System Cost Model
User's Manual

David Shropshire
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System Cost Model

User's Manual

Version 1.2

Prepared for:
The United States Department of Energy
Assistant Secretary for Environmental Management
Department of Energy Idaho Operations Office
Contract Number: DE-AC07-94ID13223

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The System Cost Model (SCM) was developed by Lockheed Martin Idaho Technologies in Idaho Falls, Idaho and MK-Environmental Services in San Francisco, California to support the Baseline Environmental Management Report sensitivity analysis for the U.S. Department of Energy (DOE). The SCM serves the needs of the entire DOE complex for treatment, storage, and disposal (TSD) of mixed low-level, low-level, and transuranic waste. The model can be used to evaluate total complex costs based on various configuration options or to evaluate site-specific options. The site-specific cost estimates are based on generic assumptions such as waste loads and densities, treatment processing schemes, existing facilities capacities and functions, storage and disposal requirements, schedules, and cost factors. The SCM allows customization of the data for detailed site-specific estimates. There are approximately forty TSD module designs that have been further customized to account for design differences for nonalpha, alpha, remote-handled, and transuranic wastes. The SCM generates cost profiles based on the model default parameters or customized user-defined input and also generates costs for transporting waste from generators to TSD sites.

ABSTRACT

The System Cost Model (SCM) was developed by Lockheed Martin Idaho Technologies in Idaho Falls, Idaho and MK-Environmental Services in San Francisco, California to support the Baseline Environmental Management Report sensitivity analysis for the U.S. Department of Energy (DOE). The SCM serves the needs of the entire DOE complex for treatment, storage, and disposal (TSD) of mixed low-level, low-level, and transuranic waste. The model can be used to evaluate total complex costs based on various configuration options or to evaluate site-specific options. The site-specific cost estimates are based on generic assumptions such as waste loads and densities, treatment processing schemes, existing facilities capacities and functions, storage and disposal requirements, schedules, and cost factors. The SCM allows customization of the data for detailed site-specific estimates. There are approximately forty TSD module designs that have been further customized to account for design differences for nonalpha, alpha, remote-handled, and transuranic wastes. The SCM generates cost profiles based on the model default parameters or customized user-defined input and also generates costs for transporting waste from generators to TSD sites.
# Contents

1. Introducing System Cost Model ........................................................................ 1
   1.1 Overview of System Cost Model ................................................................. 1
   1.1.1 Waste Types and Subtypes ................................................................. 1
   1.1.2 Creating a New Case or Loading an Existing Case .................. 1
   1.1.3 Editing a Case ..................................................................................... 2
   1.1.4 Running Calculations ........................................................................ 2
   1.1.5 Generating and Evaluating Reports .................................................. 2
   1.2 About the Manual .................................................................................. 3
   1.2.1 Section Overviews ........................................................................... 3
   1.2.2 Section Highlights ............................................................................. 4
   1.2.3 Manual Conventions ......................................................................... 4
   1.3 Obtaining Technical Support .................................................................. 5

2. Installing System Cost Model ........................................................................ 7
   2.1 Package Contents ................................................................................... 7
   2.2 System Requirements ........................................................................... 7
   2.3 Setup Procedure .................................................................................... 8

3. Working with Cases ....................................................................................... 11
   3.1 Starting System Cost Model .................................................................. 11
   3.2 Using Common System Cost Model Features ..................................... 12
      3.2.1 Using the Menu Bar ....................................................................... 12
      3.2.2 Viewing the Status Bar .................................................................. 13
      3.2.3 Using Common Buttons ................................................................ 13
   3.3 Creating a New Case ............................................................................. 14
      3.3.1 Selecting Default Waste Loads ...................................................... 15
      3.3.2 Retaining Waste Loads ................................................................. 15
      3.3.3 The New Case Dialog Boxes .......................................................... 17
      3.3.4 After Completing the New Case Dialog Boxes ......................... 17
## 3. Opening a Case

- 3.4 Opening a Case ................................................................. 18

## 3. Saving a Case

- 3.5 Saving a Case ....................................................................... 19

## 3. Closing System Cost Model

- 3.6 Closing System Cost Model .................................................. 20

## 3. Deleting a Case

- 3.7 Deleting a Case .................................................................... 21

## 3. Copying Cases

- 3.8 Copying Cases ..................................................................... 21

## 3. Merging Cases

- 3.9 Merging Cases .................................................................... 23

## 3. Combining Results

- 3.10 Combining Results .............................................................. 26

### 4. Editing Cases

- 4.1 Selecting the Current Waste Type ............................................. 28
- 4.2 Editing Waste Loads ............................................................... 28
  - 4.2.1 Selecting Waste Subtypes .................................................. 30
  - 4.2.2 Selecting the Site Generation Years and Beginning Year ........ 30
  - 4.2.3 Entering Pre-Treatment Information .................................... 31
  - 4.2.4 Entering Waste Stream Volume and Generation Rates ............ 31
  - 4.2.5 Entering Waste Stream Densities ........................................ 34
  - 4.2.6 Navigating the Edit Waste Loads Dialog Box ......................... 35
  - 4.2.7 Clearing Waste Loads ....................................................... 36
- 4.3 Editing Treatment, Storage, and Disposal Scenarios .................. 37
  - 4.3.1 Editing TSD Scenarios by Map .......................................... 37
  - 4.3.2 Editing TSD Scenarios by Table ......................................... 41
- 4.4 Editing Site Schedules ........................................................... 44
  - 4.4.1 Treatment Site Schedule .................................................. 45
  - 4.4.2 Storage Site Schedule ..................................................... 46
  - 4.4.3 Disposal Site Schedule ................................................... 46
- 4.5 Editing Facility Profiles ........................................................ 46
  - 4.5.1 Editing Facility Information ............................................... 48
  - 4.5.2 Editing Module Information ............................................. 51
  - 4.5.3 Navigating the Facility Profiles Dialog Box ........................... 55
- 4.6 Editing Inflation Factors ....................................................... 56
- 4.7 Editing Cost Factors ............................................................. 57
  - 4.7.1 Construction Costs ........................................................ 57
  - 4.7.2 Pre-operation Costs ....................................................... 59
  - 4.7.3 Operating Costs ............................................................. 59
  - 4.7.4 Labor Costs .................................................................... 60
- 4.8 Editing Other Site Costs ......................................................... 60
  - 4.8.1 Commercial Contract Services .......................................... 61
  - 4.8.2 DOE-Provided Off-Site Services ....................................... 61
  - 4.8.3 Special Site Costs ......................................................... 62
- 4.9 Editing WBS Scale Factors .................................................... 63
- 4.10 Editing Site Information ....................................................... 64
  - 4.10.1 Editing the TSD Scenario ............................................... 65
  - 4.10.2 Editing the Site Schedule ............................................... 66
  - 4.10.3 Editing Waste Loads ..................................................... 66
  - 4.10.4 Editing Facility Profiles ................................................ 66
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix 2: Report &amp; Graph Samples</td>
<td>93</td>
</tr>
<tr>
<td>A2.1  Case Summary Reports</td>
<td>93</td>
</tr>
<tr>
<td>A2.2  Site Detail Reports</td>
<td>108</td>
</tr>
<tr>
<td>A2.3  Case Summary Graphs</td>
<td>119</td>
</tr>
<tr>
<td>A2.4  Site Detail Graphs</td>
<td>124</td>
</tr>
<tr>
<td>A2.5  Case Comparison Graphs</td>
<td>127</td>
</tr>
<tr>
<td>Appendix 3: Error Messages</td>
<td>133</td>
</tr>
<tr>
<td>Appendix 4: Calculation/Assumptions</td>
<td>137</td>
</tr>
<tr>
<td>Glossary of Terms</td>
<td>141</td>
</tr>
<tr>
<td>Index</td>
<td>145</td>
</tr>
</tbody>
</table>
1. Introduction

System Cost Model (SCM) is a waste management analysis computer program that calculates the size and cost of both new and existing waste treatment, storage, and disposal (TSD) facilities. The program evaluates and determines the most efficient method of managing current and future quantities of waste.

1.1 Overview of System Cost Model

SCM is designed to be user-friendly. It has been developed by experienced engineering and scientific professionals. As an information gathering and reporting tool, SCM enables the user to evaluate and prepare for the future.

1.1.1 Waste Types and Subtypes

SCM is designed to handle the modeling of costs for different types of waste. SCM uses two different terms to classify types of waste: "waste type" and "waste subtype." These terms are used throughout the SCM program and this manual when referring to waste.

Waste type refers to major classifications of waste; e.g., low-level waste (LLW), mixed low-level waste (MLLW), transuranic waste (TRUW), etc.

Waste subtype refers to the sub-classification of the above waste types; e.g. alpha (A), nonalpha (NA), contact-handled (CH), etc.

Refer to Appendix A1.1 Waste Type Abbreviations for a complete list of the waste types and subtypes handled by SCM.

1.1.2 Creating a New Case or Loading an Existing Case

Working with SCM starts with either creating a new case or editing an existing one. When creating a new case, the user will start by using a series of
on-screen forms to supply basic information to SCM, such as what types of waste the case will initially contain. SCM uses this information to build a new case. SCM then leads the user through the steps of changing the information associated with a case. These steps are described in Section 1.1.3 Editing a Case.

When loading an existing case, simply select the name of the case from the list of available cases.

### 1.1.3 Editing a Case

There are four required and four optional categories of information that can be changed for a SCM case. The required categories include waste loads, TSD scenarios, site schedules, and facility profiles. The optional categories include inflation factors, cost factors, other site costs, and Work Breakdown Structure (WBS) scale factors. Data from the four required categories must be provided for the program to run calculations successfully, while the four optional categories all have defaults and it is at the user’s discretion whether to make any changes.

All of the commands for editing a case are located in the Edit menu. The case is saved with the same name by using Case, Save (this option overwrites the original case), or saved with a different name by selecting Case, Save As.

### 1.1.4 Running Calculations

Once the information is entered, the model can be calculated using the Run! menu item. SCM determines the operational schedules and duration, existing module types, module capacities and types of waste handled by these modules, and costs and labor requirements for new and existing facilities.

There are three phases in the calculation process: error checking, capacity calculations, and cost computations. SCM displays progress information as the case runs the calculation process to completion. When the last calculation is complete, SCM displays a dialog box to that effect.

Generally, calculation time ranges from 2 to 10 minutes, depending on the type of hardware used and the amount of data associated with the case.

### 1.1.5 Generating and Evaluating Reports

After the user has input the data and run the calculations, the Report menu can be used to generate a variety of case summary reports, site detail reports, graphs, and timelines to aid in the evaluation of a particular case. A preview function allows the user to quickly choose the reports needed.
After the user has reviewed the reports generated by SCM, generally the same cycle will start again, by editing some of the parameters of the case, running calculations, and examining the output from reports.

1.2 About the Manual

This manual assumes that the user is familiar with Microsoft Windows. If the user is new to Windows or is not familiar with icons, list boxes, and dialog boxes, the Microsoft Windows booklets *Getting Started with Microsoft Windows* or *Microsoft Windows User's Guide* are helpful references.

Furthermore, it is recommended that the user browse through this entire SCM manual before using this application. If help is required while using SCM, access the SCM Help System by pressing F1 or by selecting Help from the menu bar.

1.2.1 Section Overviews

The SCM manual is organized into six major sections, with four appendices. A brief overview of the information included in these sections is provided below.

*Section 1. Introducing System Cost Model:* Summarizes the application and its main functions. Describes the layout and content of the manual and lists some important technical support information.

*Section 2. Installing System Cost Model:* Guides the user through the setup procedure.

*Section 3. Working with Cases:* Describes SCM common features and all of the commands in the Case pull-down menu. Teaches the user how to open, create, delete, copy, save, and close cases.

*Section 4. Editing Cases:* Describes each of the commands in the Edit pull-down menu. Teaches the user how to edit waste loads, TSD scenarios, site schedules, facility profiles, inflation factors, cost factors, other site cost factors, site information, and case notes. The information in this section applies to both new and existing cases.

*Section 5. Calculations and Reports:* Describes how to run calculations using the Run! command and how to generate each of the reports and graphs in the Report pull-down menu.

*Section 6. Using the Help System:* Describes how to access and use the SCM Help System.

*Appendix 1: Abbreviations and Codes:* Lists the various waste type abbreviations, site codes, and module codes used throughout the manual and SCM program.
Appendix 2: Report & Graph Samples: Includes samples of each report and graph.

Appendix 3: Error Messages: Lists all SCM error messages, with an explanation of the cause and solution for each message.

Appendix 4: Calculation Assumptions: Details all assumptions that are part of the calculation process SCM uses to determine costs associated with a case.

In addition, the Table of Contents, the Index, and the Glossary of Terms are included in this manual as resources for locating specific pieces of information. The Table of Contents, located at the beginning of the manual, may be used when it is necessary to find a specific topic, The Index, located at the end of the manual, is a helpful resource when it is necessary to search for specific terms in alphabetical order. Finally, the Glossary of Terms, also located at the end of the manual, is a ready reference when looking for word definitions, abbreviations, and acronyms related to SCM.

1.2.2 Section Highlights

If SCM is not already installed on the computer, see Section 2. Installing System Cost Model for instructions. For an overview of SCM and its basics, refer to Section 1. Introducing System Cost Model and Section 3. Working with Cases.

To start creating a new case, review Section 3.3 Creating a New Case. Once a new case has been created, or when editing an existing one, review Section 4. Editing Cases. This section describes the procedure for making changes using the Edit menu and provides detailed information on data entry for the various dialog boxes.

To run calculations and generate reports for either a newly created or recently edited case, refer to Section 5. Calculations and Reports.

For ease of use, the information in this manual is also accessible through the Help System. A guide to using the Help System is presented in Section 6. Using the Help System.

Finally, use the Table of Contents to locate specific topics, the Index to alphabetically search for specific terms, and the Glossary to find the meanings of words, abbreviations, and acronyms related to SCM.

1.2.3 Manual Conventions

This manual follows a format which enables the user to quickly locate information. A summary of these conventions is listed below.

Convention I Some functions require the use of a command button. When describing a particular function that requires selecting a button, check box, or menu item,
the text of that action appears bolded within the text. Also, names of keys, such as the Enter key, are presented in this same typeface.

**Convention II** Throughout the manual, whenever a bolded word is followed by another bolded word and separated by a comma, the first word is a menu heading, and the second word is a command within that menu. For example:

Help, Contents refers to the Help section on the menu bar and Contents within the Help menu.

**Convention III** References made to sections of this manual that describe a function in greater detail are shown in italics. For example:

Refer to Section 3.1 Starting System Cost Model for a more detailed description.

**Convention IV** The on-line Help System follows the subject headings used in this manual.

**Convention V** The sections in the body of the manual are structured around the SCM menus and completely describe each main dialog box as accessed through its menu command.

### 1.3 Obtaining Technical Support

**Help, About SCM** To access technical support information while using SCM, simply select the Help menu and choose About SCM. Refer to Section 6.3 Reviewing Information About System Cost Model for details.

For questions that cannot be resolved by using the SCM manual and Help System, contact David Shropshire:

David Shropshire  
Idaho National Engineering Laboratory  
Lockheed Martin Idaho Technologies  
Idaho Falls, Idaho 83415  
(208) 526-6800

When contacting the above-listed number, the user should have both the computer and the System Cost Model User’s Manual within reach. The user will be asked to provide the SCM version number, basic hardware specifications, and a description of the problem. The user should also be prepared to provide, print, and fax information pertaining to the system’s configuration including “win.ini” and “system.ini” settings as required.
2. Installing System Cost Model

2. Introduction

This section details the installation process, which involves copying the contents of the SCM disks to a computer, so that the SCM program is ready to use. The process takes approximately ten minutes.

For those familiar with Windows and its applications, a summary of the installation process follows: insert Disk 1; select File, Run from the Microsoft Windows Program Manager; type a:setup; and press the Enter key. When prompted, insert the indicated disks. A Program Manager group and icon will be created for SCM.

2.1 Package Contents

- Four high-density 3½-inch disks
- One System Cost Model User’s Manual

2.2 System Requirements

In order to efficiently use SCM to its fullest capacity, the computer system on which the program is installed should meet the following requirements:

- Computer using DOS 5.0 or later version and Microsoft Windows 3.1
- 486SX 33MHz microprocessor or greater
- 20 Megabytes free hard disk space
- 4 Megabytes RAM (8MB or more recommended)
2.3 Setup Procedure

SCM installation procedure is similar to that of other Windows programs. The entire installation should take approximately ten minutes.

Three SCM subdirectories will be created during the installation process. Two of these subdirectories, "data" and "default," store the files necessary to run the application while the third, "betacase.scm," stores files of a sample case.

For future reference, once saved, each case will be located in its own subdirectory. These case subdirectories can be recognized by their "scm" extension. In the Windows Program Manager, SCM creates the System Cost Model program group which contains the single SCM icon.

**Start Windows**

Turn on the computer and start Microsoft Windows.

If Windows is already running, close all other programs except the Windows Program Manager. This is important because SCM Setup needs access to certain key files that other applications may be using.

If the computer does not start Windows automatically, it can often be started by typing `win` and pressing the `Enter` key after the computer has started.

**Insert Disk 1**

Insert Installation Disk 1 into the appropriate floppy drive—either drive A or B (referred to as the A-drive throughout this manual).

**Select File, Run**

Select the **File** menu on the Program Manager, then select the **Run** command.

**Enter a:setup**

In the Run dialog box, type `a:setup` and then select the **OK** button.

Once the setup procedure is initialized, it begins installing files onto the hard drive. The dialog box will appear as shown below.

A dialog box displays each SCM file, as it is being copied, under the Source File heading while Setup copies the files from the floppy drive to the hard drive. Likewise, the drive, directory, and filenames are displayed under the Destination File heading as Setup installs the file on the hard drive.

As the installation process for disk 1 continues, the horizontal bar below the Destination File heading displays the percentage of the installation process that has been successfully completed.
Insert Disk 2   Setup prompts the user to remove Disk 1 from the floppy drive and insert Disk 2.

Select the OK button to continue installing files from Disk 2.

This process repeats itself for each of the four disks as Setup installs SCM onto the hard disk.

When the installation process is complete, Setup returns to the Program Manager. When reinstalling SCM, duplicate icons may appear in the SCM program group. Although they will not cause any harm, simply delete any old SCM icons. Each of the icons will have the same effect, even if they are labeled differently.

From the Program Manager, double click on the SCM icon to access the application. Refer to Section 3.1 Starting System Cost Model for more detailed information.
3. Working with Cases

3. Introduction

This section describes how to use some of the common SCM command features including the menu bar, status bar, and certain buttons. It explains the main window that appears when SCM is launched and each of the commands in the Case menu.

3.1 Starting System Cost Model

Double click on the SCM icon in the Program Manager to launch SCM.

A dialog box appears asking whether to create a new case, open an existing one, or exit to the SCM menu. The box also displays information regarding technical support for SCM users.
From this dialog box, the user can choose to open a case, start a new case, or cancel to the SCM menus.

**Open Case** Select **Open Case** to open an existing SCM case for editing; see **Section 3.4 Opening a Case** for more information.

**New Case** Select **New Case** to create a new SCM case; see **Section 3.3 Creating a New Case** for more information.

### 3.2 Using Common System Cost Model Features

Certain key elements in SCM appear throughout the application. The menu bar at the top of the SCM window is used to navigate and execute commands. The status bar at the bottom of the SCM window displays the name of the case and the type of waste currently being edited. Many traditional Windows and SCM buttons are also used to execute commands.

#### 3.2.1 Using the Menu Bar

The menu bar at the top of the SCM window is the most commonly used navigating tool. To initiate a menu bar command, select a menu heading to view the list of commands in its pull-down menu. This is done by placing the mouse arrow on the menu bar heading and holding down the left button. Select a command from the menu by dragging the mouse arrow to the function of choice so that it is highlighted, then release the mouse button to access that function. The menu bar has the following selections:

| Case | Edit | Run! | Report | Help |
To access the pull-down menu without using the mouse, simply press the Alt key and the underlined command letter from the menu title at the same time. Next, press the underlined letter of the desired command.

For example, select Help on the menu bar by pressing the Alt and H keys, and then select the Contents command by pressing C to access the SCM Help Contents window.

### 3.2.2 Viewing the Status Bar

The status bar at the bottom of the SCM window displays the name of the case on the left and the type of waste currently being edited in the center.

![Status Bar](image)

### 3.2.3 Using Common Buttons

The following buttons commonly appear throughout the application. In fact, many of these command buttons are common Windows elements. Even for new users, most of the buttons are self-explanatory and this section will only need to be reviewed occasionally. For more information about these and other Windows features, refer to the Microsoft Windows User's Guide.

**Done** When finished using a dialog box, select the Done button to acknowledge the changes and move on.

![Done Button](image)

**Cancel** When using a dialog box, select the Cancel button to return to the previous dialog box and not save changes.

![Cancel Button](image)

**Undo Edits** To return all entries in the current dialog box to their previous settings, select the Undo Edits button. This must be selected before pressing the Done button.

![Undo Edits Button](image)

Until data in the dialog box are changed, the Undo Edits button appears light gray and remains unavailable. Also, once the Done button has been selected and the data in a dialog box have been saved, the Undo Edits button will become unavailable.

In some dialog boxes, data will be saved for one set of information when another on-screen control is selected. For example, selecting a different waste-subtype on the waste load screen will first save information for the current waste subtype.
Drop-Down Lists  To enter data into a list box, select the box itself or the Drop-Down List button, then select the appropriate item in the drop-down list that appears.

Use the Vertical Scroll Bar to display choices that are not in the current list, or type the first letter of the selection. The automatic list search feature highlights the first list item beginning with that letter.

Scroll Bars  Horizontal and vertical Scroll Bars allow viewing of data not visible in the current list.

These scroll bars are only present when the data exceed the screen space available. Click on the scroll bar, drag the scroll box, or click the scroll arrows to view this data.

Option Buttons  Option Buttons allow selection of one option over another.

Click on an unmarked option button to mark it and thereby select its associated option. Doing this will deselect all other options in the group.

Check Boxes  Check Boxes allow selection of one or more options.

Click on an unmarked check box to mark it and thereby select its associated option. Click on a marked check box to deselect it.

Spinners  Spinners allow the user to choose from a range of sequential numerical values without having to type a value individually.

For example, this is used in SCM for selecting a year from a range of years. Click on the up arrow to increase the value, and the down arrow to decrease the value, or click inside the box and type in a number.

3.3 Creating a New Case

New Case  To create a new case when first starting SCM, select the New Case button.

Case, New  Once in the system, the user can create a new case by selecting Case, New from the menu bar at the top of the SCM window.
When creating a new case, SCM asks a series of questions, using the answers supplied to set up the new case. These questions are divided into two sets. The first set establishes basic information associated with the case and is described in the section below. The second set allows the user to change the values associated with the case and is described in Section 4. Editing Cases.

### 3.3.1 Selecting Default Waste Loads

The first step of creating a new case is to select which default waste loads to retain from all available waste types. SCM comes with a set of default data that includes existing waste loads for all sites. All waste types supported by SCM will be presented in this dialog box.

![Select Default Waste Loads](image)

To select a default waste load to retain, simply click on a waste type with the mouse. To select more than one waste load, hold down the Control key on the keyboard while clicking with the mouse on the desired waste types.

**Select Waste Types**

After the desired waste types have been selected, choose the Select Waste Types button to proceed to the next step. At this point, SCM copies the necessary case files, validates several case attributes based on the waste type selection, and prepares the case for data entry.

Select the Cancel button to return to the initial SCM dialog box or to the menu bar.

### 3.3.2 Retaining Waste Loads

After selecting the waste types to retain from the default waste loads, SCM asks for which specific sites waste loads should be retained. It does this once for each waste type that was selected to retain in the step above.
Select sites for which MLLW waste loads should be retained

Ames Laboratory
Argonne National Laboratory East
Argonne National Laboratory West
Battelle Columbus Laboratory
Bettis Atomic Power Laboratory
Brookhaven National Laboratory
Charleston Naval Station
Colonie Interim Storage Site
Energy Technology Engineering Center
Fernald Environmental Management Project
General Atomics

Hold down the Control key while clicking the mouse to select multiple sites

Select All Sites

Deselect All Sites

Retain Waste Loads

From this dialog box, hold down the Control key on the keyboard while selecting sites by clicking the mouse on the site name. The Select All Sites button may be used to automatically mark all the sites; similarly, the Deselect All Sites button clears the marks on all sites. When all pertinent sites have been selected, click the Retain Waste Loads button.

If only some sites have been selected, SCM will present a list of the sites that have not been selected for verification by the user.
Clear Waste Loads Click on the Clear Waste Loads button to clear the displayed list of sites in the Clear Waste Loads dialog box. Otherwise, click on the Cancel button to return to the Retain Waste Loads dialog box.

If all sites were selected, SCM presents a dialog box for verification by the user.

3.3.3 The New Case Dialog Boxes

After a new case has been set up by the user, SCM automatically presents a series of dialog boxes to allow the user to change or add information in the case. These dialog boxes are the same as those used to edit existing cases. The titles of the dialog boxes are listed below as Steps 1-5, along with the section of the manual in which each individual dialog box is described.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Manual Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select Waste Type</td>
<td>4.1 Selecting the Current Waste Type</td>
</tr>
<tr>
<td>2</td>
<td>Edit Waste Loads</td>
<td>4.2 Editing Waste Loads</td>
</tr>
<tr>
<td>3</td>
<td>Edit TSD Scenario</td>
<td>4.3 Editing Treatment, Storage, and Disposal Scenarios</td>
</tr>
<tr>
<td>4</td>
<td>Edit Site Schedules</td>
<td>4.4 Editing Site Schedules</td>
</tr>
<tr>
<td>5</td>
<td>Edit Facility Profiles</td>
<td>4.5 Editing Facility Profiles</td>
</tr>
</tbody>
</table>

In this series, the user first chooses a waste type, and then works with the associated information for that waste type (Steps 2-5). After completing this sequence, SCM will present the same sequence again. This allows each waste type to be edited, one at a time. Note that the Facility Profile dialog box is presented for each waste type selected, even though the information presented applies to the entire case.

For information regarding how to use each individual dialog box, refer to Section 4, Editing Cases.

3.3.4 After Completing the New Case Dialog Boxes

Once the series of dialog boxes listed above has been completed for all the selected waste types, the user is returned to Step 1 (Select Waste Type). To leave the series, click on the Cancel button.

From this point, the user may now either run calculations (see Section 5.1 Running Calculations) or edit other case information (starting with Section 4.6)
Editing Inflation Factors). For either selection, it is a good idea to save the case at this point. For guidance on saving a new case, see Section 3.5 Saving a Case.

To return to editing information for the case, refer to Section 4. Editing Cases.

### 3.4 Opening a Case

**Open Case** To open an existing case when first starting SCM, select the Open Case button. The Open Case dialog box appears, allowing the user to select the appropriate case to open.

**Case, Open** Once in the system, open a case by selecting Case, Open from the menu bar.

SCM presents the Open Case dialog box which lists all SCM cases in the “Cases” list and their associated notes in the “Case Notes” list. The case at the top of the Cases list automatically appears highlighted. If this is not the desired case, use the mouse or arrow keys to highlight the appropriate case.

**Open Case** Once the desired case is highlighted, choose the Open Case button, or double click the case name to automatically open it. To not open a case at this time, select Cancel.

SCM copies the necessary case files and validates several case attributes, preparing the files for use. After SCM opens the selected case, if the calculations are not up-to-date, a dialog box appears asking the user to run the calculations now.
Select Yes to run the calculations based on the information currently in the case files. Refer to Section 5.1 Running Calculations for a more detailed description.

Select No to proceed to the next step in loading a case.

Once calculations have completed, or if they were already up-to-date, or if No is selected from the above dialog box, the user will be presented with the final question of selecting a waste type with which to work. Because SCM handles cases that contain more than one kind of waste, the type of waste to work with initially must be selected. This choice will be displayed even if the loaded case only has one type of waste.

Select Waste Type
Select the type of waste to work with by clicking on its name in the list, and then clicking on the Select Waste Type button.

Cancel
To not select a waste type at this time, select Cancel. However, a waste type must be selected to perform any of the editing functions within SCM. To choose a waste type to edit after leaving this dialog box, select Edit, Select Waste Type from the menu.

3.5 Saving a Case

Case, Save
To save modifications to an existing open case, select Case, Save from the menu bar.

The Save command appears light gray and is unavailable when saving a newly created case for the first time (see Case, Save As below), or if a case has just been opened, but modifications have not been made to it.
If an existing case has been opened and modified, selecting **Case, Save** updates the case with the new changes.

As with other applications, be sure to save often in case of unexpected problems.

**Case, Save As** To save a new case for the first time or to save a copy of an existing open case under a different name, select **Case, Save As** from the menu bar. When using “Save As,” a new name must be provided with which to save the case. If the same name is chosen, or the name of another case, an error message will be displayed.

**OK** For a case that was created that is being saved for the first time, the Save Case dialog box asks for a name for the case. Any notes about the case for future reference can also be entered here. When complete, select the **OK** button.

![Save Case Dialog Box](image)

To save a copy of an existing case under a different name, first open the case using the **Case, Open** command. Once the case is open, select **Case, Save As**. Modify the name of the case and enter any notes that might be useful for future reference. When complete, select the **OK** button.

### 3.6 Closing System Cost Model

**Case, Exit** Leave SCM by selecting **Case, Exit** from the menu bar at the top of the SCM window. If the menu bar is not available because another dialog box is being displayed, simply cancel or close the dialog box, then choose **Exit** from the **Case** menu.
If changes have been made to an open case, SCM asks whether to save those changes before exiting. SCM returns to the Program Manager or any other application that might be running.

3.7 Deleting a Case

Case, Delete  Once in the system, delete an existing case by selecting Case, Delete from the menu bar. The Delete Case dialog box appears and allows selection of the appropriate case to delete.

![Delete Case Dialog Box](image)

The Delete Case dialog box lists all SCM cases in the Cases list along with their associated notes in the Case Notes list. The case at the top of the Cases list automatically appears highlighted. If this is not the desired case to delete, use the mouse to click on the appropriate case. Note that the open case cannot be deleted. To delete the currently open case, a different case must first be opened.

Delete Case  Once the case to delete has been highlighted, choose the Delete Case button, or double click on the case name.

To not delete a case at this time, select Cancel to return to the menu.

3.8 Copying Cases

Case, Copy To  Once in the system, an existing case can be copied from the SCM directory on the hard disk to a floppy or another hard disk by selecting Case, Copy To from the menu bar. In other words, this function exports a copy of the case from its
source to another location. The Copy Case To dialog box appears and allows the selection of the appropriate case to copy.

![Copy Case To dialog box](image)

The Copy Case To dialog box lists all SCM-related cases in alphabetical order in the Cases list along with the associated notes in the Case Notes list. The case at the top of the Cases list automatically appears highlighted. If this is not the desired case to copy, click on appropriate case to highlight it.

**Destination Drive**

The Destination Drive box displays the letter of the drive to which the case will be copied.

Click the Drop-Down List button and select the appropriate drive. For example, to copy the case to the floppy drive, select A:

**Select Case**

Once the case to copy has been highlighted, and the appropriate destination drive has been selected, choose the Select Case button, or double click on the case name to automatically copy its files.

To not copy the case at this time, select the Cancel button to return to the menu.

**Case, Copy From**

Once in the system, a case can be copied from the floppy drive or another hard disk by selecting Case, Copy From from the menu bar. Using this command imports a copy of the case from its source to the drive where SCM resides. The Copy Case From dialog box appears and allows the selection of the appropriate case to copy.
The Copy Case From dialog box lists all SCM-related cases in alphabetical order in the *Cases* list and their associated notes in the *Case Notes* list. The case at the top of the *Cases* list automatically appears highlighted. If this is not the desired case to copy, click on another choice to highlight the appropriate case.

**Source Drive**  The *Source Drive* box displays the letter of the drive from which the case will be copied.

Click on the *Drop-Down List* button, then select the appropriate drive from the drop-down list. For example, to copy the case from the floppy drive, select A:

**Select Case**  Once the case to copy has been selected, and the appropriate source drive is highlighted, choose the *Select Case* button, or double click the case name.

To return to the menu and not copy a case at this time, select the *Cancel* button.

The Copy To and Copy From features are used to copy cases to and from two different disk drives. To copy a case onto the same drive in which it is currently saved, use *Copy, Save As*; see Section 3.5 *Saving a Case* for more information.

### 3.9 Merging Cases

**Case, Merge**  Two or more cases can be merged by selecting *Merge* from the *Case* menu selection. This function allows the waste loads, TSD scenarios, and all other case information from multiple cases to be combined into a single, new case that can be used on its own.
The Merge Cases dialog box appears and allows the selection of the cases to combine. The dialog box is shown below.

When presented with this dialog box, first type the name of the new case name that the merged cases will be put into by typing in the box labeled “Merged Case Name.”

Then, select the cases to be merged by clicking on them while holding down the Control key. To deselect a case, simply click on it a second time, again while holding down the Control key.

Only cases from the current version of SCM will be displayed in the list. To merge cases from previous versions, first open each case and save it as version 1.2.

When the cases to merge have been selected, click on the Merge Cases button.

The second step in merging cases is to choose from which case to take cost factors and facility profiles. Because this information cannot be merged, a single case must be selected from the dialog box below.
Cost factors, inflation factors, and facility profiles are taken from a single case.

Select case from which this data should be taken.

**Select Case** Click on the desired case from which to take cost factors and facility profiles to highlight the case and then click on the **Select Case** button.

The final step of merging cases is to select for each case that is being merged which sites and waste types to include, as shown in the dialog box below. Note that each waste type and site combination available in the case is displayed.

**Select Sites** Select the waste type/site combinations to bring into the merged case by clicking on them while holding down the **Control** key. To select all sites without having to select them individually, use the **Select All Sites** button. Similarly, use the **Deselect All Sites** button to select none of the sites. When done, click on the **Select Sites** button. The cases will be merged and saved into the specified case name. This process may take several minutes.
3.10 Combining Results

**Case, Combine Results**

The results of calculations of two or more existing cases can be combined by selecting **Combine Results** from the **Case** menu selection. This function allows the results of two or more cases to be combined into one "summary" case, allowing for the generation of reports for the combined case. Combined cases cannot be edited; only reports may be generated from them.

The Combine Case Results dialog box appears and allows selection of the cases to be combined. The dialog box is shown below.

The Combine Case Results dialog box lists all SCM cases in alphabetical order in the **Cases** list along with the associated notes in the **Case Notes** list. Hold down the **Control** key while clicking on the cases to select multiple cases. The selected cases will appear highlighted.

Only cases from the current version of SCM will be shown. To combine results of cases from previous versions, each case must be opened, run, and saved.

**Combined Case Name**

Input the filename in the Combined Case Name box to name the newly combined result case.

**Combine Cases**

Once the cases to combine and the new case name have been selected, select the **Combine Cases** button. To return to the menu, and not combine the cases at this time, select the **Cancel** button.
4. Introduction

The Edit menu allows altering of previously entered data. Data is edited to correct entry mistakes or alter specific components of a case so that cases can be compared for cost analyses.

SCM accepts data input from four required categories and four optional categories. The four required categories are waste loads, TSD scenario, site schedules, and facility profiles. The optional categories, which allow individual refinement of select model assumptions, are inflation factors, cost factors, other site costs, and WBS scale factors.

Data from the four required categories must be complete for the program to work. It is at the user's discretion whether to make any changes to the four optional categories. Remember, for an existing case the original data defaults may have been overwritten or erased by the previous user of that case.

When editing a case, use the selections on the Edit menu bar to select any of the four required categories and any of the four optional categories for editing. Data from the waste loads, TSD scenarios, site schedules, other site costs, and WBS scale factors are different for each waste type in the case. To edit a waste type other than the currently selected waste type, use the Edit, Select Waste Type menu command, as described in Section 4.1 Selecting the Current Waste Type.

It is recommended that edits to the required categories should be made in the order listed in the menu bar, because edits in certain categories may require adjustments from other categories below them on the menu list. For example, the input necessary for the TSD scenario is dependent on the waste loads, and certain changes to the waste loads may require additional input in the TSD scenario.

Once the information is entered, the model results can be calculated using the Run! command. SCM determines the operating schedules, capacities, and costs for both new and existing facilities.
To use the editing features, open a case (Section 3.4 Opening a Case) or start a new one (Section 3.3 Creating a New Case). When working with a new case, SCM automatically leads the user through all four of the required input categories.

### 4.1 Selecting the Current Waste Type

**Edit, Select Waste Type** SCM can store more than one type of waste (MLLW, TRUW, etc.) in a single case. When editing a case, SCM allows editing on only one type of waste at a time. Use the **Edit, Select Waste Type** menu command to select the type of waste for which to edit data.

![Select a Waste Type]

**Select a Waste Type** To choose a waste type to edit, click on the type of waste in the list of available waste types, and choose the **Select Waste Type** button. After selecting a waste type, its name is displayed in the status bar (see Section 3.2.2 Viewing the Status Bar).

To leave the Select Waste Type dialog box without selecting a waste type to edit, select the **Cancel** button.

### 4.2 Editing Waste Loads

**Edit, Waste Loads** The **Edit, Waste Loads**, Edit function allows editing of the quantity of waste present and generated at each site. For a given site and waste subtype, the legacy waste, rate of waste generation, and waste densities by waste category default to the values obtained using site-specific data. These values may be changed by the user.

For each site and waste subtype that has waste values, it is possible to enter the number of years of waste generation, beginning year of waste generation, and location and duration of pre-treatment storage. This information will be used to determine the quantity of waste and when the waste will need to be processed.
To edit waste loads of an existing case, select **Edit, Waste Loads, Edit** from the menu bar to bring up the Edit Waste Loads: Select Site dialog box.

Select the site associated with the waste loads that require editing. A list of all available sites appears in the dialog box as shown below.

SCM displays the sites in alphabetical order. Use the Vertical Scroll Bar to display sites that are not currently shown.

**Edit Site** Highlight the appropriate site by clicking on it. Select the **Edit Site** button to edit waste loads for the selected site, or double click on the site name.

After the waste loads for a site have been changed, the name of the changed site will appear with an asterisk ("*"") preceding it in the Edit Waste Loads: Select Site dialog box. This is to emphasize that changes have been made to the information for that site. This standard is used on other dialog boxes throughout SCM.

**Done** Select **Done** to return to the menu from the Edit Waste Loads: Select Site dialog box.

Once the site is selected, SCM displays the Edit Waste Loads dialog box, shown below.
4.2.2 Selecting the Site Generation Years and Beginning Year

For the current waste subtypes is saved. When selecting a different waste subtype, information that has been entered will be overwritten.

Select a waste subtype from the drop-down list preceded. Selecting a waste subtype causes the rest of the information in the dialog box to be updated. The subtype list also allows you to select which waste is selected in the Waste Loads dialog box, the waste subtype selector, located in the Generation section.
calculate the total waste for each waste category. The total waste is calculated when Enter is pressed or when the cursor is moved to another input box on the dialog box.

**Beginning Year**  The **Beginning Year** box displays the first year of waste generation at the site, for the selected waste type and subtype. This is also the year for which legacy volumes are specified.

Use the up or down arrow to increase or decrease the year in one year increments, or click on the number and type the new value.

**4.2.3 Entering Pre-Treatment Information**

**Pre-Treatment**  Information regarding the storage of waste prior to treatment is selected from the **Pre-Treatment** group box. These choices affect the storage time for waste before treatment begins. Enter the number of years the pre-treated waste is stored and whether the waste is to be stored at the generating site or the treatment site. This selection is made for each site and waste type/subtype in a given case.

**Storage Years**  The **Storage Years** box displays the number of years the pre-treated waste is stored.

Use the up or down arrow to increase or decrease this value in one year increments, or click on the number and type the value.

The site option buttons (Generating or Treatment) determine whether pre-treated waste is stored at either the generating site or the treatment site.

**Generating**  A marked **Generating** option button indicates that the pre-treated waste is stored at the generating site.

**Treatment**  A marked **Treatment** option button indicates that the pre-treated waste is stored at the treatment site.

The user may toggle between these two choices. If the storage years is 0, then this option is displayed in light gray and is unavailable.

**4.2.4 Entering Waste Stream Volume and Generation Rates**

When a waste subtype is selected, the current values for all associated information are displayed. Data may be entered into any of the waste stream fields. Waste streams are categories of waste that are distinguishable by their origin, physical state or form, composition, radioactivity, or a combination of these characteristics. Because of screen size constraints, the waste categories are presented in two sets.

For each waste stream, enter the legacy volume in cubic meters (Volume m$^3$) and the generation rate in cubic meters per year (Generation Rate m$^3$/yr). The
legacy volume is the original, or existing, volume at the start of the beginning year of waste generation. For default values, this is the waste present as of the start of the current year. The generation rate is the estimated rate of waste generation at that site. The third column automatically totals the waste volume to treat, and is calculated by adding the legacy volume to the product of the generation rate and the site generation years. The calculation is shown below:

$$\text{Legacy Volume (m}^3\text{)} + \left[\text{Generation Rate (m}^3/\text{yr}) \times \text{Site Generation Years (yr)}\right] = \text{Volume of Waste Requiring Treatment (m}^3\text{)}.$$  

To change the waste values, click within a cell to position the cursor and enter the appropriate number (either a whole number or a decimal). The number is entered by moving to another cell or pressing the Tab key. SCM computes the treatment volume using the calculation shown above and the values entered.

**Second Set** The 32 waste streams are divided into two separate sets. When the Edit Waste Loads dialog box is first accessed, SCM displays the first set of waste streams. When viewing the first set of data, the Second Set button appears at the bottom of the dialog box. Use this button to display the second set of waste streams.

**First Set** When viewing the second set of waste streams, the First Set button switches the user to the screen which displays the first set of waste streams.

Whenever switching between editing the first and second sets, changes made will be saved and undo edits will no longer be available.

The waste stream categories in the first set are:

**Wastewaters** - waters that have been used and contain contaminants, such as those used in a manufacturing process.

**Aqueous Slurries** - watery mixtures of insoluble matter such as mud or lime.

**Aqueous/Halogenated Organic Liquids** - flowing, watery carbon compounds combined with either fluorine, chlorine, bromine, iodine, or astatine.

**Aqueous/Nonhalogenated Organic Liquids** - flowing, watery substances that contain carbon compounds in the form of plant or animal matter.

**Halogenated Pure Organic Liquids** - flowing, watery pure carbon compounds combined with either fluorine, chlorine, bromine, iodine, or astatine.

**Nonhalogenated Organic Liquids** - flowing, watery substances that contain carbon compounds in the form of plant or animal matter.

**Inorganic Particulates** - minute particles of mineral matter produced by drilling or boring, or obtained from settling operations.
**Inorganic Sludges** - precipitated solid mineral matter produced by water and waste treatment processes.

**Salt Waste** - waste that contains an abundance of salt.

**Solidified Inorganic Process Residue** - mineral matter firmly bound together as a result of time, pressure, or chemical reaction.

**Inorganic Chemicals** - mineral matter obtained by a chemical process.

**Organic Particulates** - minute particles of plant or animal matter obtained by drilling, boring, or settling operations.

**Organic Sludges** - precipitated solids of plant or animal matter produced by water and waste treatment processes.

**Organic Chemicals** - carbon compounds obtained by a chemical process.

**Contaminated Soils** - polluted soil extracted from the upper layer of the Earth’s crust.

**Contaminated Soils/Debris** - polluted soil and debris extracted from the upper layer of the Earth’s crust.

The waste stream categories in the second set are:

- **Metal Debris** - an accumulation of metallic fragments.
- **Inorganic Nonmetal** - contains neither carbon compounds nor metallic matter.
- **Asbestos Debris** - debris containing asbestos, which is an inert fibrous mineral used as a noncombustible, nonconductive, or chemically-resistant material.
- **Organic Debris** contains carbon compounds in the form of plant or animal matter.
- **Heterogeneous Debris** - contains a mixture of organic and inorganic matter.
- **Lab Packs with Metals** - laboratory-controlled concentrated masses that include metals.
- **Elemental Mercury** - a heavy, silver-white, poisonous metallic element.
- **Elemental Lead** - a malleable metal often used to shield against radioactivity.
- **Beryllium** - a gray, light, strong, brittle metallic element often used as a hardening agent in alloys.
- **Batteries** - cells that furnish electric current.
- **Reactive Metals** - metals that respond to a chemical or electrical stimulus by altering its chemical structure.
Explosives/Propellants - substances that expand rapidly when placed in certain environments.

Compressed Gases/Aerosols - substances similar to air in density that are reduced in size or volume using greater than atmospheric pressure.

Unknown Liquids - unidentified flowing liquids.

Unknown Solids - unidentified particles that are neither gaseous nor liquid.

Waste Suitable for Disposal - waste that requires no further treatment to meet requirements for disposal.

4.2.5 Entering Waste Stream Densities

Densities To view or enter the density of each waste stream, select the Densities button.

This dialog box displays the densities of the selected waste streams in kilograms per cubic meters (Density kg/m³). Default values exist for all densities, but are displayed only for waste streams with nonzero waste loads.

<table>
<thead>
<tr>
<th>Density kg/m³</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>981.0000</td>
<td>Wastewaters</td>
</tr>
<tr>
<td>942.0000</td>
<td>Aqueous slurries</td>
</tr>
<tr>
<td>942.0000</td>
<td>Aqueous/halogen. organic liquids</td>
</tr>
<tr>
<td>942.0000</td>
<td>Aqueous/nonhalogen. organic liquids</td>
</tr>
<tr>
<td>942.0000</td>
<td>Halogenated pure organic liquids</td>
</tr>
<tr>
<td>942.0000</td>
<td>Nonhalogenated pure organic liquids</td>
</tr>
<tr>
<td>981.0000</td>
<td>Inorganic particulates</td>
</tr>
<tr>
<td>981.0000</td>
<td>Inorganic sludges</td>
</tr>
<tr>
<td>981.0000</td>
<td>Salt waste</td>
</tr>
<tr>
<td>981.0000</td>
<td>Solidified inorganic process residue</td>
</tr>
<tr>
<td>981.0000</td>
<td>Inorganic chemicals</td>
</tr>
<tr>
<td>981.0000</td>
<td>Organic particulates</td>
</tr>
<tr>
<td>981.0000</td>
<td>Organic sludges</td>
</tr>
<tr>
<td>981.0000</td>
<td>Organic chemicals</td>
</tr>
<tr>
<td>1198.0000</td>
<td>Contaminated soils</td>
</tr>
<tr>
<td>1100.0000</td>
<td>Contaminated soils/debris</td>
</tr>
</tbody>
</table>

To alter default densities, enter the densities in the same manner as data are entered into the volume and generation rate on the Edit Waste Loads dialog box. Densities are required for any waste stream with a specified waste load.

Done When finished, select the Done button to return to the Edit Waste Loads dialog box.
4.2.6 Navigating the Edit Waste Loads Dialog Box

Once the legacy volume, generation rate, density, and pre-treatment storage information has been entered for the appropriate waste streams, continue entering waste load information for other sites, or move on to other sections of SCM.

Clear Loads
To clear the waste loads and set them to zero, select the Clear Loads button.

A dialog box appears to confirm the clearing of waste loads for the currently selected site and waste subtype. Select Yes to confirm this choice; once this command is executed it cannot be undone. Select No to leave this dialog box without clearing the waste loads.

Undo Edits
If incorrect information is entered into the Edit Waste Loads dialog box, all entries can be returned to their previous settings by selecting the Undo Edits button.

Until data in the dialog box are changed, the Undo Edits button remains light gray and unavailable. Changes made in this dialog box will be saved if the Next Site, Prior Site, or waste subtype selectors are chosen, and Undo Edits will become unavailable.

Next Site
To enter waste load information for the next site (in alphabetic order), select the Next Site button and repeat the Edit Waste Loads procedure (in Section 4.2 Editing Waste Loads). Changes made to the current site will first be saved automatically.

Prior Site
To enter waste load information for the prior site (in alphabetic order), select the Prior Site button and repeat the Edit Waste Loads procedure. Changes made to the current site will first be saved automatically.

Done
To move from the Edit Waste Loads dialog box back to the Edit Waste Loads: Select Site dialog box, select the Done button.

Choose the Edit Waste Loads dialog box for any of the 51 sites. To edit the waste loads of another site, double click on the site name and follow the Edit Waste Loads procedure.
4.2.7 Clearing Waste Loads

**Edit, Waste Loads, Clear** Select the **Edit, Waste Loads, Clear** function to clear some or all of the waste loads from the current case for the current waste type.

In this dialog box, use the mouse to click on the sites for which waste loads should be retained. To select more than one site, hold down the **Control** key while clicking on site names.

- **Select All Sites** To select all sites automatically, click on **Select All Sites**. From here, use the mouse with the **Control** key depressed to deselect individual sites from the list.
- **Deselect All Sites** To deselect all sites automatically, click on **Deselect All Sites**.
- **Cancel** To not clear waste loads at this time, select **Cancel**.
- **Retain Waste Loads** When the sites with waste loads that should be retained have been selected, select **Retain Waste Loads**. SCM presents a list as confirmation of the sites that will have their waste loads cleared.
Clear Waste Loads for:

- Argonne National Laboratory East
- Argonne National Laboratory West
- Bettis Atomic Power Laboratory
- Fermi National Atomic Laboratory
- Idaho National Engineering Laboratory
- Inhalation Toxicology Research
- Knolls - Kesselring
- Knolls - Schenectady

**Clear Waste Loads** From this dialog box, select **Clear Waste Loads** to confirm the action and clear waste loads from the selected sites.

**Cancel** Select **Cancel** to return to the previous dialog box.

---

**4.3 Editing Treatment, Storage, and Disposal Scenarios**

Editing TSD scenarios is the second of the four required categories. TSD scenarios may be edited by either map or table. When making entries use the map, use the table as a check to see if all required TSD selections are complete.

**Edit, TSD Scenario, by Map** Select **Edit, TSD Scenario, by Map** to access the Edit TSD Scenario: Select Site dialog box. The map for the waste site will appear once the site is selected.

**Edit, TSD Scenario, by Table** Select **Edit, TSD Scenario, by Table** to access the Table dialog box.

When editing TSD scenarios, select the TSD sites for a particular site's waste loads and for a specific waste type and subtype. The type of waste, treatment method, and TSD locations may significantly impact lifecycle costs and planning of new facilities. SCM requires a TSD scenario to be completed for each site that has a waste load.

**4.3.1 Editing TSD Scenarios by Map**

Use the Edit TSD Scenario by Map dialog box to enter where the waste that comes from the selected waste generating site is to be treated, stored, and disposed.
Select Edit, TSD Scenario, by Map to access the Edit TSD Scenario: Select Site dialog box. To access the map, select a site from the Edit TSD Scenario: Select Site dialog box. A list of those sites with waste loads defined appears in a dialog box as shown below. The map for the waste site will appear once a site is selected.

SCM displays the sites in alphabetical order. Use the Vertical Scroll Bar to display sites that are not currently shown.

After changing TSD data for a site and returning to the Edit TSD Scenario: Select Site dialog box, the name of the changed site will appear with an asterisk ("*"), preceding it. This is to emphasize that changes have been made to the information for that site.

Highlight the appropriate site by clicking on it. Then, select the Edit Site button to edit the highlighted site’s TSD scenario using the TSD Locations dialog box.

Select Done from this dialog box to return to the menu.

Double click on the site name to access the TSD Locations dialog box. This will automatically activate the Map dialog box.
A map of the United States appears, marked with codes representing each of the 51 sites that generates waste. Refer to Appendix I: Abbreviations and Codes for a list of site names and their associated codes.

**Treatment Option**
The contents of the Treatment Option box vary based on the waste type and subtype selected. Click on the Drop-Down List button and choose the appropriate treatment option.

A default treatment option is always provided, and in most cases this value will not need to be altered.

**Waste Subtype**
For each site, the waste subtypes with assigned waste loads appear on the map in a drop-down list. Enter TSD scenario information for each waste subtype, one at a time. If only one subtype has assigned waste load information, SCM displays that subtype in light gray and the drop-down box is unavailable. In this instance, enter TSD scenario information for the displayed waste subtype.

To aid in the selection of TSD sites, the location of the waste generating site is highlighted with a red background. This shows visually how far sites under consideration for TSD selection are from the generating site. The distances between the various sites can have an impact on the costs.

**Treatment**
The Treatment box displays the waste treatment site code. The box is blank until a selection is made. To enter the site code, click within the box to position the cursor, then click on the desired site code button on the map. SCM enters the site code into the Treatment box. The site’s code may also be typed into the entry box, rather than picking it from the map.

**Truck/Rail**
The button next to the Treatment box selects whether the waste will be transported to the treatment site by Truck or by Rail.
When a site code is selected, this button defaults to Rail if transportation is required. Transportation may then be toggled between Truck and Rail by clicking on the button. If no transportation is required, None appears in light gray and is unavailable for selection. If N/A appears in the button, no transportation data is available for this route, and transportation costs will be zero. If only truck or rail is available (but not both), the button will display the transportation method in light gray text, indicating that the selection cannot be changed.

**Storage**  
The Storage box displays the storage site code where the waste will be stored after treatment. The box is blank until a selection is made.

To enter the site code, click within the box to position the cursor, then click on the desired site code button. SCM enters the site code into the Storage box. The site code can also be entered into the entry box, rather than picking it from the map.

**Truck/Rail**  
The button next to the Storage box selects whether the waste will be transported to the storage site by Truck or by Rail.

**Storage Years**  
The Storage Years box displays number of years the waste will be stored. Use the up or down arrow to increase or decrease this number in one year increments.

**Disposal**  
The Disposal box displays the waste disposal site code. The box is blank until a selection is made.

To enter the site code, click within the box to position the cursor, then click on the desired site code button. SCM enters the site code into the Disposal box. The site code can also be entered into the input box, rather than picking it from the map.

**Truck/Rail**  
The button next to the Storage box displays whether the waste will be transported to the disposal site by Truck or by Rail.

Once TSD scenario information for the selected site has been entered, TSD scenario information for additional sites may also be entered. TSD scenarios must be selected for each site with waste loads for SCM to calculate costs.

**Done**  
To move back to the Edit TSD Scenario: Select Site dialog box select the Done button from the TSD Map.

**Undo Edits**  
If incorrect information is entered into the TSD Locations dialog box, all entries for the currently selected waste subtype can be returned to their previous settings by selecting the Undo Edits button.

Until data in the dialog box are changed, the Undo Edits button remains light gray and unavailable. Changes made in this dialog box will be saved upon choosing the Next Site, Prior Site, or waste subtype selectors, and Undo Edits will become unavailable.
**Next Site** To enter TSD information for the next site (alphabetically), select the **Next Site** button and follow the Edit, TSD Scenario, by Map procedure. SCM automatically saves changes before moving to the next site.

**Prior Site** To enter TSD information for the previous site (alphabetically), select the **Prior Site** button and follow the Edit, TSD Scenario, by Map procedure. SCM automatically saves changes before moving to the prior site.

**Table** To access the TSD Scenario Table, select the **Table** button while in the Map dialog box.

### 4.3.2 Editing TSD Scenarios by Table

While TSD scenarios can be edited graphically using the map, the table can be used to enter data instead. The Table can also be used as a check for entries done in the Map.

**Table** To access the table from the map dialog box, select the **Table** button.

Select **Edit, TSD Scenario, by Table** to access the Table dialog box from the edit menu.

The TSD Table displays TSD scenarios for each waste generating site for the currently selected waste type. The columns display the site codes for the generating, treatment, storage, and disposal sites and the mode of transport to each location. The number of years of waste storage is also displayed.

The **Waste Gen. Site** column displays the site codes for sites that generate waste. Refer to **Appendix I: Abbreviations and Codes** for a list of site names.
and their associated codes. One row appears for each waste subtype with associated wastes at the generating site.

The **Waste Type** column displays a code representing each waste subtype.

The **Treat Opt** column displays the treatment option that will be used to treat the waste.

The **Treatment Trans. Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Treatment Site** column displays the waste treatment site code.

The **Storage Trans. Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Storage Site** column displays the post-treatment waste storage site code.

The **Store for (years)** column displays the number of years the waste will be stored.

The **Disposal Transportation Mode** column displays a “T” for truck transportation or an “R” for rail transportation. If transportation is not necessary, or there is not any data available for that route, the column will be blank, and the associated transportation costs will be zero.

The **Disposal Site** column displays the waste disposal site code.

The TSD Scenario Table is displayed alphabetically by waste generating site code. SCM can only display a limited number of sites on the TSD Scenarios dialog box at one time. Use the following navigation buttons to locate the waste generating site to edit.

**Prior Set** To view the TSD scenarios for the previous set of sites, select the **Prior Set** button.

**Next Set** To view the TSD scenarios for the next set of sites, select the **Next Set** button.

**Top** To view the site TSD scenarios at the beginning of the table, select the **Top** button.

**Bottom** To view the site TSD scenarios at the end of the table, select the **Bottom** button.

Once the site TSD scenario to edit has been selected, refer to *Section 4.3.2.2 Entering TSD Data* for more guidance.

**Map** To view or enter TSD data graphically, select the **Map** button at the bottom of the dialog box, and refer to *Section 4.3.1 Editing TSD Scenarios by Map* for more guidance.
When done editing TSD scenarios, select the Done button.

4.3.2.2 Entering TSD Data

To enter TSD data in the Table dialog box, click on the row of interest and the TSD Scenario dialog box appears.

The selected waste generating site name and waste subtype appear at the top of the TSD Scenario dialog box.

The waste subtype label is displayed for information only. To enter TSD information for a different waste subtype, return to the TSD Table dialog box and choose the appropriate row.

- **Treatment Option**
  - The Treatment Option box displays the waste treatment method. The list displayed will vary depending on the current waste type.

- **Treatment Site**
  - The Treatment Site box displays the waste treatment site code.
  - Click on the Drop-Down List button and select the appropriate treatment site.

- **Transport by**
  - The Transport by box displays whether waste will be transported to the treatment site by truck or by rail.
  - Click on the Drop-Down List button and select Truck or Rail. If transportation is not necessary or there is not any data available for that route, the box appears light gray and unavailable. If this column is blank, associated transportation costs will be zero.
**Storage Site**  The Storage Site box displays the post-treatment waste storage site code. Click on the Drop-Down List button and select the appropriate storage site.

**Transport by**  The Transport by box indicates how waste will be transported to the storage site.

**Storage for**  The Storage for box displays the number of years the waste will be stored. Use the up or down arrow to increase or decrease this number in one year increments.

**Disposal Site**  The Disposal Site box displays the waste disposal site code. Click on the Drop-Down List button and select the appropriate treatment site.

**Transport by**  The Transport by box displays how waste will be transported to the disposal site.

**Undo Edits**  If incorrect information was entered into the TSD Scenario dialog box, all entries can be returned to their previous settings by selecting the Undo Edits button. Until data in the dialog box are changed, the Undo Edits button remains light gray and unavailable.

**Done**  When TSD data entry for the selected waste generating site and waste subtype is complete, select the Done button to return to the TSD Table.

---

### 4.4 Editing Site Schedules

Editing site schedules is the third of the four required categories.

**Edit, Site Schedules**  To edit site schedules of an existing case, select Edit, Site Schedules from the menu bar.

Once the quantity of waste and the TSD scenario have been entered, SCM allows the user to edit the scheduling of new treatment, storage, and disposal facilities at a site. This scheduling information will affect costs and the scheduling of funds for the project. SCM defaults to a construction schedule that starts in 1995. The number of construction years defaults to three.

A list of all sites specified in TSD scenarios appears on the left side of the Site Schedule dialog box. SCM displays the sites in alphabetical order. Use the vertical scroll bar to scan the available sites. To edit a particular site schedule, select the associated site.

If scheduling information for a site is changed, and then another site is selected, SCM will automatically save the modified information before displaying information for the newly selected site. SCM denotes sites that have been changed with an asterisk ("*" preceding the site code.

---

44 • 4. Editing Cases
Waste Subtype

Use the Waste Subtype selector to choose a subtype for changing site schedules. This selector will display all waste subtypes associated with the selected waste type for the selected site. When selecting a new waste subtype, SCM first saves the changes that have made to the current waste subtype.

To edit a particular schedule item, use the arrows to increase or decrease the numbers in the following boxes (detailed in Section 4.4.1 Treatment Site Schedule) in increments of one or click on the box and enter the number.

### 4.4.1 Treatment Site Schedule

**Sites**
The Sites button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for treatment. The number of sending sites appears next to the Sites button.

**Beginning Year of Construction**
The Beginning Year of Construction box displays the year in which construction of the proposed treatment site will begin. A beginning year must be chosen to allow beginning of construction at the site for treatment.

**Number of Years of Construction**
The Number of Years of Construction box displays how many years of construction the treatment site will require. The default of three years is not based on any specific data.

**Number of Years of Operation**
The Number of Years of Operation box displays how many years of operation are expected from the treatment site. This should be based on the number of years sites will be sending waste to this site for treatment.
4.4.2 Storage Site Schedule

**Sites**
The Sites button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for storage. The number of sending sites appears next to the Sites button.

**Number of Years of Construction**
The Number of Years of Construction box displays how many years of construction the storage site will require. The default of three years is not based on any specific data.

4.4.3 Disposal Site Schedule

**Sites**
The Sites button accesses the Sending Sites display dialog box. From this dialog box, the user can view the site names and codes of those sites sending waste of the selected subtype to the highlighted site for disposal. The number of sending sites appears next to the Sites button.

**Number of Years of Construction**
The Number of Years of Construction box displays how many years of construction the disposal site will require. The default of three years is not based on any specific data.

Once TSD schedules have been edited for the selected site, another site may be chosen to edit.

**Undo Edits**
If incorrect information is entered into the Site Schedule dialog box, the Undo Edits button can be selected to return all entries to their previous settings.

Until data in the dialog box is changed, the Undo Edits button remains light gray and unavailable. Choosing a site from the site list, or selecting a waste subtype will save all changes and make Undo Edits unavailable.

**Done**
When all site schedules have been edited, select the Done button to return to the SCM menu.

4.5 Editing Facility Profiles

Editing Facility Profiles is the last required SCM editing category.

**Edit, Facility Profiles**
To edit facility profiles, select Edit, Facility Profiles from the menu bar.

Once the waste load, TSD scenario, and site scheduling information has been chosen, the information for existing facilities can be reviewed. SCM databases contain information about the known existing facilities at the time of the release of the SCM program. The default database also has information for modules available at facilities and the waste type dedication for the modules.
An existing case may have altered capacities and waste dedications, and other facilities or modules may have been added. The capacities and waste type dedication for modules in the default database can be changed, but an existing facility cannot be deleted from the default database. Other facilities or modules can be added, however.

Existing facilities and modules that are part of the default database are designated on-screen with a [D] label. Facilities or modules added by the user are designated with a [U] label.

When the user adds an existing facility, SCM requires the following information: when will it be operational and for how long, what module types will exist at the facility, what are the module capacities and what types of waste can be handled by these modules, and how much labor will be involved in operation?

Before editing facility profiles, select the associated site. A list of all available sites appears in the dialog box, as shown below.

```
AM Ames Laboratory
AE Argonne National Laboratory East
AW Argonne National Laboratory West
BC Battelle Columbus Laboratory
BA Bettis Atomic Power Laboratory
BN Brookhaven National Laboratory
CN Charleston Naval Station
CI Colonie Interim Storage Site
ET Energy Technology Engineering Center
FE Fermi National Atomic Laboratory
FM Fernald Environmental Management Project
GA General Atomics
GE General Electric Vallecitos
GJ Grand Junction Project Office
HA Hanford

Edit Site   Done
```

SCM displays the sites in alphabetical order. Use the vertical scroll bar to locate the desired site.

**Edit Site** Highlight the appropriate site by clicking on it. Select the Edit Site button to edit the highlighted site’s facility profiles using the Facility Profiles dialog box; or, double click on the site name to access the Facility Profiles dialog box.
The selected site name appears at the top of the Facility Profiles dialog box.

4.5.1 Editing Facility Information

There may be numerous facilities at any given site. SCM defaults to the facility and module information available at the time of the release of SCM. A module must be associated with a specific facility. Therefore, information about the facility must be entered first, and then information about the modules associated with them may be entered.

Existing facilities are classified into two categories: default and user defined. Default facilities, denoted by a [D] before their name in the facility list, are facilities that exist at the time of release of SCM. User-defined facilities, denoted by a [U] before their name in the facility list, are facilities added by a user specifically to the current case.
4.5.1.1 Adding New Facilities

- **Add Facility** To add a facility to the **Facilities** list, select the **Add Facility** button on the Facility Profiles dialog box.

![Add Facility Dialog Box]

**Facility Name** The **Facility Name** box displays the name of the facility. Enter the name of the facility in the box. Each facility at a site must have a unique name.

**Year Available** The **Year Available** box displays the year the facility will begin operation. Use the arrows to increase or decrease this number in one year increments.

**Years Operating** The **Years Operating** box displays how many years the facility will operate. Use the arrows to increase or decrease this number in one year increments.

**Undo Edits** If incorrect information was entered into the Add Facility dialog box, return all entries to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

**Done** When the facility information is completely entered, select the **Done** button from the Add Facility dialog box to return to the Facility Profiles dialog box.

The new facility name appears in the **Facilities** list on the Facility Profiles dialog box. Facilities added by the user will always be labeled with a [U] in the facilities list, indicating that the facility is user-defined.

**Cancel** Select the **Cancel** button to return to the Facility Profiles dialog box without adding the facility.

4.5.1.2 Editing Existing Facilities

Edit existing facilities using the Edit Facility dialog box. Existing facilities appear in the **Facilities** list at the top of the Facility Profiles dialog box.

Highlight the existing facility to edit using the Facility Profiles dialog box. Note the **Operating Years** of the existing facility appear to the right of the facility name.
**Edit Facility** Select the **Edit Facility** button to edit the highlighted facility using the Edit Facility dialog box.

![Edit Facility dialog box](image)

**Facility Name** The **Facility Name** box displays the name of the highlighted facility from the Facility Profiles dialog box. The entry can be changed only if the facility is user-defined; if it is a default facility, the name will appear in light gray text.

For a user-defined facility, a new name can be entered in the **Facility Name** box to replace the existing one.

**Year Available** The **Year Available** box displays the year in which the facility will begin operation. Use the arrows to increase or decrease this number in one year increments.

**Years Operating** The **Years Operating** box displays the number of years the facility will operate. Use the arrows to increase or decrease this number in one year increments.

**Undo Edits** If incorrect information was entered into the Edit Facility dialog box, return all entries to their previous settings by selecting the **Undo Edits** button.

Until data in the dialog box are changed, the **Undo Edits** button remains light gray and unavailable.

**Done** When editing has been finished for the facility, select the **Done** button to record changes and return to the Facility Profiles dialog box. The edited facility name appears in the **Facilities** list on the Facility Profiles dialog box.

**Cancel** Select the **Cancel** button to return to the Facility Profiles dialog box without accepting the changes.

### 4.5.1.3 Deleting Existing Facilities

Delete existing facilities using the Facility Profiles dialog box. Only user-defined facilities, designated with a [U] to the left of the name of the facility, can be deleted. Facilities appear in the **Facilities** list at the top of the Facility Profiles dialog box.

Highlight a user-defined facility for deletion.
Delete Facility  Select the **Delete Facility** button to delete a user-defined facility and its associated information.

### 4.5.2 Editing Module Information

Just as each site can have more than one facility, each facility can have more than one module. For example, a site can have both an incinerator (INCIN) and a grouting module (GROUT).

A single facility, however, cannot have more than one module of the same type. For example, two incinerators cannot exist at the same facility at Hanford.

Enter information about specific modules using this section of the Facility Profiles dialog box.

#### 4.5.2.1 Adding Modules

Each facility can have a number of modules that are currently available. The lower portion of the Facility Profiles dialog box lists the modules that are available at the selected facility. Just as with facilities, modules are designated as default ([D]) or user-defined ([U]).

**Add Module**  To add a module to the **Modules** list, select the **Add Module** button on the Facility Profiles dialog box. The module information supplied will be added to the currently selected facility.

The Add Module dialog box appears. Because modules are components of facilities, a facility must exist before a module can be added. Refer to *Section 4.5.1.1 Adding New Facilities* for a more detailed description.
**Module**  The Module box displays the module codes. Click on the Drop-Down List button and select the appropriate module code. Refer to Appendix A1.3 Module Codes to review a list of module codes.

**Capacity**  The Capacity (kg/yr) box displays the amount of waste that the module can handle. Treatment module capacity is a rate measured in kilograms per year (kg/yr). Storage and disposal module capacity is a volume measured in cubic meters per year (m³/yr).

Highlight the box, or click within it to position the cursor, then enter the appropriate number.

In the Module Capacity Waste Dedication group, use the Drop-Down List button to select a waste type and subtype. Then enter the percentage of that module dedicated to handling the specified waste type and subtype.

**Waste Type**  The Waste Type box displays all waste types supported by SCM. Select a waste type from the drop-down list.

**Waste Subtype**  The Waste Subtype box displays the waste subtypes available for the waste type selected. Select a waste subtype from the drop-down list.

**Percentage**  In the Percentage box, enter the percentage of the module that will be dedicated to handling the waste type and subtype selected above.

Use the up or down arrow to increase or decrease this number by five percent. Either click within another box or press the Tab key to display the selection. The box to the right displays the module's percentage capacity for each...
combination of waste type and subtype. Enter as many combinations of waste types and subtypes as necessary. The sum of these percentages must total 100% for the Done button to become available.

Done  When the entering of module information is finished, select the Done button from the Add Module dialog box to return to the Facility Profiles dialog box. The new module name appears in the Modules list on the Facility Profiles dialog box.

The Done button will not be available until waste dedications total 100%. It will also be unavailable if the module selected to add is already defined at the current facility.

Cancel  Select the Cancel button to return to the Facility Profiles dialog box without accepting changes.

4.5.2.2 Editing Existing Modules

Edit existing modules by selecting the Edit Module button. Existing modules appear in the Modules list at the bottom of the Facility Profiles dialog box. The Edit Module dialog box appears as shown below.

The Edit Module dialog box operates with the exact same controls as the Add Module dialog box, except that the Module selector is unavailable for default existing modules (modules marked with a [D] in the Module list). Refer to Section 4.5.2.1 Adding Modules above for more information.
4.5.2.3 Editing Module Work Breakdown Structures

WBS To edit the work breakdown structure of a selected module, highlight the desired module, then select the WBS button on the Facility Profiles dialog box. The WBS dialog box appears as shown below.

While SCM calculates the costs associated with module Operations and Maintenance (O&M, WBS 3.0) and Decontamination and Decommissioning (D&D, WBS 4.0) for existing facilities, any costs the user wants to include for Pre-operations and Facility Construction Costs may be entered here. The user may also override the calculated O&M and D&D costs by making entries in this dialog box.

If user-specified cost and full-time equivalent (FTE) values are not entered for WBS 3.0 (Operations & Maintenance) and WBS 4.0 (Decontamination & Decommissioning), SCM calculates these values using existing module information. However, if costs are entered for one module at a site, then costs for all modules of that type at the site (at different facilities) will be replaced.

The name of the selected facility and module appears in the top left of the dialog box. The Work Breakdown Structure list displays the specific tasks associated with the construction and operation of a module. Enter the appropriate information into the boxes to the right.

Cost K$/Year The Cost K$/Year box displays the yearly cost of the associated WBS in thousands of dollars (K$/year).

Click within the box to position the cursor and type an entry.

FTEs/Year The FTEs/Year box displays the number of FTE employees required for the associated WBS per year. An FTE is an employee who works 8 hours per day, 40 hours per week, or 2,080 hours per year.

Click within the box to position the cursor and then make an entry.
**Years of Expense**
The *Years of Expense* box displays the number of years each cost is incurred. Cost and FTE is multiplied by the Years of Expense to produce total costs.

Use the arrows to increase or decrease this number in one year increments.

For WBS 3.0, the years of expense is the same as the years that the facility will operate, which is specified in the facility information (see *Section 4.5.1.1 Adding New Facilities*, or *Section Facilities*).

**Undo Edits**
If incorrect module information was entered, return all boxes to their previous settings by selecting the *Undo Edits* button. Until data in the dialog box is changed, the *Undo Edits* button remains light gray and unavailable.

**Done**
When the entry of WBS breakdown information is finished, select the *Done* button to return to the Facility Profiles dialog box.

**Cancel**
Select *Cancel* to return to the Module dialog box without saving WBS breakdown information.

### 4.5.2.4 Deleting Existing Modules

Delete user-defined modules using the Facility Profiles dialog box. User-defined modules are designated with a [U] to the left of the module, while default modules are designated with a [D] to the left of the module. Existing modules appear in the *Modules* list at the bottom of the Facility Profiles dialog box.

Highlight the existing user-defined module to delete.

**Delete Module**
Select the *Delete Module* button to delete the highlighted module and its associated information.

### 4.5.3 Navigating the Facility Profiles Dialog Box

Once the facility and module information has been edited for a selected site, either continue editing facility information for other sites, or return to the SCM window to work with other parts of the case.

**Next Site**
To edit facility information for the next site (alphabetically), select the *Next Site* button and follow the same procedure as described in *Section 4.5.1 Editing Facility Information*.

**Prior Site**
To edit facility information for the previous site (alphabetically), select the *Prior Site* button and follow the same procedure as described in *Section 4.5.1 Editing Facility Information*.

**Done**
To record edits to facility information and return to the Edit Facility: Select Site dialog box select the *Done* button from the Edit Site Facility dialog box.

When the editing of facilities is completed, select the *Done* button from the Edit Facility: Select Site dialog box.
If incorrect inflation factor information was entered, return all entries to their previous settings by selecting the Undo Edits option. Until done in the dialog box is changed, the Undo Edits button remains highlighted and unavailable.

Factors box also records changes.

When the editing of a given set of inflation factors is finished, select the Save button to record the changes and prepare the dialog box for the next set of entries. After the inflation factor for any set of years has been changed, select the Save button to increase or decrease the inflation factor in 1% increments.

Note: Default inflation factor is 0.9%.

Starting Year and Ending Year boxes allow the first and last year in the range. To change any of the percentages, first select either a single year or a range of years by selecting the change by clicking on it in the list, or select a range of years by selecting the months of the year the Starting Year box displays the first year in the range. Ending Year box displays the last year in the range.

A list of inflation factors for each year appears in the current inflation factors.

To edit inflation factors, select Edit inflation Factors from the menu. The Edit inflation Factors dialog box appears as shown below.

4.6 Editing Inflation Factors
Select the Done button to record all inflation factor edits and return to the menu bar.

## 4.7 Editing Cost Factors

**Edit, Cost Factors** To edit cost factors for specific sites, select **Edit, Cost Factors** from the menu bar. The Cost Factors dialog box appears.

A list of all available sites appears in alphabetical order on the left side of the Cost Factors dialog box. Use the Vertical Scroll Bar to display sites that are not currently shown. Highlight the appropriate site and edit its cost factors using the boxes on the right side of the dialog box.

To enter information in a particular box, click on the box or use the tab key to highlight the box and enter the appropriate number.

**Undo Edits** If incorrect cost factor information was entered, return all boxes to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable. Selecting a different site from the Select Site list will save changes and make the **Undo Edits** button unavailable.

Selecting a different site from the Select Site list will also will record changes.

### 4.7.1 Construction Costs

The Construction Costs group box displays the percentages used to calculate the costs of design, inspection, project management, construction indirect,
construction management, management reserve, and construction contingency, based on the base construction costs.

<table>
<thead>
<tr>
<th>Construction Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
</tr>
<tr>
<td>Inspection</td>
</tr>
<tr>
<td>Project Mgmt</td>
</tr>
<tr>
<td>Constr Indirect</td>
</tr>
<tr>
<td>Constr Mgmt</td>
</tr>
<tr>
<td>Mgmt Reserve</td>
</tr>
<tr>
<td>Constr Contgncy</td>
</tr>
</tbody>
</table>

**Design**
The **Design** box displays the percentage used to calculate project design based on the base construction cost. Base construction cost includes equipment installation, building construction, and associated indirect costs.

**Inspection**
The **Inspection** box displays the percentage used to calculate project inspection cost based on the base construction cost.

**Project Management**
The **Project Management** box displays the percentage used to calculate project management cost based on the base construction cost.

**Construction Indirect**
The **Construction Indirect** box displays the percentage used to calculate construction indirect costs based on the cost of erected buildings plus installed equipment.

**Construction Management**
The **Construction Management** box displays the percentage used to calculate construction management based on the base construction cost.

**Management Reserve**
The **Management Reserve** box displays the percentage to calculate the amount reserved for additional construction management costs, based on the base construction costs.

**Construction Contingency**
The **Construction Contingency** box displays the percentage applied to the base construction cost and all above costs to cover unforeseen activities or costs.

For example, if base construction costs are calculated to be $100,000, then the costs above would be as follows:

- Design $25,000
- Inspection $8,000
- Project Management $3,000
- Construction Indirect $11,505 ($88,495 + 13% = 100,000)
Construction Management $8,000
Management Reserve $0
Construction Contingency $18,720 (13% of 100,000 + 25,000 + 8,000 + 3,000 + 8,000)

4.7.2 Pre-operation Costs

The Pre-operation Costs group box displays the percentages used to calculate the costs of concept design, safety assurance, preparatory operations, and pre-operations management along the with the NEPA permit cost.

<table>
<thead>
<tr>
<th>Pre-operation Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Design 9.0%</td>
</tr>
<tr>
<td>Safety Assurance 9.0%</td>
</tr>
<tr>
<td>Prep Operations 100.0%</td>
</tr>
<tr>
<td>PreOps Mgmt 10.0%</td>
</tr>
<tr>
<td>NEPA Permit K$ 6,000.0</td>
</tr>
</tbody>
</table>

Concept Design The Concept Design box displays the percentage used to calculate pre-operations design, based on total construction cost (WBS 2.0).

Safety Assurance The Safety Assurance box displays the percentage of the total constructed facility used to calculate safety assurance costs.

Preparation for Operations The Preparation for Operations box displays the percentage of a single annual O&M budget used to calculate O&M training prior to commencement of operations.

Pre-operation Management The Pre-operation Management box displays the percentage of pre-operation costs used to calculate pre-operation management costs.

NEPA Permit The NEPA Permit box displays the costs, in thousands of dollars, associated with obtaining a NEPA permit.

4.7.3 Operating Costs

The Operating Costs group shows the contingency percentage applied to operating costs.

<table>
<thead>
<tr>
<th>Operating Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingency 15.0%</td>
</tr>
</tbody>
</table>

Contingency The Contingency box displays the percentage applied to the total calculated operating costs as contingency.
4.7.4 Labor Costs

The FTE Costs (K$/year) group box displays the annual salary in thousands of dollars for engineering, construction, operating, and engineering/construction positions.

<table>
<thead>
<tr>
<th>FTE Costs (K$/year)</th>
<th>Operating</th>
<th>Eng/Const</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>$109.0</td>
<td>$97.0</td>
</tr>
<tr>
<td>Construction</td>
<td>$87.0</td>
<td>$107.0</td>
</tr>
</tbody>
</table>

FTE costs are fully burdened.

Engineering The Engineering box displays the annual salary, including benefits, of an engineer or administrator for both the design and operating phases.

Construction The Construction box displays the annual salary, including benefits, of a construction laborer.

Operating The Operating box displays the annual salary, including benefits, of a facilities operator.

Engineering and Construction The Engineering and Construction box displays the annual salary, including benefits, of a field engineer and/or construction manager.

4.8 Editing Other Site Costs

Edit, Additional Costs To edit other cost factors for specific sites, select Edit, Other Site Costs from the menu bar. The Other Site Costs dialog box appears as shown below.
A list of all available sites appears in alphabetical order on the left side of the Other Site Costs dialog box. Use the Vertical Scroll Bar to display sites that are not currently shown. Highlight the appropriate site and edit its cost factors using the boxes on the right side of the dialog box.

**Waste Subtype**
The Waste Subtype selector appears in the upper right corner of the dialog box, allowing for the selection of the waste subtype in which to change other site costs.

To enter information in a particular box, click on the box, or use the tab key to highlight the box and enter the appropriate number.

**Undo Edits**
If incorrect cost factor information was entered, return all entries to their previous settings by selecting the Undo Edits button. Until data in the dialog box are changed, the Undo Edits button remains light gray and unavailable.

Selecting a different site from the Select Site list will save changes and make the Undo Edits button unavailable.

**Done**
Select the Done button to record cost factor edits and return to the menu bar. Selecting a different site from the list on the left will also record changes.

### 4.8.1 Commercial Contract Services

The Commercial Contract Services (WBS 5.0) group box allows editing of the volume and unit cost for waste treatment for the waste sent to off-site commercial facilities.

<table>
<thead>
<tr>
<th>Commercial Contract Services (WBS 5.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste sent off-site: 10 m³</td>
</tr>
<tr>
<td>Cost: 3.0 $/m³</td>
</tr>
</tbody>
</table>

**Waste sent off-site**
The Waste sent off-site box displays the cubic meters of waste transported from the facility to a commercial facility.

**Cost**
The Cost box displays the dollar amount per cubic meter that the commercial facilities charge.

### 4.8.2 DOE-Provided Off-Site Services

The DOE-Provided Off-Site Services (WBS 6.0) group box allows editing the volume and cost of waste sent off-site to other DOE facilities.

<table>
<thead>
<tr>
<th>DOE Provided Off-Site Services (WBS 6.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste sent off-site: 10 m³</td>
</tr>
<tr>
<td>Cost: 3.0 $/m³</td>
</tr>
<tr>
<td>Years of Expense: 0</td>
</tr>
</tbody>
</table>
Waste sent off-site  The *Waste sent off-site* box displays the cubic meters of waste transported from the facility to another DOE facility.

Cost  The *Cost* box displays the dollar amount per cubic meter that the treating site charges.

Years of Expense  The *Years of Expense* box displays the number of years this volume of waste will be sent off-site at the given cost.

### 4.8.3 Special Site Costs

The *Special Site Costs (WBS 8.0)* group box allows editing of unforeseen costs (e.g., site infrastructure costs) during a specified range of years.

<table>
<thead>
<tr>
<th>Special Site Costs (WBS 8.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost: $0.00 K$/year</td>
</tr>
<tr>
<td>Start Year: 1988</td>
</tr>
<tr>
<td>End Year: 1992</td>
</tr>
</tbody>
</table>

Cost  The *Cost* box displays the special site costs in thousands of dollars per year.

Start Year  The *Start Year* box displays the year in which the special site costs begin.

End Year  The *End Year* box displays the year in which the special site costs end.
4.9 Editing WBS Scale Factors

Select Edit, WBS Scale Factors from the menu bar to apply scale factors to specific module costs. The WBS Scale Factors dialog box displays the scale factors for WBS costs for a particular module at a specific site and allows the user to increase or decrease WBS costs by a scaling factor. The WBS Scale Factors dialog box appears below.

Select the specific site associated with the scale factors to edit. A list of available sites appears on the left side of the WBS Scale Factors dialog box in alphabetical order. Use the Vertical Scroll Bar to display sites that are not currently shown. Highlight the site to be edited. Then select the module and waste subtype options.

**Waste Subtype**
The Waste Subtype Option box allows the selection of the waste subtype to be edited. Click on the Drop-Down List button and select the appropriate option.

**Module**
The Module Option box allows the selection of the module being edited. Click on the Drop-Down List button and select the appropriate module option.

**Cost/FTE**
The Cost/FTE option buttons allow changing of scale factors for either costs or FTEs. Select the appropriate button by clicking on it.

After these selections, input the appropriate scale factor for WBS 1.0 - 4.0. To change other scale factors, repeat the steps listed above.

**Undo Edits**
If incorrect information was entered, return all boxes to their previous settings by selecting the Undo Edits button. Until data in the dialog box are changed, the Undo Edits button remains light gray and unavailable.
Selecting a different site, waste subtype, or module from the selectors provided will save changes and make the Undo Edits button unavailable.

**Done**: Select the **Done** button to record scale factor edits and return to the menu bar. Selecting a different site from the list on the left will also record changes.

When **Done** is selected, the cost factors are applied to the calculation results, so that calculations do not need to be rerun. However, if a scale factor that was 0 is changed to a non-zero value, a warning message is displayed and calculations must be rerun to incorporate the new scale factors.

### 4.10 Editing Site Information

**Edit, Site Information** Select **Edit, Site Information** from the menu bar to edit all information associated with a specific site.

The Site Information dialog box combines the function of the TSD Scenarios and Site Schedule dialog boxes. This information is displayed on the left and right portions of the dialog box, respectively. The other information associated with a site can also be accessed: waste loads, facility profiles, cost factors, and other site costs by selecting buttons at the bottom of the dialog box.

The site to edit is selected from the **Drop-Down List** box in the upper left corner of the dialog box. Any changes made affect the site displayed in this box.
Click on the **Down-Arrow** button on the list box to view a list of all sites in alphabetic order. Use the **Vertical Scroll Bar** to display sites that are not displayed in the current list. Click on the site name to select it.

**Waste Subtype**
The **Waste Subtype** drop-down list, located to the right of the site selection box, allows waste subtype selection from a list of all waste subtypes for which waste loads are entered. This selection controls both the TSD Scenario and Site Schedule portions of the Site Information dialog box.

Choose the waste subtype to display and enter data for it in the TSD Scenario and Site Schedule fields for the selected site.

### 4.10.1 Editing the TSD Scenario

Use the TSD Scenario section of this dialog box to edit TSD scenarios. Enter where waste loads from each site will be treated, stored, and disposed.

TSD scenarios can be edited using the Site Information dialog box or the Edit TSD Scenario dialog box. Refer to **Section 4.3 Editing Treatment, Storage, and Disposal Scenarios** for further guidance.

**Treatment Option**
The **Treatment Option** box displays the treatment methods available for the selected waste type.

**Treatment Site**
The **Treatment Site** box displays the waste treatment site code. Click on the **Drop-Down List** button, then select the appropriate treatment site.

**Transport by**
The **Transport by** box displays whether waste will be transported to the treatment site by **Truck** or by **Rail**. Click on the **Drop-Down List** button and select **Truck** or **Rail**. Notice that if the Treatment site selected is the same as the waste generating site, the **Transport by** box displays None and appears light gray and unavailable. If no distance data are available for the selected site, the **Transport by** box displays N/A.

**Storage Site**
The **Storage Site** box displays the waste storage site code. Click on the **Drop-Down List** button and select the appropriate storage site.

**Transport by**
The **Transport by** box displays whether waste will be transported to the storage site by **Truck** or by **Rail**.

**Storage for**
The **Storage for** box displays the number of years of post-treatment waste storage. Use the arrows to increase or decrease this number in increments of one.

**Disposal Site**
The **Disposal Site** box displays the waste disposal site code and name. Click on the **Drop-Down List** button and select the appropriate disposal site.

**Transport by**
The **Transport by** box displays whether waste will be transported to the disposal site by **Truck** or by **Rail**.
Undo Edits If incorrect site information was entered, return all entries to their previous settings by selecting the **Undo Edits** button. Until data in the dialog box is changed, the **Undo Edits** button remains light gray and unavailable.

Done Select the **Done** button to record site information edits and return to the menu bar. Selecting a different site from the site drop-down list in the upper left corner will also record changes.

### 4.10.2 Editing the Site Schedule

**Site Schedule** The Site Schedule section of this dialog box works like the Site Schedule dialog box accessed from the menu bar. Refer to *Section 4.4 Editing Site Schedules* for a detailed explanation.

### 4.10.3 Editing Waste Loads

**Waste Loads** Select the **Waste Loads** button to edit waste loads using the Edit Waste Loads dialog box. When finished editing, the Site Information dialog box is displayed. Refer to *Section 4.2 Editing Waste Loads* for more detailed description.

### 4.10.4 Editing Facility Profiles

**Facilities** Select the **Facilities** button to edit facility profiles of an existing case using the Facility Profiles dialog box. When finished editing, the Site Information dialog box will be displayed. Refer to *Section 4.5 Editing Facility Profiles* for more detailed description.

### 4.10.5 Editing Cost Factors

**Cost Factors** Select the **Cost Factors** button to edit the cost factors of an existing case using the Cost Factors dialog box. When the editing is complete, the Site Information dialog box will be displayed. Refer to *Section 4.7 Editing Cost Factors* for more detailed description.

### 4.10.6 Editing Other Site Costs

**Other Site Costs** Select the **Other Site Costs** button to edit other site costs using the Other Site Costs dialog box. When the editing is complete, the Site Information dialog box will be displayed. Refer to *Section 4.8 Editing Other Site Costs* for more detailed description.
4.11 Editing Case Notes

When the user saves a case for the first time (using *Case, Save As*), SCM allows for entry of notes regarding the case for future reference. These notes allow for identification and differentiation of each case.

**Edit, Case Notes** Select *Edit, Case Notes* from the menu bar to edit the notes associated with an open case. The Case Notes dialog box will appear as shown below.

![Case Notes dialog box](image)

**Case Note** To edit the existing notes, click within the text in the *Case Note* box and edit as desired.

**OK** Select the *OK* button to acknowledge changes and return to the menu bar.

**Cancel** Select *Cancel* to return to the menu bar without accepting changes.
5. Introduction

When all the data have been entered or edited in a new or existing case, run the calculations and SCM will determine the results. Then, use the Report menu to generate a variety of case summary reports, site detail reports, graphs, and timelines.

5.1 Running Calculations

Running calculations for a case after each set of edits or on a new case entry must be done to produce the most current cost information. A case should be saved prior to running calculations, so that if SCM encounters unexpected problems while running, changes will not be lost.

The SCM calculations make assumptions that affect the output reports and graphs; see Appendix 4: Calculation Assumptions.

5.1.1 Starting Calculations

A case must be opened before running calculations. See Section 3.4 Opening a Case or Section 3.3 Creating a New Case for more information.

Run! Select the Run! command from the menu bar to run calculations for the current case. A dialog box will appear to confirm the running of calculations.
Yes  Select Yes to run the calculations.

Selecting Yes causes SCM to immediately display progress information as the calculations run to completion.

The calculation process involves three main sections: error checking, capacity calculations, and cost calculations.

No  To not run the calculations at this time, select No. SCM then returns to the menu bar.

When calculations are running, press Alt-C (hold down the Alt key while pressing C) to stop the calculation process. It may take several moments for the calculations to be interrupted. A dialog box is displayed to confirm this choice.

Depending at what point the calculations were interrupted, the results of previous calculations may be lost. A dialog box is displayed to explain changes to calculation results.
5.1.2 Calculations Performed

The SCM error-checking process checks for valid TSD scenarios. The capacity calculations are composed of the following eleven steps:

1. pre-treatment storage, treatment, post-treatment storage, disposal sites and treatment options are linked;
2. pre-treatment storage schedules are calculated;
3. treatment schedules are calculated;
4. treatment modules are calculated;
5. storage and disposal schedules are calculated;
6. storage and disposal modules are calculated;
7. pre-treatment storage, treatment, storage, and disposal schedules are merged;
8. existing capacities are calculated;
9. existing capacity utilization is calculated
10. new and existing facility capacities are separated; and
11. average module capacities are calculated.

The cost calculations are composed of the following six steps:

1. cost regressions are calculated;
2. WBS 1.0 - 4.0 FTE costs are calculated;
3. WBS 5.0 - 8.0 costs are calculated;
4. existing facility costs are incorporated;
5. cost schedules are calculated; and
6. WBS cost scale factors are calculated.
When the last calculation is complete, SCM displays the following dialog box.

![Dialog Box](image)

**Calculations complete!**

**OK** To acknowledge the message and return to the menu bar, select the OK button or press the Enter key. A variety of reports may now be generated using the Report menu as described in *Section 5.2 Generating and Printing Reports.* First, however, the case may be saved as described in *Section 3.5 Saving a Case.*

### 5.1.3 Time Required

Calculations take anywhere from 2 to 30 minutes. The time required to run the calculations depends on the type of hardware being used and the amount of data associated with the case. Refer to *Section 2.2 System Requirements* for a list of recommended hardware. Calculations should be run each time the case is edited, as the output will not change until the calculations are rerun.

### 5.2 Generating and Printing Reports

Use the Report menu to generate all SCM reports and graphs. These reports and graphs may be previewed, printed, or exported.

#### 5.2.1 Selecting Reports or Graphs to Generate

**Reports** Select Reports from the menu bar to access a pull-down menu of reports and graphs. Select one of the following report or graph types: *Case Summary Reports, Site Detail Reports, Case Summary Graphs, Site Detail Graphs,* or *Case Comparison Graphs.* Each of these options is described in a later section, starting with *Section 5.2.5 Generating Case Summary Reports.*
The "Reports to Print" and "Graphs to Print" sections allow marking of the boxes corresponding to the specific reports or graphs to generate. For site-detail report and graph types, specific sites can be selected to be included in the printout. Preview, Print, or Export the selected reports or graphs using the associated buttons.

Select All Reports Select the Select All Reports button to choose all available reports and graphs to be generated. The available reports and graphs are marked with a box as shown above.

Deselect All Reports Select the Deselect All Reports button to deselect all selected report and graphs from being generated. All previously marked report or graph boxes are now unmarked.

Preview Select the Preview button to view a selected report or graph before printing it. SCM initializes the report engine and then prepares the report. Refer to Section 5.2.3 Previewing Reports below for a more detailed description.

Print Select the Print button to send the report to the printer.
The Printing dialog box displays the SCM print status as it reads, sorts, and prints the selected reports and graphs. SCM displays the current number of records read and sorted relative to the total number of records to be read and sorted for the print file. It displays the percentage of the process which is complete. To set up the printer, refer to Section 5.2.10 Setting up the Printer.

**Export** Select the Export button to export data from a report or graph to an ASCII file.

When the user chooses to export data from a report, the format for export can be selected.

Mark the **Data Only** option box to export the report data (only the numbers used in the report, in comma-delimited ASCII format).

Mark the **Report Image** option box to export a report image (an ASCII representation of the report).

Select the Export button to start exporting data from the selected reports. When exporting data, the user will be prompted for a file name for each report selected.

**Done** Select Done to leave the report or graph selection dialog box.
5.2.2 Selecting Report Options

On each of the report and graph dialog boxes, the user is presented with a set of options to control the appearance and structure of the output.

<table>
<thead>
<tr>
<th>Options</th>
<th>Type:</th>
<th>All types</th>
<th>☀️ For whole case</th>
<th>☀️ By waste type</th>
</tr>
</thead>
</table>

**Type**  In the Type selection boxes, SCM allows the user to choose to report specific waste types. If these selections are left at their defaults, the generated report or graph will contain data from all waste types present in the case. If a specific waste type is selected, then the generated report will contain only data from the selected waste type.

If there is more than one waste type in the current case, then the Type selection boxes will present all available choices, as well as an All types choice. Select All types to report all waste types.

**For whole case**  The second selector in this section allows the user to choose whether to report For whole case, or to report By waste type. With the For whole case choice, SCM prints the report or graph without subdividing the information by waste type.

**By waste type**  With the By waste type choice, SCM prints each waste type present in the case on separate pages.

5.2.3 Previewing Reports

**Preview**  Select the Preview button to view a report.

When the user previews a report (not a graph), SCM scans the database to locate and add the appropriate data to the report. The processing time varies with the amount of data to be included in the report. Select the Cancel button at the bottom of the window to abort the scanning process. The number of records scanned, the number of records selected, the total number of records, and the percentage of records scanned are displayed in the bottom right corner of the window.

The following navigational and command buttons are located at the bottom of the window:

- **The Home button**  transfers the user to the first page of a report
- **The Previous button**  transfers the user to the previous page
- **The Next button**  transfers the user to the following page
- **The End button**  transfers the user to the last page of a report.
If the first page of the report is displayed, the **Home** and **Previous** buttons appear light gray and unavailable. If the last page of the report is displayed, the **Next** and **End** buttons appear light gray and unavailable.

**Cancel** Select the **Cancel** button to cancel the report generation process. To restart the generation of the report, reselect **Preview** from the report dialog box. The **Cancel** button is only available when SCM initially scans the database to generate the report or graph; otherwise, it appears light gray and unavailable.

Use the **Zoom** button to alternate between viewing the entire report page and two enlarged (zoomed-in) views.

Use the **Export** button to export the data from the currently-displayed report to a file. When the **Export** button is selected, the following dialog box appears.

![Export Dialog Box]

**Format** From this dialog box, choose the format to export by selecting the **Format** option. Selecting **OK** will display different options depending on which format is chosen. Then a dialog box will be displayed to select a file name in which to store the exported data. Select **Cancel** to not export the report data.

Select the **Print** button to send the report to the printer. A print dialog box appears. Specify the print range and the number of copies, and select the **OK** button to begin printing. To set up the printer, refer to Section 5.2.10 Setting up the Printer.

### 5.2.4 Preview Controls

The Preview Controls dialog box, located in the lower right corner of the Preview window, appears for both report and graph previewing.

![Preview Controls Dialog Box]

The dialog box displays controls for previewing the next report or graph, printing the current report or graph, and canceling the print preview. If the
Preview Controls dialog box is in the way of the preview window, click and hold on the title bar and drag it to a new location.

**Next** If more than one report or graph was selected to be generated, select the Next button to view the next report or graph.

SCM initializes the report engine and prepares the next report or graph. When the preview window reappears, SCM scans the database and adds the appropriate data to the report or graph.

When viewing the final report or graph (or if only one report or graph is selected), select the Next button to return control to the report or graph selection dialog box. From here, the reports or graphs just previewed may be printed, or other reports or graphs can be selected to preview and print. Refer to *Section 5.2.1 Selecting Reports or Graphs to Generate* for guidance.

**Print** Select the Print button to send the currently displayed report or graph to the current default printer. To set up the printer, refer to *Section 5.2.10 Setting up the Printer*.

**Cancel** Select the Cancel button to discontinue the previewing process and return to the report or graph selection dialog box. Refer to *Section 5.2.1 Selecting Reports or Graphs to Generate* for guidance.

### 5.2.5 Generating Case Summary Reports

Select Report, Case Summary Reports from the menu bar to generate case summary reports. Case summary reports show information for the case as a whole, without subdivision for individual sites, in a textual (row and column) format.

![Case Summary Reports](image)

**Reports to Print**
- **WBS 1.0 - 4.0**
- **WBS 5.0 - 8.0**
- **FTE**
- **Annual Costs**
- **Waste Loads - First Set**
- **Waste Loads - Second Set**
- **Waste Densities - First Set**
- **Waste Densities - Second Set**
- **Schedule**
- **TSD Scenario**
- **Background**
- **Facility Profiles**
- **PEIS Report - TSD**
- **PEIS Report - WBS**

**Options**
- **Type:**
  - All types
- **For whole case**
  - By waste type

[Preview] [Print] [Export] [Done]
The **Reports to Print** group box displays the case summary reports that can be generated. Refer to *Section A2.1 Case Summary Reports* for examples of each type of report.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

### 5.2.6 Generating Site Detail Reports

**Reports to Print**

To generate site detail reports, select **Report, Site Detail Reports** from the menu bar. Site detail reports show information in a textual format for specific sites that the user chooses.

```
<table>
<thead>
<tr>
<th>Reports to Print</th>
<th>Site Detail Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBS 1.0 - 4.0</td>
<td>Annual Capacities</td>
</tr>
<tr>
<td>WBS 5.0 - 8.0</td>
<td>Annual WBS 1.0 - 8.0</td>
</tr>
<tr>
<td>FTE</td>
<td>Annual WBS 1.0 - 4.0 by Module</td>
</tr>
<tr>
<td>Cost Factors</td>
<td>Annual WBS 5.0 - 8.0 by Module</td>
</tr>
<tr>
<td>Module Capacities</td>
<td>Sending Sites</td>
</tr>
</tbody>
</table>
```

**Sites to Print**

```
HA - Hanford
```

Hold down the Control key while clicking the mouse to select multiple sites.

```
Select All Sites | Deselect All Sites
```

**Options**

```
Type: MLLW | All types | For whole case | By waste type
```

The **Reports to Print** group box displays the reports that can be generated. Refer to *Section A2.2 Site Detail Reports* for examples of each type of report.

The **Sites to Print** group box lists the sites for which the selected reports will be generated.

Click on a site name to select it. To select multiple sites, hold down the **Control** key while clicking on the site names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display sites that are not currently displayed in the box.
See Section 5.2.2 Selecting Report Options for information about the Options group.

5.2.7 Generating Case Summary Graphs

To generate case summary graphs, select Report, Case Summary Graphs from the menu bar. Case summary graphs display information in a bar or line graph for the entire case without subdivision by site.

The Graphs to Print group box displays the graphs that can be generated. Refer to Section A2.3 Case Summary Graphs for examples of each type of graph.

See Section 5.2.2 Selecting Report Options for information about the Options group.

5.2.8 Generating Site Detail Graphs

To generate site detail graphs, select Report, Site Detail Graphs from the menu bar. Site detail graphs display information in a bar or line graph for the sites selected by the user.
The **Graphs to Print** group box displays the graphs that can be generated. Refer to *Section A2.4 Site Detail Graphs* for examples of each type of graph.

The **Sites to Print** group box displays the sites for which graphs will be generated.

Click on a site name to select it. To select multiple sites, hold down the Control key while clicking on the site names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display sites that are not currently displayed in the box.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

### 5.2.9 Generating Case Comparison Graphs

**Report, Case Comparison Graphs**

To generate a variety of case comparison graphs, select **Report, Case Comparison Graphs** from the menu bar. Case comparison graphs display information from multiple cases (as selected by the user) in a bar or line graph.
The **Graphs to Print** group box displays the graphs that can be generated. Refer to Appendix A2.5 *Case Comparison Graphs* for examples of each type of graph.

The **Cases to Print** group box displays the cases that can be incorporated into the selected case comparison graphs.

Click on the first case name to select. To select other cases, hold down the **Control** key while clicking on the case names. The selections will appear highlighted. Use the **Vertical Scroll Bar** to display cases that are not currently displayed in the box.

See *Section 5.2.2 Selecting Report Options* for information about the **Options** group.

### 5.2.10 Setting up the Printer

**Report, Printer Setup** Select **Report, Printer Setup** to select a printer and the source, size, and orientation of the paper, along with other options specific to individual printers. Refer to the *Microsoft Windows User’s Guide* for additional guidance.
6. Using the Help System

6. Introduction

The Help pull-down menu at the top of the window contains the Help resources and the information from this manual.

6.1 Accessing Help

**Help, Contents** Access the SCM Help Contents window by selecting Help, Contents from the menu bar.

**Contents** Select the Contents button at the top of the System Cost Model Help window to return to the Contents window when using Help.
The SCM Contents window is the Help System's table of contents. Review the green underlined items and select a topic by clicking on the desired item.

In many cases, several sub-topics will appear. Select the appropriate sub-topic. Related topics may appear underlined at the bottom of the window. Click on one of these related topics to read its description.

While in SCM, press the F1 key to display help for the particular section of SCM that is currently active. For example, when using the TSD Scenario dialog box, pressing F1 will display help for that function.

### 6.1.1 Navigating Help

Help provides several navigational buttons to move efficiently through the help topics.

- **Back** Select the Back button to return to the previous help topic.
- **History** Select the History button to view the list of help topics accessed during the current help session. Double click on the desired topic in the Help History dialog box to access that topic.
- **Alt + Tab** Press and hold down the Alt key then press the Tab key to move between the SCM Help System and the SCM application. When several applications are running, it may be necessary to press the Tab key several times while holding the Alt key down.
6.1.2 Using the Help Menu Bar

The Help menu bar allows for printing the current Help window, quitting Help, copying text from a Help window, marking a Help window, and receiving assistance using Help.

- **File** The File menu provides choices for opening other help files, printing the topic file currently displayed, specifying the print setup, and quitting Help.

- **Edit** The Edit menu allows for copying text from any Help topic to the Clipboard, and allows adding of comments to the Help topics.

- **Bookmark** The Bookmark menu allows definition of place holders at frequently used Help topics. This menu lists previously defined bookmarks for easy retrieval.

- **Help** The Help menu explains how to use the Help System. This menu controls whether Help windows are to overlap any other application’s windows. This "Always On Top" option can be useful when following a step-by-step procedure on-screen, to help refer back to a particular Help topic. Refer to the *Microsoft Windows User’s Guide* for a more detailed description.

6.1.3 Reviewing SCM Terms

- **Glossary** Select the Glossary button to view a list of SCM terms and their definitions. Each term is dot-underlined. Click on the word and a pop-up definition appears. Click on the window again to hide the definition.

6.2 Searching for Specific Help Topics

Search for a specific topic using a key word or title.

- **Help, Search for Help on** Select Help, Search for Help on from the menu bar, to search for a specific help topic. The Search dialog box appears.
Search  While in the SCM Help System, select the Search button at the top of the window to search for a specific help topic.

The list of topics is arranged alphabetically in the Search dialog box. Either enter a word or scroll through the list to select a topic.

By the user entering a word, the first letter entered calls up the first word in the list beginning with that letter. Each letter typed thereafter narrows the search by moving to the word that begins with that particular combination of letters. There may be several entries from which to choose. Use the scroll bar to view those entries that do not appear in the dialog box.

Show Topics  Select the Show Topics button to view a short list of topics associated with the highlighted word.

Go To  Select the topic and the Go To button to access the requested topic.
6.3 Reviewing Information About System Cost Model

Help, About SCM  Select Help, About SCM from the menu bar, to review information about SCM. The About System Cost Model dialog box appears.

The About System Cost Model dialog box displays the version number, the name, address, and telephone number of SCM developers, and pertinent copyright and contract information.

Done  Select the Done button to leave the About dialog box and return to the menu bar.
Appendix 1: Abbreviations and Codes

A1.1 Waste Type Abbreviations

System Cost Model (SCM) works with the following types of waste, each shown with its identifying abbreviation.

**LLW**  
Low-level waste (LLW) contains less than 10 nCi/gm of radioactivity except when it has alpha emissions which are between 10 and 100 nCi/gm.

**MLLW**  
Mixed low-level waste (MLLW) is a combination of hazardous waste and low-level waste.

**TRUW**  
Transuranic waste (TRUW) is generated by irradiating uranium and results in the formation of elements heavier than uranium with the subsequent radioactive decay of these elements into lighter waste products.

The following waste subtypes are supported by SCM.

**A**  
Alpha waste contains transuranic nuclide at concentrations ranging from 10 to 100 nCi/gm.

**NA**  
Nonalpha waste contains transuranic nuclide at concentrations below 10 nCi/gm.

**CH**  
Contact-handled waste has a contact radiation dose less than 200 mrem/hr.

**RH**  
Remote-handled waste has a contact radiation dose at or greater than 200 mrem/hr.
A1.2 Treatment, Storage, and Disposal Site Codes

Each of the following sites are identified by a site number and a two-letter site code. These codes are listed in alphabetical order by site name.

AM  Ames Laboratory
AE  Argonne National Laboratory East
AW  Argonne National Laboratory West
BC  Battelle Columbus Laboratory
BA  Bettis Atomic Power Laboratory
BN  Brookhaven National Laboratory
CN  Charleston Naval Station
CI  Colonie Interim Storage Site
ET  Energy Technology Engineering Center
FE  Fermi National Atomic Laboratory
FM  Fernald Environmental Management Project
GA  General Atomics
GE  General Electric Vallecitos
GJ  Grand Junction Project Office
HA  Hanford
ID  Idaho National Engineering Laboratory
IT  Inhalation Toxicology Research
KC  Kansas City Plant
KK  Knolls - Kesselring
KS  Knolls - Schenectady
KW  Knolls - Windsor
EH  Laboratory for Energy-Related Health Research
LB  Lawrence Berkeley Laboratory
LL  Lawrence Livermore National Laboratory
LA  Los Alamos National Laboratory
MI  Mare Island Naval Station
MS  Middlesex Sampling Plant
MD  Mound Plant
NR  Naval Reactor Facility
NV  Nevada Test Site
NN  Norfolk Naval Station
OR  Oak Ridge Reservation
PG  Paducah Gaseous Diffusion Plant
PX  Pantex Plant
PH  Pearl Harbor Naval Station
PI  Pinellas Plant
PO  Portsmouth Gaseous Diffusion Plant
PN  Portsmouth Naval Station
PP  Princeton Plasma Physics Lab
PS  Puget Sound Naval Station
RM  RMI Titanium, Inc.
RF Rocky Flats Plant
SL Sandia National Laboratory - Albuquerque
SC Sandia National Laboratory - Livermore
SR Savannah River Site
SM Site A/Plot M, Palos Forest Preservation
ST Stanford Linear Accelerator Complex
UM University of Missouri
WP Waste Isolation Pilot Plant
WS Weldon Spring Site
WV West Valley Demonstration Project

A1.3 Module Codes

This section lists the five-letter module codes that identify treatment, storage, and disposal modules.

A1.3.1 Pre-Treatment Storage Module Codes
PADMN Pre-Treatment Storage Administration
PRCSH Pre-Treatment Receive, Certification, and Shipping
PSTOR Pre-Treatment Storage

A1.3.2 Treatment Module Codes
AQWTR Aqueous Waste Treatment
ASPAK Assay, Sort, & Packaging
CMPCT Shredding/Compaction
CSHIP Certification/Shipping
DEACT Deactivation/Reactive Metals Removal
DECON Decontamination
DWASH Debris Washing
EWASH Soil Washing
GROUT Grout Stabilization
INCIN Incineration
MAINT Maintenance
MMELT Metal Melting
NEUTR Neutralization (Liquid Waste)
NPACK Nongas Packaging
ORGRM Organic Removal
ORGSB Organic Stabilization
OSORT Open, Dump, & Sort
PACKG Packaging
PBRCR Lead Recovery
PLYMR Polymer Stabilization
RCINS Receiving & Inspection
RECYC  Recycling
RETRV  Waste Retrieval
RMERC  Mercury Recovery
SPECL  Special Waste Processing
SUPER  Supercompaction
SWASH  Sludge Washing
TADMN  Treatment Administration
THDRB  Thermal Desorption
TSTOR  Treatment Storage
VITRF  Vitrification
WCHAR  Waste Characterization (Physical)
WETOX  Wet Air Oxidation

**A1.3.3 Storage Module Codes**

SADMN  Storage Administration
SRCSH  Storage Front/Back End
SRCSH  Storage Receiving and Shipping
STORE  Storage
STOSI  Silo Storage

**A1.3.4 Disposal Module Codes**

AGDSP  Above Ground Engineered Disposal
BHDSP  Borehole Disposal
DADMN  Disposal Administration
DRECV  Disposal Front End
IDDSP  Intermediate Depth Disposal
SIDSP  Silo Disposal
SLDSP  Shallow Land Disposal
Appendix 2: Report & Graph Samples

A2. Report & Graph Samples

Examples of System Cost Model (SCM) report and graph outputs can be found in the System Cost Model User's Manual.

A2.1 Case Summary Reports

This section presents samples of graphs which can be generated from SCM as described in Section 5.2.5 Generating Case Summary Reports.

The sample reports presented in this section are shown in the order in which they appear in the report dialog box. They are as follows:

- WBS 1.0 - 4.0
- WBS 5.0 - 8.0
- FTE
- Annual Costs
- Waste Loads - First Set
- Waste Loads - Second Set
- Waste Densities - First Set
- Waste Densities - Second Set
- Schedule
- TSD Scenario
- Background
- Facility Profiles
- PEIS Report - TSD
- PEIS Report - WBS
### Detailed Work Breakdown Structure PLCC by Site

**Non-alpha MLLW**

All costs in thousands of dollars

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Case: TESTCASE

**Date Calculated:** 5/1/95  
**Date Printed:** 5/1/95
## Detailed Work Breakdown Structure PLCC by Site

All costs in thousands of dollars (constant dollars)

### WORK BREAKDOWN STRUCTURE

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Date Calculated: 5/1/85
Date Printed: 5/1/85
# Detailed Work Breakdown Structure FTEs by Site

**Non-alpha MLLW**

**Case: TESTCASE**

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**Date Calculated**: 5/1/95  
**Date Printed**: 5/1/95
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**Argonne National Laboratory West**

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Data Calculated: 5/1/95
Data Printed: 5/1/95

Page 1

Appendix 2: Report & Graph Samples • 97
## Total Waste Loads by Site - First Set

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### Volume in cubic meters

**Case: TESTCASE**

Program version 1.2

Data version 1.2

Date Calculated: 5/1/95
Date Printed: 5/1/95

Page 1
Total Waste Loads by Site - Second Set

Volume in cubic meters

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Date Calculated: 5/1/05
Date Printed: 5/1/05

Program version 1.2
Data version 1.2
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**Date Calculated:** 5/1/95  
**Date Printed:** 5/1/95  
**Program version:** 1.2  
**Data version:** 1.2
Waste Densities by Site - Second Set

Density in kilograms per cubic meter

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Case: TESTCASE

Date Calculated: 5/1/95
Date Printed: 5/1/95

Program version 1.2
Data version 1.2
## Site Schedule

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**Date Calculated:** 5/1/95  
**Date Printed:** 5/1/95  
**Program version:** 1.2  
**Data version:** 1.2
## TSD Scenario

### Von-alpha MLLW

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<td>OR</td>
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**NOTE:** N/A indicates that transportation data is not available.

Date Calculated: 5/1/95
Date Printed: 5/1/95

Program version 1.2
Data version 1.2
Case Background

Case: TESTCASE

Data Version: 1.2
Program Version: 1.2

Last Save: 5/1/95 11:19:21
Last Run: 5/1/95 17:27:27

# of Treatment Sites: 22
# of Storage Sites: 5
# of Disposal Sites: 7

Notes:

Date Calculated: 5/1/95
Date Printed: 5/1/95
## Facility Profiles

**Case: TESTCASE**

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### Lawrence Berkeley Laboratory

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*Date Calculated: 5/1/95
Date Printed: 5/1/95*
PEIS TSD Modules
All costs in millions of dollars (constant dollars)

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<th>OR</th>
<th>NV</th>
<th>SR</th>
<th>PO</th>
<th>OT</th>
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**NOTE:** The OT column shows the total of all other sites.

Date Calculated: 5/1/95
Date Printed: 5/1/95

Program version 1.2
Data version 1.2
# PEIS Work Breakdown Structure

## All costs in millions of dollars (constant dollars)

### Case: TESTCASE

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<th>OR</th>
<th>NV</th>
<th>SR</th>
<th>PO</th>
<th>OT</th>
<th>LL</th>
<th>ID</th>
<th>PX</th>
<th>AW</th>
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**NOTE:** The OT column shows the total of all other sites.

Data Calculated: 5/1/95
Data Printed: 5/1/95

Program version 1.2
Data version 1.2
A2.2 Site Detail Reports

This section presents samples of graphs that can be generated from SCM as described in Section 5.2.6 Generating Site Detail Reports.

The sample reports presented in this section are shown in the order in which they appear in the report dialog box. They are as follows:

- WBS 1.0 - 4.0
- WBS 5.0 - 8.0
- FTE
- Cost Factors
- Module Capacities
- Annual Capacities
- Annual WBS 1.0 - 8.0
- Annual WBS 1.0 - 4.0 by Module
- Annual WBS 5.0 - 8.0 by Module
- Sending Sites
# Hanford

## Work Breakdown Structure PLCC by Module

### All costs in thousands of dollars (constant dollars)

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<th>4.0</th>
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### Hanford

**Work Breakdown Structure PLCC by Module**

Non-alpha MLLW

All costs in thousands of dollars (constant dollars)

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Case: TESTCASE

Date Calculated: 5/1/95
Date Printed: 5/1/95
# Hanford

## Detailed Work Breakdown Structure FTEs by Module

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Cost Factors:

Hanford Cost Factors

Case: TESTCASE

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## Hanford Annual Module Capacities

**Case: TESTCASE**

Treatment capacities in kilograms per year; All other capacities in cubic meters per year

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Date Calculated: 5/1/95
Date Printed: 5/1/95
# Hanford

## Annual WBS 1.0 - 8.0 Costs

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**Note:**
- All costs in thousands of dollars (actual dollars).
## Hanford
### Annual WBS 1.0 - 4.0 Costs by Module

**yNon-alpha MLLW**

All costs in thousands of dollars (actual dollars)

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Date Printed: 5/ 1/95
### Hanford Annual WBS 5.0 - 8.0 Costs by Module

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Sending Sites:

Hanford
Sending Sites

Case: TESTCASE

Treatment
EH MLLW Non-alpha
HA MLLW Non-alpha
Total Sending Sites: 2

Disposal
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BN MLLW Non-alpha
EH MLLW Non-alpha
ET MLLW Non-alpha
HA MLLW Non-alpha
LB MLLW Non-alpha
LL MLLW Non-alpha
PP MLLW Non-alpha
Total Sending Sites: 8
A2.3 Case Summary Graphs

This section presents samples of graphs which can be generated from SCM as described in Section 5.2.7 Generating Case Summary Graphs.

The sample graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

- Life Cycle by TSD
- Life Cycle by WBS
- TSD Cost Timeline
- WBS Cost Timeline
Total Life Cycle Cost by PTSD

Case: TESTCASE
TSD Cost Timeline:
A2.4 Site Detail Graphs

This section presents samples of graphs which can be generated from SCM as described in Section 5.2.8 Generating Site Detail Graphs.

The samples graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

- TSD Cost Timeline
- WBS Cost Timeline
TSD Cost Timeline:

Appendix 2: Report & Graph Samples
WBS Cost Timeline:

[Diagram showing WBS Cost Timeline for Hanford]

Appendix 2: Report & Graph Samples
A2.5 Case Comparison Graphs

This section presents samples of graphs which can be generated from SCM as described in Section 5.2.9 Generating Case Comparison Graphs.

The sample graphs presented in this section are shown in the order in which they appear in the graph dialog box. They are as follows:

- TSD
  Cumulative Cost Over Time
- WBS 1.0 - 4.0
- WBS 5.0 - 8.0
Cumulative Cost Over Time:
WBS 1.0 - 4.0:

Case Comparison by WBS 1.0 - 4.0

130 • Appendix 2: Report & Graph Samples
WBS 5.0 - 8.0:

Case Comparison by WBS 5.0 - 8.0

MLIW

Appendix 2: Report & Graph Samples • 131
The following list details each System Cost Manual (SCM) error message and how to solve the associated problem. They are presented in alphabetical order.

[case] already exists
A name for a case has been specified that is already being used on your system; select another name.

[datapath] contains no database tables to copy!
The directory that SCM uses to create new cases is empty. Reinstall SCM or contact technical support.

[path] already exists
A case has been chosen to copy from or to another drive, and the case (or a case with the same name) already exists in that directory. Either remove the case from the destination directory, or rename the case to copy.

[path] contains no database tables to copy!
One of the cases selected to combine is missing some or all of its information. Try loading the case, running calculations, and saving the case, or reconstructing the case data.

Case cannot be named 'UNTITLED.SCM'
A case cannot be named "UNTITLED," but some parts of SCM use this name as a placeholder. Replace the name "UNTITLED" with another name.
Case created with a newer version of SCM; case cannot be opened

A case has been specified to load that was created with a later version of SCM. Make sure your system has the most recent version of SCM, or contact technical support for assistance.

Case database version newer than current database version; case cannot be opened.

A case has been specified to load that was created with a later version of the SCM database. Make sure your system has the most recent version of SCM, or contact technical support for assistance.

COSTMOD.DBF record not found for [module]; contact SCM Administrator

One of the SCM databases appears to be incomplete. Contact technical support for assistance.

COSTFACT.DBF record not found for site [sitename]; contact SCM Administrator

One of the SCM databases appears to be incomplete. Contact technical support for assistance.

Duplicate records found in [filename]

When loading a case, SCM checks for the integrity of the databases included in the case, including whether the databases contain duplicate information. Contact technical support for assistance with this error.

Facility name entered not unique

The facility name you specified already exists when adding a new facility. Use a different facility name for the new facility.

Incomplete site selection

When defining a TSD scenario, a site must be selected for both treatment and disposal; selecting a site for storage is optional. Make sure sites are selected.

Invalid case name

A case name has been entered that is not legal. Make sure the name contains no spaces or punctuation symbols.

Invalid facility name

The name of the new facility cannot be blank. Enter a name to identify the facility.
Module selected already exists for this facility

There can only be one instance of any module at a given facility; a module has been attempted to be added to a facility that already has that module. Either increase the capacity of the existing module, or define a new facility and add the new module to that facility.

Need at least two [version #] cases to combine

To combine the results of cases, at least two cases of the current version of SCM must be present on your system. To convert a case to the current version, open the case, run the calculations, and save the case.

No cases found in directory [path]

A case operation has been selected, such as to copy a case, but no cases exist on your system. At least one existing case must be present to be able to perform these operations.

No sites exist

The database that contains the sites that SCM supports appears to be empty. Contact technical support for assistance.

No waste loads defined - nothing to do!

The clear waste loads function cannot be used when there are no waste loads defined for the current case.

SCM cannot delete the current case

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the deletion of the selected case. Check your system to ensure that it is operating properly.

SCM is unable to delete the [path] directory

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the deletion of the selected case. Check your system to ensure that it is operating properly.

Spaces are not allowed in case names

The case name entered is not legal. Make sure the name contains no spaces.

There is no distance data between sites

SCM comes with a database containing distances between sites that is used to calculate transportation costs. The chosen sites are not in the distance database. Contact technical support for assistance with this error.
**TSD scenarios have not been defined for all waste loads**

The calculation error checking process has detected there are not TSD scenarios defined for all waste loads. Use the **Edit, TSD Scenario** menu selection to define TSD scenarios for all waste loads in the case.

**Two or more cases must be selected to create a combined case**

The case combine function will combine the results from two or more cases into a new case. Select at least two case names from the list.

**Unable to convert case - case program version not known**

SCM has a conversion feature to take cases from older versions and convert them to work with the current SCM release. The specified case is from a version that is unknown or not supported. Contact technical support for more information.

**Unable to create case [path]**

SCM was unable to create a new case as a result of a disk error. Check your system to ensure that it has enough free disk space and that the rest of your system is operating properly.

**Unable to create directory [path]**

SCM has detected a problem with your hard disk or with another portion of your system's hardware that prevents the creation of a directory needed for operation. Check your system to ensure that it is operating properly and that there is enough available disk space.

**Waste subtype [subtype name] not found**

A waste subtype was selected that was not found in the SCM databases. Please contact technical support.

**Waste type [type name] not found**

A waste subtype was selected that was not found in the SCM databases. Please contact technical support.
A4. Introduction

System Cost Model (SCM) uses the following set of assumptions when performing the calculations for capacities and schedules:

- Costs in SCM are based on the capacities for each module that are computed. After the capacity in each year has been determined, the average capacity for the lifetime of the module is computed. The method used to determine the average, however, is different for new and existing facilities. Consider the following example module usage:

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>1000</td>
</tr>
<tr>
<td>1997</td>
<td>3000</td>
</tr>
<tr>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>2001</td>
<td>5000</td>
</tr>
<tr>
<td>2002</td>
<td>3000</td>
</tr>
</tbody>
</table>

For a new facility, the average would be computed as

$$\frac{1000 + 3000 + 2000 + 5000 + 3000}{7} = 2000 \text{ kg/yr}$$

where 7 is the total number of years the facility will be in existence, even though it will not be in operation in 1998 or 1999. Operation and Maintenance (O&M) costs for this facility would be calculated based on 2000 kg/yr input and would be spread evenly over the entire lifetime (1996 - 2002).

For an existing facility, the average would be computed as

$$\frac{1000 + 3000 + 2000 + 5000 + 3000}{5} = 2800 \text{ kg/yr}$$

In this case, only the number of years that the module is actually in use is used to compute the average. O&M costs for this facility would be based on 2800 kg/yr of input and would apply only to the years that the facility is used (1996, 1997, 2000, 2001, and 2002).
Aqueous waste streams are always treated at the generating site, regardless of the TSD scenario chosen for that site. The storage and disposal options specified in the TSD dialog box are used for all waste, including aqueous waste.

Waste process flow factors used to determine the treatment requirements for the 32 treatability categories of waste load inputs are documented in the following reports: Waste Management Facilities Cost Information Reports for MLLW, Waste Management Facilities Cost Information Reports for LLW, and Waste Management Facilities Cost Information Reports for TRUW.

Disposal facilities receive waste at the same rate as treatment facilities process the waste. The first year of storage or disposal for waste is the same as the first year of treatment. Storage continues for a number of years specified. For example, if waste is generated only in 1996 and storage for that waste is specified as 2 years, then storage data is recorded for 1996, 1997, and 1998.

For legacy volumes, treatment is spread equally over the entire lifetime of the specified treatment facility. For example, if 1000 kg of legacy waste exists at a site, and the specified treatment site is set to operate for 10 years, then the treatment facility receives 100 kg per year of legacy waste for treatment.

Existing facilities are always used before new facilities are built.

The beginning year of construction provided by the user is overridden if the required treatment start year and the number of years of construction (provided by the user) dictate an earlier construction date.

Waste handling capacities are divided among existing facilities with similar treatment capabilities at a site. For example, if three existing facilities at Hanford each had 100 kg incineration capacity and only 100 kg of waste needs to be incinerated, all three facilities are operated at one-third capacity.

Treatment must begin in the first year of generation unless pre-treatment storage is used.

Pre-operations occur in the two years before construction. The construction and operating periods are specified by the user.

The decontamination and decommissioning period occurs within the five years following treatment or at the conclusion of the facility life-cycle.

SCM uses the following set of assumptions when performing the calculations for costs:

- Calculation of O&M costs for a facility are always based upon the average annual capacity. The calculation of capital costs (WBS 1.0, 2.0, and 4.0),
depends on the type of facility. For treatment modules, capital costs are based on the *average* annual rate. For storage (and pre-treatment storage) modules (PSTOR, STORE, and STOSI), capital costs are based on the *maximum* volume in storage in any given year of the module's lifetime; i.e., the largest inventory of waste during the module's lifetime. For disposal modules (AGDSP, SLDSP, IDDSP, and SIDSP), capital costs are based on the *total* amount of waste that is placed in the facility over its lifetime.

- Costs are calculated based on cost versus capacity data which appears in the *Waste Management Facilities Cost Information* reports for MLLW, LLW, and TRUW.
- The cost estimates produced by SCM rely on established assumptions related to waste processes, technology selection criteria, and scheduling limitations.
- FTEs are calculated by using a scale factor, or series of factors, applied against each of the WBS components.
- WBS 5.0 costs are applied to the first year of treatment at a site. WBS 6.0 costs are applied over the number of years specified by the user, starting with the first year of treatment at a site. WBS 7.0 costs are applied to the years in which the transportation occurs. WBS 8.0 costs are spread over the years specified by the user.
- WIPP costs, which are determined by using the AGDSP module, are based on unit rates (i.e., $ per m³).
- Only WBS 3.0 and 4.0 costs are calculated for existing facilities. WBS 1.0 and 2.0 costs must be a user-input in order for these costs to be included in the results of calculations.
- WBS 4.0 costs for existing facilities are calculated based on the dedicated capacity of the facility, not on the amount of capacity that was used at the facility.
- If the user enters costs for WBS 4.0 for a module at an existing facility, then user-provided costs are used for all other instances of that module at the specified site.
- WBS 3.0 and 4.0 costs for an existing facility that are user-input are scaled based on waste dedication information.
- The cost for NEPA permitting, which is a user-input on a site-specific basis in the Cost Factors dialog box, is applied to the appropriate administration module (TADMN, SADMN, or DADMN, in order of preference).
- Cost data for facilities that are larger than can be supported by backup information are calculated by multiplying the largest facility cost by the ratio of the facility capacity to the largest capacity to the 0.7 power.

- Cost data for facilities that are smaller than can be supported by backup information (but larger than a minimum facility) are calculated by multiplying the smallest facility cost by the ratio of the facility capacity to the smallest capacity to the 0.7 power.

- If the combination of the treatment option and waste load result in process volumes for a particular module less than 0.1 pound per hour or 0.1 cubic foot per year, no cost is calculated for that treatment, storage, or disposal technology.

- For TRUW, retrieval cost and waste characterization costs are automatically applied to legacy waste as they undergo treatment.
Alpha Waste
Alpha (A) waste emits alpha radiation from the range of 10 to 100 nCi/gm.

Aqueous
Aqueous waste consists primarily of water.

Base Case
Base case treatment is a standard waste treatment scheme, using thermal desorption and grout as the primary stabilization route.

Contact-Handled
Contact-handled waste has a contact radiation dose less than 200 mrem/hr. This waste may be handled by workers in the proper personal protective equipment.

Facility
A facility is a building or set of buildings on a site. There can be multiple facilities per site. Furthermore, any facility can have one or more modules that either treat waste, store waste, or dispose of waste.

FTE
Full-time equivalent (FTE) represents an employee working 8 hours per day, 40 hours per week, or 2,000 hours per year.

Grout
Grout is a thin mixture of water and portland cement, and occasionally other components, e.g., sand, clay, or hardeners.

Hazardous Waste
Hazardous waste is a toxic, flammable, corrosive, or reactive waste that is dangerous to humans and the environment, but not radioactive.
Inorganic
Inorganic materials are composed of mineral matter containing no organic carbon.

Land Disposal Requirements
Land disposal requirements (LDR) involve the waste being treated to Resource Conservation and Recovery Act (RCRA) disposal standards.

Legacy Volume
Legacy volume is the preexisting volume of waste present at a site at the start of a model run.

Low-level Waste
Low-level waste (LLW) contains less than 10 nCi/gm of total radioactivity other than alpha emissions that may be between 10 and 100 nCi/gm.

Mixed Low-level Waste
Mixed low-level waste (MLLW) is a combination of hazardous waste and low-level waste.

Module
Modules are subsets of facilities. Any facility can have one or more modules. There are three types of modules: treatment, storage, or disposal. Furthermore, there may be different treatment modules for different waste streams. For example, when a load of waste arrives to be treated, 50% may be transferred to the battery treatment module, 30% to the organic deposits treatment module, and 20% to the reactive metals treatment module. A five-letter module code is used to identify treatment, storage, and disposal modules.

Nonflame
Nonflame treatment of waste uses processes that are alternates to incineration.

Organic
Organic materials are composed of plant or animal matter—organic compounds.

Particulate
Particulate is made up of minute solid particles.
**Polymer**
Polymer is a material built up from a series of smaller units that may be chemically simple (such as ethylene) or relatively complex (such as methyl methacrylate).

**Reduced Gas**
Reduced gas treatment produces a final waste form that will generate less gas during disposal.

**Remote-Handled**
Remote-handled waste has a contact radiation dose at or greater than 200 mrem/hr. This waste must be handled by methods that isolate the workers from the waste.

**Site**
A site is an area of land occupied by, or to be occupied by, one or more structures or by some other use. Each site is identified by a site number and a two- to five-letter site code.

**Sludge**
Sludge is soft organic or inorganic solid material produced by drilling or boring, or obtained from settling operations.

**Solidification**
Solidification is a particular stabilization process in which waste and a liquid, such as grout or polymer, are mixed together and allowed to harden.

**Stabilization**
Stabilization is the process whereby waste is physically bound in a solid matrix of another material and placed in a container. Vitrification and solidification processes are both referred to as stabilization.

**TSD**
Treatment, Storage, and Disposal.

**Transuranic Element**
All elements beyond uranium on the periodic table. All transuranic elements are manmade.

**Transuranic Waste**
Waste contaminated with uranium-233 or transuranic elements having half-lives greater than 20 years in concentrations of more than 1 ten-millionth of aluric per gram of waste.
Transuranic waste (TRUW) is generated by irradiating uranium and resulting in the formation of elements heavier than uranium with the subsequent radioactive decay of these elements into lighter waste products.

**Vitrification**

Vitrification is a specific stabilization process in which waste and a molten frit additive are mixed and allowed to cool to form a glassy or rocklike material. The additive contains abundant silica (SiO₂) and often consists chiefly of sand or basalt.

**Waste Stream**

A waste stream is a category of waste that is distinguishable by its origin, physical state or form, composition, radioactivity, or some combination of these characteristics.

**Waste Type**

Waste type refers to a major waste classification, e.g., low-level waste (LLW), mixed low-level waste (MLLW), transuranic waste (TRUW), etc.

**Waste Subtype**

Waste subtype refers to the subclassification of a waste type; e.g., alpha (A), nonalpha (NA), contact-handled (CH), etc.

**WIPP**

Waste Isolation Pilot Plant (WIPP) located in Carlsbad, New Mexico.

**WIPP WAC**

WIPP waste acceptance criteria (WAC) indicates that the waste will be treated to meet WIPP waste acceptance criteria.

**Work Breakdown Structure**

Work breakdown structures (WBSs) are subsets of projects. There are four WBSs, or tasks, associated with a project: preoperations activities cost, production facility construction cost, operations and maintenance costs, and decontamination and decommissioning costs.
Index

A
aerosols, 34
aqueous slurries, 32
asbestos, 33
asterisks, 38, 44
asterisks, 29

B
batteries, 33
beryllium, 33

C
case
copy to, 21, 22
delete, 21
exit, 20
new, 14
open, 18
run, 69
save, 19
save as, 20
case notes
editing, 67
case summary graphs, 79
case summary reports, 77
changed data, 29, 38, 44
compressed gasses/aerosols, 34
contents screen, 83
copying a case, 20, 21, 22
cost factors
editing, 57
creating a case, 14

D
debris, 33
deleting a case, 21

E
edit
case notes, 67
  cost factors, 57
  facility profiles, 46
  inflation factors, 56
  other site costs, 61
  site information, 64
  site schedules, 44
  TSD scenario by map, 41
  waste loads, 29
  elemental lead, 33
  elemental mercury, 33
  exiting System Cost Model, 20
  explosives, 34
  exporting a case. See case, copy to. See case, copy to

F
  facility
    add, 49
    delete, 50
    edit, 49
  facility profiles
    editing, 46

G
  gasses, 34
  generation rate, 32
  generation years, 30
  glossary definitions, 85
  graphs
    previewing, 75
    printing, 73
    selecting, 72

H
  halogen, 32
  hardware requirements, 7
  help
    about SCM, 87
    contents, 83
    glossary, 85
    menu bar, 85
    navigating, 84
    search for help on, 85
  heterogeneous debris, 33

I
  inflation factors
    editing, 56
  inorganic, 32

L
  lab packs, 33
  launching SCM, 11
  lead, 33
  legacy volume, 32
M
menu bar, 12
mercury, 33
Microsoft Windows, 3
module
  add, 51
  delete, 55
  edit, 53
multiple case graphs, 80

N
navigating help, 84

O
online questionnaire
  part 2, 37
opening a case, 18
opening SCM, 11
organic, 32
other site costs
  editing, 61

P
particulate, 33
previewing reports and graphs, 75
printer setup, 81
printing reports and graphs, 73
propellants, 34

Q
questionnaire
  part 2, 37
quitting System Cost Model, 20

R
reactive metals, 33
renaming a case, 20
report
  case summary graphs, 79
  case summary reports, 77
  multiple case graphs, 80
  printer setup, 81
  site detail graphs, 79
  site detail reports, 78
reports
  previewing, 75
  printing, 73
  selecting, 72
run!, 69

S
saving a case, 19, 20
saving a copy of a case, 20
searching for help topics, 85
selecting reports and graphs, 72
setting up the printer, 81
site detail graphs, 79
site detail reports, 78
site generation years, 30
site information
  editing, 64
site schedules
  editing, 44
sludge, 33
slurry, 32
software requirements, 7
status bar, 13
System Cost Model
  exiting, 20
    hardware requirements, 7
    software requirements, 7
    starting, 11

T
treatment option, 63, 65
TSD scenario
  edit by map, 41

W
waste loads
  editing, 29
waste stream
  densities, 34
  generation rate, 31
  volume, 31
wastewaters, 32
WBS
  edit, 54
Windows, 3