TOTAL	547.	44.	16.	121.	53.	162.	62.	90.
TOT AGS	133.	44.	16.	8.	53.	1.	11.	1.
TOT UGS	414.	0.	0.	113.	0.	161.	52.	89.
SPECIES%	100.	8.	3.	22.	10.	30.	11.	16.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET PULP CORD VOL - (SPECIES * DIAMETER)
TREES CUT

CORDS PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	1.	0.	0.	0.	0.	1.	0.	0.
12	1.	0.	0.	0.	0.	0.	0.	0.
14	1.	0.	0.	0.	0.	0.	0.	0.
16	1.	0.	0.	0.	0.	0.	0.	0.
18	1.	0.	0.	0.	0.	0.	0.	0.
20	1.	0.	0.	0.	0.	1.	0.	0.
22	0.	0.	0.	0.	0.	0.	0.	0.
24	1.	0.	0.	0.	0.	0.	0.	0.
26	0.	0.	0.	0.	0.	0.	0.	0.
28	0.	0.	0.	0.	0.	0.	0.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	1.	0.	0.	0.	0.	1.	0.	0.
SM SAW	2.	0.	0.	1.	0.	0.	0.	1.
MED SAW	2.	0.	0.	0.	0.	1.	0.	0.
LG SAW	1.	0.	0.	0.	1.	0.	0.	0.
TOTAL	7.	1.	0.	2.	1.	2.	1.	1.
TOT AGS	2.	1.	0.	0.	1.	0.	0.	0.
TOT UGS	5.	0.	0.	1.	0.	2.	1.	1.
SPECIES%	100.	8.	3.	22.	10.	30.	11.	16.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
PROJECTED TO : AUG/2008

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

NET BOARD FOOT VOLUME - (SPECIES * DIAMETER)
TREES CUT

INT 1/4" LOG RULE - BD. FT. PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.
12	522.	1.	102.	258.	48.	74.	0.	39.
14	409.	0.	1.	255.	0.	0.	13.	139.
16	690.	0.	0.	256.	0.	14.	163.	257.
18	678.	0.	0.	113.	0.	233.	103.	229.
20	521.	0.	0.	0.	0.	521.	0.	0.
22	488.	97.	0.	0.	21.	338.	31.	0.
24	1239.	499.	0.	0.	532.	0.	208.	0.
26	151.	20.	0.	0.	82.	0.	48.	0.
28	131.	0.	0.	0.	0.	0.	131.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	0.	0.	0.	0.	0.	0.	0.	0.
SM SAW	1621.	2.	103.	769.	48.	88.	176.	434.
MED SAW	1687.	97.	0.	113.	21.	1092.	134.	229.
LG SAW	1521.	519.	0.	0.	615.	0.	387.	0.
TOTAL	4829.	618.	103.	882.	684.	1180.	698.	663.
TOT AGS	1607.	618.	103.	70.	684.	7.	122.	4.
TOT UGS	3221.	0.	0.	813.	0.	1173.	576.	660.
SPECIES%	100.	13.	2.	18.	14.	24.	14.	14.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

VALUE - (SPECIES * DIAMETER)
TREES CUT

VALUE - DOLLARS PER ACRE

SPECIES > DIA.	ALL SP	BC	WO	SM	NRO	CO	AB	RM
2	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.
10	2.	0.	0.	1.	0.	1.	0.	0.
12	73.	1.	31.	21.	15.	3.	0.	3.
14	33.	0.	0.	21.	0.	0.	0.	11.
16	47.	0.	0.	21.	0.	0.	5.	20.
18	38.	0.	0.	9.	0.	8.	3.	18.
20	17.	0.	0.	0.	0.	17.	0.	0.
22	57.	39.	0.	0.	6.	11.	1.	0.
24	368.	200.	0.	0.	161.	0.	7.	0.
26	34.	8.	0.	0.	25.	0.	2.	0.
28	4.	0.	0.	0.	0.	0.	4.	0.
SAPS	0.	0.	0.	0.	0.	0.	0.	0.
POLES	2.	0.	0.	1.	0.	1.	0.	0.
SM SAW	153.	1.	31.	64.	15.	3.	6.	34.
MED SAW	112.	39.	0.	9.	6.	35.	4.	18.
LG SAW	406.	208.	0.	0.	185.	0.	12.	0.
TOTAL	674.	248.	31.	74.	207.	39.	22.	52.
TOT AGS	0.	0.	0.	0.	0.	0.	0.	0.
TOT UGS	0.	0.	0.	0.	0.	0.	0.	0.
SPECIES%	100.	37.	5.	11.	31.	6.	3.	8.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

CASH FLOW TABLE
RESIDUAL STAND

ANNUAL CASH FLOW PATTERN

(ALL VALUES ARE IN DOLLARS PER ACRE INFLATED TO YEAR OF OCCURRENCE)

	YEAR				
ITEM	1988	1989	1990	1991	1992
MGT & TAXES	5.00	5.00	5.00	5.00	5.00
SALE ADMIN.	.00	.00	.00	.00	.00
MARKING	.00	.00	.00	.00	.00
TOT ANN COST	5.00	5.00	5.00	5.00	5.00
CUM TOT COST	5.00	10.00	15.00	20.00	25.00
HUNTING LEAS	10.00	10.00	10.00	10.00	10.00
SALE INCOME	.00	.00	.00	.00	.00
TOT ANN RECP	10.00	10.00	10.00	10.00	10.00
CUM TOT RECP	10.00	20.00	30.00	40.00	50.00
ANN NET REV	5.00	5.00	5.00	5.00	5.00
CUM NET REV	5.00	10.00	15.00	20.00	25.00

ANNUAL CASH FLOW PATTERN

(ALL VALUES ARE IN DOLLARS PER ACRE INFLATED TO YEAR OF OCCURRENCE)

	YEAR				
ITEM	1993	1994	1995	1996	1997
MGT & TAXES	5.00	5.00	5.00	5.00	5.00
SALE ADMIN.	.00	.00	.00	.00	.00
MARKING	.00	.00	.00	.00	.00
TOT ANN COST	5.00	5.00	5.00	5.00	5.00
CUM TOT COST	30.00	35.00	40.00	45.00	50.00
HUNTING LEAS	10.00	10.00	10.00	.00	.00
SALE INCOME	.00	.00	.00	.00	.00
TOT ANN RECP	10.00	10.00	10.00	.00	.00
CUM TOT RECP	60.00	70.00	80.00	80.00	80.00
ANN NET REV	5.00	5.00	5.00	-5.00	-5.00
CUM NET REV	30.00	35.00	40.00	35.00	30.00

ANNUAL CASH FLOW PATTERN

(ALL VALUES ARE IN DOLLARS PER ACRE INFLATED TO YEAR OF OCCURRENCE)

	YEAR				
ITEM	1998	1999	2000	2001	2002
MGT & TAXES	5.00	5.00	5.00	5.00	5.00
SALE ADMIN.	.00	.00	.00	.00	.00
MARKING	.00	.00	.00	.00	.00
TOT ANN COST	5.00	5.00	5.00	5.00	5.00
CUM TOT COST	55.00	60.00	65.00	70.00	75.00
HUNTING LEAS	.00	.00	.00	.00	.00
SALE INCOME	.00	.00	.00	.00	.00
TOT ANN RECP	.00	.00	.00	.00	.00
CUM TOT RECP	80.00	80.00	80.00	80.00	80.00
ANN NET REV	-5.00	-5.00	-5.00	-5.00	-5.00
CUM NET REV	25.00	20.00	15.00	10.00	5.00

ANNUAL CASH FLOW PATTERN

(ALL VALUES ARE IN DOLLARS PER ACRE INFLATED TO YEAR OF OCCURRENCE)

	YEAR				
ITEM	2003	2004	2005	2006	2007
MGT & TAXES	5.00	5.00	5.00	5.00	5.00
SALE ADMIN.	.00	.00	.00	.00	.00
MARKING	.00	.00	.00	.00	.00
TOT ANN COST	5.00	5.00	5.00	5.00	5.00
CUM TOT COST	80.00	85.00	90.00	95.00	100.00
HUNTING LEAS	.00	.00	.00	.00	.00
SALE INCOME	.00	.00	.00	.00	.00
TOT ANN RECP	.00	.00	.00	.00	.00
CUM TOT RECP	80.00	80.00	80.00	80.00	80.00
ANN NET REV	-5.00	-5.00	-5.00	-5.00	-5.00
CUM NET REV	.00	-5.00	-10.00	-15.00	-20.00

ANNUAL CASH FLOW PATTERN

(ALL VALUES ARE IN DOLLARS PER ACRE INFLATED TO YEAR OF OCCURRENCE)

ITEM	YEAR 2008
MGT & TAXES	5.00
SALE ADMIN.	5.00
MARKING	5.00
TOT ANN COST	15.00
CUM TOT COST	115.00
HUNTING LEAS	.00
SALE INCOME	855.12
TOT ANN RECP	855.12
CUM TOT RECP	935.12
ANN NET REV	840.12
CUM NET REV	820.12

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

INVESTMENT PERFORMANCE TABLE
RESIDUAL STAND

PROJECT PERFORMANCE ANALYSIS

REAL DISCOUNT RATE = 5.00 %
(INVESTMENT PERIOD = 21 YEARS)

(ALL MONETARY VALUES ARE IN DOLLARS PER ACRE)

NET PRESENT VALUE (NPV)	$	319.07
EQUIVALENT ANNUAL INCOME (EAI)	$	25.60
SOIL EXPECTATION VALUE (SEV)	$	512.06
BENEFIT/COST RATIO		5.49
YEARS TO PAY BACK AT DISCOUNT		0 YEARS

REAL INTERNAL RATE OF RETURN EXCEEDS 200%

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
PROJECTED TO : AUG/2008

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

SENSITIVITY ANALYSIS
RESIDUAL STAND

SENSITIVITY ANALYSIS

(SENSITIVITY OF PERFORMANCE TO A 10% CHANGE IN INPUT VALUES)
REAL DISCOUNT RATE = 5.00 %
(INVESTMENT PERIOD = 21 YEARS)

(ALL MONETARY VALUES ARE IN DOLLARS PER ACRE)

ITEM CHANGED	NPV CHANGE	EAI CHANGE	SEV CHANGE
MGT & TAXES	$ 6.73	$ .54	$ 10.80
SALE ADMIN.	$ .19	$ .02	$ .30
MARKING	$ .19	$ .02	$ .30
HUNTING LEAS	$ 6.79	$ .54	$ 10.89
SALE INCOME	$ 32.23	$ 2.59	$ 51.72

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF
STAND : 32
MGMT/UNIT :
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

DATE PRINTED : 24/APR/1995
DATE TALLIED : AUG/1988
PROJECTED TO : AUG/2008

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

RISK ANALYSIS
RESIDUAL STAND

RISK ANALYSIS

(INPUT VALUE CHANGES WHICH WILL MAKE NPV EXACTLY EQUAL TO $0.00)
REAL DISCOUNT RATE = 5.00 %
(INVESTMENT PERIOD = 21 YEARS)

(ALL MONETARY VALUES ARE IN DOLLARS PER ACRE)

ITEM CHANGED	PERCENT CHANGE	DOLLAR CHANGE
MGT & TAXES	100.00 %	$ -67.31
SALE ADMIN.	100.00 %	$ -1.88
MARKING	100.00 %	$ -1.88
HUNTING LEAS	-100.00 %	$ -67.86
SALE INCOME	-99.00 %	$ -319.07

NOTE: WHEN PERCENT CHANGE EQUALS 100% AND DOLLAR CHANGE IS SMALLER THAN $ 319.07, THE INPUT VARIABLE WILL NOT ALTER THE OVERALL PROJECT PERFORMANCE, GIVEN THE CURRENT DECISION CRITERIA.

NED/SIPS - Stand Inventory Processor and Simulator- V 1.00

PROPERTY : Allegheny NF DATE PRINTED : 24/APR/1995
STAND : 32 DATE TALLIED : AUG/1988
MGMT/UNIT : PROJECTED TO : AUG/2008
STAND SIZE: 125.00 ACRES NUMBER OF PLOTS: 10 BAF/PLOT SIZE: 10.00

STAND DATA FILE: c:\ned\TSAMPLE.NEM
USER DATA FILE: NED.DEF

ECONOMIC DIARY
RESIDUAL STAND

NED/SIPS Economics - Cost and Revenue Diary

Entry	Activity Name	Year(s) of Occurrence Begin	End	Type of Cash Flow (Cost/Rev.)		Activity Cost	Addition Inflatio Rate
1	MGT & TAXES	1988	2008	C	$	5.00	0.00
2	SALE ADMIN.	2008	2008	C	$	5.00	0.00
3	MARKING	2008	2008	C	$	5.00	0.00
4	HUNTING LEASE	1988	1995	R	$	10.00	0.00
5	SALE INCOME	2008	2008	R	$	673.62	1.20

Appendix G.--NED.

NED/SIPS will be a useful addition to the tools available for forest management. Development is ongoing for the full version of NED, which will go beyond the capabilities of NED/SIPS. The motivating factor in the design of NED is to assist in making forest management recommendations based on the full range of resource values, including wildlife habitat, visual qualities, and watershed and ecological characteristics, in addition to traditional timber and economic values. This will be accomplished by incorporating the knowledge of many resource experts into the system. That knowledge, along with inventory data describing the present state of a forest management unit, will be used to build prescriptions that chart a path for managing the forest with silvicultural techniques that should accomplish the user's goals.

In the future, NED will be designed to operate in both the **Microsoft Windows** and the **UNIX X-Windows** environments. It will incorporate all of the current capabilities of NED/SIPS for data entry, report generation, treatment specification and stand projection, and also will incorporate goal input for a wide range of resource goals, and generate stand-based prescriptions using expert system technology. There will be many new reports that allow the user to do a wildlife analysis, or an aesthetic analysis, and so on. Growth simulators will be more accurate by the addition of ingrowth generation.

The process of generating prescriptions for forest management is a complex one. The first step in the process is to determine what goals the forest owner or manager has for the forest. A tool that can aid in this part of the process is the Forest Stewardship Planning Guide (FSPG), another interim product of the Northeast Decision Model. The FSPG program runs in the **Microsoft Windows** environment, and guides the user through the process of determining the management goals for the forest. This program will make limited recommendations on how to manage a forest for specific goals, and will describe the conditions that must be created or enhanced to accomplish them. It will also suggest which silvicultural systems are most likely to enhance those features. Without access to data describing the users' stands, the FSPG is unable to detect when goals conflict with each other, and cannot make specific stand-based recommendations, so the forest manager is left with the task of integrating and combining that information.

Once the goals for the forest are known, the next steps are to determine what information will be needed to support decision making, to design an inventory process that will acquire that data, to actually collect the stand inventory data, and to make that data available to NED through the data entry process. NED will require more information than is presently handled by NED/SIPS, but the program will be designed so that datasets created with NED/SIPS and goal sets created with FSPG will be useable by NED.

When both goals and stand data are available, the process of generating prescriptions begins. In broad strokes, the process consists of determining what desired future conditions (dfc's) are required to accomplish each goal, combining those dfc's into sets that can be implemented on the same stands, determining where these conditions already exist or can be created, thus allocating stands to the sets, and finally, based on that allocation, generating prescriptions for the short term and long term management of the stands. The generated recommendations for each stand will include both the silvicultural system to be used to manage the stand in the long term, and the suggested current treatment. The prescriptions will be designed to maintain the full set of desired conditions *in perpetuity* at the management unit level, though the condition of any single stand will change significantly through time.

Appendix H.--Running NED/SIPS in Windows

NED/SIPS is an MS-DOS character-based program, but if you normally operate in the **Microsoft Windows** environment, NED/SIPS can be used in that environment. The installation procedure automatically installs the files needed to operate under Windows. If you allow the installation procedure to modify the WIN.INI file, the very next time you enter Windows, a dialog box will appear asking if you want to install a Program group and an icon for NED/SIPS.

If you installed NED/SIPS in a subdirectory other than the default (C:\NED), you will need to use the PIF Editor (located in the MAIN Program Group) to edit the file NEDSIPS.PIF file so that the "Program Filename" and "Start-up Directory" fields reflect the current location of the NED software. This .PIF file instructs NED/SIPS to operate in a window, rather than full screen. Check the "Full Screen" box if you wish it to operate full-screen. Make sure you SAVE the .PIF file if you change settings.

Try double clicking the NED/SIPS icon to start the program. If you are operating in windowed mode and the window is too large or too small for your screen, click once on the Control-menu Box in the upper left corner of the window. Select the menu item labelled "Fonts..." and chose a font which yields a window size appropriate for your setup. If scrollbars are visible in the window draw the window size out to its largest possible extent to eliminate them.

Please note that NED/SIPS does not support mouse input.

At any time during use of the program under Windows, you may switch between windowed mode and full-screen mode by pressing ALT ENTER (hold down ALT while pressing ENTER).

It is possible that some NED/SIPS features may not operate in precisely the same manner under Windows. If you are experiencing a problem and are running NED/SIPS under Windows, please try the same operations under MS-DOS before reporting a problem

NOTICE

GTR-NE-205

A new version of NED/SIPS (Ver.1.11) is included in the pocket inside the back cover, and a list of frequently asked questions is enclosed.

July 1997

NED/SIPS FAQs

NED/SIPS Frequently Asked Questions
November 11, 1996

Q1. Do I have to have a math coprocessor to run NED/SIPS?
No, you do not have to have a math coprocessor to run NED/SIPS. However, calculation speed is much faster with a math coprocessor. V1.00 of NED/SIPS instructed the user not to install NED/SIPS if the computer did not have a math coprocessor. This was an unnecessary precaution. All 486 (except some 486SX's) and Pentium computers have a math coprocessor built in (4/24/96)

Q2. Why does NED/SIPS crash (stop running) on my computer?
You probably don't have enough **free conventional memory**. You must have at least 560K of free conventional memory to run NED/SIPS. To find out how much free conventional memory you have, navigate to C:\> and enter the command MEM,
i.e. C:\> MEM < ENTER> You should see a line on the screen similar to:

Memory Type	Total	=	Used	+	Free
Conventional	640K		26K		614K

In the above example, the computer has 614K of free conventional memory and NED/SIPS should run without crashing. If this number is below 560K on your computer, this is likely the reason NED/SIPS crashes. If so read on. If not, please look at questions 2A, 6 and 8 for further possibilities.
Refer to page 55 in the NED/SIPS User's Guide for a brief explanation of this problem. You can run MEMMAKER to create more free conventional memory. Refer to your DOS manual for information about MEMMAKER.

CAUTION: MEMMAKER is not for the faint-hearted. The process involves several steps, which if interrupted can cause your computer to perform strangely. If you are uncomfortable with running MEMMAKER yourself, and know someone more expert who can help you run it, you are encouraged to do so. In any case, you should make backup copies of the CONFIG.SYS and AUOTEXEC.BAT files in your root directory before running MEMMAKER (4/24/96).

Q2A. Sometimes NED/SIPS seems to take forever to do something. It keeps flashing "working" in the lower right corner. Why?
The program has probably crashed without changing the screen, leaving it difficult to tell whether it is still running. See questions 2, 6 and 8 for possible explanations of why it crashed. If you type CLS and press ENTER, and the screen clears, you have crashed. Type NED and press ENTER to start NED/SIPS again. If there is no response, you may need to reboot to resume control. (11/4/96)

Q3. Why does NED/SIPS report very high relative densities, especially for white pine and red oak?
Version 1.00 of NED/SIPS used untested formulae to compute relative density (percent stocking) which resulted in the high relative density figures. Version 1.11 of NED/SIPS uses

formulae based on the A-line stocking for each species group and reports much more accurate relative density figures (4/24/96).

Q4. Why does the last page of my report stay in the printer?
NED/SIPS sends the form feed command at the start of printing a report, instead of at the end. This means that the last page of a report is not ejected until the next report is printed. To get the last page of a report out of the printer, simply take your printer OFF LINE, press the FORM FEED button and then place the printer ON LINE again (4/24/96).

Q5. Can I convert SILVAH files so they will run in NED/SIPS?
Yes. Use the CONV program that is on the NED/SIPS V1.11 disk. Instructions for using CONV are found on the file CONVERT.TXT, also installed in the c:\NED directory by the V1.11 disk. To view CONVERT.TXT, use a text editor (such as Notepad in Windows) or in DOS set the current directory to C:\ned and type:

TYPE CONVERT.TXT | MORE

You can use CONV to convert SILVAH, OAKSIM, FIBER and NE-TWIGS files to NED/SIPS files and vice-versa.

CAUTION: CONV **does not check** to see if a file of the same name already exists. For example, if you convert a file named ABCD.SIL from SILVAH format to NED/SIPS format, the converted file will be automatically named ABCD.NEM. If you had previously created a NED/SIPS file named ABCD.NEM, it would be written over. Be careful (4/24/96).

Q6. Why does NED/SIPS crash when I try to combine several large data files?
The maximum number of trees that NED/SIPS can process at one time, whether in a single stand data file or from several combined, is 999. You may get an error message "number of plots entered not = number of plots counted" which is usually followed by a "crash" (4/24/96).

Q6A. How many stand data files can I combine?
You can combine up to 20 stand data files. Although you may not get an error message when combining more than 20 files, the headings and computations may not be correct (11/11/96).

Q7. Is there any way to perform calculations when I have more than 1000 trees?
Yes. Try this procedure:

1. Divide your data into two parts so that the combined acres of each part are about equal and there are less than 1000 trees in each group.
2. Run ANALYSIS on each part of the data separately and print the STAND table (number per acre).
3. Create a new data file using cruise type = 4, plot size = 1, number of plots = 2 and stand size = combined acres for all the cruises. Record the two stand tables in the new stand data file, entering the number per acre in the count field. ANALYSIS of this new stand data file will be the average of the two stand tables. If the combined acres of the two parts of your data were about equal, then this average will be a good estimate of the total stand (4/24/96).

Q7A. Are the computations using a combined data files weighted?
Yes, the count for individual trees is weighted by the acreage of that stand, so that in the combined stand they reflect the proper proportion of the overall stand (11/11/96).

Q8. What does an error "division by zero" mean?

This message appears after a "crash". You probably have a tree with dbh equal to zero. Check your data (4/24/96).

Q9. When I am creating a stand data file, the program doesn't recognize the site index species I enter. Why?
Make sure the species code type in the stand data file is correct (4/24/96).

Q9A. When creating a stand data file with a large number of trees, some data fields (for new trees) are empty. Why?
This problem starts appearing around tree number 745. Extra care is needed to insure that the Product field and the Count field have correct values, because they may have non-zero values when you get there. If you have to split a stand data file with more than 999 trees, it might be a good idea to leave each file with less than 745 trees (11/11/96) .

Q10. What is the minimum amount of tree data that is needed to run NED/SIPS?
The only tree data that are required are species, dbh and count. If you leave the other fields as zeros, NED/SIPS will assume Status = 1 (live), Tim = 2 (AGS), Saw GRD = 0. If Saw Height = 0 or Pulp Height =0, NED/SIPS will use formulae to compute sawlog and pulpwood heights and use these heights to compute volumes (4/24/96).

Q11. What is the correct way to enter heights in the stand data file?
NED/SIPS uses **height above the stump** to calculate volumes. Therefore, you should record the sawlog height as the feet or number of logs from the stump height to the point of sawlog merchantability. Pulpwood height is the **total height** from stump to the point of pulpwood merchantability. Many people collect height data by recording the number of sawlogs and the bolts of pulpwood above the sawlogs, i.e. 2 sawlogs (16 ft.) and 3 pulpwood bolts (8 ft.). This example would be entered into NED/SIPS as sawlog height = 2 logs (16 ft.) and pulpwood height = 7 bolts (8 ft.). If NED/SIPS encounters a tree with pulpwood height less than sawlog height (when converted back to feet), there will be no remaining Pulp Height when the Sawlog Height is subtracted from the Pulp Height. Pulpwood volume (above the sawlogs) for that tree would be zero and total cubic foot volume would be underestimated (4/24/96).

Q12. What is the correct way to enter a sawlog-sized tree with no useful sawlog volume? Enter a Saw Grd of 5, 6, 7 or 8 depending on the quality of the tree. Saw grd of 5 is user defined product, 6 is pulpwood, 7 is firewood and 8 is cull. The entire volume of trees with saw grd 5, 6 or 7 are computed as pulp volume (see question 13). Trees with saw grd of 8 (cull) are not included in any volume computations (see question 18 for more information about saw grd).
Do not enter a saw height of zero and a saw grd of zero for trees with no useable sawlog volume. When NED/SIPS encounters a tree with saw height = 0, it calculates a saw height. If the saw grd = 0, NED/SIPS assumes saw grd was not taken and the sawlog volume of that tree will be included in the board foot volume. (11/11/96)

Q13. What are the definitions of total volume (cubic feet and cords), pulp volume(cubic feet and cords) and board foot volume?
Total volume (cubic feet) is the volume of the entire tree from stump to the pulpwood merchantability limit.
Pulp volume (cubic feet) includes three portions of the stand inventory:

1. Total volume of trees which have no saw volume, whether because they are smaller than the minimum dbh for computing volume, or they are too small (as most pole-sized trees are) for the board-foot volume equations to produce volume.

2. Total volume of sawlog-sized trees with Saw Grade = 5, 6 or 7 (trees designated as pulpwood only).
3. Topwood (portion of the tree from sawlog merchantability limit to the pulpwood merchantability limit)

Board foot volume is the volume of the tree from stump to sawlog merchantability limit.

These also appear in several modified forms:
Total Volume **(cords)** is Total volume **(cubic feet)** divided by 80. Other cord volumes are derived in the same way.
Gross volumes (cubic feet and board feet) are computed using formulae.
Net Total and **Net Pulp** volumes are gross cubic foot volumes reduced by Pulp Defect and a 20% utilization factor.
Net board foot volume is gross board foot volume reduced by Saw Defect (4/24/96).

Q14. Why does NED/SIPS underestimate net pulpwood volume?
1. You may have entered pulpwood height incorrectly (see question 11).
2. You may have entered saw grd incorrectly (see question 12).
3. Previous versions of NED/SIPS (before 1.11) computed Pulp Volume incorrectly for trees with saw grd 5, 6 and 7, failing to include what would have been the sawlog portion in the Pulp Volume totals. This has been corrected in Version 1.11.
4. NED/SIPS computes Net Pulpwood volume by reducing Gross Pulpwood volumes by 20% to reflect typical utilization standards. Changing the Pulp Volume Correction Factor (in the user data file) to 1.25 will negate this reduction (4/24/96).

Q15. What are the definitions of MDL DIAM, DIAM MER, and QUAD DIAM found in the overstory summary table?
MDL DIAM is medial diameter, or the average diameter of the diameter or size-class midpoints, weighted by the proportion of basal area in that class. MDL DIAM is approximately the same as the median diameter (diameter at the midpoint of the basal area). MDL DIAM is calculated by multiplying the midpoint of each size class times the basal area in that class, summing those values for all the size classes, and dividing by the total basal area. Using the stand data file TSAMPLE.NEM as an example, MDL DIAM is calculated as follows:

CLASS	MIDPOINT	BASAL AREA	(MIDPT x BA)/TBA
Saplings	3.0	18	54
Poles	8.0	33	264
Sm Saw	14.0	38	532
Med Saw	20	24	480
Lg Saw	24	3	72
		---	---
Total		116	1402

MDL DIAM = 1402/116 = 12.08 in. MDL DIAM is useful in stands with a large amount of saplings because it is less influenced by small understory trees and better reflects the size of the crop trees.

DIAM MER is the medial diameter of merchantable size trees and is calculated the same way as MDL DIAM, except that saplings are omitted.

QUAD DIAM is the quadratric mean diameter, or the dbh of the tree of average basal area. It is calculated as the square root of the total basal area divided by the total number of trees divided by 0.005454. Again using TSAMPLE.NEM data,
QUAD DIAM = sq. root((116/793)/.005454)=5.18
(4/24/96)

Q16. Can I change the volume formulae used in NED/SIPS?
You cannot incorporate your own board-foot or pulp volume formulae. You can, however, choose between three different included board-foot volume equations: International 1/4 Inch, Scribner and Doyle. This selection can be found on the second page of the User Data EDIT screens (4/24/96).

Q17. How can I control the volume calculations?
Changing any of the following factors can affect the volume calculations:

1. Enter explicit **Sawlog** and **Pulpwood Heights** for all trees in the stand data file. If you do not enter heights, NED/SIPS will calculate estimated heights (See questions 10 and 11).
2. Enter **Saw Grd** (Sawlog Grade) codes for all trees (see questions 18, 12 and 13 part 2). This code controls how the volume from each tree is counted (as Pulp or Board-foot). Note that the **Product Code**, which has similar values, has **NO effect** on how volumes are counted).
3. Enter **Sawlog** and **Pulpwood Defect** in the stand data file (See question 19). This will only affect the Net totals.
4. Change the **Stand Age** (See question 20). This will have an effect only if you have not entered explicit **Pulpwood heights**. Stand Age is a factor in the estimation of Pulp Heights.
5. Change the **minimum dbh used in volume calculations** in the User Data file. Making these numbers smaller will allow trees that were below the diameter threshold to be included in volume totals.
6. Change the **form class** for utilized species in the user data file.
7. Change the **volume correction factor** in the User Data File.

(4/24/96)

Q18. How does NED/SIPS use Saw Grd data?
Saw Grd means sawlog grade. Sawlog grades used in NED/SIPS are

0 = no grade entered (treated as ungraded sawlog)
1 = butt log grade 1
2 = butt log grade 2
3 = butt log grade 3
4 = butt log grade 4
5 = entire tree is user defined product
6 = entire tree is pulpwood
7 = entire tree is firewood
8 = entire tree is cull
9 = butt log veneer

Board foot volume includes only trees with Saw Grd 0,1,2,3,4 and 9.
Total volume includes the entirety of all trees except those with Saw Grd 8 (cull)
Pulp volume includes the entirety of trees with codes 5, 6 and 7 as well as that part of trees with codes 0, 1, 2, 3, 4 and 9 which is not included in the board foot volume.
Trees with **Saw Grd 8 (cull) are not included** in any volume or value calculations (4/24/96).

Q19. How does NED/SIPS use Saw Def and Pulp Def?
Saw Def means sawlog defect and Pulp Def means pulpwood defect. This is the percent of the total volume that is defective or unusable. NED/SIPS calculates a gross volume of each tree using the dbh and height from the stand data file. Net volume is the gross volume reduced by the saw def or pulp def. The overstory summary table shows the gross and net cords and gross and net board foot volumes. All other volumes reported in the Analysis tables are net volumes, i.e. calculated volumes have been reduced by the sawlog and pulpwood defects (See question 12) (4/24/96).

Q20. How does NED/SIPS use stand age?
When no explicit pulp height is entered, and when stand age is less than 100 years, the calculated pulpwood height will be reduced proportionally to the age. For example, by changing stand age from 100 to 30 years, pulpwood height may be reduced by as much as 80% for 8 in. dbh trees and 50% for 24 in. dbh trees. This will effect total cubic volume and pulpwood volume calculations. Stand age has no effect on calculated sawlog height, and consequently no effect on sawlog volume. **NED/SIPS uses a stand age of 65 years when you enter a stand of 0 (unknown age)**(See question 17 part 4) (4/24/96).

Q21. How can I check NED/SIPS volume calculations?
Use cruise data for which you have already calculated volumes. Also, you can make up a small data set, using cruise type = 4, plot size = 1 and number of plots = 1. Record several trees of species, dbh and heights that match your volume table, being careful not to record more than one entry for each species and dbh. Make count = 1 for all entries. Analysis tables that show per acre volumes should compare to your volume table (4/24/96).

Q22. How does NED/SIPS calculate value?
Value is the sum of pulpwood value plus sawtimber value. Pulpwood value is calculated as the net pulp volume multiplied by the pulpwood stumpage price. Sawtimber value is the net board foot volume multiplied by the sawlog stumpage price (4/24/96).

Q23. Are UGS included in volume computations?
Yes. The TIM (timber code) field can be 1 for potential crop tree, 2 for AGS (acceptable growing stock) or 3 for UGS (unacceptable growing stock). Stand tables produced in ANALYSIS include trees with TIM codes 1, 2 and 3. NED/SIPS uses the TIM code in two ways. First, total AGS and UGS are computed for each analysis table. Second, TIM is used in PRESCRIBE when BUILD YOUR OWN treatment is selected. This allows you remove trees with specific TIM codes (4/24/96).

Q24. When combining several stand data files, the ANALYSIS tables show stand acres as "combined stands". Does NED/SIPS add the acres of several stands together?
Yes. The ID Data table will show the correct acres of all the stands added together. Also, in PRESCRIBE the cut comparison table uses the correct stand size to compute total stand volumes and value (4/24/96).

Q25. Why is too much basal area removed when I do a standard prescription?
This problem was caused by the inaccurate relative density calculations in Ver. 1.00. In most cases, you should get better performance from Ver. 1.11. (See question 3) (4/24/96).

Q26. Is the Q factor based on 1-inch or 2-inch size classes?

NED/SIPS uses 1 inch diameter classes to compute the Q factor (the ratio of the number of trees in each diameter class divided by the number of stems in the next smaller diameter class). Squaring the Q factor computed using 1 inch diameter classes yields the Q factor based on 2 inch diameter classes (4/24/96).

Q27. What are the dividing lines between the size classes reported in NED/SIPS?
NED/SIPS uses the following:

	Dbh 0.1 in.	Dbh 1-in. classes	Dbh 2-in. classes
Saplings	0.6 to 5.5 in.	1 to 5 in.	2 - 4 in.
Poles	5.5 to 11.5 in.	6 to 11 in.	6 - 10 in.
Small saw	11.6 to 17.5 in.	12 to 17 in.	12 - 16 in.
Medium saw	17.6 to 23.5 in.	18 to 23 in.	18 - 22 in.
Large saw	over 23.5 in.	over 23 in.	over 22 in.

(4/24/96)

27A. Can NED/SIPS compute 2-inch stand tables from tree dbh data in tenths or 1-in classes?
No. If dbh data are entered in tenths, DBH classes should be entered as 3. If you change the DBH classes to 2, NED/SIPS **incorrectly converts** the dbh data from tenths to 2-inch classes. Similarly, dbh data in 1-inch classes is incorrectly converted to 2-in classes. **Do not use NED/SIPS V1.11 to convert dbh classes**. (11/11/96)

Q28. Why doesn't NED/SIPS print sawlog volumes for 7 inch dbh trees when I specify 7.0 as in the minimum dbh used in volume calculations?
The equations used for computing board-foot volumes in NED/SIPS produce zero volume for trees below 8 inches dbh (4/24/96).

Q29. Most tables in NED/SIPS are per acre values. Is there any way to compute the total stand values for basal area, volumes, etc.?
The only place that NED/SIPS reports stand values is in the Prescribe module. When you request the **cut comparison table** after performing a prescription, it will show the total stand volume in cords and board feet and the total stand value.

If you enter stand data for a 100% cruise, you can obtain total stand values by setting cruise type = 4, the number of plots = 1 and plot size = 1 ac. The per acre values reported will be the total stand values (4/24/96).

Q30. What do the numbers on the Cruise Information - Sampling Error Report mean?
The following five values are reported: Mean basal area, BA range, Sampling error, Plots required to be within 15% of the mean and Plots required to be within 10% of the mean.
Mean basal area is the arithmetic mean of the individual plot basal areas.
BA range is the range of the confidence interval
Sampling error is the basal area range (confidence interval) described as a percent of the mean basal area.
The # of plots required to be within 15% or 10% of the mean are the number of additional plots (above what is already in the sample) that would be needed to be collected to be 90 percent confident that the sample mean (basal area) is within 15% or 10% of the true mean.
All of the computations are for the 90 percent confidence interval, i.e. probability level = 0.1

Using the data from the TSAMPLE.NEM stand data file, the computations are as follows:

Plot	Basal Area	Basal Area Squared
1	160	25600
2	120	14400
3	120	14400
4	120	14400
5	120	14400
6	110	12100
7	50	2500
8	120	14400
9	120	14400
10	120	14400
Sum	1160	141000

m = Mean basal area = (sum BA)/n = 1160/10 = 116

v = Standard deviation = ((sum BA sq.) - (n * m*m))/(n-1)
= (141,000 - (10 *116*116))/9 = (141,00-134,456)/9 = 715.556

e = Standard error = Sq. root (v/n)
= Sq. root (715.556/10) = Sq. root (71.5556) = 8.459

t = t-value for probability 0.1 and 9 degrees of freedom = 1.833

r = BA range = e * t = 8.459 * 1.833 = 15.505

s = Sampling error = r * (100/m) = 15.505 * (100/116) = 15.505 * 0.862 = 13.367

P15 = # plots to be within 15% of the mean = ((t* t * v)/((.15*m)*(.15 *m)))-n
= ((1.833*1.833*715.556)/(17.4*17.4))-10 = 7.94 - 10
= -2.05 = 0

P10 = # plots to be within 10% of the mean = ((t* t * v)/((.10*m)*(.10*m)))-n
= ((1.833*1.833*715.556)/(11.6*11.6))-10 =1 7.86 - 10
= 7.86 = 8

(11/11/96)

Q31. Can I compute the sample size (Cruise Information analysis) when plots are not separated or for a combined data file? No. Individual plot basal areas are needed to compute sample size. When plots are not separated or several data files combined, it is not possible to compute indivual plot basal areas. (11/11/96)

Q32. Can I download NED/SIPS from the Internet?
Yes, NED/SIPS can be downloaded from the NED world wide web site at
URL http://www.fsl.uvm.edu/NED/ned_intropg.htm
You can also download other NED programs such as the Forest Stewardship Planning Guide and NEWild from this site, and learn about other NED programs being developed. (11/11/96)

Q33. What do you mean by *processed* data? When NED/SIPS generates analyses, growth simulations, and prescriptions, it first goes through a processing step, which changes the character of what is stored internally for stand data. The stand data file stored in the C:\NED

subdirectory is not changed by such processing. Some internal values are normalized to represent their per acre values, and the program estimates data for certain fields for which the user entered no data. Because the data is different from raw data entered by the user, it is not recommended that you save your stand data files after they have been processed. I you want to save the processed data, you should change the name of the stand data file to reflect its processed character and to distinguish it from the raw data. In this way, the raw data remains intact and editable. A good operating procedure is to ensure that you save your stand data file immediately after creating and editing and before performing analyses, prescriptions or growth simulations. If, after performing one of these operations which cause the internal data to be processed, you wish to further edit the stand data, you should retrieve the stand data file again, then edit it. Again, make sure you save the stand data file immediately after editing it. Their may certain circumstances where it is useful to save or edit processed data, but the procedure is not recommended, and is undertaken at your own risk. (11/11/96)

Q34. How does NED/SIPS use site index? Site index is used only in the growth simulators. Changing the site index results in slightly different growth projections. NED/SIPS does **not** compute different merchantable heights for different site indexes. Changing the site index will **not** change volume computations. (11/11/96)