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*	Name	Mail Addr.		<p>The Radioactive Materials Handling Facility (RMHF) Tracking System (RTS) is a database system that was established to record and track the storage, handling, and shipment of materials as they are passed through the RMHF located at Boeing's Santa Susana Field Laboratory (SSFL). Each material is given a unique material identification number, and information on the material's description, properties, and status is maintained in a database table based on this identification number. Shipments from the RMHF are similarly given unique shipment numbers, and information on the shipments is stored in a separate database table, with links to those materials included in each shipment to provide full shipment descriptions.</p> <p>This document provides the procedures for a user to set up and use the RMHF Tracking System to track radioactive materials and shipment information. These procedures are based on a programmed menu system that simplifies data entry, links the materials and shipments data, and provides standard formats for the generation and printing of materials and shipment reports. This document replaces document number 173TI000024 of the same name.</p>	
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A	Added waste summary reports for mixed waste and TRU + sources Added reports for waste stored greater than 9 months Added database fields for waste treatment methods and procedures Removed programmer notes from procedure Several minor and cosmetic changes	R. A. Marshall R. Amar S. E. Reeder RELEASE 04-24-01 CV

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1.0 INTRODUCTION

The Radioactive Materials Handling Facility (RMHF) Tracking System (RTS) is a database system established to record and track the storage, handling, and shipment of materials as they are passed through the RMHF at Boeing's Santa Susana Field Laboratory (SSFL). Each material that is received by the RMHF, or is produced there as the result of processing activities, is to be entered in this database. The material is given a unique identification number on receipt (or origination) and is identified by its date of receipt, description, and the location from which it came. This database file is then updated with information on the material's properties and status as the material is characterized and processed through the system. When the material is subsequently shipped out of the RMHF, a separate, outgoing shipment identification number is also recorded in the material's database file.

The outgoing shipment identification number is used to track shipments from the RMHF, where the shipment records include information on shipping date, destination, and contents. These shipment records are maintained as a separate data table within the same database, with the incoming material and outgoing shipment identification codes linked within the database to provide full traceability of the materials. The separate identification number for outgoing shipments is required because several materials are usually combined for a single shipment off site.

The RMHF Tracking System was constructed using the relational database management system Microsoft (MS) Access, a computer software package that runs under Microsoft Windows.⁽¹⁾ It was designed as a menu-driven system through which multiple authorized users can enter and update information in the database. Detailed knowledge of MS Access is not required for use in this menu format, which also includes several selectable report formats for the user to view and print selected database information. The extraction of subsets of information beyond those available through the built-in report formats does require a working knowledge of MS Access, but is not be required for most RMHF data recording and reporting applications.

This procedure provides the instructions for a user to set up and use the database program to track RMHF materials information.

⁽¹⁾ Microsoft Windows, Microsoft Access, and Microsoft Excel are licensed products of Microsoft Corporation.

2.0 DATABASE INSTALLATION

2.1 COMPUTER REQUIREMENTS

The following minimum hardware is required to run the RMHF database code:

- IBM-compatible personal computer (Pentium or newer processor recommended)
- 16 Mbytes of random access memory (RAM), 64 Mbytes recommended
- 1,000-Mbyte hard disk drive
- SVGA monitor at 800 x 600 resolution
- Mouse
- Network connection (if accessing from multiple computers)

The following minimum software is required for code installation and operation as described in this document:

- Microsoft Windows 95 operating system
- Microsoft Office Professional 97
- Network software (if accessing from multiple computers)

A printer is also required for generating printed reports.

2.2 DATABASE FILES

The RMHF database system is set up as two separate but linked files:

- **rmhf-dat.mdb**
- **rmhf_dev.mdb**

The file **rmhf-dat.mdb** contains the individual tables that store all of the data for the RMHF materials and shipments. The file **rmhf_dev.mdb** is the database management system code, which specifies the relationships between the individual data files and creates the forms, queries, and reports used to input and output RMHF data to and from the computer. The two .mdb files are linked in the code by defining the data files contained in rmhf-dat.mdb as attachments to the rmhf_dev.mdb system code.

A working backup of the data file rmhf-dat.mdb should be made at the end of each day on which database entries are made, and an archival backup shall be made at the end of each week. These backups shall be made by the designated primary user or administrator of the RTS.

2.3 NETWORKING REQUIREMENTS

The RMHF database system was configured as two linked .mdb files so that multiple users can access and use the database from different computers at the same time. A single copy of the data file rmhf-dat.mdb is maintained on the RMHF computer system, on the primary or “host” RTS computer, to ensure that all database changes are incorporated in that file. It is accessed by individual users either directly from the host computer or from other user computers that have separately installed rmhf_dev.mdb files. This requires that all of the computers using the database be networked directly to the host computer so that they can share the host’s hard disk directory containing the rmhf-dat.mdb file. This structure allows users to customize their rmhf_dev.mdb files, although this is not recommended for most applications. It also dictates the requirement for frequent backups of the rmhf-dat.mdb file on the host computer (Section 2.2), since there is only one master database file.

In order to operate in a network mode, the host computer directory in which the rmhf-dat.mdb file resides must be defined as a shared directory. Each user computer must then define a directory path to the host computer directory. Once a network has been established, the directory path definitions are made using the “Tools - Map Network Drive” option in the Windows Explorer pull-down menu after selecting the “Computer” folder. In this procedure, the RTS computer is set up as the “Z” drive with the data file located on the path `z:\rmhfwast\inventor\rmhf-dat.mdb`.

2.4 DATABASE CODE INSTALLATION

The file database system file **rmhf_dev.mdb** is installed on each user’s computer by copying it from a floppy disk or the network to a directory of choice on the hard drive. The data file **rmhf-dat.mdb** is installed on a single host RTS computer by copying the current version from a floppy disk to directory `c:\rmdfwast\inventor\` on the host computer’s hard drive.

The database code was set up to run rmhf_dev.mdb from a directory of the user’s choice, but it must locate and access the data files (rmhf-dat.mdb) in the default directory `c:\rmhfwast\inventor\` on the RTS computer. Since only one copy of rmhf-dat.mdb is installed (on the RTS computer), the initial default link to its data files will be invalid when rmhf_dev.mdb is installed on separate user computers. The following steps will change the database links for each user computer to access the data files on the host RTS computer:

1. Open the file rmhf_dev.mdb (see Section 3.1 for instructions). An error message, such as “C:\RMHFWAST\INVENTOR\RMHF-DAT.MDB is not a valid path,” will be displayed.
2. Click the mouse on “OK,” and then on “Halt” if the “Action Failed” window pops up. The Halt will leave an empty screen with the pull-down menu and toolbars at the top.
3. Click on the Database Window button on the button bar at the upper right corner of the MS Access screen to open the Database Window. Select the “Tools” drop down menu, then

“Add-Ins”, and then “Linked Table Manager”. An information box will be displayed, as shown in Figure 1. Check the “Select All” box and press “OK,” which will open a “Select New Location” box. Use that box to locate the actual location of the database file on the RTS computer (i.e., z:\rmhfwast\inventor\rmhf-dat.mdb, assuming the RTS computer is set up as the Z drive on the network). Select the rmdf-dat.mdb file, and close the box after all the links are made.

4. The program code for three buttons on the Materials Input Form require minor modification to access the “Notes”, “Characterization”, and “Isotopes” forms. Those modifications are made using the following steps:
 - a. Press the “Materials” button on the Main Menu form.
 - b. Select the “Design View” option from the “View” pull-down menu on the menu bar at the top of the screen.
 - c. Select the “Notes” button with the mouse and then right-click the mouse to pop up a properties window. Select the “Properties” option.
 - d. Locate the “On Click ... [Event Procedure]” entry, click on it, and click on the button with 3 dots that appears to the right of the entry. This will display the procedure code.
 - e. Modify the variables “Notesfile,” “Charfile,” and “Isofile” to reflect the new path to the data file (e.g., change Notesfile = “c:\rmhfwast\inventor\rmhf-dat.mdb” to Notesfile = “z:\rmhfwast\inventor\rmhf-dat.mdb”).
 - f. Save the changes by closing the procedure code (X in upper right of the window), and closing the application (“File – Close”). Answer yes when asked whether to save the changes.
5. The new links will be in effect when the database is reopened.

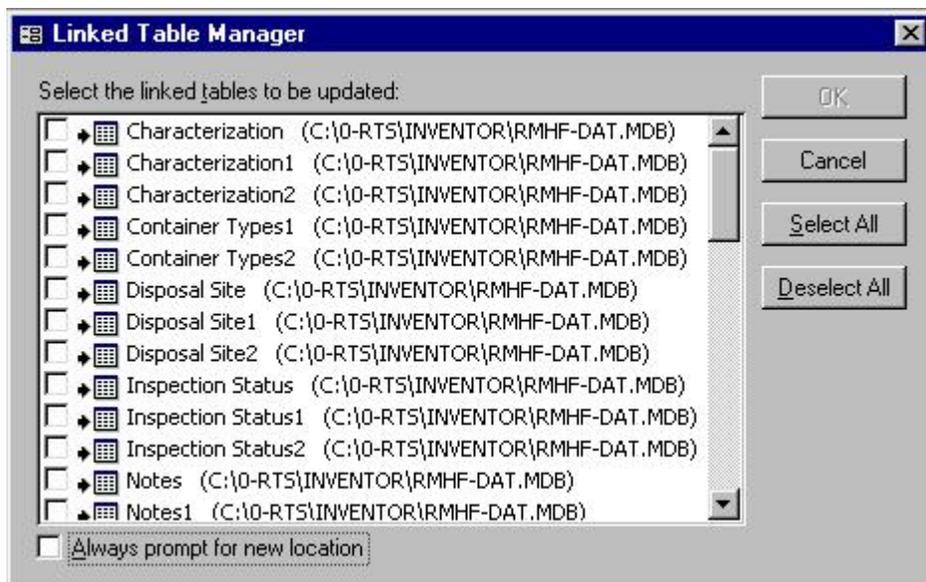


Figure 1. Linked Table Manager Box for Location Reassignment of the Database Files.

3.0 PROCEDURES FOR USING THE RMHF TRACKING SYSTEM

The RTS is to be run only from the database menu system for data entry, editing, deletion, review, and report generation. Any changes to the database code, or to the data tables by direct data entry, are to be performed only by the designated person in charge of the code.

3.1 OPENING THE DATABASE

The installed RMHF database system is opened by using the computer's mouse to double click on the RMHF RTS icon. If this icon is not present, the program may be opened by using Windows Explorer to locate the "rmhf_dev.mdb" file and double clicking on it. Alternatively, MS Access may be started by double clicking the mouse on the MS Access icon and then using the "File - Open Database..." from the pull-down menus to open the database. This will bring up the Main Menu, shown in Figure 2, on the computer screen.

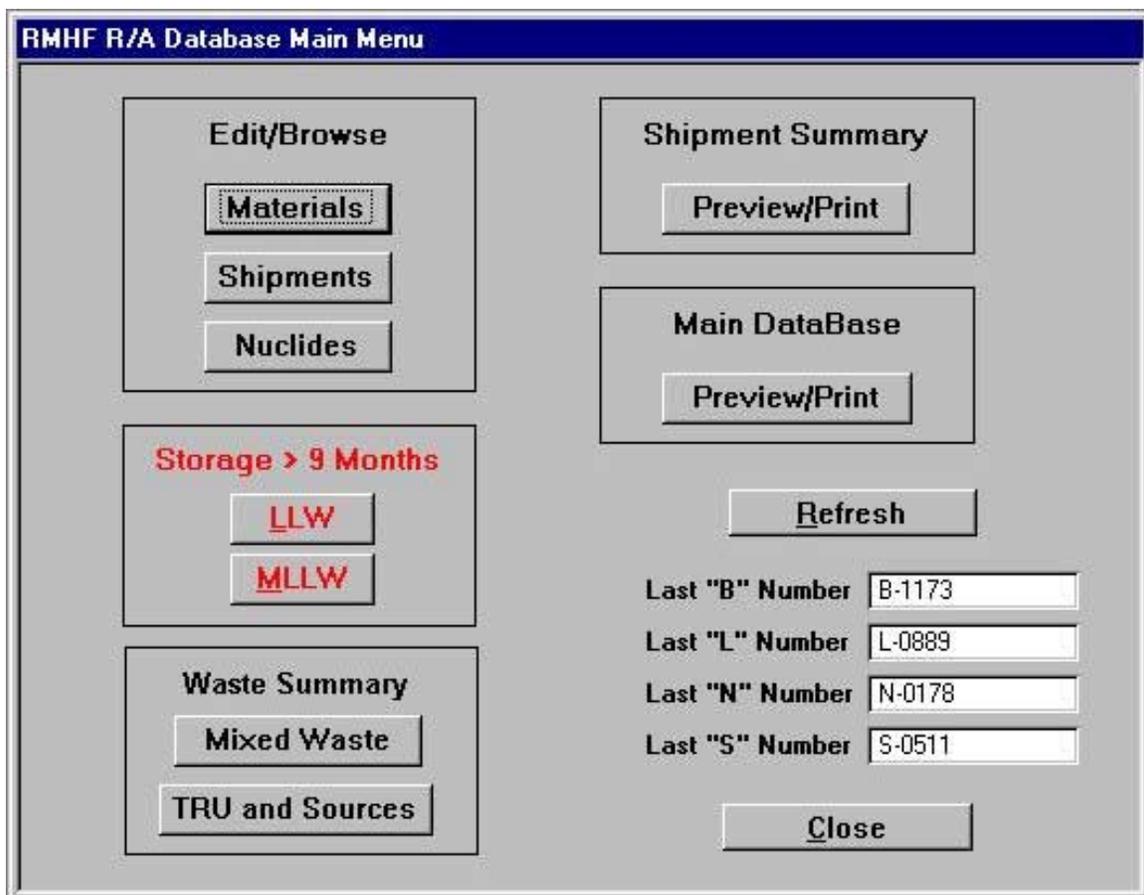


Figure 2. RMHF RTS Database Main Menu

3.2 NAVIGATING THE OPENING MENU

The main menu shown in Figure 2 provides the means of navigating the database to enter, edit, view, and print information on the materials in storage at the RMHF and records on their shipment from the facility. It also displays the last “B,” “N,” “L,” and “S” sequence numbers used to identify containers. The “Refresh” button checks the database to ensure that these values are current. A roadmap for the use of this menu is presented in Figure 3.

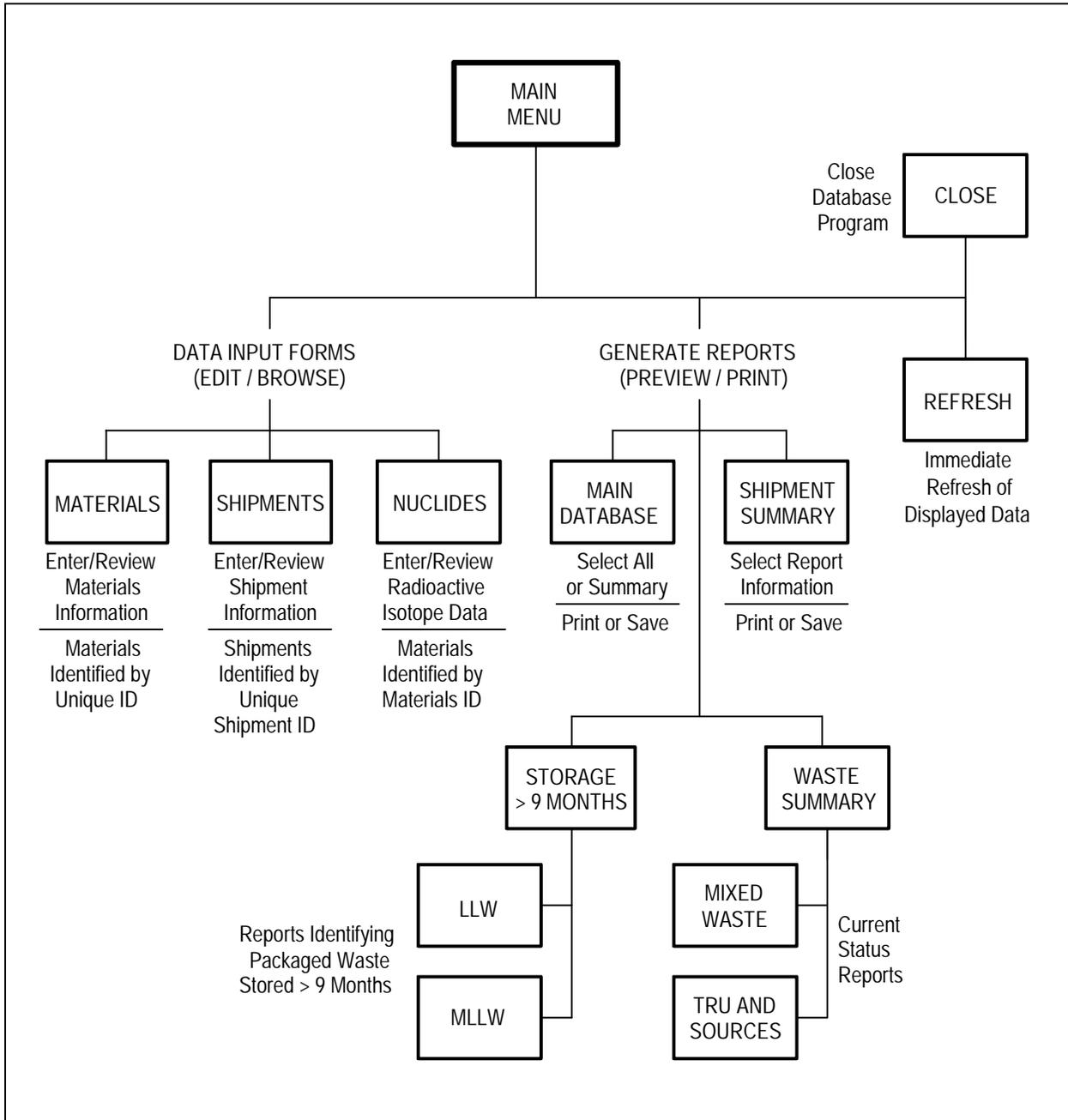


Figure 3. Roadmap for Accessing and Using the RMHF Database.

As shown in Figure 3, there are four major types of database activities available to the user:

- (1) Input, modify, or review data records associated with individual materials received and stored at the RMHF and with individual material shipments from the RMHF. The materials records include separate input forms for general descriptive information and for the radionuclide content of the materials. The material records (for both general and radionuclide data) for each material are identified by a unique RTS identification number (coded as "ETEC ID"), while each outgoing shipment (which may contain several materials) is identified by a unique shipment identification number ("Shipment ID").
- (2) Generate reports of selected information contained in the database files. Those reports include full or selected reports based on the main database or shipment records, reports specifically identifying low level waste (LLW) and mixed low level waste (MLLW) that have been in storage over nine months (and are thus approaching a one-year storage period), and status reports for mixed waste and transuranic (TRU)-plus-sources waste categories.
- (3) Refresh the data displayed on the screen.
- (4) Close the menu. This exits the program.

To input, modify, or review individual data records, use the computer's mouse to point and click on "Materials" (for material description data), "Nuclides" (for material radionuclide data), or "Shipments" (for outgoing shipment data). This will call up the appropriate data entry/edit form for that data type, as described in Section 3.3. The Nuclides form is also available through the Materials Input form by pressing the "Isotopes" button. To generate reports based on these data, point and click the mouse on "Preview/Print" for either the Main DataBase or a Shipment Summary, or click on the appropriate button under "Storage > 9 Months" or "Waste Summary." This will call up the report generation menu for the selected data file, as described in Section 3.4. Clicking the mouse on the "Close" button exits the program and MS Access.

The keyboard can be used instead of a mouse to select and activate menu items on this or any of the other database menus. Use the tab key on the keyboard to move forward box-to-box from one option to the next, or shift-tab to move backwards box-to-box. Then press "Enter" on the keyboard when the desired option has been selected. The selected button is highlighted by a black border.

If multiple users are working on the database at the same time, the most current data may not always be present on an individual user's screen. To update displayed records, click on "Records - Refresh" from the MS Access pull-down menu. To re-query underlying records, press shift-F9 on the keyboard, and to recalculate calculated fields press F9.

3.3 DATA ENTRY, EDITING, AND REVIEW

One of the primary functions of a database is to enter and store data. The normal means of data entry into the RMHF database is done through the “Materials,” “Nuclides,” and “Shipments” forms, activated by clicking on those buttons on the main menu. The “Materials” form is used for entering new data records and editing records for all materials information except the specific radionuclide contents, for which the “Nuclides” form is used. Outgoing shipments from the RMHF are entered into the database using the “Shipments” form. It is also possible to enter data directly into the individual data tables, accessing them through the main MS Access database window. However, that entry mode should not normally be used and is not discussed here.

3.3.1 Materials

Selecting the “**Materials**” option from the main menu calls up the RMHF RTS Materials Input Form, as shown in Figure 4. This form lists those material properties that are incorporated in the database, and provides fields (the white boxes) to enter or edit the data. It also has nine selection buttons, each activated by a mouse click, which are used to specify options to find, review, or record data. A roadmap for the use of those buttons is provided in Figure 5.

The screenshot shows the 'RMHF R/A Materials Input Form' with the following data and controls:

- ETEC ID:** B-969
- Mode:** Mode, Browse, New, Find, Delete, Close
- Status:** Process: Shipped, Inspection: (dropdown), Tag ID: (text), Date: (text)
- PHYSICAL DESCRIPTION:** Material Category: LLW, Waste Code: (dropdown), Physical Form: (dropdown), Description/Contents: Misc trash & steel & sand
- RADIOLOGICAL DESCRIPTION:** Activity (mCi): 1.50E+02, Rad. (mR/h): At surface = 60.00, At 1 meter = 2.50
- CHEMICAL DESCRIPTION:** Possible Hazardous Components: (text)
- SHIPMENT INFORMATION:** Shipment ID: 9105-02, Container Type: B-25, Gross Weight (lbs): 3400, Disposal Site: Hanford, Container S/N: (text), Volume (cu ft): 138

Figure 4. RMHF RTS Materials Input Form.

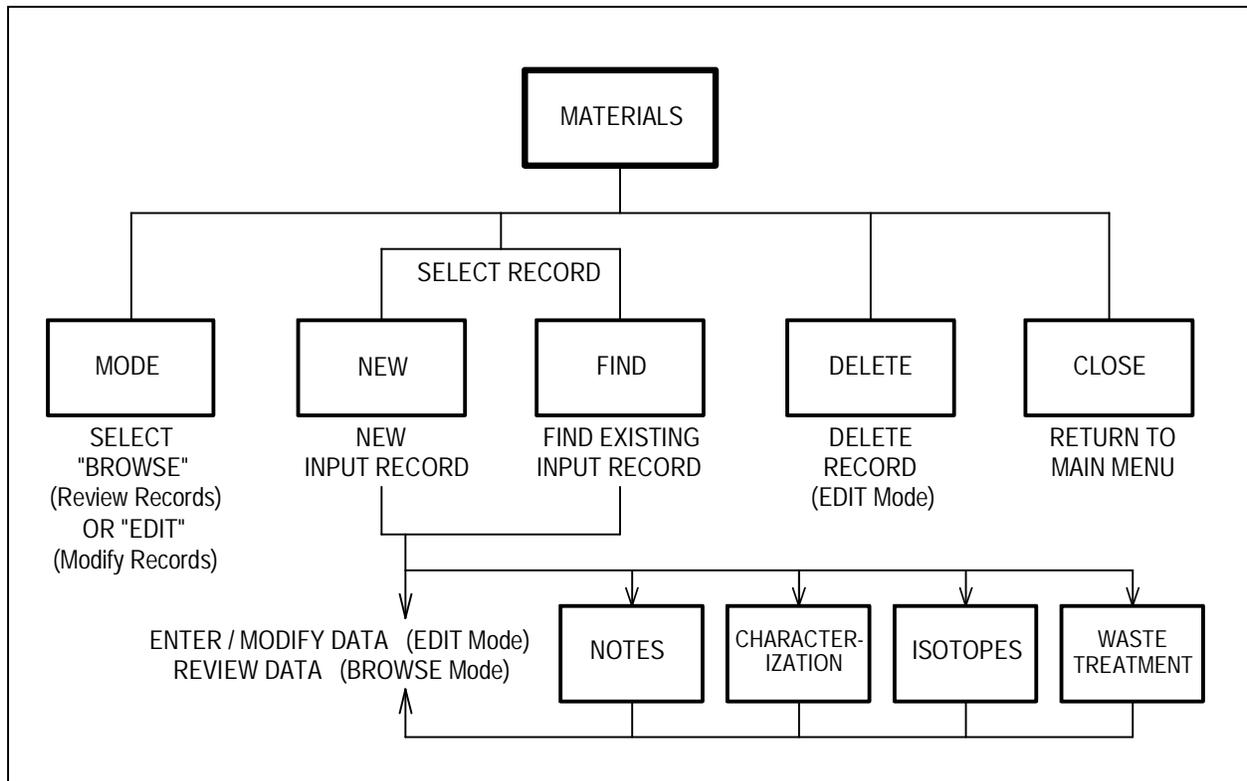


Figure 5. Roadmap for the Materials Input Form.

The “**Mode**” button toggles between a “Browse” mode and an “Edit” mode, as indicated by the label to the immediate right of the button. In the default Browse mode (activated when the menu is opened), the menu can be used to view data records, but not change them. In order to modify, enter, or delete data, the Mode button must be clicked to switch to Edit mode. This also activates the “Delete” button, which is inactive when the menu is opened. Clicking on the “New” button to open a new data record will also switch the menu to the Edit mode.

The “**New**” button is used to enter a new material into the RMHF database. It opens a new data record at the end of the database for the user to fill in the data fields (the white boxes on the form). Each entry field is accessed by clicking on it with the mouse or using the tab key on the keyboard to move from field to field. The selected field is then filled in by typing from the keyboard. The entry is saved automatically as soon as the user tabs to (or clicks on) a new field, closes the form (by clicking the “Close” button), enters another new record (by clicking “New”), or moves to another record in the data file.

Each material record is identified by its unique Material ID number (coded as “ETEC ID”), which is assigned by the user when adding this record to the database by filling out this input form. The material information to be entered into this form is listed in Table 1. The information in eleven fields (Process Status, Inspection Status, Origin, Storage Location, Material Category, Waste Code, Physical Form, Container Description, Storage, Container Type, and Disposal Site)

Table 1
Data Fields in the Materials Input Form

Input Field	Comments
Material ID Process Status New ETEC ID if transferred Inspection Status Tag ID Date Origin Date Received Date Stored Storage Location Waste Treatment Notes	The unique material identifier (coded as "ETEC ID") <i>Select</i> from list of options to describe current status Cross-reference to new Material ID number if material transferred <i>Select</i> from three options: Tamper Seal, Inspected, Hold Tag Inspection tag or tamper seal number (where used) Tag or seal date <i>Select</i> from where the material came from Date material was received at the RMHF Date material was taken into storage at RMHF (<i>see text</i>) <i>Select</i> from list of options to identify location of the material Button opens form for waste treatment description Option button for notes; filled circle denotes entries
Material Category Waste Code Physical Form 642-J, Sample Req'd STP and Number Characterization Container Description Storage Description/Contents	<i>Select</i> from list of options, such as TRU, LLW, Mixed, Mixed TRU <i>Select</i> from a list of State and EPA waste codes. <i>Select</i> from a list of EPA codes for physical form Check boxes to identify labeling and sampling requirements Check if material is in Site Treatment Plan, and enter ID number if checked Option button for characterization data; filled circle denotes entries <i>Select</i> from list of container descriptions <i>Select</i> from a list of EPA storage codes. Detailed description of the material, including dimensions, discrete sources, hazardous material constituents, etc.
Activity (mCi) Rad. at surface (mR/h) Rad. at 1meter (mR/h)	Radionuclide quantity Measured surface radiation dose rate Measured radiation dose rate 1 m from the surface
Chemical Description	Listing of possible or suspected hazardous constituents
Shipment ID Disposal Site Container Type Container S/N Gross Weight (lbs) Volume (cu ft)	Identification number for the shipment from the RMHF <i>Select</i> from list of planned or actual off-site disposition options <i>Select</i> from list of container type options Serial number of the shipping container Total weight of the material Volume occupied by the material

is to be selected from pre-defined options, by clicking on the down arrow to the right of each entry field and then clicking on the appropriate option. It is possible to enter different information in these fields, but not recommended because the selection options are defined for later database sorts. Not all of the information listed in Table 1 will be known when the material data record is first created, and is to be left blank at that time.

Some inputs (such as date) are checked for valid entries, but most are not. For example, it is possible to enter a radiation dose rate at 1 m that is greater than the surface value. Thus extra care must be used in entering data to avoid input errors.

The **Date Stored** entry is of particular significance because Resource Conservation and Recovery Act (RCRA) regulations require the maintenance of an accurate operating record, and this field is used both to document the storage date and to track the length of storage. The date entered depends upon the history and use of the container. The Date Stored for a container filled at another facility is the date that container is accepted at the RMHF for storage. The Date Stored for a container that is generated at the RMHF is the date the container ends accumulation and begins storage. The Date Stored for a container that is part of an active system (such as a catch drum for a HEPA vacuum system) is the date that the container is removed permanently from the system. If a system container's contents are emptied into a waste container, the Date Stored is the date that the waste container is filled with the system container contents. When wastes are consolidated from various storage containers into a new container (or set of containers), the assigned Date Stored for the new container is the oldest storage date for individual items placed in that container.

When additional information becomes available to add to or modify a material data record, it is entered into the database using this same menu. In this case, the "**Find**" button on the Materials Input Form box is used to call up a specific record to edit or review. Clicking this button will call up a standard MS Access dialog box (Find) in which to specify how to locate that record. The Find box is shown in Figure 6.

When this dialog box is called up, it is configured for the user to enter the entire Material ID for the material record of interest in the field (white area) to the right of the "Find What:" label. Alternatively, the search routine can be changed to find the correct record by typing in only part of the ID number. That option is selected by using the down arrow at the right of the "Match:" entry box to select "Any Part of Field" or "Start of Field" instead of "Whole Field." The search routine can also be configured to search through all fields (all of the data entries for each record) in all records for a word or string of characters. To do this, uncheck the "Search Only Current Field" check box by clicking on it with the mouse. These searches do not differentiate between uppercase and lowercase letters, but can be forced to do so by clicking on the "Match Case" check box. The "Search Fields as Formatted" option allows the user to search for displayed values that are different than stored values because of programmed formats, such as date. Some of these options can be activated from the keyboard by typing the underlined letter in the box label, such as "e" for "Search only Current Field." Click the "Close" button to exit the Find dialog box when the record is located.

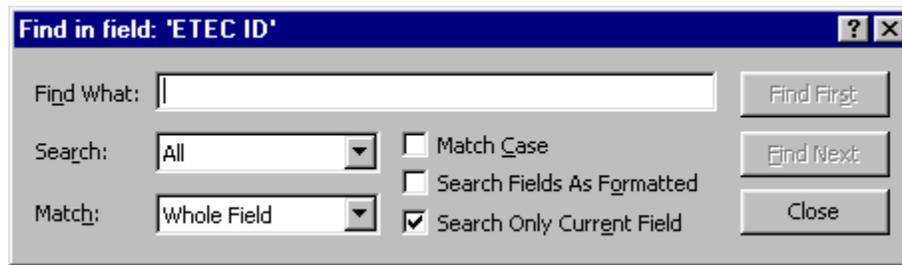


Figure 6. The Find Dialog Box for Searching for a Specific Data Record.

The “**Notes**” button opens a screen that allows the user to enter additional information about the material or item. This is particularly useful when boxes of waste are combined or repackaged. An example is shown in Figure 7.

The “**Characterization**” button opens a screen that allows the user to enter additional information about how and when the item or material was characterized, radiologically or chemically. An example of this screen is shown in Figure 8.

The “**Isotopes**” button opens the Isotopic Data Input form (Section 3.3.2) and allows the user to enter, view, and edit the isotopic constituents of the material or item.

The “**Waste Treatment**” button opens a screen that allows the user to record the waste treatment method used and to describe the procedure. An example is shown in Figure 9.

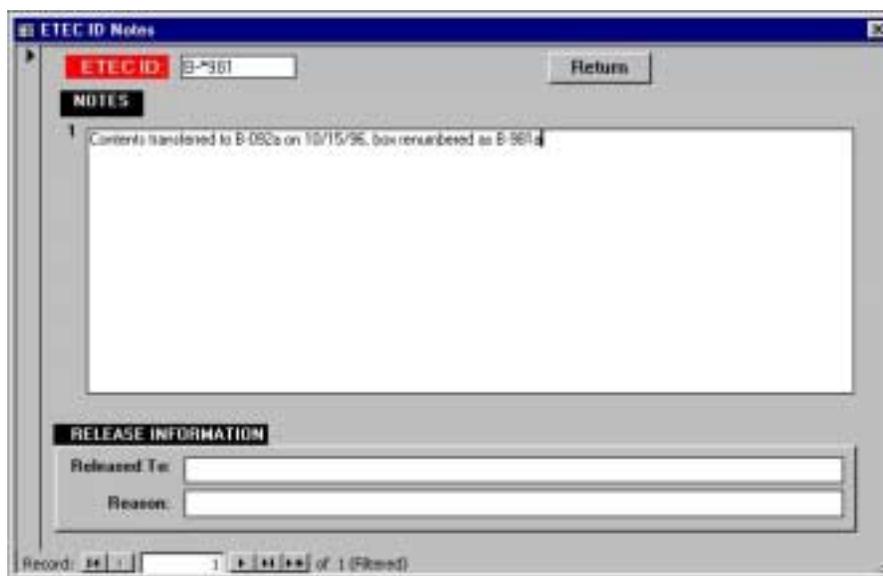


Figure 7. The Notes Screen for Entering Additional Material Information.

Characterization Information

ETEC ID: B-0066 Return

CHARACTERIZATION DATA

01	2/25/97, sample RMF97017 to T100
02	
03	
04	
05	
06	
07	
08	
09	
10	

Record: 1 of 1 (Filtered)

Figure 8. The Characterization Screen for Additional Characterization Information.

Waste Treatment Information : Form

Waste Treatment Information

ETEC ID: L-0882 Return

EWR #: 97633 and 983885

Date: 12/15/99

Treatment Method: T34: Stabilization

Treatment Procedure: 5/15/00 Re-treated waste per second EWR. Working copies of EWR's in file under ETW032. Stabilized w/2.1 DE Sporland cement. First treatment did not meet standards. Retreatment was same as previous with the addition of 20 grams of sulfur.

Record: 1 of 1 (Filtered)

Figure 9. The Waste Treatment Screen for Documenting Waste Treatment Procedures.

The navigation buttons at the bottom of the Materials Input Form can also be used to move from record to record. The use of those controls, seen at the bottom of Figure 4, is shown in Figure 10. If a number of additions or deletions have been made to the database, it is preferable to locate a record using the “Find” option rather than typing in a record number at the bottom of the input form. This is because new records are listed in the database tables in alphanumeric order, and the record number assignment thus changes as records are added and deleted.

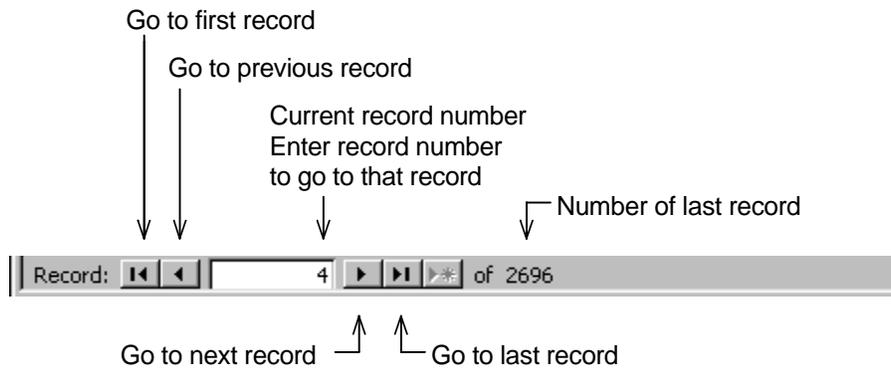


Figure 10. Navigation Buttons for Moving from Record to Record.

If it is necessary to delete a record, click on the “Delete” button when the data for that record are displayed on the computer screen. To close the Materials Input Form, click on the “Close” button to return to the Database Main Menu.

3.3.2 Nuclides

Selecting the “Nuclides” option from the main menu, or the “Isotopes” button from the Materials Input form, calls up the Isotopic Data Input form, as shown in Figure 11. This form is set up with the same format as the Materials Input Form (Section 3.3.1), and a roadmap for its navigation is provided in Figure 12. It is used to enter different data for the same materials recorded in the materials data table. The data entered in this form are the results of radiological analyses of the RMHF materials for specific radionuclides. The form includes entry fields for twenty-four different radionuclides, with reported analysis values to be entered in units of milliCuries (mCi). These fields are listed in Table 2. The “ETEC ID” is the Materials ID used in the Materials Input Form, and is used to link corresponding data for the same material from the two data files. Note that it is possible to enter a Materials ID that doesn’t correspond to an existing Materials ID in the materials database, so care must be taken to enter ID numbers correctly. The option buttons Mode, New, Delete, and Find work in the same manner as for the Materials Input Form. The “Return to” buttons allow the user to return either to the Materials Input Form or to the Main Menu. The navigation buttons work in the same manner as for the Materials Input Form if accessed from the Main Menu, but only a single record is accessible from the Materials Input Form. The use of the Isotopic Data Input Form will be more limited than the Materials Input Form, as not all materials are sent out for complete radiological analysis.

Isotopic Data Input Form

Mode Browse New Delete Find

Return to: Materials Main

ETEC ID: E-0120A

Anal. No.: Anal. Date:

MEASURED ISOTOPIIC ACTIVITIES (mCi)

H-3		Sr-90	4.07E-02	U-235	
Na-22		Cs-134		U-238	
Ar-39		Cs-137	2.62E-01	Pu-238	
Ca-41		Eu-152		Pu-239	
Fe-55		Eu-154		Pu-240	
Ni-59		Eu-155		Pu-241	
Co-60	9.38E-03	Th-232		Pu-242	
Ni-63		U-234		Am-241	

Record: 14 of 1 (Filtered)

Figure 11. Isotopic Data Input Form.

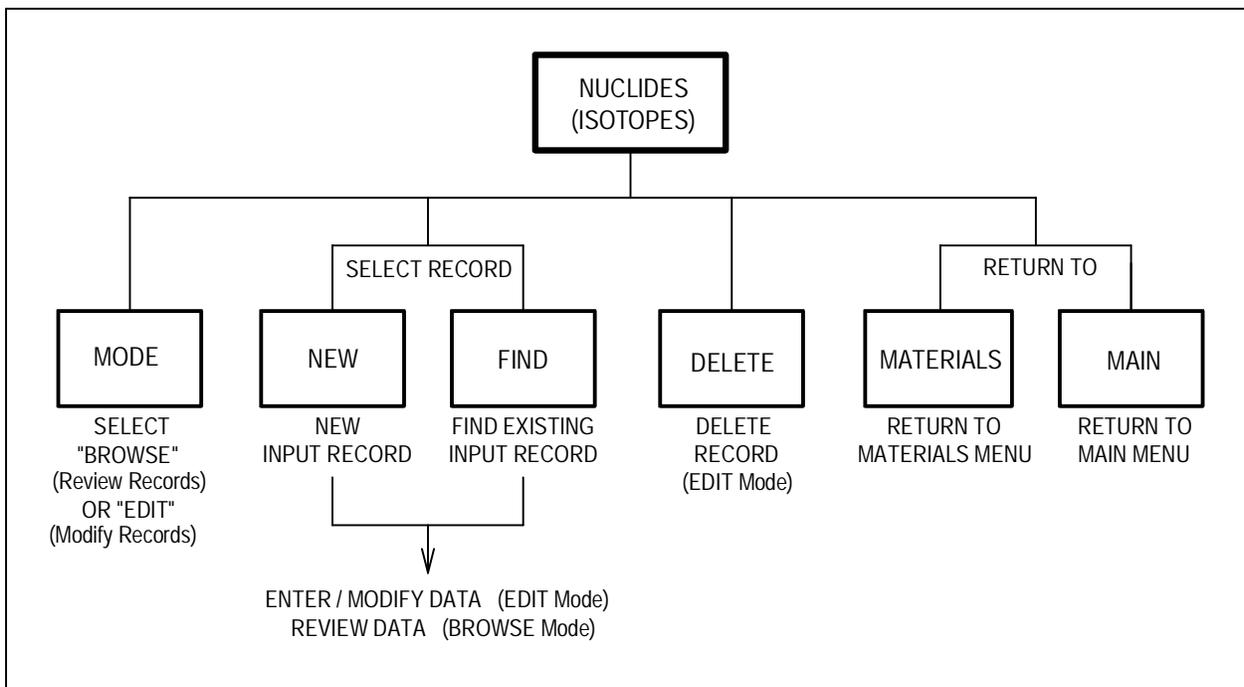


Figure 12. Roadmap for the Isotopic Data Input Form.

Table 2
Data Fields in the Isotopic Data Input Form

Input Fields		Comments	
Material ID		The unique material identifier (coded as "ETEC ID")	
Analysis Number		Analysis identification number	
Analysis Date		Date of analysis	
Isotopes:	Tritium (H-3)	Strontium-90 (Sr-90)	Uranium-235 (U-235)
	Sodium-22 (Na-22)	Cesium-134 (Cs-134)	Uranium-238 (U-238)
	Argon-39 (Ar-39)	Cesium-137 (Cs-137)	Plutonium-238 (Pu-238)
	Calcium-41 (Ca-41)	Europium-152 (Eu-152)	Plutonium-239 (Pu-239)
	Iron-55 (Fe-55)	Europium-154 (Eu-154)	Plutonium-240 (Pu-240)
	Nickel-59 (Ni-59)	Europium-155 (Eu-155)	Plutonium-241 (Pu-241)
	Cobalt-60 (Co-60)	Thorium-232 (Th-232)	Plutonium-242 (Pu-242)
	Nickel-63 (Ni-63)	Uranium-234 (U-234)	Americium-241 (Am-241)

3.3.3 Shipments

Selecting the "**Shipments**" option from the Main Menu calls up the Shipment Input/Browse Form, as shown in Figure 13. This form is used to input, modify, or review information on the shipment of materials from the RMHF. Each shipment is identified by its unique Shipment ID number, and may contain materials identified by several Material ID numbers. This form follows the same general roadmap as the Materials Input Form and the Isotopic Data Input Form, as shown in Figure 14, with the same use of text fields plus option and navigation buttons. It differs from the other two forms by the addition of two lists at the bottom of the form. The upper list ("Shipment Detail") tabulates the materials included in this shipment, identified by their Material ID numbers. The lower list tabulates (by Material ID number) either all materials in the RMHF database (if the "All Items" button is activated) or those materials not identified in the materials database as belonging to a shipment (if the "Items not shipped" button is activated). The Shipment form reads the Material ID numbers and the contents descriptions from the materials data table, based on the information entered by the user in the Materials Input Form.

If the Shipment Form is used in "Browse" mode, these lists can only be reviewed. To add materials to, or remove them from, the list of materials in the displayed shipment, switch to the "Edit" mode by clicking the "Mode" button. This activates the "Remove" and "Add" buttons above the two lists. A new shipment record will have no entries in the Shipment Detail list.

Figure 13. Shipment Input/Browse Form.

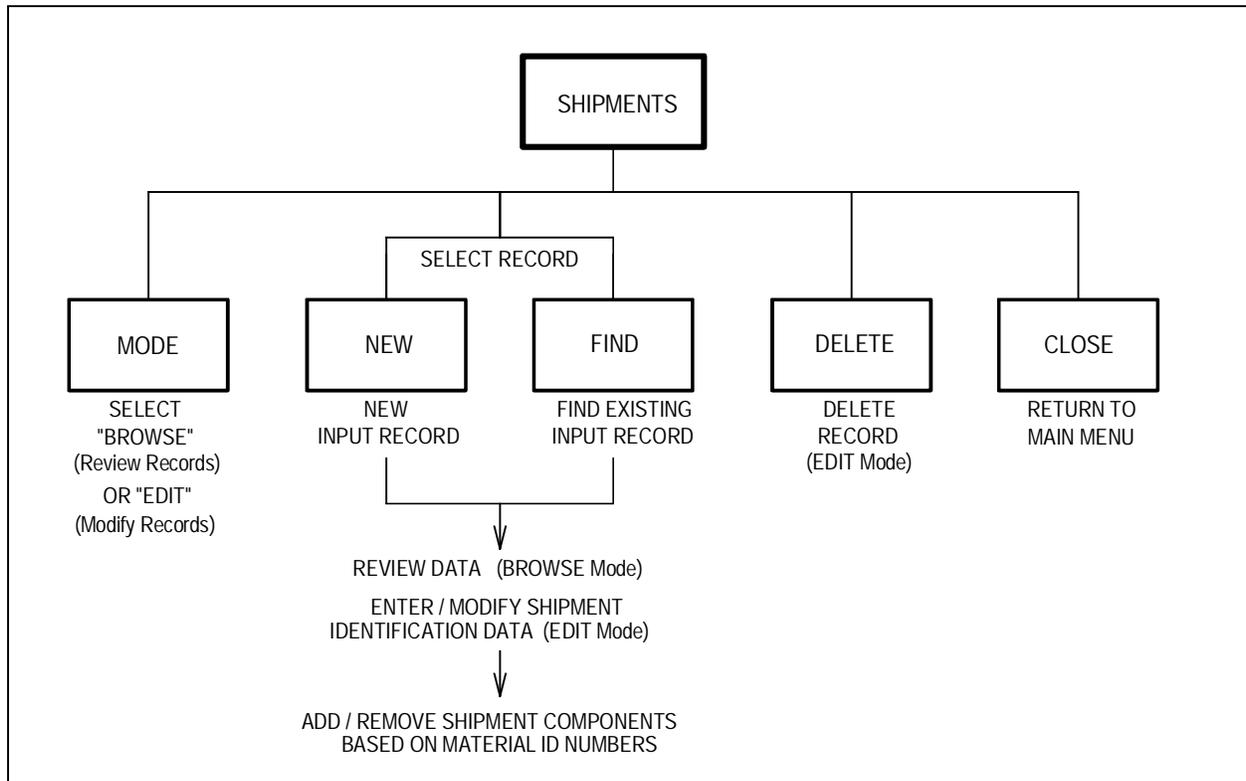


Figure 14. Roadmap for the Shipment Input/Browse Form.

A material is added to the shipment list by finding the appropriate material in the bottom list, identified by its Material ID number, highlighting it by clicking on the line with the mouse, and then clicking the “Add” button. If the wrong entry is added to the upper list, it can be removed by highlighting that entry with the mouse and clicking the “Remove” button. The data fields used in the Shipment Input/Browse Form are summarized in Table 3. The form is exited by clicking on the “Close” button. That returns the user to the Main Menu.

Table 3
Data Fields in the Shipment Input Form

Input Fields	Comments
Shipment ID	The unique shipment identifier (different than the Material ID)
Shipment Date	Date of shipment from the RMHF
Destination	Destination of the shipment when it leaves the RMHF
Receiver ID	Shipment identification used by the destination organization
Shipment Detail	Shipment contents list, based on Material ID selection from the materials database

3.4 DATA REPORTS: SELECTING, PREVIEWING, AND PRINTING

The second major function of a database is to select all or specified subsets of the data tables for reviewing and printing. These output files are called “Reports.” They are based on set-up “Queries” or tables to extract specified information from the data tables, and invoke report format instructions to define how the information will be presented on the printed page. In this manner, specific information can be readily extracted from the data files for presentation in easy-to-read form, where the reporting can include individual, grouped, and summed formats. A wide range of queries and report formats can be used to display the data, depending upon the information of interest to the user. The RMHF database system includes a number of pre-defined report formats that are user-selectable from menus, as described below. Other custom information can be extracted from the data by creating new reports. That requires a knowledge of MS Access, and is not covered here.

3.4.1 Main Database

Standard reports based on information from the main (materials) data files are accessed by clicking on the “**Preview/Print**” button in the **Main DataBase** rectangle on the RMHF Database Main Menu (Figure 2). This calls up the “Print/Browse Main Database” dialog box shown in Figure 15. Three materials data report formats are available through this menu, as indicated on the menu roadmap shown in Figure 16. The information provided in each of these three reports is listed in Table 4. The materials in the “All Records” report are listed alphanumerically by Material ID number, while those in the summary reports are listed alphanumerically by Material

ID within each category. Sample pages of these reports are presented in Figure 17 for the full materials database, in Figure 18 for the Summary by Category, and in Figure 19 for the Summary by Date.

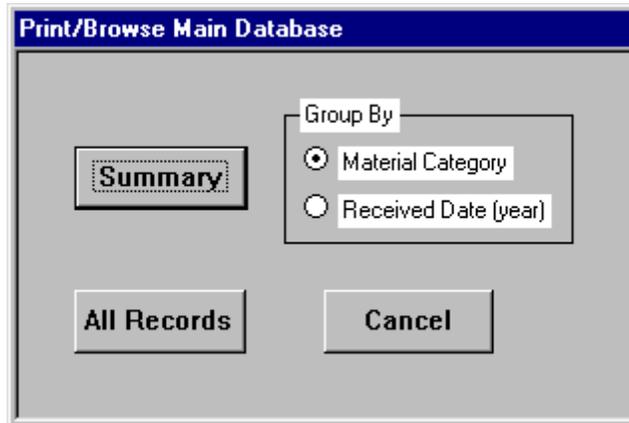


Figure 15. Print/Preview Menu for the Materials Data Files.

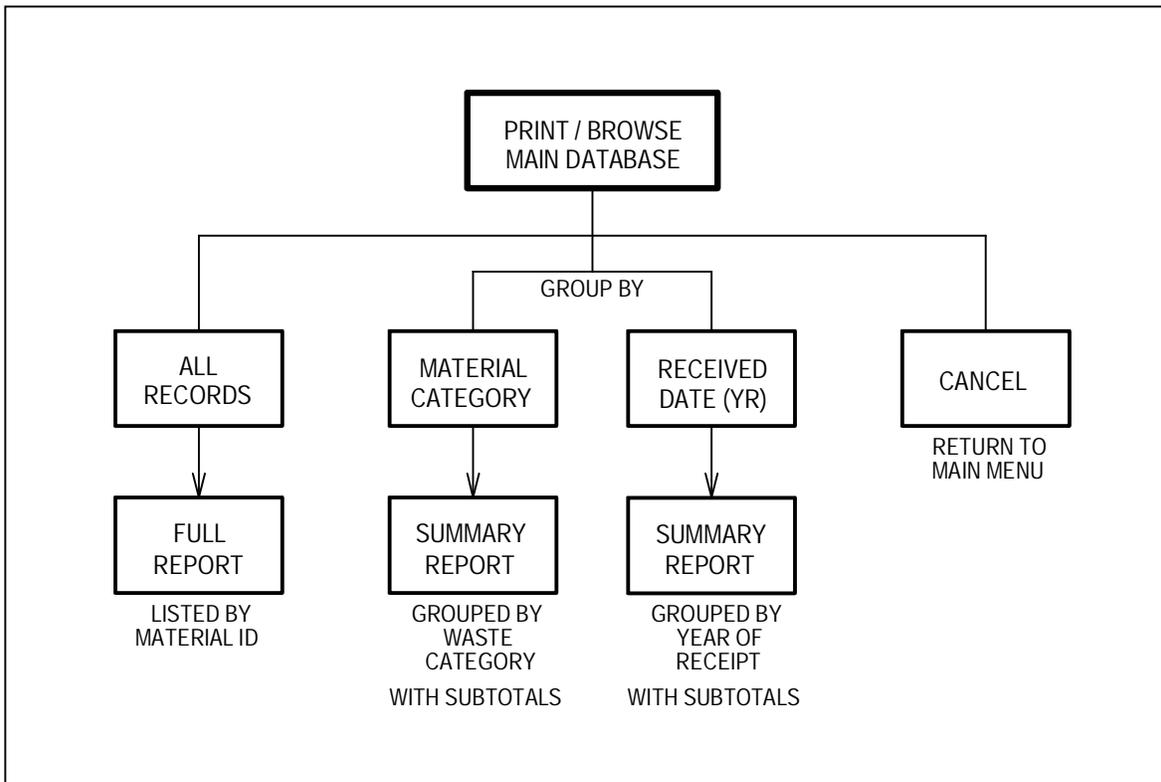


Figure 16. Roadmap for the Print/Browse Main Database Menu.

Table 4
RMHF Materials Information Printed in Standard Reports

Database Field	All Records	Summary by Material Category	Summary by Received Date
Material ID (“Etec ID”)	✓	✓	✓
Location	✓	✓	✓
Origin	✓	✓	✓
Received Date	✓	✓	(grouped by year)
Status	✓		
Waste Stream	✓		
Waste Category	✓	(grouped by category)	✓
Contents	✓	✓	✓
Activity (mCi)	✓	✓S	✓S
Dose Rate at Surface (mR/h)	✓	✓	✓
Dose Rate at 1 m (mR/h)	✓	✓	✓
Weight (lbs)	✓	✓S	✓S
Volume (ft ³)	✓	✓S	✓S
Container Type	✓		
Container Serial Number	✓		
Shipment ID	✓		

✓ = included in report
S = subtotal by group supplied for this quantity

The Summary by Category report groups all of the database materials by waste category, and prints the category groupings in alphabetical order. The first report group includes those materials for which no waste category was specified. The Summary by Date report groups all of the database materials by the year in which each was received at the RMHF, and prints the groups in earliest-to-latest year. Those materials for which no date of receipt has been recorded are listed as the first group on this report. For both summary reports, the radiological activity, weight, and volume data are summed by group and printed at the end of each tabulated group.

When MS Access generates the report and displays it on the computer screen, it also displays a new horizontal toolbar just above the displayed report. The report can be viewed in whole or in part by clicking on the magnifying-glass icon in this toolbar. The report is printed by clicking on the printer icon, and selecting the desired print options (all or specific sections; printer setup; print to a file instead of a printer). It can also be saved as an MS Access report for later review by clicking on “File - Save As” and providing a file name. Other options include exporting the report as an MS Excel, text, or RTF (rich text field; text plus formatting) file. To close the report, click on the “Close” button on the lower toolbar. That returns the user to the Database Main Menu.

A listing of the main RMHF DataBase

as of 10/5/99

ETEC ID:	Location:	Origin:	Rcvd Date:	Status:	Waste Stream:	Waste Category:	Contents:
B-*882	T059			Empty		Empty	
B-*969	Shipped	T059	22-Mar-85	Shipped	NA	LLW	Misc trash & steel & sand
B-*976	Shipped	RMDF-	13-Apr-85	Shipped	NA	LLW	Glove Box, parts, trash bags
B-*979	Shipped	T020	03-Oct-95	Shipped	NA	Mixed-P	Paint chips debris waste
B-*980	Shipped	T020	11-Apr-96	Shipped	NA	LLW	21 HEPA FILTERS AND 11 PREFILTER
B-*981	T621-Y	RMHF	09-Jul-96	Transferr	NA	LLW	Floor tiles (asbestos) and flanges with as
B-*981a	Shipped	T059	08-May-97	Shipped		LLW	Concrete, filters, elec. conduit, kal wool, s
B-*982	Shipped	T059	13-Nov-86	Shipped	NA	LLW	Trash, stl, filt & wood
B-*985	Shipped	RMHF	17-Oct-96	Shipped		LLW	radioactively contaminated bag & HEPA fi
B-*986	Shipped	T009-B	19-Apr-86	Shipped	NA	LLW	Trash, paper, plastic
B-*987	Shipped	B104-B	18-May-85	Shipped	NA	LLW	Trash, filt & stl
B-*988	Transferred	T020	22-Aug-89	Transferr	BL	Mixed T	Trash, wood, stl, plastic, weir box, 4 HEP
B-*989	Released	T009	01-Jan-93	Released	NA	Items	Radioactively contaminated ISI PAR part
B-*990	Shipped	T059	21-Oct-96	Shipped		LLW	Metal elec conduit, steel, wood, wires, hr
B-*991	Transferred	T020	03-Oct-89	Transferr	BL	LLW	Trash, dirt, asphalt, stl
B-*991A	Shipped	RMHF	15-Oct-97	Shipped		LLW-CA	Broken transite pipe
B-*992	Shipped	OSY	27-Jun-85	Shipped	NA	LLW	Soil 100%
B-*993	Shipped	OSY	27-Jun-85	Shipped	NA	LLW	Soil 100%
B-*994	Shipped	OSY	27-Jun-85	Shipped	NA	LLW	Soil 100%
B-*995	Shipped	T064/O	27-Jun-85	Shipped	NA	LLW	Soil & Rock 100%
B-*996	Shipped	T059	12-Nov-86	Shipped	NA	LLW	Trash, plstc, ppr/rbbr, conc, blocks
B-*997	Shipped	T064	01-Aug-85	Shipped	NA	LLW	Soil & Rock 100%
B-*998	Shipped	T064	01-Aug-85	Shipped	NA	LLW	Soil & Rock 100%
B-*999	Shipped	T064	01-Aug-85	Shipped	NA	LLW	Soil & Rock 100%
B-0001	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 90% - Asphalt 10%
B-0002	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 90% - Asphalt 10%
B-0003	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 75% - Asphalt 25%
B-0004	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 85% - Asphalt 15%
B-0005	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 90% - Asphalt 10%
B-0006	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 90% - Asphalt 10%
B-0007	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 95% - Asphalt 15%
B-0008	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0009	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 80% -Asphalt 20%
B-0010	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 95% - Asphalt 5%
B-0011	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 90% - Asphalt 10%
B-0012	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 80% - Asphalt 20%
B-0013	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 85% - Asphalt 15%
B-0014	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 80% - Asphalt 20%
B-0015	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 80% - Asphalt 20%
B-0016	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil&Rock 60%-asph 5%-Brush 35%
B-0017	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0018	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0019	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0020	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0021	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0024	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 100 %
B-0025	Shipped	T064	02-Aug-89	Shipped	NA	LLW	Soil & Rock 70% - Asphalt 30%

Figure 17 (page 1 of 2). Sample Pages for the RMHF Database All Records Report.

Activity:	Rad-Surf:	Rad-1m:	Weight lbs:	Volume cft	Container Type:	Container S/N:	Shipment I D:	ETEC ID:
1.50E+02	6.00E+01	2.50E+00	3400	138	B-25			B-*882
1.00E-03	2.00E-01	4.00E-02	3100	138	B-25		9105-02	B-*969
3.22E+00	6.00E+00	1.20E+00	4015	56	B-25		BURDEN	B-*976
3.31E+00	4.50E+00	8.00E-01	1785	138	B-12		0900-03-0001	B-*979
				138	B-25	104762	9703-02	B-*980
6.02E-01	1.40E+00	3.00E-02	3248	138	B-25	94070		B-*981
5.03E+02	1.50E+01	2.00E+00	4500	138	B-25	94070	9808-01	B-*981a
1.56E+00	6.00E+00	6.00E-01	1356	138	B-25		9105-02	B-*982
3.41E+01	6.00E+00	2.00E-01	1800	56	B-25	65311	9703-02	B-*985
2.00E-03	2.00E-01	1.00E-01	1600	138	B-12		BURDEN	B-*986
3.07E+00	3.80E+01	3.70E+00	3200	138	B-25		BURDEN	B-*987
				138	B-25			B-*988
9.00E-04	1.00E-02	1.00E-02	3244	138	B-25			B-*989
6.00E-02	4.00E-02	4.00E-02	3500	56	B-25	94006	9703-01	B-*990
1.54E-02	2.00E-02	2.00E-02	1370	56	B-12			B-*991
2.23E-01	4.00E-02	4.00E-02	4290	56	B-12	104987	9808-01	B-*991A
8.35E-02	4.00E-02	4.00E-02	4470	56	B-12		9301-12	B-*992
2.72E-02	4.00E-02	4.00E-02	4210	56	B-12		9301-12	B-*993
1.15E-01	1.00E-01	3.00E-02	4300	56	B-12		9301-12	B-*994
5.06E+02	1.80E+01	3.00E+00	4500	138	B-12		9301-06	B-*995
3.19E-01	1.00E-01	3.00E-02	4160	56	B-25		9105-02	B-*996
1.02E-01	1.00E-01	3.00E-02	4270	56	B-12		9301-06	B-*997
1.35E-01	1.00E-01	3.00E-02	4390	56	B-12		9301-06	B-*998
3.45E-01	1.00E-01	3.00E-02	4830	56	B-12		9301-06	B-*999
3.55E-01	1.00E-01	3.00E-02	4630	56	B-12		9301-05	B-0001
2.90E-01	1.00E-01	3.00E-02	4500	56	B-12		9301-08	B-0002
3.97E-01	1.00E-01	3.00E-02	4630	56	B-12		9301-04	B-0003
7.66E-01	1.00E-01	3.00E-02	4610	56	B-12		9301-05	B-0004
2.38E-01	1.00E-01	3.00E-02	4530	56	B-12		9301-08	B-0005
2.74E-01	1.00E-01	3.00E-02	4560	56	B-12		9301-05	B-0006
2.50E-01	1.00E-01	3.00E-02	4780	56	B-12		9301-09	B-0007
6.89E-01	1.00E-01	3.00E-02	4620	56	B-12		9301-08	B-0008
3.73E-01	1.00E-01	3.00E-02	4450	56	B-12		9301-05	B-0009
6.62E-02	1.00E-01	3.00E-02	4470	56	B-12		9301-06	B-0010
3.76E-01	1.00E-01	3.00E-02	4400	56	B-12		9301-07	B-0011
5.25E-01	1.00E-01	3.00E-02	4310	56	B-12		9301-06	B-0012
4.72E-01	1.00E-01	3.00E-02	4500	56	B-12		9301-06	B-0013
2.16E-01	1.00E-01	3.00E-02	4660	56	B-12		9301-07	B-0014
1.45E-01	1.00E-01	3.00E-02	3200	56	B-12		9301-05	B-0015
5.44E-02	1.00E-01	3.00E-02	4510	56	B-12		9301-07	B-0016
3.22E-01	1.00E-01	3.00E-02	4290	56	B-12		9301-09	B-0017
1.86E-01	1.00E-01	3.00E-02	4190	56	B-12		9301-07	B-0018
7.76E-02	1.00E-01	3.00E-02	4250	56	B-12		9301-06	B-0019
2.39E-01	1.00E-01	3.00E-02	4030	56	B-12		9301-06	B-0020
6.25E-01	1.00E-01	3.00E-02	4340	56	B-12		9301-12	B-0021
7.04E-01	1.00E-01	3.00E-02	4250	56	B-12		9301-04	B-0024
					B-12		9301-04	B-0025

Figure 17 (page 2 of 2). Sample Pages for the RMHF Database All Records Report.

Material ID	Contents	Location	Origin	Date Received	Activity (mCi)	mR/hr Surface	1m	Weight (lbs)	Volume (cu. ft)
Waste Category: LLW-VD									
Group Sub-totals:					5.36E-02			17222	409.5
B-0454	Vac drum concrete debris		T020	07/95/13	1.55E+01	1.60	0.20	6470	119
B-0457	Vac drum concrete debris, hepa filter		T020	07/95/13	2.39E+00	2.00	0.40	6572	143
B-0465	Vac drum concrete debris		T020	07/95/14	1.39E+01	8.00	0.40	5760	119
Group Sub-totals:					3.18E+01			18802	381
Waste Category: Mixed									
B-0141A	Evaporator bottoms		RMHF	07/97/28				646	56
B-0473	Evaporator bottoms		RMHF	02/96/29				2258	138
B-0503	concrete particulate waste		RMHF	11/95/16				4228	65
B-0688A	Evaporator cleanout waste		RMHF	06/99/28					65
B-1117	shield plugs from vault #1 filled with l		RMHF	08/99/25				8014	65
B-1123	shield plugs from vault #1 filled with l		RMHF	08/99/25				7890	65
B-1133	shield plugs from vault #1 filled with l		RMHF	08/99/25				7858	65
B-1152	shield plugs from vault #1 filled with l		RMHF	08/99/25				8210	65
L-0463A	Sludge cleaned out of T021 drain su		RMHF	01/99/28		40.00	1.80		7.5
L-0783A	Evaporator waste samples for jar tes		RMHF	05/99/10					
L-0807	contaminated lead, lead samples, lea		T100	09/96/27	1.54E-01	0.03	0.03	52	0.6
L-0837	Drain trap from T020 containing free		T020	04/97/02	2.90E-06	0.01	0.01		
L-0872	lead based paint chips, paper ppe, pl		T059	04/99/27		0.01	0.01	68	7.5
L-0876	Metallic lead chunks and shot		RMHF						
Group Sub-totals:					1.54E-01			39224	599.6000
Waste Category: Mixed TRU									
B-1157	The two weirs from the T020 water st		T020	06/99/08		450.00	30.00	1968	119
B55-1	Solidified oil + solvents		T055	10/88/24	9.78E+01	0.10	0.10	643	7.5

Figure 18. Sample Page for the RMHF Material Summary-by-Category Report.

Material ID	Contents	Location	Origin	Waste Category	Activity (mCi)	mR/hr		Weight (lbs)	Volume (cu. ft)
						Surface	1m		
Received in 1997									
B-0750	D&D waste stream 5, Drain line, trash	T075-Y	T020	LLW	4.84E+00	1.20E+00	3.60E-01	3000	65
B-0771	D&D waste stream 5 (carbon steel tube	T075-Y	RMHF	LLW	2.19E+00	2.50E+00	5.00E-01	4920	65
B-0799	D&D wastestream 5, Basement t	T075-Y	B/020	LLW	9.00E-03	8.00E-03		4090	65
B-0811	D&D waste stream 5, Drain line, wood,	T075-Y	T020	LLW	2.10E+00	1.60E+00	1.50E-01	4200	65
B-0883	D&D waste stream 5, Drain line, trash	T075-Y	T020	LLW	7.93E-01	1.25E+00	2.20E-01	3211	65
L-0553	Samples of solidified Liquid from T-1 ta	T075	T133	LLW					4
L-0809a	Treated (Amalgamated) mercury (with	T075	T886	LLW	4.40E-06	1.00E-01	2.00E-02		
L-0812	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				508	7.5
L-0813	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				516	7.5
L-0814	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				525.5	7.5
L-0815	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				527	7.5
L-0816	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				573	7.5
L-0817	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				556	7.5
L-0818	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				517	7.5
L-0819	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				521	7.5
L-0823	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				501	7.5
L-0824	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				567	7.5
L-0825	Liquid from T-1 tank solidified with Aqu	T075	T133	LLW				546	7.5
L-0834	Vacuum Catch Drum (see notes)	T022	RMHF	LLW					7.5
B-0141A	Evaporator bottoms	T621-Y	RMHF	Mixed				646	56
L-0837	Drain trap from T020 containing free M	T621	T020	Mixed	2.90E-06	1.20E-02	1.20E-02		
L-0548	Calibration & standard sources from T10	T075	T100	Source	1.20E+00	1.20E+00	2.00E-01	63	4
Group Sub-totals:								25987.5	479
Received in 1998									
B-0924	concrete floor plug, concrete rubble, tra	PAD	T059	LLW	6.36E+01	1.00E+01	1.40E+00	8300	119

Figure 19. Sample Page for the RMHF Material Summary-by-Date Report.

3.4.2 Shipment Summaries

Reports based on information from the shipment data files are accessed by clicking on the “**Preview/Print**” button in the **Shipment Summary** rectangle on the Database Main Menu. This calls up the “Enter Date Range and/or Destination” dialog box shown in Figure 20. Two materials data report formats are available through this menu, as indicated on the menu roadmap shown in Figure 21. The information provided in each of these two report formats is listed in Table 5. Four levels of detail are available in each of these two formats. By clicking on “Print All,” information on all shipments is printed in either full detail or summarized by group. A sample report page for the Group by Category report is shown in Figure 22, and a sample page for the Group by Shipment report is shown in Figure 23. Selecting a date range and destination option (a specific destination or all destinations) and clicking “OK” generates a report on the selected range in either full detail or summarized by group. The full-detail reports also include group summaries, where the radiological activity, weight, and volume data are summed by group and printed at the end of each tabulated group. Clicking “Print All” instead of “OK” even when a limited range of shipments is specified will generate a report for the whole database. The user is cautioned that a report generated by the selection of a specific destination and a wide date range to cover all shipments to that destination will include only those shipments for which shipment dates have been entered into the database.

When MS Access generates the report and displays it on the computer screen, it also displays a new horizontal toolbar just above the displayed report. The report can be viewed in whole or in part by clicking on the magnifying-glass icon in this toolbar. The report is printed by clicking on the printer icon, and selecting the desired print options (all or specific sections; printer setup; print to a file instead of a printer). It can also be saved as an MS Access report for later review by clicking on “File - Save As” and providing a file name, or exported as an MS Excel, text, or RTF file. To close the report, click on “Close” on the lower toolbar. That returns the user to the Database Main Menu.

Enter Date Range and/or Destination

Beginning Date: 10/2/99 <Beginning of current FY>

Ending Date: 10/6/99 <Current Date>

Destination: Leave blank for all destinations

Totals Only

Group by Shipment
 Group by Category

OK Print All Cancel

Figure 20. Print/Preview Menu for the Shipment Data Files.

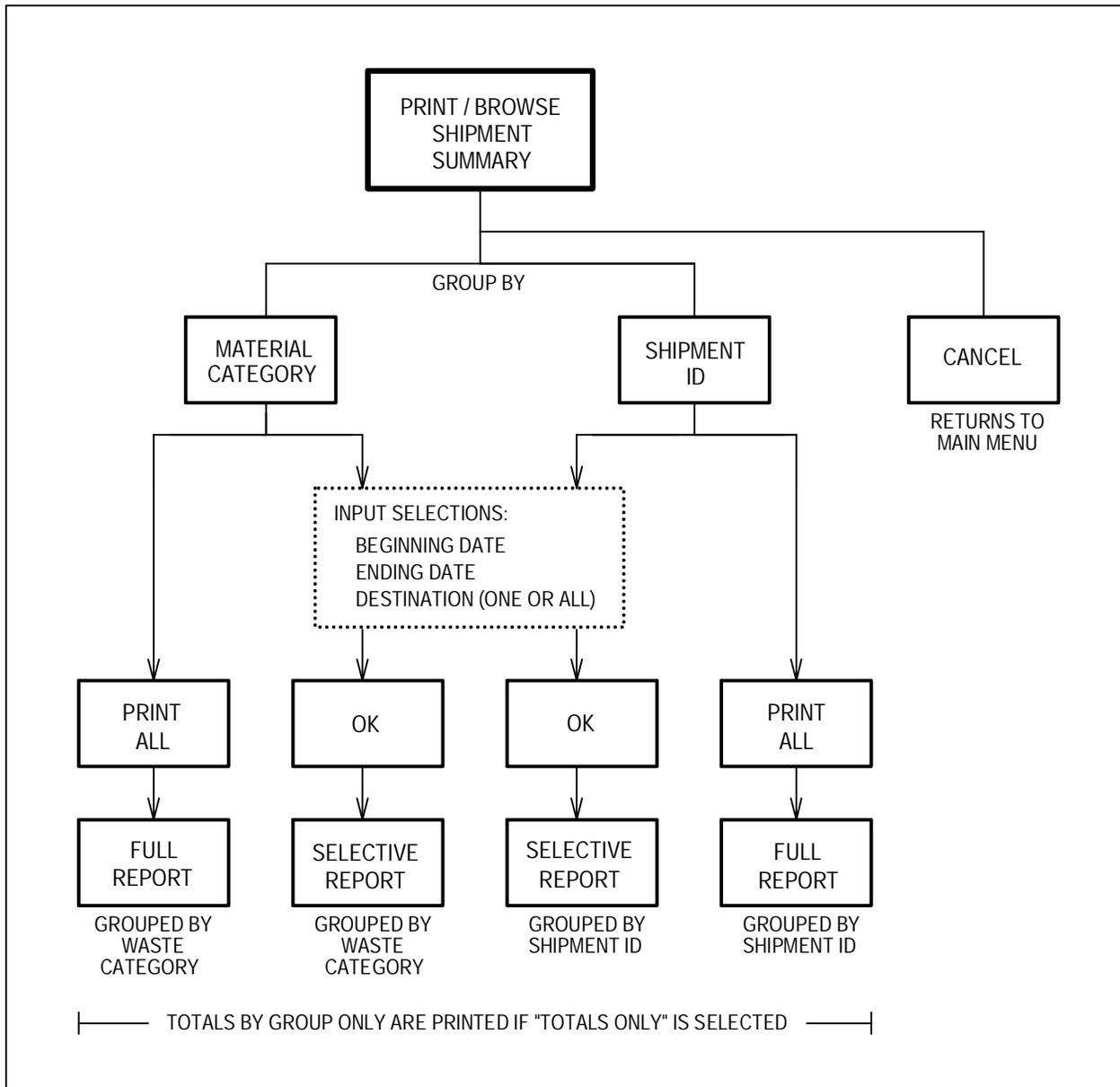


Figure 21. Roadmap for the Shipment Summary Print/Browse Menu.

Table 5
RMHF Shipment Information Printed in Standard Reports

Database Field	Summary by Material Category	Summary by Shipment
Material ID	✓	✓
Shipment ID		(grouped by ID)
Shipment Date	✓	(linked to ID)
Destination	✓	(linked to ID)
Location		✓
Origin		✓
Received Date		✓
Waste Category	(grouped by category)	
Contents	✓	✓
Activity (mCi)	✓S	✓S
Dose Rate at Surface (mR/h)	✓	✓
Dose Rate at 1 m (mR/h)	✓	✓
Weight (lbs)	✓S	✓S
Volume (ft ³)	✓S	✓S

✓ = included in report

S = subtotal by group supplied for this quantity

3.4.3 Special-Purpose Reports

Four special-purpose reports can be generated directly from the Database Main Menu (Figure 2). Clicking on “**LLW**” or “**MLLW**” under **Storage > 9 Months** generates a report of the low level waste (LLW) or mixed low level waste (MLLW), respectively, that has been stored at the RMHF for over nine months. These report options are included to identify stored waste that is approaching a one-year storage period. A sample report is shown in Figure 24. Clicking on “**Mixed Waste**” or “**TRU and Sources**” under **Waste Summary** generates a report that summarizes the mixed waste or TRU-plus-sources waste, respectively, that is currently in storage at the RMHF. A sample summary report for the mixed waste is shown in Figure 25. Maximize the report window or right-click on the report and select Print to print the report.

3.5 CLOSING THE DATABASE

Selecting the “**Close**” button on the RMHF RTS Database Main Menu closes the database and exits MS Access.

Shipment Summary by Material Category

06-Oct-99

Material ID	Contents	Shipment Date	Destination	Activity (mCi)	mR/hr		Weight (lbs)	Volume (cu. ft)
					Surface	1m		
Waste Category: LLW								
B-981a	Concrete, filters, elec. conduit, kal w	2/17/98	Hanford	6.02E-01	1.40E+00	3.00E-02	3248	138
B-0062A	Fume hood (S-107) and concrete sl	3/16/99	Hanford	2.34E+01	3.00E+01	3.40E+00	2110	56
B-0089A	Items from S161, S162, S-100, S-34	12/2/98	Hanford	1.00E+00	1.10E+00	1.80E-01	5370	138
B-0095	Rad contaminated tools from T059	3/16/99	Hanford	5.48E-02	1.90E-01	4.80E-02	1328	56
B-0096	concrete distribution box; contamina	3/16/99	Hanford	1.21E+00	1.50E+00	1.50E-01	6030	138
B-0118	PAR torch arm & feet parts, L570, L-	3/16/99	Hanford	3.38E+00	1.70E+00	1.90E-01	2740	56
B-0120A	Items from S-101, S103, S-160, S16	12/2/98	Hanford	3.62E-01	2.10E-01	3.70E-02	6475	138
B-0135	D&D waste stream 5 (concrete & r	7/29/98	NTS	1.80E-01	6.00E-01	7.00E-02	3310	56
B-0136A	D&D waste stream 5	9/15/98	NTS	2.50E-02	2.80E-02	2.80E-02	3405	56
B-0216A	D&D waste stream 5	6/10/98	NTS	4.45E-02	1.60E-02	1.60E-02	4910	56
B-0340A	S-105, S-419, S-263, S-292 & cont	12/2/98	Hanford	2.41E+00	1.10E+00	1.90E-01	4670	138
B-0352	19 HEPA filters, added 1 HEPA fro	2/17/98	Hanford	1.66E+01	5.00E+00	4.00E-01	1995	150
B-0453A	soft trash, building material debris, c	3/16/99	Hanford	1.44E-01	1.00E+00	8.00E-02	2222	143
B-0455B	D&D waste stream 5, S-238, part	1/18/99	NTS	1.59E-01	2.80E-01	3.00E-02	5230	119
B-0608	vacuum pumps (drained), misc equi	12/2/98	Hanford	5.45E-03	2.20E-02	2.00E-02	4602	119
B-0609A	D&D waste stream 5	9/2/98	NTS	7.06E-01	2.20E+00	2.30E-01	3615	119
B-0611	Scrap steel from lead items sent to	1/18/99	NTS	1.54E-01	2.50E-01	3.20E-02	4880	119
B-0612	soft trash, plastic, paper, suitable for	2/17/98	Hanford	2.57E-01	2.00E-01	4.00E-02	3145	119
B-0659A	D&D wastestream 5, 4 steel cuto	3/15/99	NTS	3.48E-02	1.50E-02	1.50E-02	4310	65
B-0687	D&D Waste stream 5	2/9/98	NTS	4.25E-02	1.40E-02	1.40E-02	4735	65
B-0699	D&D waste stream 5	2/17/98	NTS	5.70E-02	2.50E-02	2.50E-02	4943	65
B-0704	D&D Waste stream 5	2/9/98	NTS	4.31E-02	1.60E-02	1.40E-02	4530	65
B-0715	D&D waste stream 5 (carbons st	3/15/99	NTS	1.40E-02	2.40E-02	2.20E-02	5890	65
B-0720	D&D Waste stream 5	9/2/98	NTS	1.03E+00	1.60E+00	1.00E-01	2996	65

Figure 22. Sample Page for the RMHF Shipment Summary-by-Category Report.

Shipment Summary by Shipment

06-Oct-99

Material ID	Contents	Location	Origin	Date Received	Activity (mCi)	Surface	mR/hr	1m	Weight (lbs)	Volume (cu. ft)
Shipment 0900-02-0001 to Envirocare on 5/18/98										
B-0065	Pre-filters	Shipped	T020	08/95/12	3.53E+00	1.10E+01	8.00E-01		1900	138
B-0069	HEPA & pre-filters from backlog	Shipped	T020	08/95/12	3.12E+00	3.00E+00	9.00E-01		1750	138
B-0088	HEPA & pre-filters from backlog	Shipped	T020	08/95/12	2.50E+00	5.00E+00	6.00E-01		1920	138
B-0103	HEPA & pre-filters from backlog	Shipped	T020	08/95/12	1.92E+00	6.00E+00	6.00E-01		1870	138
B-0116	HEPA and pre-filters contaminated	Shipped	RMHF	10/96/15	4.80E-01	6.00E+00	4.80E-01		1245	138
B-0117	Pre-filters from backlog waste	Shipped	T020	08/95/12	4.82E-02	1.15E-01	4.30E-02		1470	138
B-0345	HEPA, bag & pre-filters	Shipped	T059	10/95/13	4.02E+00	1.90E+01	1.60E+00		1680	150
B-0346	Pre-filters lead smoke contaminated	Shipped	T059	08/95/14	2.65E+00	9.00E+00	9.00E-01		1570	138
B-0489	HEPAs, pre & bag filters	Shipped	T020	08/95/14	7.98E+00	1.60E+01	2.20E+00		1870	138
Shipment Totals:									15275	1254
Shipment 0900-03-0001 to Envirocare on 7/13/98										
B-*979	Paint chips debris waste	Shipped	T020	10/95/03	3.22E+00	6.00E+00	1.20E+00		4015	56
B-0066	Paint chips waste	Shipped	T020	10/95/02	3.43E+00	1.20E+01	1.60E+00		3415	56
B-0488	Paint chips debris waste	Shipped	T020	09/95/28	5.48E+00	1.80E+01	2.50E+00		3400	56
B-0495	Paint chips	Shipped	T020/R	11/95/20	8.83E+00	1.20E+02	5.00E+00		2446	56
B-0498	Paint chips debris waste	Shipped	T020	10/95/02	6.98E+00	1.20E+02	4.50E+00		2963	56
B-0499	Paint chips debris waste(In proc)	Shipped	RMHF	11/95/27	7.69E+00	3.80E+01	4.80E+00		2794	56
B-0521	Paint chips debris waste	Shipped	T020	09/95/28	6.16E-01	2.40E+00	5.00E-01		3435	56
B-0522	Paint chips debris waste	Shipped	T020	09/95/29	1.19E+01	7.00E+01	4.40E+00		4275	56
B-0523	paint chips debris waste	Shipped	T020	10/95/02	5.93E+00	6.00E+01	4.20E+00		3380	56
B-0706	contents of L-672, L-830a, L-835, L-	Shipped	RMHF	05/97/15	8.09E-01	4.30E+00	4.00E-01		4652	65
Shipment Totals:									34775	569

Figure 23. Sample Page for the RMHF Shipment Summary-by-Shipment Report.

Mixed Waste Summary

ETEC ID	Loctn.	Storage Date	Status	Waste Category	STP Num.	Contents	Vol. (m ³)	Weight (kg)	Chemical Description	Physical form	Waste Code	Waste Storage	Treatment Method
B-1103A	T621-Y	26-Oct-00	Storage	LLW-CAL		Soil & residue from SRE septic tank removal	1.8408	1778.7	Metals	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1163	T621-Y	13-Jan-98	Storage	LLW-CAL		Residues from the 4020 Gallery D&D cast iron drain pipes inside L-0608a and L-0782A	3.90816	816.33	Metals	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1136	T621-Y	28-Mar-97	Storage	LLW-CAL		vacuum waste and floor sweepings from 4020 block decon	1.8408	1016.8	Zinc	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1120	T621-Y	11-Dec-98	Storage	LLW-CAL		neutralized and solidified RPT tank waste	1.8408	1709.8	CA solid corrosivity	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1105A	T621-Y	26-Oct-00	Storage	LLW-CAL		Soil & residue from SRE septic tank removal	1.8408	2103.4	Metals	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
L-0551A	T621	10-May-99	Storage	LLW-CAL		Treatment residues ETW029 and ETW033	0.11328	29.932	CA solid corrosivity	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1081A	T621-Y	11-Dec-98	Storage	LLW-CAL		neutralized and solidified RPT waste	1.8408	1820.4	CA solid corrosivity	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-1035	T621-Y	10-May-99	Storage	LLW-CAL		Treated wastes ETW030, 031	1.8408	303.85	none	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	
B-0686A	T621-Y	11-Dec-98	Storage	LLW-CAL		Neutralized & Solidified RPT waste, soft trash	1.8408	1355.1	CA solid corrosivity	Solid	181 Other Inorganic Solid Waste	S01 : Container (Barrel, drum, etc.)	

Figure 24. Sample Page from a Report Listing the Mixed Low Level Waste (MLLW) Stored at the RMHF for Over Nine Months.

MLLW Stored Over 9 months

<i>ETEC ID</i>	<i>Storage Date</i>	<i>Status</i>	<i>Waste Category</i>	<i>Contents</i>	<i>Weight (lbm)</i>	<i>Volume (ft^3)</i>
B-0141A	28-Jul-97	Storage	Mixed	Evaporator bottoms from 4021 evaporator clean out	640	56
B-0473	29-Feb-96	Storage	Mixed	Evaporator bottoms from 4021 evaporator clean out	2256	138
B-0674A	11-Dec-98	Storage	LLW-CAL	Neutralized & Solidified RPT waste, soft trash	2988	65
B-0686A	11-Dec-98	Storage	LLW-CAL	Neutralized & Solidified RPT waste, soft trash	2988	65
B-0688A	10-May-99	Storage	Mixed	Evaporator waste from 4021 evaporator clean out	1296	65
B-1035	10-May-99	Storage	LLW-CAL	Treated wastes ETW030, 031	670	65
B-1059	04-Apr-00	Storage	Mixed	Solidified drainline fluid, from 104 cleanup	2208	65
B-1081A	11-Dec-98	Storage	LLW-CAL	neutralized and solidified RPT waste	4014	65
B-1098	04-Apr-00	Storage	Mixed	Solidified drainline fluid, from 104 clean up	1866	65
B-1120	11-Dec-98	Storage	LLW-CAL	neutralized and solidified RPT tank waste	3770	65
B-1136	28-Mar-97	Storage	LLW-CAL	vacuum waste and floor sweepings from 4020 block decon	2242	65
B-1163	13-Jan-98	Storage	LLW-CAL	Residues from the 4020 Gallery D&D cast iron drain pipes inside L-0608a and L-0782A	1800	138
L-0463A	28-Jan-99	Storage	Mixed	Material cleaned out of T021 drain sump	542	7.5
L-0535	15-Mar-00	Storage	Mixed	Metallic lead from Vault 5 clean up activity	70	4
L-0551A	10-May-99	Storage	LLW-CAL	Treatment residues ETW029 and ETW033	66	4
L-0811	23-Oct-98	Storage	LLW-CAL	Torit catch drum	176	7.5
L-0871A	08-Dec-99	Storage	Mixed	Vacuum catch drum used for valut clean up	372	7.5
L-0872	27-Apr-99	Storage	Mixed	lead based paint chips from B/4059 survey prep.	70	7.5
L-0880	28-Jun-99	Storage	LLW-CAL	Dried sediment from the RMHF catch basin clean out	282	7.5

Figure 25. Sample Page from a Report Summarizing the Mixed Waste in Storage at the RMHF.

4.0 DATABASE CODE VALIDATION

Code validation was performed by running several tests to establish that data entry, editing, and report generation instructions to the code through the programmed user menus produces the correct results. The original tests were run on a personal computer with a 90-MHz Pentium processor (dated 1995), and used the full RMHF database. The results of the tests demonstrated that the code is functioning properly.

4.1 DATA ENTRY

Several tests were run to validate correct data entry through the menu system and its input forms. Sample material and shipment records were entered, edited, and deleted by means of these input forms. After each of these operations, the data tables were called up directly through the MS Access database window to verify that the entered data appeared correctly in the data table records and fields. Reports were also generated before and after the database changes were made, and examined to verify correct data reporting. Those tests demonstrated that the input forms functioned properly.

4.2 LINKING SHIPMENT INFORMATION TO THE MATERIALS DATA TABLE

Data entered into the Shipment Input Form are placed in part in the Shipments table and in part in the RMHF Main Data Base table, and queries link the two tables through the Shipment ID. Data entry tests were run to verify that changes to shipments made in the Shipment Input Form updated the appropriate fields in both tables. For example, a new shipment record was created through the Shipment Input Form, selecting multiple materials from the RMHF Main Data Base table using the "Add" button, and then closed. The Shipments table was then examined directly to verify correct data entry into that table, and the RMHF Main Data Base table was examined directly to verify modification of the Status and Shipment ID fields for the selected records (and to verify no changes in other records). The Shipment Input Form was then reopened, the newly created shipment record called up using the Find option, and various modifications and deletions were made to the shipment record, including deletion of the entire record. Both data tables were updated correctly when shipment data were entered, edited, or deleted through the input menu. Database users are to enter or modify their data through this menu system to ensure that all linked fields are updated properly.

4.3 SORTING AND GROUPING RECORDS

The sorting and grouping of records to generate reports was tested by exporting the data tables to Microsoft Excel spreadsheets, executing sorting and grouping operations on the spreadsheets, and then comparing the results with equivalent information on the reports. The validity of the Excel sorting operations was in turn checked by hand by scanning the sorted Excel columns to

verify that the records were grouped properly. Comparisons included one-to-one correlations between records in the database reports and Excel lists, numbers of records in categories, and the correct alphanumeric sequencing of sorted records.

For example, the selection and grouping of records in the RMHF Main Data Base table was validated by exporting the data table into an Excel spreadsheet and sorting the spreadsheet on Status. Those records identified as “Shipped” were then deleted from the spreadsheet to examine the records of materials presently located at the RMHF. Those remaining records were then resorted by either Waste Category or Receipt Date (depending on the validation test), with a secondary sort on the Material ID, and the resultant spreadsheet lists compared with the database reports “Current RMHF Material Summary” (the report with materials grouped by waste category) and “RMHF Material Summary by Date.” The sorted spreadsheet records agreed with those in the corresponding database reports.

Similarly, the RMHF Main Data Base table was exported into a separate Excel spreadsheet and sorted on Status in order to delete all materials records except those identified as “Shipped.” Those remaining records were resorted by either Shipment or Waste Category (depending on the validation test), with a secondary sort on the Material ID. The resultant spreadsheet lists were compared with the database reports “Shipment Summary by Shipment” and “Shipment Summary by Material Category” using the “Print All” option. The sorted spreadsheet records again agreed with those in the corresponding database reports. An example is shown in Figures 26 and 27, where Figure 26 shows a sample report page, and Figure 27 shows the equivalent results generated in an Excel spreadsheet.

Additional tests were performed to verify proper shipment report generation when shipping date ranges and destinations are specified. The reports were generated correctly. One caution is that if the user selects a specific destination and a wide date range to generate a report covering all shipments to that destination, it will include only those shipments for which shipment dates have been entered into the database.

4.4 GROUP SUMS

The validity of the database report values for Group Sub-totals and Grand Totals was checked by comparing the report-generated values with calculated sums for the sorted spreadsheet records. This included the RMHF Material Summary reports and the Shipment Summary reports. The spreadsheet sums were calculated using the standard Excel SUM function, and checked in selected cases by adding columns by hand. No discrepancies were found in any of these calculations. Sample results are shown in Figures 26 and 27.

Material ID	Contents	Location	Origin	Date Received	Activity (mCi)	Surface	1m	Weight (lbs)	Volume (cu. ft)
Shipment BNL94003 to NTS on 6/29/94									
B-0138	Concrete, rebar	Shipped	T020	06/90/22	3.00E-02	1.00E-01	1.00E-02	3600	56
B-0173	Asphalt,sand,rock,dirt	Shipped	T020	06/91/11	6.80E-03	1.00E-01	1.00E-01	4000	56
B-0190	Plastic debris,trash,fram,mesh	Shipped	T020	05/91/16	3.12E-03	1.00E-01	1.00E-02	2300	56
B-0199	Asphalt, gravel	Shipped	T020	07/91/09	6.80E-03	1.00E-01	1.00E-02	5100	56
B-0200	Asphalt, gravel	Shipped	T020	07/91/09	6.80E-03	1.00E-01	1.00E-02	4700	56
B-0201	Asphalt, gravel	Shipped	T020	07/91/09	6.80E-03	1.00E-01	1.00E-02	4600	56
B-0202	Plaster debris,wall,fram,mesh	Shipped	T020	05/91/17	3.12E-03	1.00E-01	1.00E-02	2600	56
B-0203	Plaster debris,wire,metal fram	Shipped	T020	05/91/14	3.12E-03	1.00E-01	1.00E-02	2500	56
B-0204	Plaster wire mesh,metal,plastic	Shipped	T020	05/91/17	3.12E-03	1.00E-01	1.00E-02	2200	56
B-0444	Concrete in B-104	Shipped	T020	08/93/26	3.10E-01	1.00E-01	1.00E-02	4620	64
Shipment Totals:								40100	560
Shipment BNL94004 to NTS on 7/16/94								36220	568
B-0189	Plaster,debris,metal, fram,mesh	Shipped	T020	05/91/16	3.12E-03	1.00E-01	1.00E-02	2200	56
B-0205	Plaster wire mesh,metal,plastic	Shipped	T020	05/91/17	3.12E-03	1.00E-01	1.00E-02	2200	56
B-0206	Plaster debris,wire,metal fram	Shipped	T020	05/91/14	3.12E-03	1.00E-01	1.00E-02	2500	56
B-0207	Plaster wire mesh,metal,plastic	Shipped	T020	05/91/17	3.12E-03	1.00E-01	1.00E-02	2400	56
B-0299	Cemnt,conuite,trash	Shipped	T020	12/93/17	6.84E+00	1.00E+00	3.00E-02	5360	56
B-0304	Trolley doors,l beam,rebar,trash	Shipped	T020	07/93/20	9.20E-01	4.00E-02	2.00E-02	5250	56
B-0308	Trolley doors,l beam,conc,rebar,tras	Shipped	T020	07/93/20	1.71E+01	5.00E-01	9.00E-02	5840	56
B-0310	Concret,stl,wood,trash	Shipped	T020	07/93/20	8.22E+00	6.00E-01	4.00E-02	4840	56
B-0360	B-83&B-133,wall plaster,deb,trash	Shipped	T020	08/93/26	4.20E-01	5.00E-02	1.00E-02	5340	150
B-0373	Stl,conc,rebar,liner,cond,trash	Shipped	T020	02/94/20	3.37E+01	5.00E+00	1.60E-01	4840	56
Shipment Totals:								40770	654

Figure 26. Sample Page from a Summary-by-Shipment Report for Database Report Validation.

RMDFMAT4

ETEC ID	Location	Origin	Rcvd Date	Status	Waste Stream	Waste Categ	Contents	Activity	Rad-Surf	Rad-1m	Weight	Volume	Container		Shipment ID
													Type	S/N	
B-138	T075	T020	22-Jun-90	Shipped		LLW	Concrete, rebar	3.00E-02	1.00E-01	1.00E-02	3600	56	B-12N		BNL-94003
B-173	T075	T020	11-Jun-91	Shipped		LLW	Asphalt,sand,rock,dirt	6.80E-03	1.00E-01	1.00E-01	4000	56	B-12N		BNL-94003
B-190	T075	T020	16-May-91	Shipped		LLW	Plastic debris,trash,fram,mesh	3.12E-03	1.00E-01	1.00E-02	2300	56	B-12N		BNL-94003
B-199	T075	T020	09-Jun-91	Shipped		LLW	Asphalt, gravel	6.80E-03	1.00E-01	1.00E-02	5100	56	B-12N		BNL-94003
B-200	T075	T020	09-Jul-91	Shipped		LLW	Asphalt, gravel	6.80E-03	1.00E-01	1.00E-02	4700	56	B-12N		BNL-94003
B-201	T075	T020	09-Jul-91	Shipped		LLW	Asphalt, gravel	6.80E-03	1.00E-01	1.00E-02	4600	56	B-12N		BNL-94003
B-202	T075	T020	17-May-91	Shipped		LLW	Plaster debris,wall,fram,mesh	3.12E-03	1.00E-01	1.00E-02	2600	56	B-12N		BNL-94003
B-203	T075	T020	14-May-91	Shipped		LLW	Plaster debris,wire,metal fram	3.12E-03	1.00E-01	1.00E-02	2500	56	B-12N		BNL-94003
B-204	T075	T020	17-May-91	Shipped		LLW	Plaster wire mesh,metal,plastic	3.12E-03	1.00E-01	1.00E-02	2200	56	B-12N		BNL-94003
B-444	T075	T020	26-Aug-93	Shipped		LLW	Concrete in B-104	3.10E-01	1.00E-01	1.00E-02	4620	64	B-12/OP		BNL-94003
							Sum:	3.80E-01			36220.00	568.00			
B-189	T075	T020	16-May-91	Shipped		LLW	Plaster,debris,metal, fram,mesh	3.12E-03	1.00E-01	1.00E-02	2200	56	B-12N		BNL-94004
B-205	T075	T020	17-May-91	Shipped		LLW	Plaster wire mesh,metal,plastic	3.12E-03	1.00E-01	1.00E-02	2200	56	B-12N		BNL-94004
B-206	T075	T020	14-May-91	Shipped		LLW	Plaster debris,wire,metal fram	3.12E-03	1.00E-01	1.00E-02	2500	56	B-12N		BNL-94004
B-207	T075	T020	17-May-91	Shipped		LLW	Plaster wire mesh,metal,plastic	3.12E-03	1.00E-01	1.00E-02	2400	56	B-12N		BNL-94004
B-299	T022	T020	17-Dec-93	Shipped		LLW	Cemnt,conuete,trash	6.84E+00	1.00E+00	3.00E-02	5360	56	B-12N		BNL-94004
B-304	T022	T020	20-Jul-93	Shipped		LLW	Trolley doors,l beam,rebar,trash	9.20E-01	4.00E-02	2.00E-02	5250	56	B-25N		BNL-94004
B-308	T022	T020	20-Jul-93	Shipped		LLW	Trolley doors,l	1.71E+01	5.00E-01	9.00E-02	5840	56	B-25N		BNL-94004
B-310	T022	T020	20-Jul-93	Shipped		LLW	Concret,sti,wood,trash	8.22E+00	6.00E-01	4.00E-02	4840	56	B-25N		BNL-94004
B-360	T075	T020	26-Aug-93	Shipped		LLW	B-83&B-133,wall plaster,deb,trash	4.20E-01	5.00E-02	1.00E-02	5340	150	B-25N		BNL-94004
B-373	T022	T020	20-Feb-94	Shipped		LLW	Stl,conc, rebar, liner, cond ,trash	3.37E+01	5.00E+00	1.60E-01	4840	56	B-12N		BNL-94004
							Sum:	6.72E+01			40770.00	654.00			
B-209	T075	T020	06-Sep-91	Shipped		LLW	plaster decon 2	7.50E-04	1.50E+02	1.20E+01	3000	56	B-12N		BNL-94005
B-211	T075	T020	12-Jun-91	Shipped		LLW	Stucco decon rm, plastic sheet	9.80E-03	1.00E-01	1.00E-01	3000	56	B-12N		BNL-94005
B-212	T075	T020	08-Jul-99	Shipped		LLW	Stucco decon rm, plastic sheet	9.80E-03	1.00E-01	1.00E-01	2500	56	B-12N		BNL-94005
B-213	T075	T020	19-Jun-91	Shipped		LLW	Wall & wire mesh,trash rm139	9.80E-03	1.00E-01	1.00E-01	2800	56	B-12N		BNL-94005
B-214	T075	T020	08-Jul-91	Shipped		LLW	Stucco decon rm, plastic sheet	9.80E-03	1.00E-01	1.00E-01	2800	56	B-12N		BNL-94005
B-292	T022	T020	17-Dec-93	Shipped		LLW	Stl angel,wood,concrete,trash	4.57E+00	4.00E-02	2.00E-02	4300	56	B-12N		BNL-94005
B-372	T075	T020	27-Apr-93	Shipped		LLW	Concrete rubble, plastic	2.58E+00	1.00E+00	1.20E-01	4530	56	B-12N		BNL-94005
B-376	T022	T020	10-Feb-94	Shipped		LLW	Concrete,rubble	1.33E+01	1.00E+00	8.00E-02	4530	56	B-12N		BNL-94005
B-380	T022	T020	24-Feb-94	Shipped		LLW	concrete rubble,plastic	6.20E-01	2.00E-02	1.60E-02	4440	56	B-12N		BNL-94005
B-384	T075	T020	07-Sep-93	Shipped		LLW	Conc rbl, stl plate,wood,sink,glass	4.80E-01	2.30E+00	3.00E-01	4540	56	B-12N		BNL-94005
							Sum:	2.16E+01			36240.00	560.00			

Figure 27. Sample Results from an Excel Spreadsheet, Sorting the RMHF Materials Data Table by Shipment to Validate the Summary-by-Shipment Report (Figure 26).