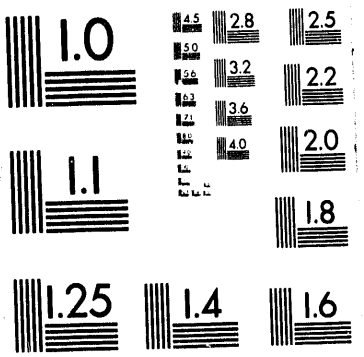
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0

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THE MONTANA RIVERS INFORMATION SYSTEM

EDIT/ENTRY PROGRAM

USER'S MANUAL

Montana Department Fish, Wildlife and Parks

Montana Natural Resource Information System

Bonneville Power Administration

July 1992

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MONTANA RIVERS INFORMATION SYSTEM

EDIT/ENTRY PROGRAM

USER'S MANUAL

Preface

The development of the *Montana Rivers Information System Edit/Entry Program* is a cooperative effort between the Montana Department of Fish, Wildlife, and Parks; the Natural Resource Information System, and the Bonneville Power Administration. The edit/entry program was developed to be used for imputing data into the natural resource databases managed by the Montana Rivers Information System. The examples given in this manual are for the fisheries database.

The Montana Rivers Information System staff manages the natural resource databases as part of the information management system of the Montana Department of Fish, Wildlife, and Parks.

Acknowledgements

This MRIS Edit/Entry Program User's Manual was prepared by the staff of the Montana Rivers Information System. Assistance was given in many areas by the NRIS Programmer/Analyst, Jim Senkler, who wrote the edit/entry programs.

1.0 INTRODUCTION

1.1 Background

The **Montana Rivers Information System** (MRIS) was initiated in 1984 with a contract between Montana Department of Fish, Wildlife, and Parks (MDFWP) and Bonneville Power Administration (BPA) to assess the state's fish, wildlife, and recreation value; and natural, cultural, and geologic features. The MRIS is now a set of data bases containing part of the information in the Natural Heritage Program natural features and threatened and endangered species data bases and the following MDFWP resource databases:

* **Montana Interagency Stream Fisheries Database**
* **MDFWP Recreation Database**
* **MDFWP Wildlife Geographic Information System**

The management and updating of MRIS are coordinated by MDFWP with assistance from the Natural Resource Information System (NRIS) for data dissemination, programming, and promotion. The long-term goals of the MRIS are to provide information about river resources, an update mechanism for each resource area, the programs to calculate final values, and the necessary means to download updated information into the MRIS.

1.2 Update Overview

The update of the MRIS databases will occur with the use of edit/entry programs located on IBM compatible computers at regional and field offices of the MDFWP, the US Forest Service (USFS), and the Bureau of Land Management (BLM). **For those of you without such equipment, edit/entry paper forms will be available upon request from MRIS staff.**

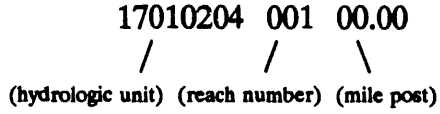
The purpose of this **User's Manual** is to:

1) describe to the user how to maintain the MRIS database of their choice by updating, changing, deleting, and adding records using the edit/entry programs; and

2) provide to the user all information and instructions necessary to complete data entry into the MRIS databases.

1.3 EPA River Reach Numbering System

The EPA River Reach Numbering System has been adopted by MRIS as the major stream identifier (Appendix E). The EPA RRN is now being used to identify a river reach and to relate resource data files within the MDFWP, the USFS, and other state agencies. An EPA reach is defined as a section of stream located between two stream confluences. The structure of the RRN is defined as:



The state of Montana has 110 hydrologic units, defining the major drainages in the state (Appendix E). There are currently over 8,000 stream reaches identified in the EPA RRN system.

1.3.1 Sections

You will notice in the Fisheries and Stream Characteristics Databases a field called **Section.** When converting the MRIS data from the state water code system to the EPA RRN system, approximately 250 stream reaches could not be converted to an EPA RRN. The existing reach boundaries of these streams now with sections did not fit to a stream confluence and/or could not be moved without affecting the biological integrity of the data. As a result, a stream in the Montana system is identified by the 16 digit EPA RRN plus a 1 digit **Section** number used in these rare cases where we could not determine an appropriate reach break. We are hoping with the update that most of these stream reaches with sections will be fitted into the EPA system. For now, however, a **unique record** in the Montana stream system is Hydrologic Unit + RRN + Section.

You will also notice in the stream listing that there are a number of **unnamed reaches** in the EPA RRN system. Many of these were added in order to define an existing reach break. To locate these streams, use the stream list in conjunction with the EPA RRN atlas. The map name is located on the stream list as part of a stream reach description.

If you find an error in the EPA stream listing, please refer to Section 1.12 for assistance with these problems.

1.3.2 Location Identification

The EPA River Reach Numbering System as well as all Geographic Information Systems (GIS) use latitude and longitude to locate points. The UTM system also is easily converted to a latitude and longitude. Township and Range

have not been successfully used as a locator in a GIS due to the occasional breaks in the coverage.

The lower boundaries in the EPA RRN will be accurately identified by their latitude/longitude using a GIS. For any point data you are collecting, you are encouraged to use latitude/longitude or the UTM system. MRIS has lat/long grids available for your use or your reaches and point data could be sent back on a copy of the Atlas when data are updated. For any further help in this effort, please call MRIS staff (see Section 1.12 for technical assistance).

1.4 Products

All users of the edit/entry programs will be provided with training, this user's manual, an atlas of stream maps for their management area, and a hard copy and floppy of the EPA reaches by hydrologic units. Updates of the system will be sent as needed. The reporting and query programs for the MRIS are not yet available but several products are available to the users in order to view the imputed data and create brief reports. See Appendix G for a list of these products and support.

1.5 Fisheries Database

The **Montana Interagency Stream Fisheries Database** provides the fisheries data included in the MRIS. This system has been in existence since the late 1970s and was last updated during the Montana Rivers Study completed in 1987. Much of the data, however, were originally collected in the late 1970s and have not been updated since. Prior updates were achieved with biologists filling out data forms that were imputed into a mainframe computer in Helena.

Fisheries data within the Interagency Data Base is contained in 29 separate data bases with over 300 fields. A relation is established between each data base using a shortened version of the EPA River Reach Number which replaces the hydrologic unit (first 8 digits) with 2 letters (Appendix B-11, B-14). Because of the volume of fields and records, updating the data base is not possible without the use of the edit/entry programs. The programs allow maintenance of the data bases easily without specialized knowledge of data base management systems.

Imputing fisheries data have been divided into two edit/entry programs to make the system as efficient as possible when managing this much data. The data within the edit/entry programs have been divided into a stream's **fisheries information** and **habitat and stream characteristics** .

Records contained in the **fisheries information** edit/entry program include three types of data:

1) Records containing **fisheries population** information for a stream; fish species, abundance, and use; total population estimates and by length groups; age and growth estimates; fish planting and suitability information; limiting factors and stream traits; and spawning and important tributary information.

2) Records containing **fisheries use** information imputed by MRIS staff includes bioeconomic data; resident and non-resident fishing pressure estimates; fishing regulations; and instream flow determinations and reservations.

3) Records containing more **specific comments** to support or add to data housed in existing fields.

Records in the **habitat and stream characteristic** edit/entry program include two types:

1) Records containing **land and administrative** information on a stream reach; bank and land ownership; land and water use; and stream access.

2) Records containing **physical and chemical stream** characteristics include flow, water temperature, bank condition, channel and pool characteristics, bank vegetation, habitat trend, and substrate composition.

*Records concerning **location** of a stream reach including upper and lower boundary, legal description, county, stream length, regional and district location will appear in both programs in order for the user to locate the stream reach. These fields will change only if a new stream reach is added which alters upper and lower boundary information. **MRIS staff will be responsible for maintaining this information.***

Water based recreational activities that were historically housed in the Interagency database including stream access and boatability are now housed in the MDFWP recreation database.

1.6 Recreation Database

The original recreation assessment in 1985, as part of the Montana Rivers Study, was the first study of recreational rivers in Montana and was better suited for broad regional planning purposes than for providing detailed information on individual reaches.

The update has included creation of a new data structure allowing for a wider range of information in a more accessible form, followed by collection of new data and identification of additional river reaches. The original assessment evaluated only 2,400 of the over 8,000 river reaches in Montana.

The recreation data is stored in three separate databases with a total of 105 fields (Appendix D). The databases are related to each other in the same way as the Fisheries database, by a shortened river reach number (Appendix B-11 and B-14).

1) The GENREC file contains information related to data source, access and ingress, use, scenic quality and solitude, and boating data.

2) The RECSITE file contains data on fourteen types of recreation sites and the facilities that are available at these sites.

3) The RECTRAIT file contains information on the types of recreational activities that each reach is used for. These activities are divided into three groups: land activities, water-related recreation, and consumptive activities.

1.7 Future Products

Future products from MRIS will include a reporting/query program of the databases with the ability to query the data on various fields, geographical as well as biological; a packaged brief and full report; and the ability to design your own report. The update of the lakes portion of the interagency fisheries database is scheduled to begin in 1992. A hydrography layer at the 1:100,000 scale is currently available for western Montana. Proposals to update the layer for the rest of the state are underway. This hydrography layer, including the EPA RRN as an attribute, will allow any data in the interagency database or any other data using the EPA RRN System to be accessed graphically. See Section 1.12 for technical support with GIS.

1.8 Equipment Needed

The edit/entry programs and all the MRIS programs are written with Clipper, a compiler using DBase files. The programs have been designed to run on an IBM compatible personal computer with MSDOS 3.3 or greater with a minimum of a 286 processor.

1.9 Read Me File

A file called README.DOC may be on **MRIS Disk 1.** It is a text file containing last minute information not available at the time this manual was printed. The file can be viewed by inserting Disk 1 into your floppy drive and entering at the DOS prompt **TYPE A:README.DOC | MORE** . If you have a printer attached to your PC you can print the contents of the README file by entering **COPY A:README.DOC PRN** at the DOS prompt.

1.10 On-Line Help

On-line help is available throughout the Edit/Entry program. To view the on-line help screen, press the Help key (F1) after the program has been loaded.

1.11 If You Get an Error

The edit/entry program has been thoroughly tested for entry of all types of data as described in this manual. However, it is possible that some errors or bugs are still waiting to be discovered. It is also possible that pressing an incorrect series of keys and/or function keys can cause an error message. An error will appear as a box on your screen with a message containing a line of programming code. If this occurs, pressing **Enter** will display where the problem occurred in the program. To print the error message, press **Shift-Print Scrn** which will send the message on the screen to the printer. You are now at the Dos prompt and can restart the edit/entry program by typing in **EDSTREAM** and then selecting the program you were in to begin again. Call for help if after restarting the program, the same error occurs (see Section 1.12 for technical support).

1.12 Technical Support

The management and contents of the data bases, including the EPA River Reach Numbering System, are maintained by the MRIS staff in Kalispell (752-5501). The MRIS staff is prepared to answer questions concerning use of the edit/entry programs, data questions, additions and errors to the EPA RRN System, or software and hardware:

- Janet Decker-Hess, MRIS Project Manager and Fisheries Biologist
- Jeff Hutten, Fisheries/GIS Technician and software/hardware
- Denise Davies, Recreation Specialist
- Gael Bissell, Wildlife Biologist

1.13 Installing the Edit/Entry Program

Installation of the Edit/Entry Program is a matter of creating a directory, installing the databases and programs, and modifying your menu if you have one. An installation titled "SETUP" has been included with your data and edit/entry programs. **Please refer to Appendix A** for complete instructions. The programs and the statewide databases in the fisheries and stream characteristics need approximately 20 megabytes. If you are in a regional or field office, you will be sent only a subset of the data for your region or management area. Statewide data is available upon request. The recreation databases and programs need approximately 6 megabytes.

1.14 A Few Tips

If you notice the program taking a longer time than normal to initialize or once in the program it taking longer to move between fields or some other function, press **Escape** once in the program and start the program again. Press Alt C if you find this occurring while initializing and restart the program with EDSTREAM (for fisheries) or EDREC (for recreation).

Each database in the system is indexed on one or more key fields. A unique record in most data sets is short_rrn +section. If the program begins to error frequently, before calling for help, first erase all the indices in the directory using the command from the DOS prompt: C:>ERASE *.NTX. A corrupted index can play havoc on any program. Then restart the program and try again.

2.0 INTRODUCTION

Using the edit/entry program will look and feel like using any other software package that you may be familiar with, such as WordPerfect, DBase, Lotus, etc. It has been designed to be used by individuals not familiar with specialized data management tasks. The system runs with the use of the function keys; the function keys with the Alt and Ctrl keys; the up and down arrows; the enter, escape, backspace keys; and the spacebar. The manual is designed to help you become familiar with the software and should be used like a **tutorial** to learn and later as a **help manual** as you enter data.

2.1 Function Keys

Four steps are involved when updating, changing, deleting, and/or adding a record: **Finding a record, Moving around the record, Changing the record and Saving the record.** For convenience, these functions have been assigned to the standard **Function Keys** (F1, F2, F3, etc) on the keyboard, and provided with this documentation is a template designed for keyboards that have the Function Keys across the top. Each function and its key assignment are described below.

Exit - Escape

The Exit key is assigned to the escape key. It is used to return to the previous level of activity. If you are in the opening window of a program, the Exit key will end the program. **You will be asked if you wish to end the program after pushing the key.** If you are in a look-up table, it will return you to the edit screen.

Help - F1

The Help key is assigned to the F1 key. It is used to display a list of the functions of each F key.

Options, Look-up Tables - F2

The Options or Look-up Table key is assigned to the F2 key. An **Options** message will appear on the 1st status line at the bottom of each screen if a look-up table is available for a particular field.

The edit/entry program makes ample use of look-up tables to simplify data entry. Using the F2 key allows you to select an entry into a field without knowing special codes or possible field entry information. For example, when entering information about fish abundance, you will find there are eleven choices which appear in a look-up table. Press F2 and the message **Species Abundance Look-up table** will appear in the upper left hand corner of the screen. Press enter again to view the contents of the look-up table.

a. Use the arrow keys to position the highlight bar on the desired item and press **Enter** to select the item, or

b. Type the first letter of the item, which will position the highlight bar on that item, then press **Enter**. For items that start with the same letter, repeat the letter until the highlight bar is on your selection. For example, if the highlight bar is on the **Common** and you press **C** the highlight bar will move to **Common with proportion of large-size fish.** If you press **C** again, the highlight bar will return to **Common.**

Using one of the two selection methods described above, your choice will automatically be entered into the corresponding fields.

> *Note: When using a look-up table with many choices, the use of the Alt S key can be a time saving device. From the look-up table, press the Alt S key, and the bottom of the look-up table will open. Type in the choice or a part of the choice and the highlight bar will move to the choice you are typing.*

System-wide Options - Ctrl F2

The system wide options key is assigned to the Ctrl-F2 key. At this point, the options include selecting the uplink or downlink of the current reach to edit. Other options will be available in future editions of the program.

Save Record or All Pages - F3

The Save Record key is assigned to the F3 key. Whenever you create a new record or change any part of an existing record, you must save the record by pressing the F3 key. If you are changing a field you must be sure to exit the field by pressing enter before saving the record. As the program is saving a record, a series of messages will appear in the 2nd status line. The program first checks each screen for content, required fields, etc and will stop if a screen is found that needs additional information to be saved. Once these screens are checked, a second series of messages will appear stating when each page has been saved. A final message will appear at the bottom of the screen saying **Record Saved** when this process is done and you will be returned to the screen you last edited.

Save This Page Only - Ctrl F3

The Save Page key is assigned to the Ctrl F3 key. If you make changes to only one or a few pages of a record, this key allows you to save just those pages. A message will appear on the bottom of the screen stating **Page Saved** when the function has been completed. **When using the Ctrl-F3, each page you make changes on must be saved seperately.**

Delete Record - F4

The Delete Record key is assigned to the F4 key. The key can be used to delete a record from a multi-record list or an unneeded stream reach which uses a section number. To delete a record you must first find the record and then press the Delete Record key. The program will ask you to confirm that you want to delete the record, which is answered with a Y(es). **Use this key with caution; data from all the relating databases will be lost. Never delete an EPA RRN that has a section number of "0".**

Select a Multi-record to Edit - Ctrl F4

The select a multi-record to edit is assigned to the **Ctrl F4** key. **The Ctrl-F4 key allows you to select the record you wish to edit from all multi-record screens** (See Section 3.3.5 for location of multi-record screens). Enter a multi-record listing with a Ctrl F4 key, use the up and down arrows to select the record you wish to edit and press enter. The selection will be loaded into the edit screen and you are ready to make changes.

Find Record - F5

The Find Record key is assigned to the F5 key. If you know the hydrologic unit and/or the RRN or name of the stream you wish to edit, enter those data and press the Find Record key. The program will display the first record greater than or equal to the data you entered. When using the F5 key from a record already loaded, you will get a message before the program locates your stream saying "Changes made may not have been saved; continue the find without saving?" The change referred to is the new hydrologic unit or RRN or name you have typed in over the existing information. Enter Y(es) and the record will be loaded into the program.

Finding records will be discussed in further detail in Section 3.2 of the manual. There are several options to find a record using the edit/entry program.

Select Index - Ctrl F5

The Selecting an Index key is assigned to the Ctrl F5 key. There are several "orders" or indices that are available for your use when editing records, depending on how the data you want to enter are organized and how many records you have to edit. By pressing the Ctrl F5 key, a look-up table of indices will appear and the index of your choice can be selected.

Next Record - F6

The Next Record key is assigned to the F6 key. You may find the next record to edit from any place in any edit screen. Which record you get next depends on the index you are using. This is a handy feature when you are entering data or editing most of the streams in a hydrologic unit.

The Next Record that will appear will be in the order of the index you have opened. The program automatically selects Hydrologic Unit + RRN; if you want another index use the Ctrl F5 key.

Next Multi-Record - Ctrl F6

The Next Multi-Record Key is assigned to the Ctrl F6 key. In many cases, their are multiple records of a certain type for one river reach. For fisheries, this option occurs on the fish species, population estimate, and spawning information screens. In stream characteristics, you will find this option on the stream bottom characteristics screen and the flow and temperature data screen. The recreation edit/entry program has the multi-record option for recreational site information. To edit the next record in a database with multiple records, press Ctrl F6. The **Ctrl F4** can be used with the multi-record screens. ***Remember to save the changes with a Ctrl F3 for the page or a F3 for the record when all changes are made.***

Note: For screens that have multiple records, you will notice on the 1st status line in the lower right corner a 1/#. This indicates to the user that this is the first of multiple records for this reach.

Previous Record - F7

The Previous Record key is assigned to the F7 key. You may find the previous record from any place on any edit screen. Press the Previous Record key, and the program will display the preceding record by the index you have chosen.

Previous Multi-Record - Ctrl F7

The Previous Multi-Record Key is assigned to the Ctrl F7 key. In many cases, their are multiple records of a certain type for one river reach. To view or edit the previous record in a database with multiple records, press Ctrl-F7.

Default For This Field - F8

The Default For This Field Key *(or set carry on)* is assigned to the F8 key. This function allows you to copy data from a field from a previous multi-record or from a previous reach to the same field in the next multi-record or reach. This function is very handy when entering data that has the same date, the same species, etc. To use the key on a multi-record, move the cursor down to the next record that is currently blank with the down arrow (if the multi record appears on the screen with other multi-records) or with the Ctrl-F6 key (if each multi-record requires a separate screen) and press F8. The field will fill with the data from the previous record. To use the key on the next reach, find the next reach using the F6 key, locate to the field you wish to duplicate and press F8.

Default For Multi-Record/Reach - Ctrl F8

The Default For This Multi-record or Reach is assigned to the Ctrl-F8 key. This function allows you to copy all the data from one screen to the next multi-record or reach. This is very handy when only a few fields change from one record to the next (population estimates in the same reach but different species and/or years or age and growth data). To use the key, using the cursor down to the next blank record with the down arrow or with the Ctrl-F6 key in a multi-record of F6 to the next reach, and press Ctrl-F8. All the data fields from the previous multi-record will be filled into the next multi-record.

Restore Page(s) - F9

The Restore Page(s) Key is assigned to the F9 key. This function allows you to restore a changed screen or record to its previous state. **It will not restore the data if you have already saved the page or the record with using the F3 or Ctrl F3 key.**

Restore a Field - Ctrl U

The Restore a Field Key is assigned to the Ctrl U key. This can be used before a page is saved to restore the original data to a single field only if it is done before **Enter** is pressed.

Clear Pages - Ctrl F9

The Clear Pages key is assigned to the Ctrl F9 key. It is used to clear a page or a record. In cases where you need to enter a new stream reach, it will initialize the screen for entering a new reach.

Select A Screen to Edit - F10

Selecting A Screen to Edit is assigned to the F10 key. This function allows you to view a list of all the screens available and allows you to select a page using the up and down arrows or by pressing the first letter of the selection you desire and then pressing enter.

Duplicate A Record (internally) - Ctrl F10

Use this key with caution with the fisheries edit/entry programs. Read on. The Duplicate A Record Key is assigned to the Ctrl F10 key. This key allows you to duplicate data from one reach to another but cannot be used to duplicate data in the fisheries edit/entry program **and** the stream characteristics program. After updating a record that you then wish to duplicate to a new stream reach (in cases where you are making a new section number, for instance), return to the first screen and press the Ctrl F10 key. The data you just updated will appear on the screen with the hydrologic unit, RRN, and name fields blank. Then fill in the Hydrologic Unit, the River Reach Number and the stream name that this data are to be copied to and press F3 to save the record.

For a simpler way to duplicate reaches in the fisheries databases, particularly in cases where the reach or reaches to duplicate already exists, exit the program and use the DUPSTRM program in the FISHUP directory. The command DUPSTRM can be executed from the DOS prompt. It is easiest to make your duplicates all at once at the end of the editing session. The utility of this program will become clear when you are updating data on our larger rivers that have many EPA RRN numbers for what you have considered biologically one stream reach. See Section 3.4 for instructions on the DUPSTRM program.

2.2 Navigation and Special Command Keys

Several keys are used to navigate among and within the fields on a data entry screen.

In all screens, the following keys can be used:

- the **enter** key stores the information in a field to its database.
- the **home** and **end** keys move the cursor to the beginning or to the end within a field.
- the **up and down arrow** keys move the cursor up and down, one line at a time.
- the **left and right arrow** keys move from left to right within a field.
- the **tab** key moves the cursor to the next field, and the **shift-tab** key moves the cursor to the previous field.
- **PgUp** allows you to go to the previous screen and **PgDn** allows you to go to the next screen.

- **Ctrl-PgUp** key allows you to go the first entry screen and the **Ctrl PgDn** allows you to go the last entry screen.
- the **up arrow** used at the top of the page moves the cursor to the last field on the screen; the **down arrow** used at the bottom of the page, moves the cursor to the first field.
- if a **down arrow** appears on the right margin of the box around the screen, use the arrow keys to access the remainder of the information that extends beyond the screen.
- when editing an existing field that you don't want erased, only want to change part of the field, place the cursor on the first letter of the fields and press the **Backspace** key. If you want to completely change the field, just begin typing the new data and the field will become blank.
- **Ctrl-Enter** is frequently used in the edit/entry programs to save text entered in a free comment field, or to save a list of several choices made from a look-up table. It also allow you to exit the box.
- the program automatically starts in the overwrite mode, noted by the size of the cursor (bar below letter on insert). To use the insert function, press insert and you will notice the size of the cursor becomes larger.
- **Ctrl-Home** to move the cursor to the top field on the screen.
- **Ctrl-End** to move the cursor to the bottom field of the screen.

2.3 Status Lines

You will notice there are two lines of information on the bottom of each edit/entry screen; these are called status lines and contain information to help you during the edit/entry process. The upper status line contains information concerning insert or overwrite mode, record status, option (F2) availability for each field, the title of the screen, whether a field is required or not, and a #/# if there is a multi-record option for this screen. The lower status line contains the Stream Name and its upper and lower boundaries and the #/# of screens. In the fisheries data base, the MDFWP Serial number is also contained in the status line. On the 1st status line on the bottom of the screen, you will notice **Ovr**. This lets you know the program is using the overwrite mode; to change to the insert mode, press **Insert** on your keyboard.

2.4 Free Comment Field

Another feature frequently mentioned in this Manual is a **free comment field.** It is used for fields such as comments, and allows you to enter as much text as desired without space restrictions. **These data are stored in a memo field in COMMENTS.DBF. The actual text is stored in COMMENTS.DBT.**

There are two basic instructions to remember when adding or editing data in a free comment field:

1. After you add/edit the field, you must press **Ctrl-Enter** to save the new text; and
2. To restore the field to its previous contents, press **Escape.**

2.5 Trait Look-up Table

The Trait Look-up Table is designed to input various descriptive attributes of a stream, its value, limiting factors, and management recommendations to improve its fishery. Because these traits are not easily handled in a normal field or a free comment field, a two tiered look-up table has been created to give you an opportunity to check off these attributes first by major category (land management types, biological features) and then by specific trait once the categories have been selected. The trait screen will appear with either a list of traits allready imputted for this reach or with a message that there are no traits listed for this reach. In either case, to edit or enter new traits, pressing enter will get a listing of the major trait categories. **An arrow on the right side indicates more below the screen.** To edit these traits, check off only the major categories pertinent to your reach by pressing enter next to each one highlighted. When the categories have been selected, press **Ctrl-enter to enter the next tier, the specific traits.** A screen with more specific attributes under these categories will then appear; the first status line tells you which category they originate from; again pressing enter select or deselects traits. **An up and down arrow on the right hand side of the box indicates that there are more traits below the screen.** To exit the screen, press **Ctrl-Enter** again and a listing of the traits you have selected will appear on the screen. See Appendix B-16 for the fisheries trait look-up tables.

Please take the time to select the traits for your reach; they provide information extremely important to managing a stream's fisheries and recreational resource.

2.6 Required Fields

There are many fields in the edit/entry program that require data input in order for a page or record to be saved. These fields are necessary for a stream to be rated in the Montana Rivers Information System which determine our Class I, II, III, etc. streams for the state. A listing of the required fields and which screen they are on occurs in Section 3.3.5. You will notice an **REQ** in the first status line when the cursor is on a required field. A page and or reach will not be saved if a required field is not entered.

Also required to save a page or record are the Data Quality Ratings (DQR) which follow many of the quantitative fields in the system. The DQR possibilities are 1-9 with:

1-3	Data based on judgement estimates
4-6	Data based on limited measurements
7-9	Data based on extensive measurements

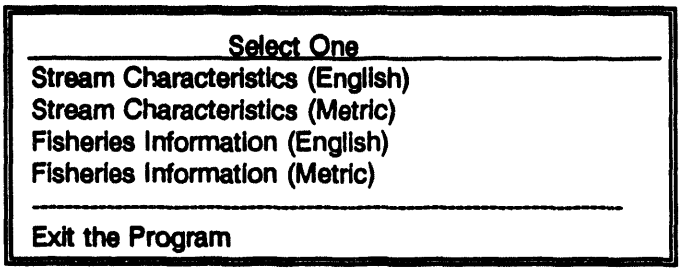
3.0 EDITING/ENTERING DATA

3.1 Starting the Edit/Entry Program

If you have a menu program on your computer, calling up the edit/entry program to update an MRIS database is simply a matter of making the appropriate menu selection **(please refer to Appendix A for how to modify your menu)**. If you do not have a menu program, proceed as follows:

1) From the DOS prompt, change to the directory containing the MRIS data base and edit/entry programs *(**FISHUP** for the fisheries and stream characteristics and **RECUP** for recreation).*

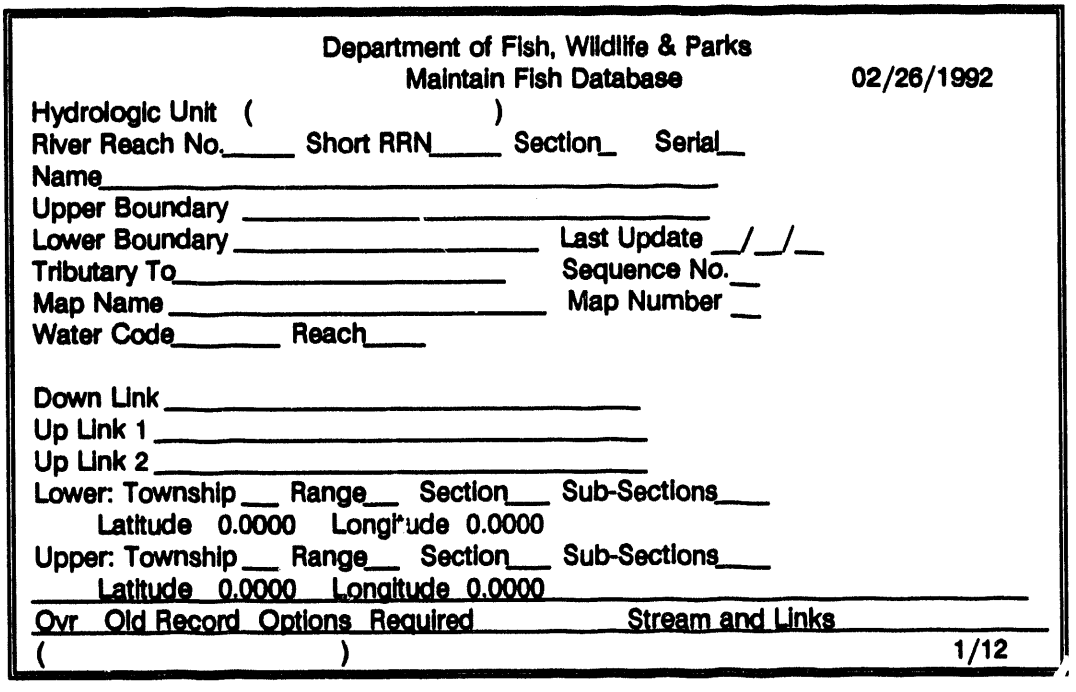
2) To start the program, type **EDSTREAM** for fisheries or stream characteristics and **EDREC** for recreation. A menu will be displayed like the one below for fisheries and in recreation, the program will be loaded:



Move the highlight bar with either the up and down arrows or by pressing the first letter of the selection you desire and press **Enter.** For this example, we will update the fisheries information for a reach. The same rules apply for the other edit/entry programs.

> ***Note:*** *You will notice that you have the option of entering the stream characteristics data and the fisheries information data in either english or metric units. The data will be stored in english units.*

The program will initialize (which will take a few minutes) and bring up the First Screen. The fields are blank and you are now ready to **Find A Record to Edit.**



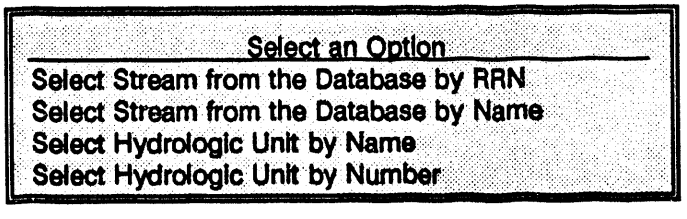
The first screen contains general location information, that in many cases, are to be used as reference points with little editing or changing necessary. The **Map Name** corresponds to the BLM 1:100,000 maps that your atlas is copied from. **The numbers in the lower left hand corner on the second status line are screen counters; 1/12 means you are on the first screen of 12 screens.**

3.2 Finding A Record To Edit

There are several ways to find a record to edit; personal choice will dictate which one becomes more convenient for you to use. **For this example, we will find and edit the Big Hole River from its mouth to Rochester Creek** (Hydrologic Unit 10020004; RRN, 00100.00; *(Don't panic; you have been sent a stream listing by Hydrologic Unit in RRN order and alphabetical order for the streams in your management area).*

3.2.1 Using the Look-up Table

From the main screen, you will notice the cursor is flashing on the Hydrologic Unit field. Press the **F2 Key**, and, a look-up table with the following contents will appear:



By using the up or down arrows or by pressing the first letter of a selection, you can move the highlight bar to any of the 4 selections; for this example we will use the look-up table selection of **Select Stream from the Database by Name**. Position the highlight bar on that selection and **press Enter**. A list of streams will appear on your screen by hydrologic unit, RRN, section, and stream name. You may use the **Pg Dn** key to move the highlight bar to **Big Hole R, RRN 00100.00** record, **press enter** and the program will load the record into the screens.

For a quicker way to find a stream from the stream listing look-up table, press the **Alt S** key and you will notice the box around the listing will open on the bottom. At this point, begin to type in **Big Hole R** and the stream listing will move to the entry as you type in more information. By the time the entire stream name is entered, the highlight bar will be on the first reach on the Big Hole River. **Press enter** and the box will close, **press enter** again and the record will be loaded into the screens.

> You may use the same technique to find a record by hydrologic unit and RRN. **If you are editing another record in the same hydrounit, have the cursor on the RRN field on the first screen and press the F2 key, followed by enter on either selection. You will get a listing only of the stream reaches in that hydrounit.**

Note: The edit/entry program automatically selects the Hydrologic Unit + RRN index. To change the index or order the reaches will appear, one of two actions can be taken. By placing the cursor on the Name field, and pressing the F6 key, the next record in alphabetical order will appear in that Hydrologic Unit; by putting your cursor on the RRN, the next record will be in River Reach Number order. You can also use the Ctrl-F5 key to select an index; once an index is selected in either of these manners, that index will remain open throughout your work in the program. You can then move to the next record from any field on any screen.

3.2.2 Using the F5 Key

To use the F5 key, position the cursor in any of the fields that are indexed; that includes the **Hydrologic Unit**, **RRN**, and **Name** fields or you can use them in combination. To find the Big Hole R, type **Big Hole R** in the **Name** field and press the Find Record key (F5). Like using the Look-up table with the stream listing, the first record with that name will appear (in this case 00100.00, mouth to Rochester Cr). **Be as exact as you can when locating a stream reach with the F5 key.; the slowest part of the programming lies in finding a record regardless of the method used.** Note: If you use the F5 key when a record is loaded into the system, a message will appear at the bottom of the screen saying,"Changes may have been made that have not been saved. Continue without saving? (Y/N) Answer Y(es) and the reach you want will appear.

3.2.3 Using the F6 or F7 key

In situations where you are entering/editing data for an entire hydrologic unit, for instance land and water use and/or land ownership, **F6** or **F7** keys will load the next or previous record, respectively. The next record loaded will either be in RRN order or alphabetical order depending on which field you are on when the key is pressed.

> **Note:** You have been provided with a paper copy of the stream listing by hydrologic unit of all the streams in your management area; one listing is in alphabetical orde. and the other is in River Reach Numbering order. An atlas of the location of the streams has also been provided. **Use these as a reference when locating the stream you want to edit.**

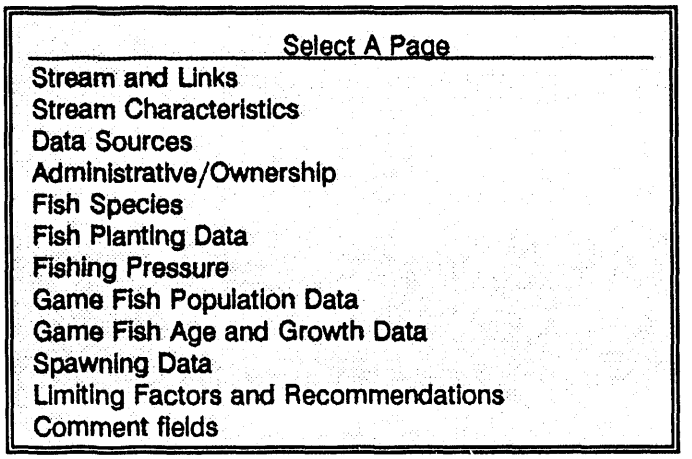
CONGRATULATIONS!! You have now found the record you wish to edit and it is has been loaded into the program. You are now ready to enter the new data you have collected on this stream reach.

Note: *A simple, but important function to always remember: Every time you enter data into a field, whether from a look-up table or typing, you must press* ***Enter*** *to store that data. Many times in this User's Manual you will be instructed to enter data and/or codes from a look-up table. Remember to press* ***Enter*** *every time; do not use arrow keys to leave a field after new data have been entered.*

3.3 Select a Screen to Update

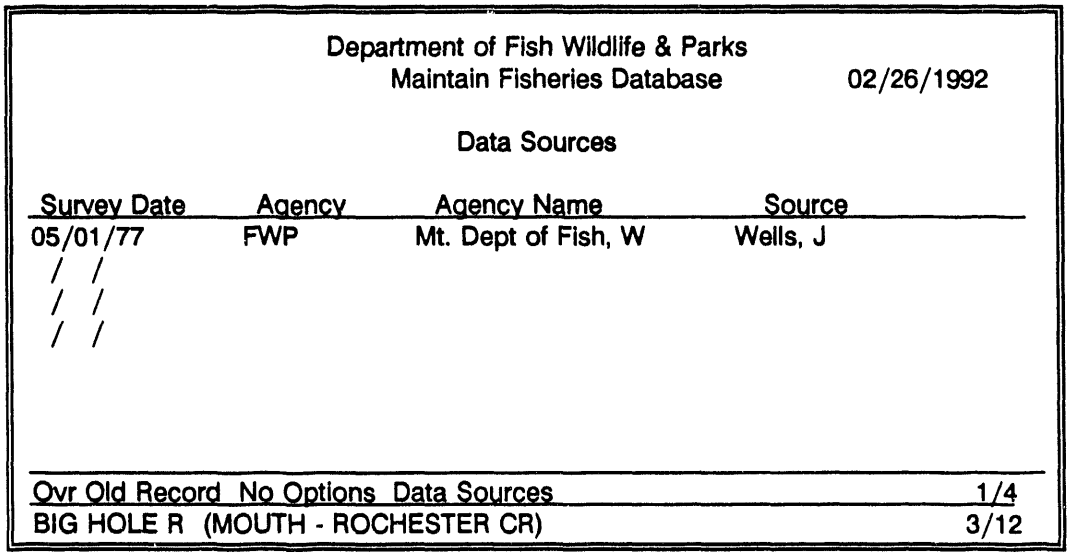
For our example here, new data have been collected on the Big Hole for age and growth, fish species, and fishing pressure. **Data source**, screen 4, also needs to be entered for each reach you update.

From the first screen, and with the cursor on any field, **press F10**, the select a page to edit look-up table. The look-up table shown below will appear over the 1st screen with the first choice, **Stream and Links** highlighted. The Select A Page shown is for the fisheries characteristics.

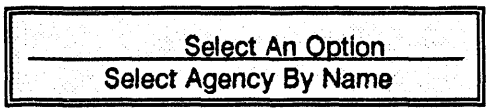


3.3.1 Data Sources

Move the highlight bar down to **Data Sources** using the down arrow or push the letter **D** on your keyboard and **Press Enter.** A screen similar to the one below will appear.



The last update source for this reach will appear on this screen; to enter information about this update, the cursor will be sitting on the date field on the left; enter the date, **Press Enter.** When you get to the agency field, you will notice the **No Options** on the 1st status line will change to **Options.** Press F2 and a screen like the one below will appear in the upper left hand corner of the screen:



Press enter and a list of the Agency abbreviations will appear in a look-up table. Move the highlight bar down to FWP and **Press Enter**; you will be returned to the Data Source Screen and FWP and "Mt. Dept. of Fish, W" will appear under Agency and Agency Name, respectively. To save the data, **Press Enter.** The cursor is now in the Source column. Enter your last name followed by a comma and your first initial. **You can also at this time correct any mistakes you see in any other entries on the screen.** *Hint: Use the tab and shift tab to move around the screen.*

> ***Note:*** *A similar **Select An Option** menu will appear after the F2 is pressed and before each look-up table. Press enter to view and enter data from the look-up table.*

You have now entered the necessary data for this screen. **Make sure you press Ctrl F3 to save the page before you go on to the next screen.**

> **Note:** *There are required fields throughout the entry screens. If you attempt to save a screen that has invalid data (most commonly, when a required data field is left blank), a message will appear at the bottom of the screen notifying you of the error. The error must be corrected before the record or page can be saved.*

3.3.2 Age and Growth Data

Press F10 to select the next page to edit; for our example, we will now enter new age and growth data collected on the Big Hole River. Move the highlight bar down to **Game Fish Age and Growth Data** using the down arrow or press the letter **G** twice on the keyboard. **Press Enter** and a screen similar to the one shown below will appear:

Department of Fish Wildlife & Parks
Maintain Fisheries Database

02/26/1992

Age and Growth Data
Numbers per 1,000 ft.

Survey date	Species		Age	Number	Mean Length	Mean Weight
09/09/90	004	Brown Trout	1	125	6.5	0.6

Ovr New Record No Options Minimum Flows 1/4
BIG HOLE R (MOUTH - ROCHESTER CR) 8/12

You are now ready to enter the age and growth data for the Big Hole. The cursor is flashing on the first field, date. Enter 09/09/90 (the date of your survey) and **Press Enter**; species, use the look-up table by pressing an F2 followed by pressing enter; select the

species, press enter and you will be returned to the main screen with 004, Brown Trout entered, **Press Enter**; age of first age class, press enter; number of first age class, enter; mean length, press enter; and mean weight and press enter. Use the tab and shift tab to move across the screen.

The cursor is now on the survey date field again for the record you just entered. **To enter the next age class, move to cursor to the next line with the down arrow. To repeat the date record from the above record, press F8; the date from the previous record will appear in the record you are on.** Always press enter to save the data. You can use the F8 to repeat the data from any of the above fields or use the Ctrl-F8 to repeat all the data from the first record. You can then edit the fields age, number, mean length and mean weight.

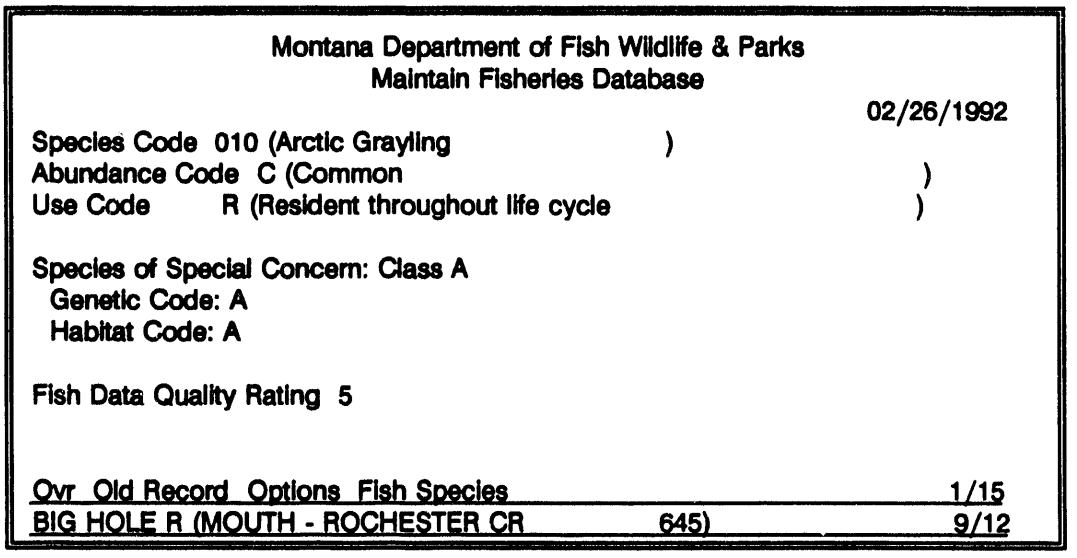
> The two numbers (1/4) in the far right corner of the first status line will change as you enter more records on the age and growth screen; these numbers will only appear on a screen when there is an opportunity to enter multi-records for a given database. **Although only 10 lines appear on the screen, you may enter as many records as you have data for.**

Note: If before you save the page, you realize you have entered the wrong data for this page, press the Restore/Clear Record key (F9), and the original record will be displayed.

When you complete entering all the records for **Age and Growth**, press Ctrl F3 to save the page before you go on to the next screen or save all the pages with a F3 when you are completely done updating the record.

3.3.3 Fish Species

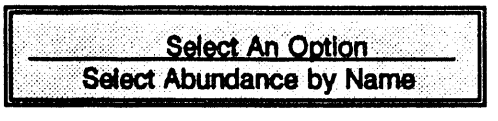
Press F10 to select the next page to edit; you will now check and edit the existing fish species information and enter new information in this reach of the Big Hole. Move the highlight bar to **Fish Species** using the down arrow or press the letter **F** on your keyboard and **Press Enter.** A screen similar to the one below will appear:



Several items to notice on the screen before you begin; look at the first status line to the far right and you will notice 1/15; this is a **record counter** letting you know that for this reach of the Big Hole, there are 15 species present with this being the first record. After you edit the Arctic Grayling information (we'll get to that in a minute), press **Ctrl F6** and the next fish species will appear. You will also notice that the status line record counter will have moved to 2/15. Options are available for every field on this page or the codes can be found in Appendix B.

> ***Want to view all the fish species in the reach at one time and then select the one to edit?*** *Press Ctrl F4 and a listing of species and their codes will appear; move the cursor using the down arrow to the species you want to edit and press enter. The species selected will be loaded into the edit screen and you are ready to make changes to the record. You can press these keys at any time on the screen. When finished editing, press* ***Alt F4*** *to view the listing followed by escape to go back to the edit/entry screen.*

Review the Arctic Grayling data; lets say arctic grayling are still present in this reach but they are essentially absent. Using the down arrow, move the cursor to the **Abundance Code** and press F2. A screen in the left hand upper corner will appear with this message:



Press Enter and the following look-up table will appear:

Select Abundance
A= Abundant
B= Abundant with proportion of large-size fish*
C= Common
D= Common with proportional number of large-size fish
U= Uncommon
V= Uncommon with proportional number of large-size fish
R= Rare
E= Species expected but not verified
I= Immature fish only; adults never in reach
M= Species absent but might be present if habitat problems corrected
N= No present
P= Species absent but could be present if introduced
Z= Abundance unknown

Move the highlight bar to **M** using the down arrow key or by pressing the letter **M** on the keyboard; press enter and the main screen will return and the entry for abundance will be changed from **R** (Rare) to **M** (Species absent but might be present if habitat problems corrected).

> *Note: Refer to Appendix B-22 for the graph used in determining relative abundance by stream width. All the codes for any of the look-up tables and the definition for "proportional number of large-size fish" can also be found in Appendix B.*

Continue to move through each species that need changes using the Ctrl F6 and F7 keys or with Ctrl F4. To enter a new species, go to the last record, and press Ctrl F6. A blank screen will appear with a message "Adding a record". Enter the new species, abundance and use using the look-up tables.

To delete a species record, have the record you want to delete loaded on the screen and press F4 and the screen will clear. Check the final list using the Alt F4 or Ctrl F4 key. **When you are done editing all the species information, press Ctrl F3 to save the page before you go on to the next screen.**

> *Note: If you have entered a Species of Special Concern, you will not be able to move past the genetic and habitat entry codes until you have entered data. These data dramatically affect the rating given to a stream reach so they are required for each species of special concern.*

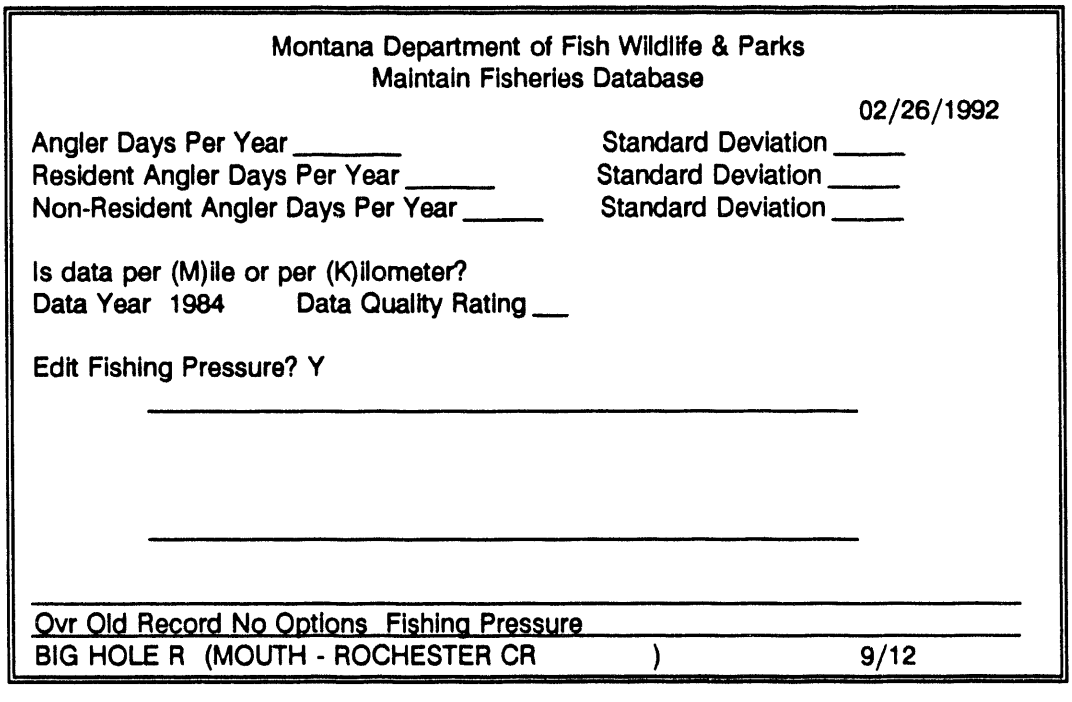
Fields labeled **DATA QUALITY RATING** are to be used to judge the quality of your data from "1" which is poorest to "9" which is the best. This is a mandatory field and needs to be entered in order to save the page. **Rate conservatively**. As a guide:

1 to 3 means the data rated are based on judgement estimates;
4 to 6 means the data rated are based on limited measurements;
7 to 9 means the data rated are based on extensive measurements.

3.3.4 Fishing Pressure

The last screen that we will take a close look at in order to demonstrate all of the options available in the edit/entry program is the Fishing Pressure screen. Press F10 and from the **Select a Page** look-up table, move the highlight bar to **Fishing Pressure** with the down arrow or by pressing the letter **F** on your keyboard.

__Hint:__ Just going to the next screen to edit? Simply press Pg Dn and the next screen will appear; to go to the next screen up, press __Pg Up__. To go to the first screen, press __Ctrl Pg Up__ and to go to the last screen, press __Ctrl-Pg Dn__.



Fishing pressure data are from the MDFWP Angler Mail Survey conducted every 5 years. (Shown is the 1984 data; these will be updated for 1989 by the MRIS staff). If you have more accurate data, from a creel census for instance, enter the data beginning with Angler Days Per Year. There is the opportunity to enter additional information not covered in the fields by using the **Free Comment Field** located under the statement, **Edit Fishing Pressure?** Enter Y from the keyboard and press enter and the cursor is now inside the box. Enter whatever comment you want here (although there is no space limitations please try to be concise). Press **Ctrl-Enter** to save the comment or press the **Escape** key to erase the entry in the comment field. The cursor will leave the box and return to the Y after Edit Fishing Pressure. **After you have completed editing the Fishing Pressure Screen, press Ctrl-F3 to save the page.**

Note: Before loading the next reach to edit, if you have not saved a page or pages of screens you have edited, a message will appear at the bottom of the screen after you attempt to find the record stating ***changes that have been made may not have been saved. Continue without saving? (Y/N).*** *At this time press F3 and each page will be checked for required fields and will stop if a mandatory field is blank. Following the checking, the screens that have been changed will be saved and you are ready to go on to the next record to edit.*

3.3.5 Other Screens in the Edit/Entry Programs

Only a few of the screens in the edit/entry programs appear in the manual. Below are descriptions of the type of data on each screen, required fields on the screens, look-up tables, and multi-record options.

Fisheries Edit/Entry Screens

Screen 1, Stream and Links - *Reference Data*. Covered in Section 3.1 of manual text. The Township, Range, and Section data for lower and upper boundary indicate the reach boundaries from the water code system. Upper and lower boundary information will appear by Latitude and Longitude when the EPA RRN hydrography layer is completed. Data from the screen are stored in STREAM.DBF, ADMNOWN.DBF, LOCATION.DBF, MTRRN.DBF and COMMENTS.DBF and COMMENTS.DBT. A **Free Comment Field** extends beyond the bottom of this screen. Comments to supplement data fields may be added here or **there may be questions to you concerning information we entered**. Please check the comments (up arrow from first field will get you there) and if there is a question, adjust the data if necessary. Ctrl-Enter will allow you to exit the box.

Screen 2, Stream Characteristics - *Miscellaneous Stream Characteristics*. Look-up tables for side channel occurrence, stream category, mountain ranges, and habitat trend. Data stored in ADMNOWN.DBF. This same screen appears in the STREAM edit/entry program. Data only need be entered in one place or the other. **Required fields – habitat trend code and DQR and stream category.**

Screen 3, Data Sources - *Data Sources.* Covered in Section 3.3.1 of manual. **Multi-record input onscreen.** Enter date, look-up table for agency, last name, first initial. Same screen in STREAM. Data need only be entered once. Data stored in DTASOURC.DBF. **Required fields - all fields on this screen.**

Screen 4, Administrative/Ownership - *Data used in stream ratings and fishing regulations.* Look-up tables for ingress, esthetics, spring creek status, and MDFWP District and Region. Free Comment field for special regulations. (Editing of regulations have been done by MRIS staff. If changes need to be made, please change and notify MRIS staff in general comment field.) Data Stored in ADMNOWN.DBF, REQUIRED.DBF, COMMENTS.DBF. and COMMENTS.DBT. **Required fields - all fields on this screen.**

Screen 5, Fish Species - *Fish species presence, abundance, and use.* Covered in Section 3.3.3 of manual. **Multi-record input using Ctrl F6.** Abundance Graph, Appendix B-22. Data stored in FISHSPEC.DBF. See Appendix B-20 for specific instructions for fish species information. Most of this information is automated in the edit/entry program when F2 is pressed. **Required fields - Habitat and genetic code if species of special concern is present.**

Screen 6, Fish Planting Data - *Fish planting information on stream reaches.* Look-up tables for why are fish planted, species planted, how often, habitat suitability and aboriginal fish code. Data stored in FISHPLNT.DBF. **Required fields - Are fish planted and is reach's sport fishery dependent on planting?**

Screen 7, Fishing Pressure - *Fishing pressure statistics and free comment field.* Covered in Section 3.3.4 of manual. Data stored in PRESSURE.DBF.

Screen 8, Game Fish Population Data - *Population estimates.* Look-up tables for sampling gear, estimation method, and species code. **Multi-record input using Ctrl-F4,F6, and F7 for species or years.** Data stored in POPESTIM.DBF.

Screen 9, Game Fish Age and Growth Data - *Age and growth data by species by date.* Screen covered in Section 3.3.2. Look-up tables for species. **Multi-record input onscreen.** Data stored in AGEGROWTH.DBF.

Screen 10, Spawning Data - *Spawning survey data.* Look-up tables for species, spawning rating, survey method, survey type, hydrologic unit, river reach number, and section. **Multi-record input using Ctrl-F6 for species and years if needed.** Data stored in SPAWNING.DBF. *You will notice on many of the spawning records that the species codes is "999". These records were in the original database with no species information, just that the reach was essential or important to a population. In order to save this page, a species code needs to be entered or the record need to be deleted using the F4 key.*

Screen 11, Barrier Information - *Fish barrier to passage information.* Information concerning type of barrier, barrier signifigance, size, latitude, longitude, species affected, and management of barrier. Additional space for comments. Look-up table for barrier signifigance, species, and barrier management.

Screens 12, Limiting Factors and Recommendations - Two-tiered or windowed screen to enter general categories of traits and more specific traits in 2nd window.Trait look-up tables for limiting factors and fisheries values and recommendations. **Go through these; they provide the basis for many management changes and if stream lists produced from these fields are accurate, your phone calls will decrease.** Entire listing of traits starting on Appendix B-23.

Screen 13, Comment Fields - *Free comment fields.* There are free comment fields to supplement spawning, gamefish, species of special concern, limiting factors, and management recommendations information. These are strictly for your use in situations where additional comments concerning surveys are necessary.

Stream Characteristics screens

Screen 1, Stream and Links - *Reference data.* Covered in Section 3.1 of manual. Data from ADMNOWN.DBF, LOCATION.DBF, MTRRN.DBF, and STREAM.DBF. Same screen in Fisheries Edit/Entry Program. Enter data from either program.

Screen 2, Stream Characteristics - *Miscellaneous Stream Characteristics.* Look-up tables for side channel occurrence, stream category, mountain ranges, and habitat trend. Data stored in ADMNOWN.DBF. Same screen in Fisheries Edit/Entry Program. Enter data from either program. Stream Order should be determined using a quad map with a 1:24000 scale. First order streams are unbranched streams found usually, but not exclusively, at the head of drainage basins. Second order streams are formed when two or more first order streams come together, etc.

Screen 3, Counties - *County listing.* Uses a look-up table for county name. **Multi-record input onscreen.**

Screen 4, Data Sources - *Data Sources.* Covered in Section 3.3.1 manual. Data stored in DTASOURC.DBF. Same screen is in Fisheries Edit/Entry Program. Enter data from either program.

Screen 5, Land and Water Usage - *Water uses for reach's water and land use in drainage.* Uses trait look-up tables as check-offs for uses. Enter look-up tables by a Y in box saying "Edit water uses?" Pressing **Enter** selects a use or cancels a use already selected, **Ctrl-Enter** saves selections, and **Escape** returns to main screen without saving. See Appendix C-9 for look-up table. Data stored in USAGE.DBF. **Required fields - Land and Water Uses.**

Screen 6, Land and Bank Ownership - *Land and Bank Ownership Codes.* Select ownership record type (land or bank), sector (federal, state, etc), owner code (USFS, WMA, Private land, etc). All three codes need to be entered in type, sector,and owner code order. Look-up tables for ownership type, sector, owner code, and relative ownership. Data stored in LANDBANK.DBF.

Screen 7, Minimum Flows - *Minimum flow data determined and/or reserved.* Fields describing flow, dates, reserved or determined, and reservation adequacy. **Multi-record input onscreen.** Data stored in MINFLOW.DBF.

Screen 8, Physical Characteristics - *Channel and valley physical characteristics.* Fields describing physical measurements of channel and valley, gradient, sinuosity, and pool-riffle-run ratios. Data stored in PHYSICAL.DBF. **Required fields - Average Channel Width.**

Screen 9, Habitat Characteristics - *Habitat ratings and vegetation characteristics.* Look-up tables for habitat ratings, subsurface cover, bank vegetation, and riparian vegetation. See Appendix C-10 for specific instructions for habitat ratings. Enter trees and shrubs on screen look-up by entering Y in "Edit Tree Species?" **Enter** selects a species or cancels a species already selected, **Ctrl-Enter** saves selections, and **Escape** returns to main screen without saving. Look-up table also in Appendix C-11. **Required fields - streamside and riparian vegetation type.**

Screen 10, Flow and Temperature Data - *Flow and temperature survey data.* Screen includes survey flow information, normal low flow and peak water temperature, and survey methods. Look-up tables for flow stage and survey method. Data stored in FLOWTEMP.DBF. Multi-record option using Ctrl-F4, F6, and F7. **Required fields – normal low flow information.**

Screen 11, Stream Bottom Data - *Substrate Information.* Substrate composition by pool, run, and riffle; embeddedness and substrate score; and aquatic plants. Data stored in STRMBTM.DBF. Multi-record option using Ctrl-F4, Ctrl-F6 and Ctrl-F7.

Screen 12, Detailed Pool Data - *Percentages of each pool class and substrate composition.* Data stored in POOL.DBF. See Appendix C-11 for Pool classifications descriptions.

Recreation Screens

Screen 1, Stream Location and Reference Data. Stream location and data sources. Look-up tables for Tourism Department Vacation Region and source agency. Miscellaneous free comment field. All fields are mandatory except number of evaluators, update, and comments. Data stored in GENREC.DBF.

Screen 2, Miscellaneous Recreation Information. Look-up tables for access, ingress, data quality rating, ROS Class, scenic quality. Free comment field for unique recreational opportunity. Mandatory fields are access, ingress, ROS, and scenic quality. Data stored in GENREC.DBF, ACCESS.DBF, AND COMMENTS.DBF and COMMENTS.DBT.

Screen 3, Recreational Use. Look-up tables for estimated overall recreational use, estimated angler use, estimated hunter use, estimated boater use, estimated recreational land use, range of demand, and data quality ratings. All estimated use fields and data quality rating fields are mandatory, as is range of demand. Overall use figure, angler days, boater days, hunter days, and recreational land user days are not mandatory. Data stored in GENREC.DBF.

Screen 4, Boating. Boatable season, whitewater class, and boat obstruction have look-up tables and are the mandatory fields. Comment fields for whitewater comments, boating regulations, and boating events. Data stored in GENREC.DBF and COMMENTS.DBF and COMMENTS.DBT.

Screen 5, Recreation Sites. Site name, site type, availability of facilities at the site. Site type is mandatory if site name is filled in. Look-up table for site type and boat ramp type. Multi record input using Ctrl-F6 and Ctrl-F7 for more sites if needed. Data stored in RECSITE.DBF.

Screen 6, Recreation Activities. Activity check-off lists for consumptive activities, water-related activities and land activities. Comment field for rock collecting types, rock climbing area, peaks for climbing, and key species for birdwatching and wildlife viewing. Data stored in RECTRAIT.DBF and COMMENTS.DBF.

3.4 Duplicating A Record

Because the EPA RRN system creates a new reach at each stream confluence, there may be cases where the same data are pertinent for more than one stream reach. There are 13 reaches on the Big Hole River from the mouth to Melrose, which is considered similar and treated as one reach from a fisheries standpoint. To simplify data entry in these cases, **a duplicating reach option** is available from the DOS prompt from the edit/entry directory. It helps to have your stream list in front of you and save the reaches that need

to be duplicated after you are done editing for the day. You will need to first exit the edit/entry program you are in by pressing the escape key and then using the "Exit the Program" option from the main menu. At the DOS prompt in the edit/entry directory (FISHUP), type in **DUPSTRM** and press enter. The program will take a few minutes to initialize and then a look-up table of streams reaches with the command "Select the reach to be duplicated" at the top of the screen. You can select the record to duplicate by using the down arrow or by using the **Alt S** which opens the bottom of the screen for you to type in the hydrologic unit and RRN. Once you have found the record to duplicate from, press enter (if you have used Alt S, press enter again) and the record you have selected will appear at the top of the screen. Next you will be asked to select the reach you want to duplicate to. Follow the same process as described above and the reach will be duplicated. Repeat this process as many times as you need to.

3.5 Adding a Record

If you find you have collected data on a stream currently not found in the EPA River Reach Numbering System, we will need the following information,:

- The name of the stream you want to add and its length;
- The name of the stream the added stream joins and the EPA RRN of that stream;
- The length of the two sections of stream that have been split as a result of the addition
- The name of the 1:00 000 scale BLM map that the stream is on (use your tabular file or stream atlas)

To enter the data into the edit/entry program, from the last screen you updated, press Ctrl F9 and the screen will clear. From here, enter the Hydrologic Unit the stream is in and enter 9999.01 for the RRN. If there is more than one new reach in a hydrologic unit, enter 9999.02 for the next reach, and so on. Go through all the screens of the edit/entry program for Fisheries and Stream Characteristics using the **Page Up** and **Page Down** key and save the entire record with the F3 key.

3.6 Sending Back the Data

Instructions as to the timing of updates and the protocol to update the Master Database will be provided in a separate document and/or in later additions of the users manual.

3.7 Exiting the Program

From any of the screens, press the Exit key (Escape) to end the program. You will be asked "Do you want to exit the program Y/N?" Enter Y to end the program and you will return to the edit/entry selection screen. Highlight the menu selection "Exit the Program" and you will be returned to the DOS prompt or your

menu depending on how you have set up your system.

At the end of each day of data entry, we encourage you to back up your data on a floppy. A program titled "FINISH" has been installed in your directory. After returning to the DOS prompt, type **FINISH** and press enter. You will then be prompted to insert a floppy diskette.

APPENDIX A

Installation

I. Installing the Edit/Entry Programs and Data

Approximately 16 megabytes of space are needed to install the entire Fisheries and Stream Edit/Entry programs and data. If you are in a regional or field office, you have only been sent the data for your area. This reduces the size of the system to approximately 3-6 megabytes. The Recreation Edit/Entry program and data use approximately 6 megabytes.

To begin the installation, you must first decide which hard drive you wish to install it on (if your hard drive has been partitioned). You have been sent 2 5-1/4" diskettes, labeled #1 & #2. Begin the installation by inserting diskette #1 into your A Drive (or B Drive, if that's your 5-1/4" Floppy Drive), type **A:** (or **B:**) at the DOS prompt, and press Enter. When you receive the A:> (or B:>) prompt, type **SET DRIVE=A:** (or **SET DRIVE=B:**) and press Enter.** Then type **SETUPC** for Drive C installation or **SETUPD** for Drive D installation and press Enter. The Installation program will now create the directories and load the programs, databases and batch files necessary to run the Edit/Entry program.

**** If you get the message "Out of Environment Space" when you type the command SET DRIVE=A: (or SET DRIVE=B:) you will have to modify your CONFIG.SYS file to install the program. Using a text editor, add the line (or change an existing line):**

SHELL = C:\DOS\COMMAND.COM/E:512 C:\DOS /P to the CONFIG.SYS and reboot your machine. If you continue to get the message, boost the number 512 by increments of 256 until the message stops.

You will also need to modify your **AUTOEXEC.BAT** and **CONFIG.SYS** using a text editor or Word Perfect.

To the AUTOEXEC.BAT file:
add the line **SET CLIPPER=F:122** to the file (before your menu command if you have one) **and,**

To the CONFIG.SYS file:
change FILES=16 (or whatever you have) to **FILES=127** and
add **INSTALL=C:\DOS\SHARE.EXE /F:4096** (if you already have part of this line, modify it to match the above statement). TYPE THESE LINES **EXACTLY** AS SHOWN, INCLUDING SPACES. You will need to reboot your system (Ctrl-Alt-Del) after you have made these changes.

IT IS VERY LIKELY YOU WILL ENCOUNTER PROBLEMS WITH ALTERING YOUR AUTOEXEC.BAT AND/OR CONFIG.SYS FILES; PLEASE CALL FOR ASSISTANCE.

The Edit/Entry Program automatically configures itself to both Hercules Monochrome, CGA, EGA and VGA Color monitors. However, if you have a VGA Monochrome monitor, you will need to add to the line in your **AUTOEXEC.BAT** file,
SET CLIPPER=F:122; **VGAMONO**, file and delete the **COLORS.SYS** file from the FISHUP directory if it does exist. Again, you will need to reboot your system.

II. Starting the Edit/Entry Programs

1) From the DOS prompt, change to the **FISHUP** directory and type **EDSTREAM.**
2) A menu will appear with the following selections:

Stream Characteristics (English)
Stream Characteristics (Metric)
Fisheries Information (English)
Fisheries Information (Metric)
Exit the Program

From the menu, highlight the selection you wish to work in and press Enter. It will take several minutes for the program to initialize, open databases and indices. A series of messages will appear in the 2nd status line concerning the loading of each screen.

III. Finishing the Edit/Entry Programs

1) Press **Esc** while in the edit/entry program when you are finished saving your data. Highlight "Exit the Program" on the main menu and press Enter.

2) At the DOS prompt (C:\FISHUP> or D:\FISHUP>) type **FINISH** and press Enter.

3) You will be prompted for a High Density Diskette, which should be formatted and blank and insert into your **A drive.**

4) The Finish program will backup and compress the data files onto this diskette into a file titled **DATA.ZIP**. This process takes approximately 10-15 minutes depending on the size of your files. You may back up your data files using this diskette at the end of each editing session; the program will update **DATA.ZIP** each time.

APPENDIX B

Fisheries Database Structures and Look-up Tables

DESCRIPTIONS OF DATABASES AND INDEX FOR EACH

Database	Description	Index
ADMNOWN	Administrative and ownership information	SHORT_RRN + SECTION
AGEGROW	Age and growth data from population estimates	SHORT_RRN + SECTION + DTOS(SURV_DATE)+SPECIES +AGE
ALTERED	Data describing altered channel length	SHORT_RRN + SECTION
BARRIER	Data describing fish barriers	SHORT_RRN + SECTION
BARRSPEC	Fish species related to barrier database	SHORT_RRN + SECTION + SPECIES
BIOECON	Bioeconomic data	SHORT_RRN + SECTION
CHANSTAB	Channel Stability Elements	SHORT_RRN + SECTION
COMMENTS	Additional comments as needed.	SHORT_RRN + SECTION + CATEGORY
DTASOUR	One record for each added or changed reach	SHORT_RRN + SECTION + DTOS(SURV_DATE)
COUNTY	Counties	SHORT_RRN + SECTION + STR(FIPS, 3)
FISHPLNT	Fish planting data	SHORT_RRN + SECTION
FISHSPEC	Fish species data	SHORT_RRN + SECTION + SPECIES
FLOWTEMP	Flow and temperature physical characteristics	SHORT_RRN + SECTION
HABITAT	Habitat data and ratings	SHORT_RRN + SECTION
LANDBANK	Reach Land & bank ownership information	SHORT_RRN + SECTION + TYPE + SECTOR + OWNERCODE
LOCATION	Geographical location data	SHORT_RRN + SECTION
MINFLOW	Minimum flow requirements	SHORT_RRN + SECTION + BEGDAY + BEGMONTH
MTRRN	Reach information from EPA System	SHORT_RRN + SECTION
PHYSICAL	Physical characteristics	SHORT_RRN + SECTION
POOL	Pool physical characteristics	SHORT_RRN + SECTION
POPESTIM	Fish population estimates	SHORT_RRN + SECTION + DTOS(SURV_DATE)+ SPECIES
PRESSURE	Fishing pressure data	SHORT_RRN + SECTION
RATING	Final ratings	SHORT_RRN + SECTION
RATDATA	Rating Data	SHORT_RRN + SECTION
REQUIRED	Unrelated data fields that are required	SHORT_RRN + SECTION
SPAWNING	Spawning data	SHORT_RRN + SECTION + SPECIES + DTOS(SURV_DATE)
STREAM	One of these records exists for each reach	HYDROUNIT + RRN + SECTION
STRMBTM	Stream bottom characteristics	SHORT_RRN + SECTION
USAGE	Land and Water Usage codes	SHORT_RRN + SECTION + LAND_H2O + USAGE
TRAIT	Limiting factors and mgt recommendations	SHORT_RRN + SECTION + CATEGORY +ABBR
TREE	Riparian and Streambank species	SHORT_RRN + SECTION + SPECIES

Fisheries Information Database Structures

ADMNOWN.DBF - Administrative and Ownership Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FWPREGION	C	1	0	FWP Region
FWPDISTRIC	C	1	0	FWP District
STRMREACH	C	3	0	Reach number
STRMDRAIN	C	2	0	Drainage code
WATERCODE	C	4	0	Water code
WTRTYPE	C	2	0	(01= Trout stream; 02 = non-trout stream; 10 = stream management undesignated; 19 = unable to sustain fish; 41 = stream with mostly warm/cool water fish)
STRMORDER	C	2	0	Stream order code. Using Quad scale map (1 = smallest unbranched perennial tributaries; 2 = below the junction of two first order streams; 3 = below the junction of two second order streams; etc.)
MTNRNG1	C	3	0	Mountain range code 1. See Appendix B-15
MTNRNG2	C	3	0	Mountain range code 2. See Appendix B-15
FISHREGS	L	1	0	Fishing regulation exception.
SERIAL	C	3	0	FWP Fisheries Serial No.

AGEGROW.DBF - Age and Growth Information Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SURV_DATE	D	8	0	Survey date
SPECIES	C	3	0	Fish species code
AGE	C	1	0	Age (0 - 5)
COUNT	N	3	0	No. of fish in group
MEAN_LEN	N	5	2	Mean length
MEAN_WT	N	5	2	Mean weight
AGE_RAT	C	1	0	Age and growth data quality rating. (1 =low to 9 high)
SERIAL	C	3	0	FWP Fisheries Serial No.

ALTERED.DBF - Altered Channel Database Structure
(Used when **Channel has been altered** in Agricultural Trait Look-up table)

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No
CALENGTH	N	5	0	Length of channel altered in feet
CASTABLE	N	3	0	Percentage of altered channel now stable
SERIAL	C	3	0	FWP Fisheries Serial No.

BARRIER.DBF - Barrier Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section
BARR_SIGN	C	1	0	Barrier significance to species (P=prevents introgression to species of special concern, S=spawning blocked upstream)
BARR_TYPE	C	1	0	Type of barrier (W=waterfall, C=culvert, D-debris, B=bedrock, I=insufficient flow, M=Manmade dam)
BARR_LAT	C	6	0	Barrier latitude
BARR_LONG	C	6	0	Barrier longitude
BARR_HEIGT	N	4	1	Barrier height in feet
BARR_MGMT	C	1	0	Management recommendations for barrier (R=remove, M=maintain, E=remove excess debris)
SPEC_USE	C	1	0	Use of reach by species (use use codes from fish species)
COMMENT	C	254	0	Barrier comment
SERIAL	C	3	0	Serial Number

BARRSPEC.DBF - Fish species related to barrier database

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SPECIES	C	3	0	Fish species code (See Appendix B-16)

BIOECON.DBF - Bioeconomic Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
CVM	N	7	2	Contingent value estimate in dollars/day
TCM	N	7	2	Travel cost estimate in dollars/day
YEAR	C	4	0	Survey year
SOURCE	C	100	0	Source of the data
BIOEC_RATE	C	1	0	Data quality rating for bioeconomic data. (1 =low to 9 = high)
SERIAL	C	3	0	FWP Fisheries Serial No.

CHANSTAB.DBF - Channel Stability Ratings Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
CHSTABELEM	C	30	0	Stability elements
CHSTATOTSC	C	3	0	Total score
SERIAL	C	3	0	FWP Fisheries Serial No.

COMMENTS.DBF - Comments Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
CATEGORY	C	2	0	Category of comments. GN = General; LF= Limiting Factor; FR = Fishing regulation; SR= Sport Fishing pressure; SC = Species of Special Concern; GM= Gamefish; MR=Management Recommendations;
COMMENT	M	10	0	Comments
SERIAL	C	3	0	FWF Fisheries Serial No.

DTASOURC.DBF - Data Sources Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SURVEYDATE	D	8	0	Survey date.
DATASOURCE	C	60	0	Name of data source.
AGENCY	C	3	0	Agency Code
SERIAL	C	3	0	Serial no.

FISHPLNT.DBF - Fish Planting Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FISHPLANT	C	1	0	Fish planted regularly (N = No; Y = Yes; blank = unknown or unrated)
WHY_PLANT	C	1	0	Why fish planted. (H = historic plant; R = restoration plant; M = Mitigation; P= Put and Take; S= Supplementation of Existing Fishery; O= Other)
SPECIES	C	3	0	Fish species code. See Appendix B-16
NO_PLANT	N	5	0	Number of fish planted
SIZE	N	5	1	Size of fish planted (in inches)
FREQUENCY	C	1	0	Planting frequency code. (A = Annually; B= Biannually; S = Semi-annually; O= Other; blank = unknown)
ARTFFISHRY	C	1	0	Is the sport fishery of the reach based on planting? (Y/N)
SUITRESID	C	1	0	Habitat suitability rating for residence.(1 = best to 5 = poorest; blank = unknown or unrated)
SUITSPAWN	C	1	0	Habitat suitability rating for spawing. (1 = best to 5 = poorest; blank = unknown or unrated)
SUITREAR	C	1	0	Habitat suitability rating for rearing. (1 = best to 5 = poorest; blank = unknown or unrated)
SUITSPEC	C	3	0	Fish species code for suitable habitat.
SERIAL	C	3	0	FWP Fisheries Serial No.

FISHSPEC.DBF - Fish Species Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SPECIES	C	3	0	Fish species code. See Appendix B-16.
FISHABUN	C	1	0	Fish abundance code. See Appendix B-20 and B-22.
FISHUSE	C	1	0	Fish use code. See Appendix B-20.
RATFISH	C	1	0	Fish species data quality rating. (1 = low to 9 = high)
FISHSCGC	C	1	0	Species of special concern genetic code. See Appendix B-20.
FISHSCHC	C	1	0	Species of special concern habitat code.
HISTCODE	C	1	0	Historical fish population code. (1 = low to 9 = high)
SERIAL	C	3	0	FWP Fisheries Serial No.

LOCATION.DBF - Geographical Location Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
LWRBTWN	C	3	0	Lower boundary township.
LWRBRNG	C	3	0	Lower boundary range.
LWRBSEC	C	2	0	Lower boundary section. See Appendix B-27.
LWRBSSEC	C	4	0	Lower boundary sub-section. See Appendix B-27.
LWRBLAT	N	7	4	Lower boundary latitude.Use grid or UTM system.
LWRBLONG	N	8	4	Lower boundary longitude.Use grid or UTM system.
UPRBTWN	C	3	0	Upper boundary township. See Appendix B-27.
UPRBRNG	C	3	0	Upper boundary range. See Appendix B-27.
UPRBSEC	C	2	0	Upper boundary section. See Appendix B-27.
UPRBSSEC	C	4	0	Upper boundary sub-section. See Appendix B-27.
UPRBLAT	N	7	4	Upper boundary latitude.Use grid or UTM system.
UPRBLONG	N	8	4	Upper boundary longitude.Use grid or UTM system.
SERIAL	C	3	0	FWP Fisheries Serial No.

MTRRN.DBF - EPA River Reach Numbering System Database Structure

Field Name	Type	Width	Dec	Description
RRN	C	16	0	Hydrologic Unit + River Reach Number
NAME	C	30	0	Name of stream
DLINK	C	16	0	Downlink of stream reach
UPLINK1	C	16	0	Tributary uplink of stream reach
UPLINK2	C	16	0	2nd tributary uplink of stream reach
TRIB_OF	C	30	0	Tributary to name
LOBOUN	C	30	0	Verbal description of lower boundary
UPBOUN1	C	30	0	Verbal description of upper boundary 1
UPBOUN2	C	30	0	Verbal description of upper boundary 2
MAP_NUM	N	3	0	Number of 1:100 K map
MAP_NAME	C	30	0	Name of 1:100 K map
LENGTH	N	4	1	Length of stream reach in miles (from EPA system)
WIDTH	N	4	0	Width of stream reach in feet
STREAM_NO	N	5	0	EPA stream number
SEQ_NO	N	8	2	EPA Sequence number
DOWNLAT	N	7	4	Latitude of lower boundary
DOWNLON	N	8	4	Longitude of lower boundary

POPESTIM.DBF - Fish Population Estimates Database Structures

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SURV_DATE	D	8	0	Survey date
SPECIES	C	3	0	Fish species code. See Appendix B-16.
COLL_CODE	C	6	0	Collection code from MDFWP estimator form
SECNAME	C	30	0	Name of population estimate section
SECLENGTH	N	5	2	Length of survey reach
SECUNIT	C	6	0	Units of SECLENGTH
AVE_WIDTH	N	6	2	Average width of sampling reach.
SECDESC	C	50	0	Latitude/longitude and verbal description of section
GEAR	C	1	0	Gear code. (B = boat shocking with boom; M = boat shocking - mobile anode; P = backpack shocking; S = bank shocking; I = above water observation; U = snorkeling; A = angling; C = chemical; E = explosives; K = creel; R = dewatering; Z = hand capture)
ESTIM_MTHD	C	1	0	Estimation method code. (P = Petersen mark-recapture; S = Schanble mark-recapture; E= one pass; T = two pass; Z = Zippin; M = multi-pass, maximum likelihood; C = catch per unit effort; N = total number; O = other)
BIOMASS	C	6	0	Total biomass in lbs.
GRP1_359	N	4	0	Group 1; population estimate from 3.0 in. to 5.9 in.
GRP1_ERR	N	3	0	Standard error for Group 1
GRP1_LNG	N	5	2	Mean length for Group 1
GRP1_WT	N	5	2	Mean weight for Group 1
GRP2_6119	N	4	0	Group 2; population estimate from 6.0 in. to 11.9 in.
GRP2_ERR	N	3	0	Standard error for Group 2
GRP2_LNG	N	5	2	Mean length for Group 2
GRP2_WT	N	5	2	Mean weight for Group 2
GRP3_12179	N	4	0	Group 3; population estimate from 12.0 in. to 17.9 in.
GRP3_ERR	N	3	0	Standard error for Group 3
GRP3_LNG	N	5	2	Mean length for Group 3
GRP3_WT	N	5	2	Mean weight for Group 3
GRP4_18	N	4	0	Group 4; population estimate from 18.0 in. and greater
GRP4_ERR	N	3	0	Standard error for Group 4
GRP4_LNG	N	5	2	Mean length for Group 4
GRP4_WT	N	5	2	Mean weight for Group 4
TOT_STDERR	N	3	0	Standard error for total
TOTAL_EST	N	4	0	Total estimated number for survey reach
PER_GAME	N	3	0	Percent composition of game species.
MIN_LENGTH	N	5	2	Minimum length in the estimate
MAX_LENGTH	N	5	2	Maximum length in the estimate
POP_RAT	C	1	0	Data quality rating of population data (1 = low to 9 = high)
SERIAL	C	3	0	FWP Fisheries Serial No.

PRESSURE.DBF - Fishing Pressure Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SFPFMD	C	5	0	Sport fishing pressure estimate in angler-days/year/unit
SFPSD	C	5	0	Sport fishing pressure standard deviation.
SFPYR	C	2	0	Year sport fishing data pressure data collected.
RATSFP	C	1	0	Sport fishing pressure data quality rating. (1 = low to 9 = high)
RESIDENT	C	5	0	Resident fishing pressure estimate
RES_STDDEV	C	3	0	Resident fishing pressure standard deviation
NONRES	C	5	0	Non-resident fishing pressure estimate
NON_STDDEV	C	3	0	Non-resident fishing pressure standard deviation
DATA_UNIT	C	1	0	Unit metric/english of data
SERIAL	C	3	0	FWP Fisheries Serial No.

RATDATA.DBF - Fishing Pressure Rating Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SVHYDOUNIT	C	8	0	Hydrologic Unit
SVRRN	C	8	0	RRN
SVSECTION	C	8	0	Section
SVCOMBFMD	C	1	0	Combined FADs. (Used only to determine FAD rating)
SERIAL	C	3	0	FWP Fisheries Serial No.

RATING.DBF - Final Ratings Database Structure

Field Name	Type	Width	Dec	Description
SERIAL	C	3	0	FWP Fisheries Serial No.
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FINAL_VAL	C	1	0	Final value (blank = unknown ; 1 = outstanding ; 2 = high fishery value ; 3 = substantial fishery value ; 4 = moderate value; 5 = limited value; 6 = unrated value)
SF_VAL	C	1	0	Sport fishery value (blank = unknown ; 1 = outstanding ; 2 = high fishery value ; 3 = substantial fishery value ; 4 = moderate value; 5 = limited value; 6 = unrated value)
SPEC_HAB	C	1	0	Species habitat value (blank = unknown ; 1 = outstanding ; 2 = high fishery value ; 3 = substantial fishery value ; 4 = moderate value; 5 = limited value; 6 = unrated value)
SPAWN_VAL	C	1	0	Spawning value
SPRING_VAL	C	1	0	Spring creek value

REQUIRED.DBF - Mandatory Data Fields Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
INGRESS	C	1	0	Ingress rating.
SPRINGCR	C	1	0	Spring creek rating. (1 = outstanding rating; 2 = high value; 3 = substantial value; N = not a spring creek)
ESTHETICS	C	1	0	Esthetics rating. (A = outstanding; B = above average; C = average; D = below average; E =low; F = national renown)
SVLOCALCOM	L	1	0	Important to local community
LAKE_RES	L	1	0	Reach affected by a lake or reservoir?
STREAM_CAT	C	1	0	Stream Flow Category (P = Perennial; E = Ephemeral; I = Intermittent)
SERIAL	C	3	0	FWP Fisheries Serial No.

SPAWNING.DBF - Spawning Counts Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SPECIES	C	3	0	Fish species code. See Appendix B-16.
SURV_DATE	D	8	0	Survey date
SURV_TYPE	C	1	0	Type of survey. (R = Redds; F = Fry; A = Adult)
SVSPAWNTRB	C	1	0	Spawning tributary rating.(1 = esential for sport class 1; 2 = essential for sport class 2; 3 = outstanding game fish run.)
COUNT	C	3	0	Counted in stream reach.
SURVEYMETH	C	1	0	Method used to count redds.(A = aerial; F = Foot; B = Boat; T = Trap H= Helicopter; W = Fixed Wing; S= Snorkeling)
SECTLENGTH	N	5	2	Length of stream reach counted.
SPTRBHYDRO	C	8	0	Hydrologic unit of spawner origin
SPTRBRRN	C	8	0	RRN of spawner origin
SPTRBSECT	C	1	0	Section of spawner origin
DQR	C	1	0	Data quality rating. (1 = low to 9 = high)
SERIAL	C	3	0	FWP Fisheries Serial No.

STREAM.DBF - Stream description Database Structure

Field Name	Type	Width	Dec	Description
HYDROUNIT	C	8	0	Hydrologic unit.
RRN	C	8	0	EPA river reach number.
SECTION	C	1	0	Section No.
SHORT_RRN	C	9	0	Short RRN
NAME	C	30	0	Name of stream
DLINK	C	16	0	Downlink RRN
DLINK_SEC	C	1	0	Downlink Section
ULINK1	C	16	0	Uplink1 RRN
ULINK1_SEC	C	1	0	Uplink1 Section
ULINK2	C	16	0	Uplink2 RRN
ULINK2_SEC	C	1	0	Uplink2 Section
STREAM_NO	N	5	0	EPA stream number.
SEQ_NO	N	8	2	EPA Sequence number
UPDATE	D	8	2	Last update date.
SERIAL	C	3	0	FWP Fisheries Serial No.
NEWREACH	L	1	0	New reach in MTNEWALL

TRAIT.DBF - Traits and Limiting Factors Database Structure

This database uses the TRAITLU database for the meaning of the abbreviations (Appendix B-23).

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
CATEGORY	C	2	0	Code for category e.g. BI = Biology, MN = Management,etc
ABBR	C	2	0	Codes for traits
SERIAL	C	3	0	FWP Fisheries Serial No.

LOOK-UP TABLES

BASINS.DBF - HYDROUNIT CODES, NAMES, AND ABBREVIATONS

Hydrounit	Basin Name	Hydrounit Abbr.
10010001	Belly	QA
10010002	St. Mary	QB
Upper Missouri River Basin		
10020001	Red Rock	AA
10020002	Beaverhead	AB
10020003	Ruby	AC
10020004	Big Hole	AD
10020005	Jefferson	AE
10020006	Boulder	AF
10020007	Madison	AG
10020008	Gallatin	AH
Missouri-Forks to Teton		
10030101	Upper Missouri	BA
10030102	Upper Missouri - Dearborn	BB
10030103	Smith	BC
10030104	Sun	BD
10030105	Belt	BE
10030201	Two Medicine	CA
10030202	Cut Bank	CB
10030203	Marias	CC
10030204	Willow	CD
10030205	Teton	CE
Missouri- Lower River		
10040101	Bullwhacker - Dog	DA
10040102	Arrow	DB
10040103	Judith	DC
10040104	Fort Peck Reservoir	DD
10040105	Big Dry	DE
10040106	Little Dry	DF
10040201	Upper Musselshell	EA
10040202	Middle Musselshell	EB
10040203	Flatwillow	EC
10040204	Box Elder	ED
10040205	Lower Musselshell	EE

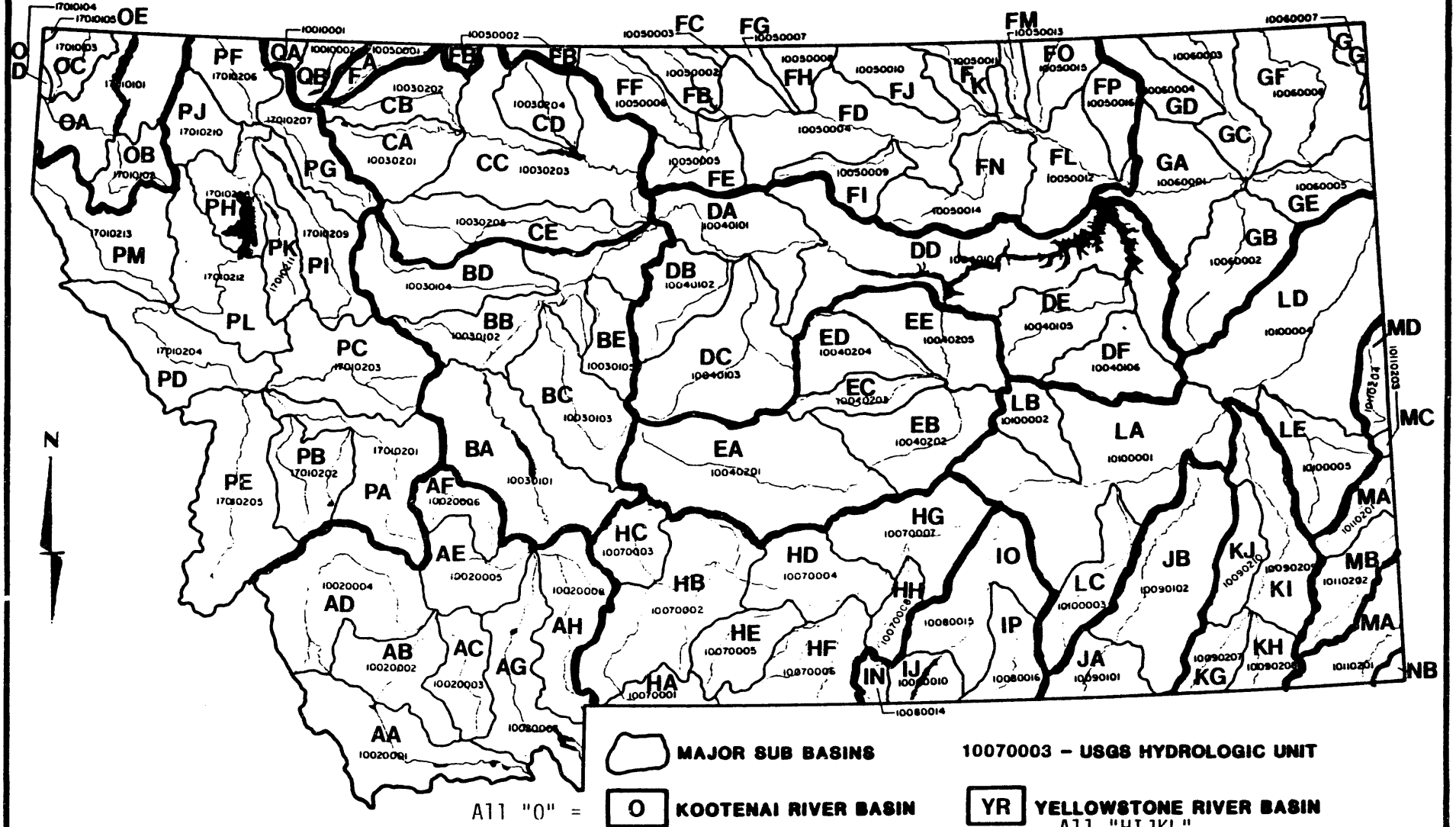
BASIN.DBF (cont.)

Hydrounit	Basin Name	Hydrounit Abbr.
Milk River Basin		
10050001	Milk Headwaters	FA
10050002	Upper Milk	FB
10050003	Wild Horse Lake	FC
10050004	Middle Milk	FD
10050005	Big Sandy	FE
10050006	Sage	FF
10050007	Lodge	FG
10050008	Battle	FH
10050009	Peoples	FI
10050010	Cottonwood	FJ
10050011	Whitewater	FK
10050012	Lower Milk	FL
10050013	Frenchman	FM
10050014	Beaver in Milk River Catalog Unit	FN
10050015	Rock	FO
10050016	Porcupine	FP
Missouri/Poplar Basin		
10060001	Prarie Elk - Wolf	GA
10060002	Redwater	GB
10060003	Poplar	GC
10060004	West Fork Poplar	GD
10060005	Charlie - Little Muddy	GE
10060006	Big Muddy	GF
10060007	Brush Lake Closed Basin	GG
Upper Yellowstone basin		
10070001	Yellowstone Headwaters	HA
10070002	Upper Yellowstone	HB
10070003	Shields	HC
10070004	Upper Yellowstone - Lake Basin	HD
10070005	Stillwater in Upper Yellowstone	HE
10070006	Clarks Fork Yellowstone	HF
10070007	Upper Yellowstone - Pompeys Pillar	HG
10070008	Pryor	HH
Bighorn River Basin		
10080010	Big Horn Lake	IJ
10080014	Shonshone	IN
10080015	Lower Bighorn	IO
10080016	Little Bighorn	IP

BASIN.DBF (cont.)

Hydrounit	Basin Name	Hydrounit Abbr.
Tongue River Basin		
10090101	Upper Tongue	JA
10090102	Lower Tongue	JB
100902	Powder	K
10090207	Middle Powder	KG
10090208	Little Powder	KH
Lower Powder Basin		
10090209	Lower Powder	KI
10090210	Mizpah	KJ
Lower Yellowstone Basin		
10100001	Lower Yellowstone - Sunday	LA
10100002	Big Porcupine	LB
10100003	Rosebud	LC
10100004	Lower Yellowstone	LD
10100005	O'Fallon	LE
Little Missouri Basin		
10110201	Upper Little Missouri	MA
10110202	Boxelder	MB
10110203	Middle Little Missouri	MC
10110204	Beaver in Little Missouri Catalog	MD
101202	Little Missouri Catalog Unit	N
10120202	Lower Belle Fourche	NB
Kootenai Basin		
17010101	Upper Kootenai	OA
17010102	Fisher	OB
17010103	Yaak	OC
17010104	Lower Kootenai	OD
17010105	Moyie	OE
Clark Fork/Flathead Basin		
17010201	Upper Clark Fork	PA
17010202	Flint - Rock	PB
17010203	Blackfoot	PC
17010204	Middle Clark Fork	PD
17010205	Bitterroot	PE
17010206	North Fork Flathead	PF
17010207	Middle Fork Flathead	PG
17010208	Flathead Lake	PH
17010209	South Fork Flathead	PI
17010210	Stillwater in Pend Oreille Catalog	PJ
17010211	Swan	PK
17010212	Lower Flathead	PL
17010213	Lower Clark Fork	PM

Map showing drainages and drainage codes.



	MAJOR SUB BASINS	10070003 – USGS HYDROLOGIC UNIT	
All "O" =	O KOOTENAI RIVER BASIN	YR	YELLOWSTONE RIVER BASIN All "HIJKL"
All "P" =	PR CLARK FORK BASIN	MN	LITTLE MISSOURI RIVER BASIN All "M" & "N"
All "ABCDEFG" =	UM MISSOURI RIVER BASIN	Q	ST. MARY RIVER BASIN All "Q"

MOUNTAIN RANGES LOOK-UP TABLES

Code	Mountain Range
ABS	Absaroka Range
APG	Apgar Mountains (Glacier NP)
ANA	Anaconda Mountains
BPW	Bearpaw Mountains
BTH	Beartooth Range (including Beartooth Plateau)
BVH	Beaverhead Mountains
BBT	Big Belt Mountains
BHN	Bighorn Mountains
BSY	Big Snowy Mountains
BIT	Bitterroot Range
BRI	Bridger Range
BTL	Blacktail Range
BUT	Butte Highlands
CAB	Cabinet Mountains
CAS	Castle Mountains
CEN	Centennial Mountains
COR	Coer d'Alene Mountains
CZY	Crazy Mountains
EPI	East Pioneer Mountains
ELK	Elkhorn Mountains
FHD	Flathead Mountains
FLN	Flint Creek Range
GAL	Gallatin Range
GLT	Galton Range
GRR	Garnet Range
GRN	Granite Range
GRV	Gravelly Range
HIM	Highwood Mountains
HRS	Horseshoe Hills
JON	John Long Mountains
JUD	Judith Mountains
LAR	Larb Hills
LEW	Lewis Range (Glacier NP)
LBT	Little Belt Mountains
LRK	Little Rocky Mountains
LSY	Little Snowy Mountains
LWF	Little Wolf Mountains
LIV	Livingston Range (Glacier NP)
MAD	Madison Range
MIS	Misson Range
PIN	Pintlar Peaks
PRY	Pryor Mountains
PUR	Purcell Mountains
ROS	Rosebud Mountains
RUB	Ruby Range
SAL	Salish Mountains
SAP	Sapphire Mountains
SNO	Snowcrest Range
SPA	Spanish Peaks
SPO	Spokane Hills
SWA	Swan Range
SGR	Sweet Grass Hills
TEN	Tendoy Mountains
TOB	Tobacco Root Mountains
TRI	Trilobite Range
WPI	West Pioneer Range
WHI	Whitefish Range
WOL	Wolf Mountains

FISH SPECIES LOOK-UP TABLE

Code	Species
	Catfish Family
025	Bullhead
065	Black Bullhead
024	Channel Catfish
064	Stonecat
066	Yellow Bullhead
	Ling Cod Family
026	Burbot
	Drum Family
036	Freshwater Drum
	Gar Family
038	Shortnose Gar-Class C*
	Goldeye Family
034	Goldeye
	Killifish Family
103	Plains Killifish
	Live Bearer Family
115	Green Swordtail
106	Mosquitofish
108	Sailfin Molly
109	Shortfin Molly
112	Variable Platy
	Minnow Family
037	Minnow
041	Northern Redbelly/Finescale Dace
043	Western Silvery/Plains Minnow
042	Brassy Minnow
032	Common Carp
050	Creek Chub
047	Emerald Shiner
052	Fathead Minnow

Minnow Family (cont.)

142 Finescale Dace
044 Flathead Chub
053 Golden Shiner
030 Goldfish
045 Lake Chub
039 Longnose Dace
143 Northern Redbelly Dace
033 Northern Squawfish
029 Peamouth
146 Peamouth X Redsided Shiner
144 Peamouth X Squawfish
051 Pearl Dace Class C
141 Plains Minnow
147 Redbelly X Finescale Dace Hybrid Class C
049 Redside Shiner
048 Sand Shiner
054 Sicklefin Chub Class B*
145 Spottail Shiner
046 Sturgeon Chub Class B
035 Utah Chub
140 Western Silvery Minnow

Paddlefish Family

028 Paddlefish Class A*

Perch Family

022 Sauger/Walleye
083 Iowa Darter
081 Sauger
149 Sauger X Walleye Hybrid
082 Walleye
020 Yellow Perch

Pike Family

023 Northern Pike
148 Northern Pike X Muskie Hybrid

Trout/Salmon Family

002 Cutthroat Trout
001 Rainbow Trout
089 Salmon
118 Trout
119 Trout/Salmon
014 Whitefish
010 Arctic Grayling Class A

Trout/Salmon Family (cont.)

126 Atlantic Salmon
003 Brook Trout
124 Brook Trout X Bull Trout Hybrid
004 Brown Trout
005 Bull Trout Class B
087 Chinook Salmon
125 Cisco
009 Coho Salmon
122 Columbia Basin Redband Trout Class B
123 Cutthroat X Golden Trout Hybrid
007 Golden Trout
150 Golden X Rainbow X Cutthroat Hybrid
008 Kokanee
006 Lake Trout
015 Lake Whitefish
085 Mountain Whitefish
086 Pygmy Whitefish
011 Rainbow X Cutthroat Trout Hybrid
120 Rainbow X Golden Trout Hybrid
128 Redband X Westslope Cutthroat Hybrid
088 Splake
121 Upper Missouri Cutthroat Trout Class A
012 Westslope Cutthroat Trout Class A
013 Yellowstone Cutthroat Trout Class A
127 Yellowstone X Westslope Cutthroat Hybrid

Sculpin Family

016 Sculpin
130 Mottled Sculpin
133 Shorthead Sculpin Class C
131 Slimy Sculpin
134 Spoonhead Sculpin Class C
132 Torrent Sculpin

Smelt Family

099 Rainbow Smelt

Stickelback Family

071 Brook Stickelback

Sturgeon Family

027 Sturgeon
091 Pallid Sturgeon Class A
092 Shovelnose Sturgeon
090 White Sturgeon Class A

Sucker Family

040 **Buffalo**
031 **Sucker**
060 **Bigmouth Buffalo**
059 **Blue Sucker**
058 **Largescale Sucker**
056 **Longnose Sucker**
063 **Mountain Sucker**
055 **River Carpsucker**
062 **Shorthead Redhorse**
061 **Smallmouth Buffalo**
057 **White Sucker**

Sunfish Family

018 **Bass**
021 **Crappie**
019 **Sunfish**
077 **Black Crappie**
074 **Bluegill**
076 **Green Sunfish**
017 **Largemouth Bass**
075 **Pumpkinseed**
079 **Rock Bass**
073 **Smallmouth Bass**
152 **Sunfish Hybrid**
072 **White Bass**
078 **White Crappie**

Trout/Perch Family

100 **Trout-Perch Class C**

***Class A** — *limited numbers and/or limited habitats both in Montana and elsewhere in North America; elimination from Montana would be a significant loss to the gene pool of the species or subspecies.*

***Class B** — *intermediate between classes A and C. Limited numbers and/or limited habitats in Montana; fairly widespread and fair numbers in North America as a whole. Elimination from Montana would be at least a moderate loss to the gene pool of the species or subspecies.*

***Class C** — *limited numbers and/or limited habitats in Montana; widespread and numerous in North America as a whole. Elimination from Montana would be only a minor loss to the gene pool of the species or subspecies.*

Further instructions for fish species information

Abundance of fish refers only to adult fish, or in the case of game fish "keeper" fish (7" minimum for trout; exception 6" minimum for trout populations which spawn when shorter than 7"). The abundance graph (pg 10) is a guide to numbers associated with abundant, common, uncommon, and rare. The ratings reflect the peak abundance during the year, e.g., when migratory spawners are present.

CRITERIA FOR LARGE-SIZE FISHES

Species	Kg	Lbs	Species	Kg	Lb
Shovelnose sturgeon	2.7	6.0	Northern Pike	6.8	15.0
Paddlefish	34.0	75.0	Bullhead-black & yellow	.3	.7
Mountain whitefish	.9	2.0	Channel catfish	3.6	8.0
Kokanee	1.1	2.5	Burbot	2.7	6.0
Cutthroat trout	.7	1.5	Smallmouth bass	.9	2.0
Rainbow trout	1.4	3.0	Largemouth bass	1.8	4.0
Brown trout	1.4	3.0	Crappie-black & white	.5	1.0
Bull trout	2.7	6.0	Yellow perch	.5	1.0
Lake trout	6.8	15.0	Sauger	.9	2.0
Arctic grayling	.9	2.0	Walleye	1.8	4.0
Golden trout	.5	1.0			

Genetic Code: Genetic value for fish species of special concern.

A= A genetically pure population as determined by electrophoresis that is isolated from contaminating species.*

B= A potentially pure population where there is no record of contaminating species in areas where spawning occurs:
(a) Contaminating species for native rainbow trout are: golden trout, cutthroat trout and any hybrid Salmo except hybrid brown trout.
(b) Contaminating species for westslope or Yellowstone cutthroat trout are: rainbow, golden, other strains of cutthroat trout, and any hybrid Salmo except hybrid brown trout.
(c) Contaminating species for bull trout is brook trout.

C= A potentially pure population where no contaminating species exist, but planting records indicate that a contaminating species (which could cause hybridization) has been planted in the drainage or is elsewhere in the drainage and could invade.

D= An especially valuable genetically pure cutthroat trout population (determined by electrophoresis) or especially valuable bull trout population where there are also contaminating species in the reach or drainage. Introgression or hybridization may be static or receding due to reproductive isolation. This rating also applies to sympatric populations of native and non-native rainbow trout.

E= A potentially pure population where contaminating species are known to exist.

G= A genetically pure population could exist but is not present.

H= A hybridized or introgressed population known to exist based on electrophoresis.

I= A genetically pure population, determined by electrophoresis, where contaminating species could invade. Sometimes used instead of Genetics Rating D for bull trout in order to upgrade an especially important spawning stream.

J= A population that is 99% pure determined by electrophoresis and managed as a pure population.

*If a populaton has been electrophonetically tested and has a rating of A, I or J, barrier data must be filled in (screen 12). The barrier information affects the final stream value class and allows management of barriers with respect to their value to the fishery resource.

Abundance Code: Abundance of fish refers only to adult fish, or in the case of game fish "keeper" fish (7" minimum for trout; exception 6" minimum for trout populations which spawn when shorter than 7"). The abundance graph (Figure 1, B-14) is a guide to numbers associated with abundant, common, uncommon, and rare. The ratings reflect the peak abundance during the year, e.g., when migratory spawners are present.

A= Abundant
B= Abundant with proportion of large-size fish*
C= Common
D= Common with proportional number of large-size fish*
U= Uncommon
V= Uncommon with proportional number of large-size fish*
R= Rare
E= Species expected but not verified
I= Immature fish only; adults never in reach
M= Species absent but might be present if habitat problems corrected
N= Not present
P= Species absent but could be present if introduced (e.g., potential habitat in a barren stream)
Z= Abundance unknown (avoid use)

Use Code: Codes indicate single or dominant use:

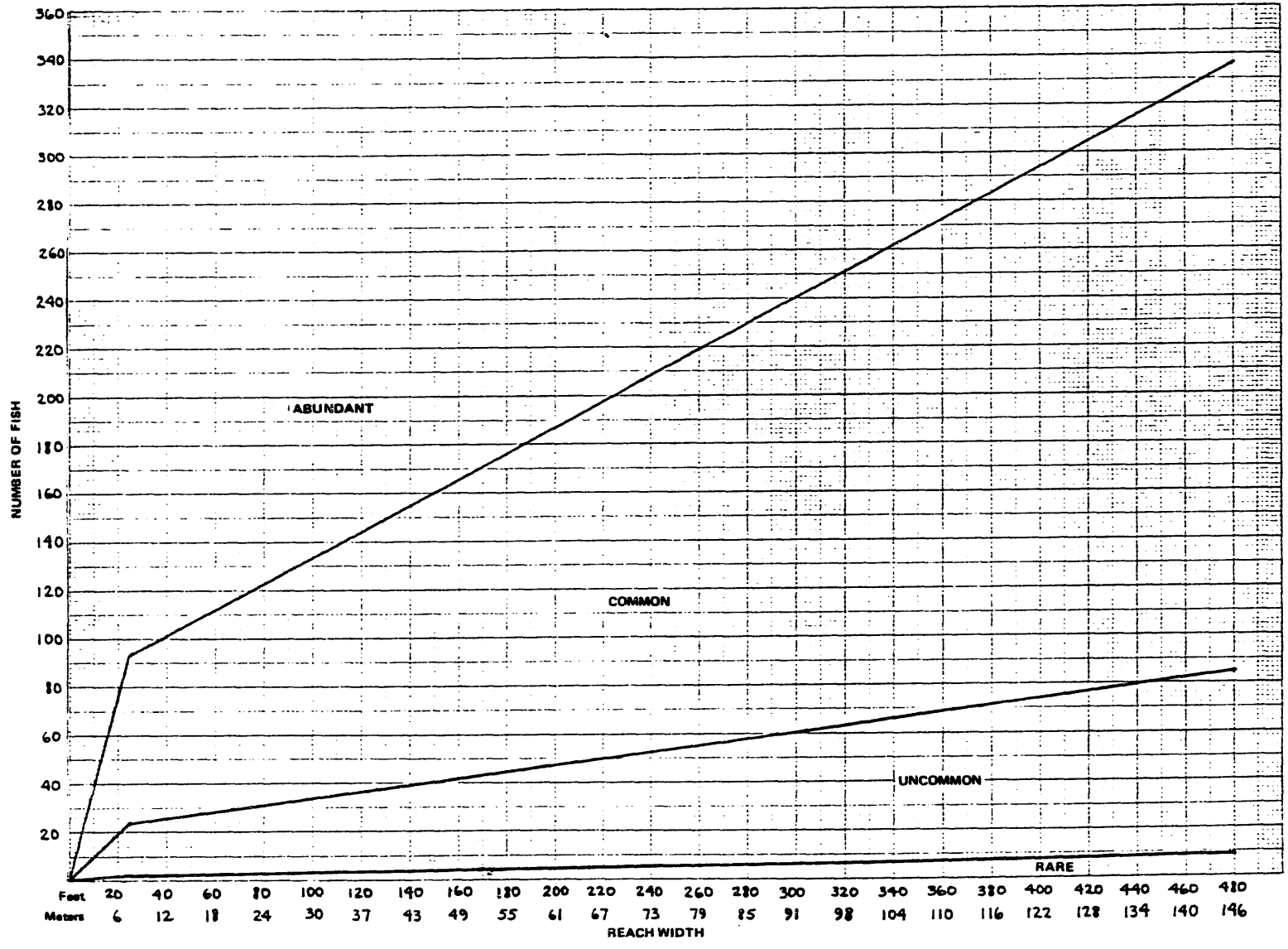
L= Resident throughout life cycle
A= Spawning elsewhere - spends part or most of life in reach (includes planted fish that do not reproduce
H= Spawning and hatching - young promptly move downstream
J= Spawning and nursery to subadult
C= Passing through - species uses reach as a corridor to migrate upstream and return downstream
F= Feeding run or avoiding poor conditions elsewhere
N= No use (only in connection with abundance code N)
Z= Use undetermined;

Codes that are combinations of the above codes to indicate more than one population of a species:

R= L plus H or J
P= C plus L, A, H or J
S= H and J combined
T= L plus A or F

Any other combination: Enter code for dominant use.

FIGURE 1. FISH ABUNDANCE - FISH PER 300 METERS (APPROX. 1,000 FEET)



TRAIT LOOK-UP TABLES

Agricultural Use limiting fishery

AL	CD	This reach has a chronic dewatering problem (dewatering is a significant problem in virtually all years)
AL	PP	This reach has a periodic dewatering problem (dewatering is a significant problem only in drought or water short years)
AL	ST	There is bank encroachment by stock trampling.
AL	DS	There is pollution from domestic stock.
AL	WA	The watershed has been abused by stock overuse.
AL	CA	Channel/bank has been altered, encroached, relocated,straightened,dredged, constricted for agricultural purposes.
AL	SI	There is excess siltation.
AL	IR	There is turbidity and sediment from irrigation.
AL	MC	There is commercial organic pollution.
AL	PE	There is pollution from weedicides and/or pesticides.

Management recommendations for agricultural use

AM	RF	This reach needs reduced man caused flow fluctuations (applies to dams, could also apply to dewatering for irrigation, if water removed is in excess of established norms for water right or use).
AM	II	This reach needs improved irrigation practices. See comments
AM	FB	Consider stream bank fencing.
AM	IC	This reach needs improved bank cover.
AM	SB	Stream bank stabilization needed.
AM	WR	This reach needs its watershed restored.
AM	CH	Channel improvements needed. See comments.

Logging, mining, and industrial factors limiting fishery

IL	LO	The watershed has been abused by logging practices.
IL	RD	The watershed has been abused by road construction.
IL	ED	Fish production limited by sediment from a highly erosive drainage (soils of drainage are highly unstable and erosive).
IL	CA	Channel/bank has been altered, encroached, relocated,straightened,dredged, constricted by logging, mining, or other industrial activites.
IL	MC	There is mining related pollution.
IL	MI	The watershed has been abused by mining practices.
IL	TH	Thermal effluent is causing temperature problems from power plants, dam, etc.
IL	CH	There is commercial chemical pollution.

Management recommendations for logging, mining, and industrial factors

IM	PA	Pollution abatement needed.
IM	LI	Logging practices need to be improved.
IM	RF	This reach needs reduced man caused flow fluctuations (applies to dams, could also apply to dewatering for irrigation, if water removed is in excess of established norms for water right or use).

Production and spawning limiting factors

SL	BA	Barrier(s) to fish passage present. Enter comment here.
SL	SA	Fish production limited by the lack of spawning area(s).

Management recommendations to improve spawning

SM	BR	This reach needs a barrier(s) to fish passage removed.
SM	DR	This reach needs excess debris removed.
SM	IS	Spawning area improvements needed.
SM	BM	This reach needs its barrier maintained to prevent passage by undesirable fish.

Urban and transportation factors limiting fishery

UL	HU	The watershed has been abused by human overuse.
UL	RD	The watershed has been abused by road construction.
UL	SE	There is pollution from domestic sewage.

Management recommendations for urban and transportation limiting factors

UM	PA	Pollution abatement needed.
UM	RF	This reach needs reduced man caused flow fluctuations (applies to dams, could also apply to dewatering for irrigation, if water removed is in excess of established norms for water right or use).
UM	WR	This reach needs its watershed restored.
UM	CH	Channel improvements needed. See comments.
UM	RC	River corridor planning needed here.

Hydropower operation limiting fishery

WL	DA	Reach is affected by an impoundment.
WL	GA	There is pollution from gas super saturation.

Management recommendations for hydropower operation

WM	RF	This reach needs reduced man caused flow fluctuations (applies to dams, could also apply to dewatering for irrigation, if water removed is in excess of established norms for water right or use).

Biological Limiting factors

BL	NN	Native species are limited by non-native game fish. Enter comments
BL	GF	Fish production limited by over-population of game fish. See comments.
BL	RO	Fish production limited by over-population of rough fish. See comments.
BL	LF	Fish production limited by low number of aquatic invertebrates.
BL	LN	Fish production limited by low nutrients (stream is infertile).
BL	DI	Fish production is limited by disease and/or parasites.
BL	BP	Reach inundated by beaver ponds.
BL	FO	Fish are only near the mouth.
BL	FP	Fish production is limited by low natural flows/small stream size.

Management recommendations for biological limiting factors

BM	CS	This reach needs change in fish species. Enter comments.
BM	SF	Fish stocking recommended. See comments.
BM	BC	This reach needs beaver control.
BM	BS	This reach needs beaver stocked.

Physical Limiting factors

Fish production limited by:

PL	BU	. . . a lack of bank undercut.
PL	ED	. . . sediment from a highly erosive drainage (soils of drainage are highly unstable and erosive).
PL	BM	. . . bedload movement (excessive movement resulting in unstable substrate for invertebrates and filling or shifting pools).
PL	IP	. . . inadequate pools.
PL	IR	. . . inadequate riffles.
PL	RO	. . . a lack of bank vegetation.
PL	SG	. . . steep gradient/excessive flow(s) .
PL	TE	. . . low or high summer water temperature (enter normal peak water temperature on page 13); if caused by thermal effluent or irrigation return, mark those).
PL	TU	turbidity.
PL	OT	. . . another reason. See comments.
PL	GO	The watershed has been abused by game overuse.
PL	FI	The channel has been altered by flood or ice (Anchor ice, scouring ice)

Management Recommendations for physical limiting factors

PR	GR	Gradient needs to be reduced
PR	NR	Needs rehabilitation

Fishing Regulations, commercial fishery, overharvest limiting factors

RL	CF	Reach has commercial fishing.
RL	OH	Sport fish are being over harvested (fish harvest exceeds optimum sustainable yield; detrimental to quality of fishing).
RL	ON	Non-sport fish are being over harvested.
RL	SP	Spawners are being poached.
RL	HF	This reach is hard to fish (stream too brushy for convenient fishing).

Management recommendations for regulating fishery

RM	CF	This reach needs change in management of commercial fishery.
RM	FR	Special regulations recommended. See comments.
RM	RE	This reach needs fishing regulations enforced.

Identified fishery values

FV	HB	This reach has potential for significant fish habitat improvements.
FV	MI	Substantial fisheries improvement have been taken here to mitigate for fisheries losses elsewhere.
FV	NU	This reach is valuable to receiving waters for nutrients and fish food.
FV	WQ	This reach is valuable for downstream water quality.
FV	WV	This reach is valuable for downstream water volume.
FV	SC	There are special concerns other than fish.
FV	HE	Reach is a hatchery egg/fish source.
FV	MP	This reach has had a DFWP River Managment Plan developed.

Management recommendations

FM	SU	Fishery survey needed.

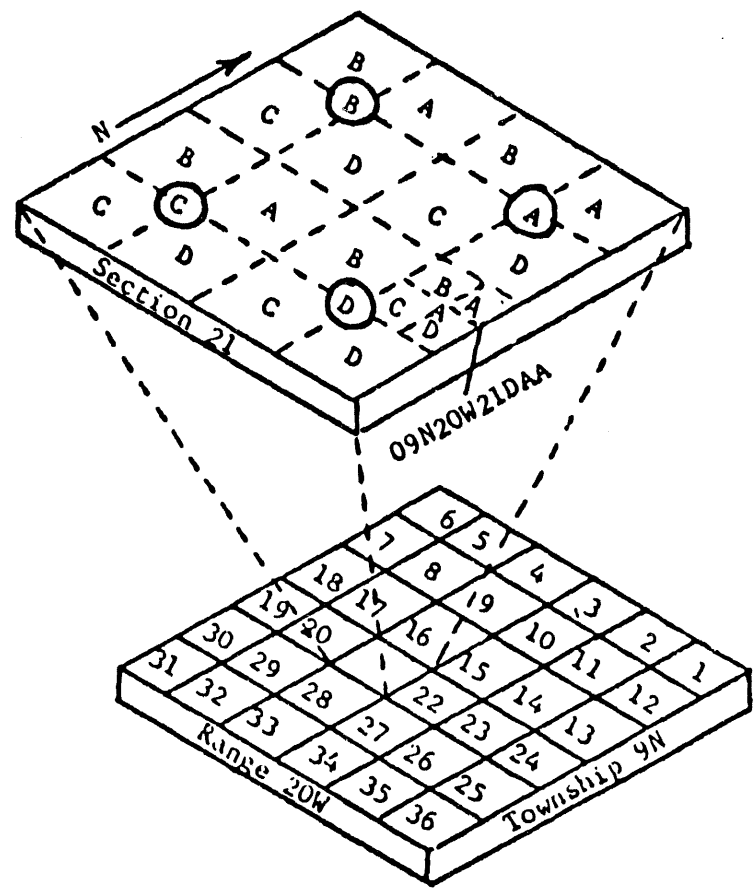
LAND DESCRIPTION (TOWNSHIP RANGE SECTION SUBSECTION)

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Section Numbers

Townships are located by a numbered grid system consisting of Township and Range lines. The Township lines run east and west of a principal meridian. The Range lines run north and south of an established base line. Thus, a Township is described as a number N or S of the base line, and a number E or W of the principal meridian.

A desirable modification of the usual method of describing a location on a map is the one used by several agencies including the USGS. A location is specified by using 12 characters - the first three give the Township; the next three give the Range; the next two the Section number within the Township; and the next four the location within the quarter section (160 A), the quarter-quarter section (40 A), the quarter-quarter-quarter section (10 A) and the quarter-quarter-quarter-quarter section (2½ A). The subdivisions of the 640 A section are designated as A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. For example, if a lake is located in Township 9N, Range 20W, Section 21 the description might be 09N20W21DAA. The letters DAA indicate the lake is in the NE ¼ of the NE ¼ of the SE ¼ of Section 21. As indicated above, a still further breakdown to a 2½ acre area is possible using a fourth letter (A, B, C, or D).



APPENDIX C

Stream Characteristics Database Structures and Look-up Tables

DESCRIPTIONS OF DATABASES AND INDEX FOR EACH

Database	Description	Index
ADMNOWN	Administrative and ownership information	SHORT_RRN + SECTION
AGEGROW	Age and growth data from population estimates	SHORT_RRN + SECTION + DTOS(SURV_DATE)+SPECIES +AGE
ALTERED	Data describing altered channel length	SHORT_RRN + SECTION
BARRIER	Data describing fish barriers	SHORT_RRN + SECTION
BARRSPEC	Fish species related to barrier database	SHORT_RRN + SECTION + SPECIES
BIOECON	Bioeconomic data	SHORT_RRN + SECTION
CHANSTAB	Channel Stability Elements	SHORT_RRN + SECTION
COMMENTS	Additional comments as needed.	SHORT_RRN + SECTION + CATEGORY
DTASOUR	One record for each added or changed reach	SHORT_RRN + SECTION + DTOS(SURV_DATE)
COUNTY	Counties	SHORT_RRN + SECTION + STR(FIPS, 3)
FISHPLNT	Fish planting data	SHORT_RRN + SECTION
FISHSPEC	Fish species data	SHORT_RRN + SECTION + SPECIES
FLOWTEMP	Flow and temperature physical characteristics	SHORT_RRN + SECTION
HABITAT	Habitat data and ratings	SHORT_RRN + SECTION
LANDBANK	Reach Land & bank ownership information	SHORT_RRN + SECTION + TYPE + SECTOR + OWNERCODE
LOCATION	Geographical location data	SHORT_RRN + SECTION
MINFLOW	Minimum flow requirements	SHORT_RRN + SECTION + BEGDAY + BEGMONTH
MTRRN	Reach information from EPA System	SHORT_RRN + SECTION
PHYSICAL	Physical characteristics	SHORT_RRN + SECTION
POOL	Pool physical characteristics	SHORT_RRN + SECTION
POPESTIM	Fish population estimates	SHORT_RRN + SECTION + DTOS(SURV_DATE)+ SPECIES
PRESSURE	Fishing pressure data	SHORT_RRN + SECTION
RATING	Final ratings	SHORT_RRN + SECTION
RATDATA	Rating Data	SHORT_RRN + SECTION
REQUIRED	Unrelated data fields that are required	SHORT_RRN + SECTION
SPAWNING	Spawning data	SHORT_RRN + SECTION + SPECIES + DTOS(SURV_DATE)
STREAM	One of these records exists for each reach	HYDROUNIT + RRN + SECTION
STRMBTM	Stream bottom characteristics	SHORT_RRN + SECTION
USAGE	Land and Water Usage codes	SHORT_RRN + SECTION + LAND_H2O + USAGE
TRAIT	Limiting factors and mgt recommendations	SHORT_RRN + SECTION + CATEGORY +ABBR
TREE	Riparian and Streambank species	SHORT_RRN + SECTION + SPECIES

ADMNOWN.DBF - Administrative and Ownership Database (see Appendix B - 2 for structure)

COUNTY.DBF - County Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FIPS	N	3	0	County FIPS code.
SERIAL	C	3	0	FWP Fisheries Serial No.

DTASOURC.DBF - Data Sources Database (see Appendix B - 4 for structure)

FLOWTEMP.DBF - Flow and Temperature Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SURV_DATE	D	8	0	Survey date.
FLOW_METH	C	1	0	Flow data collection method.
FLOWDS	C	7	0	Flow during survey in cubic feet/second.
RATFLOWDS	C	1	0	Flow survey data quality rating. (1 = low to 9 = high)
FLOWSTAGE	C	1	0	Stage during survey flow. (1 = dry; 2 = low; 3= moderate; 4 = high; 5 = flooding; blank = unknown or not determined)
NORLOWFLOW	C	7	0	Normal low flow (including man caused) in cfs.
RATNLFLOW	C	1	0	Normal low flow data quality rating. (1 = low to 9=high)
MORE_FLOW	L	1	0	More flow data available? T/F?
BEAVERPOND	C	3	0	Percent of reach inundated by beaver ponds.
RATBEAVRPD	C	1	0	Percent inundated by beaver ponds data quality rating.(1 = low to 9 = high)
PKH2OTEMP	C	2	0	Normal peak water temperature.
RATPKH2OTP	C	1	0	Normal peak water temperature data quality rating.(1 = low to 9 = high)
TEMPDS	N	4	1	Temperature during survey.
MORE_TEMP	L	1	0	More temperature data available? T/F
SERIAL	C	3	0	FWP Fisheries Serial No.

HABITAT.DBF - Habitat Database Structures

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FILAMALGAE	C	1	0	Filamenteous algae. (C=common; N=none observed; R=rare; X=present, abundance not specified)
HIGHRPLANT	C	1	0	Higher plants code. (C=common; N=none observed; R=rare; X=present, abundance unknown.
GRAZLENGTH	C	5	0	Length grazed by livestock in feet.
GRAZCOMPAT	C	1	0	Livestock grazing length compatability code. (1=low; 2=poor; 3=stable but spotty; 4=stable or improving; 5=high; blank=unknown or unrated)
STRMCOVER	C	1	0	Stream cover habitat rating.(1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
BNKCONDITN	C	1	0	Bank condition habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
BNKSTABILT	C	1	0	Bank stability habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
CHANSTABIL	C	1	0	Channel stability habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
STRMBSEDMT	C	1	0	Streambed sediment habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
COMBRATING	C	1	0	Combined habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated)
BNKVEGETAT	C	1	0	Dominant bank vegetation. (1=Deciduous trees; 2=Conifer; 3=Mixed; 4=Deciduous shrubs; 5=upland shrubs; 6=grass/herbaceous forms; 7=no vegetation, soil, road material; 8=shrubs/trees with soil/rock material (alpine).
RIPVEGETAT	C	1	0	Dominant riparian vegetation. (see bank vegetation codes.)
SSURFACCOV	C	1	0	Subsurface cover rating. (0=none; 1=poor; 2=fair; 3=good; blank=unknown or unrated)
HABTREND	C	1	0	Habitat trend code. (D=deteriorating; I=improving; S=static; blank=unknown or unrated)
RISK_INDEX	N	6	2	Risk assessment index.
HAB_RATE	C	1	0	Habitat data quality rating. (1=low to 9=high)
WDIN0_6	N	4	0	Feet of instream woody Debris 0-6 inches
WDIN6_12	N	4	0	Feet of instream woody Debris 6-12 inches
WDIN12_18	N	4	0	Feet of instream woody debris 12-18 inches
WDIN18_99	N	4	0	Feet of instream woody debris 18+ inches
WDOUT0_6	N	4	0	Feet of out-of-stream woody debris 0-6 inches
WDOUT6_12	N	4	0	Feet of out-of-stream woody debris 6-12 inches
WDOUT12_18	N	4	0	Feet of out-of-stream woody debris 12-18 inches
WDOUT18_99	N	4	0	Feet of out-of-stream woody debris 18+ inches
SERIAL	C	3	0	FWP Fisheries Serial No.

LANDBANK.DBF - Land and Bank Ownership Database

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
TYPE	C	1	0	Record type. (L = land ownership; B= bank ownership)
SECTOR	C	1	0	Agency sector. (F = Federal, S = State, P = Private)
OWNERCODE	C	9	0	Owner code (Agency + Unit +Area_Abbr + Tiebreaker)
STATE	C	2	0	State abbreviation.
COUNTRY	C	2	0	Country abbreviation.
REL_LNDOWN	C	1	0	Relative ownership code.
LENGTH	N	5	1	Length owned in miles
RAT_LENGTH	C	1	0	Length data quality rating (1= low to 9 = high)
SERIAL	C	3	0	FWP Fisheries Serial No.

LOCATION.DBF - Geographical Location Database Structure (see Appendix B - 5 for structure)

MINFLOW.DBF - Minimum Flow Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
FLOW	C	6	0	Amount of minimum flow needed.
BEGDAY	C	2	0	Day of begin of minimum flow needed.
BEGMONTH	C	2	0	Month of begin of minimum flow needed.
ENDDAY	C	2	0	Day of end of minimum flow needed.
ENDMONTH	C	2	0	Month of end of minimum flow needed.
H2ORESERV	C	1	0	Has water been (R= reserved? M= minimum flows determined? N = No)
RESERVADQ	L	1	0	Is the amount of water reserved adequate? (Y = Yes, N = No)
SERIAL	C	3	0	FWP Fisheries Serial No.

PHYSICAL.DBF - Physical Stream Characteristics Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
REACHLENG	C	5	0	Length of reach in miles.
RATRCHLENG	C	1	0	Length of reach data quality rating. (1 = low to 9 = high)
AVCHANWIDT	C	4	0	Average channel width in feet.
RATAVCHANW	C	1	0	Average channel width data quality rating.(1 = low to 9 = high)
AVGVWIDTH	C	5	0	Average valley width in feet.
RATAVGVWID	C	1	0	Average valley width data quality rating. (1 = low to 9 = high)
AVGRIPWID	C	4	0	Average riparian width in feet.
RATAVGRIPW	C	1	0	Average riparian width data quality rating. (1= low to 9 = high)
AVCHANDEPT	C	4	0	Average channel depth in feet.
RATAVCHAND	C	1	0	Average channel depth data quality rating. (1 = low to 9 = high)
UPRBELEV	C	7	0	Upper boundary elevation in feet.
RATUPRBELE	C	1	0	Upper boundary elevation data quality rating. (1 = low to 9 =High)
LWRBELEV	C	7	0	Lower boundary elevation in feet.
RATLWRBELE	C	1	0	Lower boundary elevation data quality rating. (1 = low to 9 = high)
UPRBAVWETW	C	6	0	Upper boundary average wetted width
RATUPRBAVW	C	1	0	Upper boundary average wetted width data quality rating. (1 = low to 9 = high)
LWRBAVWETW	C	6	0	Lower boundary average wetted width in feet.
RATLWRBAVW	C	1	0	Lower boundary average wetted width data quality rating.(1 = low to 9 = high)
GRADIENT	C	4	0	Percent gradient.
RATGRADNT	C	1	0	Percent gradient data quality rating. (1 = low to 9 = high)
SINUOSITY	C	4	0	Sinuosity.
RATSINUOS	C	1	0	Sinuosity data quality rating. (1 = low to 9 =high)
SIDECHOCC	C	1	0	Side channel occurance code. (H = high; L =low; M = moderate; N = nil; blank = unknown or not determined)
RATIOPOOL	C	3	0	Percentage of reach that is pools.
RATIORUN	C	3	0	Percentage of reach that is runs.
RATIORIFFL	C	3	0	Percentage of reach that is riffles.
RATIOPOCKT	C	3	0	Percentage of reach that is pocket water.
RATRATIO	C	1	0	Percentage of reach data quality rating. (1 = low to 9 =high)
ROSGEN_CL	C	2	0	Visual classification of the channel type and subtype using Rosgen's (1985) channel type classification. Alpha and numeric combination using gradient, sinuosity, width/depth ratio, dominant particle size, channel entrenchment, and landform feature.
SERIAL	C	3	0	FWP Fisheries Serial No.

POOL.DBF - Pool Physical Characteristics Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
PCLASS1	C	3	0	Pool class 1 percentage. See Appendix C-12 for pool classification guidelines.
PCLASS2	C	3	0	Pool class 2 percentage. See Appendix C-12 for pool classification guidelines.
PCLASS3	C	3	0	Pool class 3 percentage. See Appendix C-12 for pool classification guidelines.
PCLASS4	C	3	0	Pool class 4 percentage. See Appendix C-12 for pool classification guidelines.
PCLASS5	C	3	0	Pool class 5 percentage. See Appendix C-12 for pool classification guidelines.
RATPCLASS	C	1	0	Pool class percentages data quality rating.(1 = low to 9 = high)
PCLBEDROCK	C	3	0	Percentage of bedrock in pool class 1, 2 and 3.
PCLDEBRIS	C	3	0	Percentage of debris in pool class 1, 2 and 3.
PCLBNKSCR	C	3	0	Percentage of bank scour in pool class 1, 2 and 3.
PCLBTMSCR	C	3	0	Percentage of bottom scour in pool class 1, 2 and 3.
RATPCL123	C	1	0	Pool class 1, 2 & 3 percentages data quality rating.(1 = low to 9 = low)
AVMAXPOOLD	C	5	0	Average maximum pool depth at low flow in feet.
RATAVMAXPD	C	1	0	Average maximum pool depth at low flow data quality rating. (1 = low to 9 = high)
SERIAL_NO	C	3	0	FWP Fisheries Serial No.

STREAM.DBF - Stream description Database (see Appendix B - 10 for structure)

STRMBTM.DBF - Stream Bottom Characteristics Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SURV_DATE	D	8	0	Survey date of sample
PBHARDPAN	C	3	0	Percent of pool bottom that is boulder/hardpan (>256.0 mm).
PBBOULDER	C	3	0	Percent of pool bottom that is cobble (64 mm - 256.0 mm).
PBRUBBLE	C	3	0	Percent of pool bottom that is large gravel (6.5 - 64.0 mm).
PBGRAVEL	C	3	0	Percent of pool bottom that is small gravel (2.0 - 6.4 mm).
PBFINES	C	3	0	Percent of pool bottom that is fines (<2.0 mm).
PBSILT	C	3	0	Percent of pool bottom that is silt.
RATPOOLBTM	C	1	0	Pool bottom data quality rating. (1 = low to 9 = high)
RNBHARDPAN	C	3	0	Run bottom percentage that is boulder/hardpan (>256.0 mm).
RNBBOULDER	C	3	0	Run bottom percentage that is cobble (64 mm - 256.0 mm).
RNBRUBBLE	C	3	0	Run bottom percentage that is large gravel (6.5 - 64.0 mm).
RNBGRAVEL	C	3	0	Run bottom percentage that is small gravel (2.0 - 6.4 mm).
RNBFINES	C	3	0	Run bottom percentage that is fines (<2.0 mm).
RNBSILT	C	3	0	Run bottom percentage that is silt.
RATRUNBTM	C	1	0	Run bottom data quality rating. (1 = low to 9=high)
RFBHARDPAN	C	3	0	Riffle bottom percentage that is boulder/hardpan (>256.0 mm).
RFBBOULDER	C	3	0	Riffle bottom percentage that is cobble (64 mm - 256.0 mm).
RFBRUBBLE	C	3	0	Riffle bottom percentage that is large gravel (6.5 - 64.0 mm).
RFBGRAVEL	C	3	0	Riffle bottom percentage that is small gravel (2.0 - 6.4 mm).
RFBFINES	C	3	0	Riffle bottom percentage that is fines (<2.0 mm).
RFBSILT	C	3	0	Riffle bottom percentage that is silt.
RATRIFFBTM	C	1	0	Riffle bottom data quality rating. (1 = low to 9 = high)
EMBEDD	N	1	0	Embeddness score (1 - 5)
SUB_SCORE	N	4	1	Substrate composition score. (1 - 6)
PER_QUAR	N	3	0	Percentage of substrate less than 0.25 in. (6.35 cm)
SUB_METH	C	1	0	Substrate method (M = McNeil, S = Substrate score, W = Whitlock, V = Vibert Box, O = Ocular)
SUB_SAMP	N	2	0	Number of samples used for analysis
MORE_SUB	L	1	0	More substrate data available
SERIAL	C	3	0	FWP Fisheries Serial No.

TREE.DBF - Tree and shrub species Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
SPECIES	C	6	0	Species code (see Appendix C-10)
SERIAL	C	3	0	Serial No.

USAGE.DBF - Land and Water Usage Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
LAND_H2O	C	1	0	Land or Water. (L = Land code; W = code.)
USAGE	C	2	0	Usage code. See Appendix C-9.
SERIAL	C	3	0	FWP Fisheries Serial No.

WILDNESS.DBF - Wilderness Areas Database Structure

Field Name	Type	Width	Dec	Description
SHORT_RRN	C	9	0	Short RRN
SECTION	C	1	0	Section No.
WILDRNESS1	C	3	0	Wilderness Area code 1.
WILDRNESS2	C	3	0	Wilderness Area code 2.
SERIAL	C	3	0	FWP Fisheries Serial No.

LAND AND WATER USAGE LOOK-UP TABLES

Type	Code	Description
L	00	Agricultural
L	01	Irrigated cropland
L	02	Non-irrigated cropland
L	03	Managed pasture
L	04	Native pasture
L	05	Orchards
L	06	Residential
L	07	High density residential (> 1 house/acre)
L	08	Low density residential (< 1 house/acre)
L	09	Transportation/ROW
L	10	Logging roads
L	11	Primary/secondary roads
L	12	County roads
L	13	Interstate
L	14	Powerline right of way
L	15	Railroad right of way
L	16	Timber Management
L	17	Drainage managed primarily timber harvest
L	18	Drainage occasionally managed for timber harvest
L	24	Underground mining
L	25	Open pit mine
L	26	Tailings pond/pile
L	27	Reclaimed mines
L	28	Placer mining
L	29	Recreation
L	30	Trails bordering stream
L	31	General recreational use
L	32	Outfitting
W	01	Recreation
W	02	Irrigation
W	03	Irrigation return
W	04	Power
W	05	Industry
W	06	Instream only
W	07	Transportation
W	08	Water assimilation/pollution dilution
W	10	Commercial
W	11	Domestic
W	12	Stock watering

Specific instructions for Habitat Ratings:

1. High Stream Cover - % Shade (June - September; 11:00 a.m. - 5:00 p.m., MDT):

80% or more	4 = Excellent
60 - 80%	3 = Good
40 - 60%	2 = Fair
0 - 40%	1 = Poor

2. Bank Condition

Negligible use/damage: vegetation well-rooted; sod intact; very little, if any, erosion from vegetation areas; less than 5% bare soil showing. 4 = Excellent

Some use/damage: vegetation generally well-rooted; sod mostly intact; soil showing in places (6% to 15% bare soil showing overall); some surface erosion evident. 3 = Good

Substantial use/damage: vegetation shallow-rooted; moderate surface erosion (16% to 25% bare soil showing overall). 2 = Fair

Heavy to severe use/damage: vegetation generally cropped to sod; considerable soil showing (over 25%) with sod damage serious; active surface erosion a serious problem. 1 = Poor

3. Bank Stability

Bank stable and undamaged: 0 to 10% of banks damaged; little or no unnatural bank erosion or sloughing present fully recoverable after a season of rest. 4 = Excellent

Bank damage moderate: 10 to 20% of banks damaged; some accelerated erosion and sloughing. 3 = Good

Bank damage substantial: 20 to 40% of banks damaged; moderate to heavy bank erosion and sloughing during season(s) of use which continues during non-use period(s); conditions do not allow natural recovery of banks to a level greater than 60% stability. 2 = Fair

Bank damage excessive: 40% or more of banks damaged; severe bank damage, accelerated erosion and sloughing over virtually the entire bank surveyed; no evidence of bank recovery visible, and erosion is consistent. 1 = Poor

4. Channel Stability

Negligible lateral channel movement and bank erosion (0 to 5%); no channel scour or channel change within streambed. 4 = Excellent

Some lateral channel movement and bank erosion (5 to 10%); minor channel scour or channel change within streambed. 3 = Good

Frequent lateral channel movement and bank erosion (10 to 15%); moderate channel scour or channel change within streambed. 2 = Fair

Excessive lateral channel movement and bank erosion (more than 15%); severe channel scour or channel change within streambed; source of extreme sedimentation. 1 = Poor

5. Streambed Sediment

Percent of fine sediments (particles of sand size and smaller) covering stream bottom (wetted perimeter) materials.

Less than 10%	3 = Good
10 to 25%	2 = Fair
More than 25%	1 = Poor

6. Combined Rating

Sum of ratings 1 through 5 above:

17 or more	4 = Excellent
14 - 16	3 = Good
10 - 13	2 = Fair
5 - 9	1 = Poor

TREE AND SHRUB LOOK-UP TABLE

Type	Code	Species
S	RHAALN	Alder Buckthorn
S	KALMIC	Alpine Laurel
S	BETGLA	Bog Birch
S	RIBODO	Buffalo Currant
S	PRUVIR	Common Chokecherry
S	SYMALB	Common Snowberry
S	CRADOU	Douglas Hawthorn
S	SPIDOU	Douglas Spirea
S	SARVER	Greasewood
S	CORSTO	Red-osier Dogwood
S	POTFRU	Shrubby Cinquefoil
S	SHEARG	Silver Buffaloberry
S	ARTCAN	Silver Sagebrush
S	ALNINC	Thinleaf Alder
S	LONUTA	Utah Honeysnuckle
S	VACOCC	Western Huckleberry
S	SALSPP	Willow,undesignated speci
S	ROSWOO	Wood Rose
T	ULMAME	American Elm
T	POPTRI	Black Cottonwood
T	ACENEG	Boxelder
T	POPSPP	Cottonwood,unknown specie
T	PSEMEN	Douglas Fir
T	POPDEL	Eastern Cottonwood
T	PICANG	Engelmann Spruce
T	ABIGRA	Grand Fir
T	FRAPEN	Green Ash
T	PINCON	Lodgepole Pine
T	POPANG	Narrowleaf Cottonwood
T	SALAMY	Peachleaf Willow
T	PINPON	Ponderosa Pine
T	POPTRE	Quaking Aspen
T	JUNSCO	Rocky Mountain Juniper
T	ELAANG	Russian Olive
T	ABILAS	Subalpine Fir
T	LARLYA	Subalpine Larch
T	BETOCC	Water Birch
T	TSUHET	Western Hemlock
T	LAROCC	Western Larch
T	THUPLI	Western Red Cedar
T	PINMON	Western White Pine

Specific Instructions for Pool Classes

Pool Classes are determined as follows:

Size rating: (longest axis of pool)
3= Pool longer or wider than average stream width
2= Pool as long or wide as average stream width
1= Pool shorter and narrower than average stream width

Depth Rating (deepest part of pool)

3= Over 3 feet
2= 2-3 feet
1= under 2 feet

Cover Rating

3= Abundant cover
2= Partial cover
1= Exposed

Total Rating	Pool Class
8-9	1
7	2
5-6*	3
4-5	4
3	5

*The total of 5 points for a class 3 pool must include 2 for depth and 2 for cover

APPENDIX D

Recreation Databases Structures

GENREC.DBF - Contains data source information and general recreation information, including: use, access, water character, scenery and solitude, and boating information

Field Name	Type	Width	Field Definition
HYDROUNIT	C	8	HYDROLOGIC UNIT
RRN	C	8	EPA RIVER REACH NUMBER
SHORT_RRN	C	9	BASIN CODE + RIVER REACH NUMBER
STREAM	C	30	STREAM NAME
TOURISM	N	1	DEPT. OF COMMERCE TOURISM BUREAU VACATION REGION SEE LOOKUP TABLE I
NAME	C	30	INDIVIDUAL'S NAME
AGENCY	C	3	AGENCY RATING CODE (1=DFWP, 2=BLM, 3=USFS)
REC_SOURCE	C	100	SOURCES OF DATA
SOURCE_COD	C	15	CODE TO PUBLIC LIBRARY FILE, GIVES INFO ON TYPE AND METHODS OF DATA COLLECTION
REC_UPDATE	D	8	REC DATA REVISION DATE
NUM_EVAL	N	2	NUMBER OF INDIVIDUALS EVALUATING THE REACH
ACCESS	N	1	ACCESS RATING (1=ABUNDANT, 2=MODERATE, 3=LIMITED, 4=RESTRICTED, 0=UNKNOWN) SEE LOOKUP TABLE III
INGRESS	N	1	INGRESS RATING SEE LOOKUP TABLE IV
ROS_CLASS	N	1	ROS CLASS (1=PRIMITIVE, 2=SEMIPRIMITIVE/NONMOTORIZED, 3=SEMIPRIMITIVE/MOTORIZED, 4=ROADED NATURAL, 5=RURAL, 6=URBAN 0=UNKNOWN) SEE LOOKUP TABLE V
SCENIC_QUA	N	1	SCENIC QUALITY (1=EXCEPTIONAL, 2=HIGH, 3=MODERATE, 4=LIMITED, 0=UNKNOWN) SEE LOOKUP TABLE VI
USE_LEVEL	N	5	QUANTITATIVE MEASURE OF OVERALL USE (# VISITOR DAYS IN THOUSANDS PER ANNUM)
USE_ESTIMA	N	1	OVERALL USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) SEE LOOKUP TABLE VII
DQR_USE	N	1	DATA QUALITY RATING FOR OVERALL USE ESTIMATE CODE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA)
ANGLER_DAY	N	5	NUMBER OF ANGLER DAYS IN THOUSANDS PER ANNUM
USEEST_FSH	N	1	FISHING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN)

GENREC.DBF (cont.)

Field Name	Type	Width	Field Definition
DQR_FSH	N	1	DATA QUALITY RATING FOR FISHING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA)
HUNTER_DAY	N	5	NUMBER OF HUNTER DAYS IN THOUSANDS PER ANNUM
USEEST_HUN	N	1	HUNTING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN)
DQR_HUN	N	1	DATA QUALITY RATING FOR HUNTING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA)
BOATER_DAY	N	5	NUMBER OF BOATER DAYS IN THOUSANDS PER ANNUM
USEEST_BOA	N	1	BOATING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN)
DQR_BOA	N	1	DATA QUALITY RATING FOR BOATING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA)
LAND_DAY	N	5	NUMBER OF RECREATIONAL LAND USER DAYS IN THOUSANDS PER ANNUM
USEEST_LAN	N	1	RECREATIONAL LAND USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN)
DQR_LAN	N	1	DATA QUALITY RATING FOR LAND USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA)
DEMAND	N	1	TYPE OF DEMAND (1=NATIONAL, 2=STATE, 3=REGIONAL, 4=LOCAL, 5=LIMITED, 0=UNKNOWN) SEE LOOKUP TABLE VIII
BTBL_SEAS	N	1	TIME OF YEAR THAT THE REACH IS TYPICALLY BOATABLE SEE LOOKUP TABLE IX
CFS_MIN	N	5	ANNUAL MINIMUM FLOW IN CUBIC FEET PER SECOND
CFS_MAX	N	5	ANNUAL MAXIMUM FLOW IN CUBIC PER SECOND
WATER_CLAS	C	3	WHITEWATER CLASSIFICATION (1-6 = CLASS 1 - 6, 0=UNKNOWN) SEE LOOKUP TABLE X
BOAT_OBST	N	1	OBSTRUCTION TO BOATERS (1=FALLS, 2=CABLES, 3=DIVERSION DAM, 4=FENCES, 5=LOG JAM, 6=NO OBSTRUCTION, 7=OTHER 0=UNKNOWN)
OBST_SIGN	C	1	THE HAZARD/OBSTRUCTION IS SIGNED
PORTAGE	C	1	IT IS NECESSARY TO PORTAGE AROUND THE HAZARD
BOAT_REG	C	1	THERE ARE BOATING REGULATIONS ON THE REACH

GENREC.DBF (cont.)

Field Name	Type	Width	Field Definition
COMM_BOAT	C	1	THERE IS COMMERCIAL BOATING ON THE REACH
SHUTTLE	C	1	THERE ARE SHUTTLE SERVICES AVAILABLE
SPEC_EVENT	C	1	THE REACH IS USED FOR SPECIAL BOATING EVENTS/COMPETITION
SOURCE	C	2	SOURCE OF COMMENT (UR=UNIQUE RECREATIONAL OPPORTUNITY, BR=DESCRIPTION OF BOATING REGULATIONS, EV=DESCRIPTION OF SPECIAL EVENT, RA=NAME OF RECREATION AREA, KS=KEY SPECIES VIEWABLE, PK=PEAK NAME, RT=ROCK TYPES, WW=WHITEWATER)
COMMENTS	M	10	COMMENT

RECTRAIT - Information pertaining to recreational land, water, and hunting/fishing activities. (RECTRAIT)

CATAGORY	CODE	TEXT
CONSUMPTIVE		
C	BG	USED FOR BIG GAME HUNTING
C	BH	USED FOR BIRD HUNTING
C	BF	USED FOR BOAT FISHING
C	BO	USED FOR BOW HUNTING
C	HU	USED FOR HUNTING
C	SF	USED FOR SHORE FISHING
C	TR	USED FOR TRAPPING
C	UP	USED FOR UPLAND BIRD HUNTING
C	WH	USED FOR WATERFOWL HUNTING
WATER		
W	CA	USED FOR CANOEING
W	IN	USED FOR INNERTUBING
W	JB	USED FOR JETBOATING
W	JS	USED FOR JETSKIING
W	JD	USED FOR JOHN/DRIFT BOAT
W	KA	USED FOR KAYAKING
W	MB	USED FOR MOTORBOATING
W	RA	USED FOR RAFTING
W	SB	USED FOR SAILBOARDING
W	SW	USED FOR SWIMMING
W	WS	USED FOR WATERSKIING
LAND		
L	DG	HAS [illegible]L ROADS FOR DRIVING
L	MT	HAS [illegible]ZED TRAIL USE
L	NT	HAS [illegible]TORIZED TRAIL USE
L	DP	HAS [illegible] ROADS FOR DRIVING
L	BP	USED FOR BACKPACKING
L	BW	USED FOR BIRD WATCHING
L	XC	USED FOR CROSS COUNTRY SKIING
L	FW	USED FOR FOUR-WHEEL DRIVE RECREATION
L	GP	USED FOR GOLD PANNING
L	HK	USED FOR HIKING
L	HB	USED FOR HORSEBACK RIDING
L	IC	USED FOR ICE CLIMBING
L	MB	USED FOR MOUNTAIN BIKING
L	MC	USED FOR MOUNTAIN CLIMBING
L	OR	USED FOR OFF ROAD VEHICLES
L	RC	USED FOR ROCK CLIMBING
L	RO	USED FOR ROCK COLLECTING
L	SM	USED FOR SNOWMOBILING
L	WV	USED FOR WILDLIFE VIEWING

RECSITE - Recreation site information; availability of facilities.

Field Name	Type	Width	Field Definition
SHORT_RRN	C	9	EPA RIVER REACH NUMBER
NO_SITES	N	3	NUMBER OF DEVELOPED RECREATION SITES ALONG THE REACH
SITE_NAME	C	26	OFFICIAL SITE NAME
SITE_TYPE	C	2	TYPE OF RECREATION SITE SEE LOOKUP TABLE XI
DAYUSE	C	1	DAYUSE SITE ONLY
SEASON	C	17	THE SEASON FEES ARE COLLECTED
STAY_L	N	2	MAXIMUM NUMBER OF CONSECUTIVE DAYS A CAMPER CAN STAY AT THE SITE
CAMP_FEE	N	5	CAMPING FEE
ENTRY_FEE	N	5	ENTRY OR USE FEE
PARKING	N	2	NUMBER OF PARKING SPOTS AT THE SITE
PICNIC	N	2	NUMBER OF PICNIC SITES AVAILABLE
CAMP	N	3	NUMBER OF CAMPING UNITS AVAILABLE AT THE SITE
TRAILER	C	1	TRAILERS UNITS ARE ALLOWED
DUMP	C	1	DUMP STATION FOR TRAILERS AVAILABLE
FLUSH_TOIL	C	1	FLUSH TOILET IS AVAILABLE
PIT_TOIL	C	1	PIT TOILET IS AVAILABLE
HANDI_TOIL	C	1	DISABLED TOILET IS AVAILABLE
HANDI_FAC	L	1	DISABLED FACILITIES ARE AVAILABLE
PACK_OUT	C	1	PACK IN/PACK OUT AREA (NO GARBAGE COLLECTION)
WATER	C	1	DRINKING WATER IS AVAILABLE
BOAT_RAMP	N	1	BOAT RAMP TYPE (1=CARRY IN LAUNCH, 2=PAVED, 3=UNPAVED 4WD, 4=NO RAMP, 0=UNKNOWN)
FISH_SITE	C	1	FISHING IS ACCESSIBLE FROM SITE
SWIM_SITE	C	1	THERE IS A DESIGNATED BEACH/SWIMMING AREA
TRAILS	C	1	TRAILS ARE ACCESSIBLE FROM SITE
VISIT_CTR	C	1	THERE IS A VISITOR CENTER
INTERP	C	1	THERE ARE INTERPRETIVE DEVICES

Look-up Tables for Recreation Edit/Entry

LOOKUP TABLE I - TOURISM BUREAU VACATION REGION

1=Glacier Country
2=Goldwest Country
3=Yellowstone Country
4=Charlie Russell Country
5=Missouri River Country
6=Custer Country

LOOKUP TABLE III - ACCESS

1=ABUNDANT
Abundant access exists if the segment is parallelled by or frequently intersected by paved or car-suitable roads. Access to the river shoreline should also be abundant and permit easy put-in and take-out of boats.
2=MODERATE
Moderate access exists if the segment is occasionally parallelled or intersected by good quality roads. Access to the shoreline may be restricted in places by topography. Access to put-ins or take-outs is not as easy.
3=LIMITED
Limited access exists if the segment is rarely parallelled or intersected by roads; the main access may be by poor roads or trails. Shoreline access may be difficult for much of the segment's length.
4=RESTRICTED
Restricted access exists of the segment is not accessible by road and the shoreline is difficult to reach from adjacent lands.
0=UNKNOWN
Insufficient information available to evaluate access.

LOOKUP TABLE IV - INGRESS RATINGS

1=A stream section bordered almost entirely by a mix of public lands which insure ingress by anglers (excluding state school sections).
2=A stream section bordered by a mix of private and public land where the public land is distributed in such a way that no significant portion of the stream is unavailable by vehicle and/or walking. Floating may also be a major means of access.
3=A stream section bordered by mostly private land where ingress is uncontrolled or readily available by permission. This portion may be available by floating or through steam access laws. Also includes corporate lands that are currently open but could go to individual ownership in the future or company policy regarding ingress could change.
4=A stream section bordered mostly by private land where ingress is limited but some fishing is allowed. Includes minor portions where public land or road crossing provides limited ingress. The portion through private land may be available by floating or through stream access laws.
5=A stream section bordered entirely by private land where public fishing is available for a fee or where a small group has leased exclusive rights. Legality may be in question on some streams but this category identifies the current "fee" or "lease" fishing areas.
6=A stream section bordered mostly by private land where little or no ingress by permission is allowed. Floating is precluded by stream size or other physical limitation (no road or public land reach stream).
7=A stream or stream segment bordered by public land that is unavailable because of posting on private land or locked gates on private roads.

LOOKUP TABLE V - RECREATIONAL OPPORTUNITY SPECTRUM

Both the Bureau of Land Management and the Forest Service use the Recreational Opportunity Spectrum (ROS) as an indicator of the experience settings likely available.

1=PRIMITIVE

These areas are the largest in size and the most remote of all, where both interaction and evidence of humans are slight. Often the settings are the central core of wilderness areas, completely away from sights and sounds of people. The areas are for foot and horse traffic only. No facilities are provided. Visitors should have adequate outdoor skills to cope with a multitude of natural wildland conditions. They bring all their own equipment for camping, hiking, and the like.

There is no timber harvest. Other resource activity such as grazing may occur, but is usually limited. Trails offer varying degrees of travel difficulty; sometimes large areas have no trails at all. There are no onsite controls over visitors, but they may see a back country ranger occasionally. Users generally are free to travel and camp where they want, although there may be restrictions on camping areas near lakeshores and streambanks to help protect those areas.

2=SEMIPRIMITIVE/NONMOTORIZED

These settings are similar to semiprimitive/motorized except they are designed for the hiker, backpacker, and horse user. Sights and sounds of motorized users are not found on the trails. Distant sounds of highway and logging traffic may sometimes be heard.

Hiking and equestrian trails offer varying degrees of travel difficulty and provide challenges to users. The visitor usually displays higher degrees of outdoor skills and must bring all their own equipment for activities like camping, hiking, and river running. Few facilities are provided.

Timber harvest activities may occur but are limited. Any motorized access is closed to public recreational use. The forest appears natural. Some onsite controls over users occur, such as trailhead registration and restrictions on camping areas to protect lakeshores and streamside areas.

3=SEMIPRIMITIVE/MOTORIZED

These settings are somewhat remote, they are away from the main traveled highways or roads where nature predominates. The visitor often must have a four-wheel drive vehicle or trail bike to travel the roads and trails. Visitors may also travel by foot or horseback expecting to see the motorized user. Concentrations of users is low. There may be logging or mining, but it is limited. The landscape appears predominantly natural. Recreation facilities are few, if any. At some campspots there may be sealed-pit toilets and spring boxes for water. There are only limited onsite controls over users, such as road closure signs and limits on where they may camp to protect lake and streamside areas.

4=ROADED NATURAL

These are the settings seen from the many highways and scenic roads throughout the State's underdeveloped areas including National Forests. The vegetation is often managed through timber harvest to maintain a healthy, natural-appearing forest. Recreation places are smaller campgrounds or winter sports facilities with moderate evidence of people.

Roads and parking areas are often gravel, though some may be paved. Facilities include toilets with sealed pits, fireplaces, tables and level places for tents. Water may be provided by handpumps. There are no hookups for trailers, but parking spurs will often accommodate self-contained units.

Fees are charged at many campgrounds. The user is restricted to camping and picnicking in designated sites by roadside barriers and is subjected to periodic visits by a compliance checker.

5=RURAL

These are often the settings between the cities and the forests, such as pastoral farmlands and small communities. Affiliation with people and convenience of facilities are prevalent. Recreation places are often county and state parks.

Rural settings may include winter sports areas and large campgrounds on National Forest lands. Facilities often include cooking grills and flush toilets with electric lights. Occasionally electric and sewer hookups for trailers are provided. Fees are charged on nearly every site. The visitor is restricted to designated roads and campsites. A campground host may be on duty to help the visitor. Outdoor living skills are not important and are seldom needed.

6=URBAN
The urban settings are often where people live and work. Buildings dominate as do powerlines, traffic controls, and paved roads. Large numbers of users can be expected. Recreation places are often city or county parks with exotic plants and mowed lawns.
Few urban recreation places occur on National Forests. Examples of National Forest urban areas include large resorts and winter sports complexes.
0=UNKNOWN
Insufficient information available to evaluate ROS class.

LOOKUP TABLE VI - SCENIC QUALITY

1=EXCEPTIONAL
Outstanding scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create unique, highly memorable, and harmonious visual settings. Views along the river and away from the river to surrounding scenery are highly diverse, providing river users with scenery that is spectacular and/or not common on other rivers in the region. If buildings, roads, and other cultural modifications are present, they either add favorably to or do not intrude on visual quality for river users.
2=HIGH
High scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create a highly memorable and visually pleasing setting, although one that may be more common to the region. Views along and away from the river are highly diverse and cultural modifications, if present, either add to or do not detract from the visual setting.
3=MODERATE
Moderate scenic quality. For these segments, landforms, vegetation patterns, and water features along the river combine to create harmonious but common visual settings. Views along and away from the river are somewhat varied, but lack a high degree of contrast and diversity. Encroachment of cultural modifications may be evident, and either adds little to or detracts from visual quality.
4=LIMITED
Low scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create visual settings lacking in variety and contrast. Views along and away from the river are monotonous and common. Cultural modifications may dominate and detract from visual quality.
0=UNKNOWN
Insufficient information available to evaluate scenic quality.

LOOKUP TABLE VII - USE ESTIMATE

1=HIGH
Heavy or concentrated recreational use; on a typical weekend day greater than 6 parties will commonly be seen at sites on shore and on the river.
2=MODERATE
Moderate or dispersed recreational use; on a typical weekend day 4-6 parties will commonly be seen on or along the river.
3=LOW
Limited or highly dispersed use; on a typical weekend day 0-3 parties is typical on or along the river.
0=UNKNOWN
Insufficient information to evaluate use

DATA QUALITY RATING
1=Use estimate is based on judgement only
2=Use estimate is based on some measurable data
3=Use estimate is based on measurable data

LOOKUP TABLE VIII - DEMAND

1=NATIONAL
Users drawn from throughout the country or beyond
2=STATE
Users drawn from throughout the state
3=REGIONAL
Regional use predominates
4=LOCAL
Local use predominates
5=LIMITED
Very occasional or no recreational use
0=UNKNOWN
Insufficient information available to evaluate demand

LOOKUP TABLE IX - BOATABLE SEASON

1=Not boatable
2=Typically summer boating only
3=Boatable only during spring runoff
4=Boatable during spring runoff, with sustained flows to mid-summer
5=Year round sustained flow
6=Year round sustained flow, dependant on ice cover
7=Boatable spring through fall
0=Insufficient information available to evaluate boatable season

LOOKUP TABLE X - WHITEWATER CLASSIFICATION

1=CLASS I
Basically flat water, though it may have some small waves and ripples, and very minor obstacles.
2=CLASS II
The easiest rapids are found under this classification. Scouting is not necessary and minimal maneuvering is required. Waves can get up to three feet high. Channels are obvious and there are no dangerous hazards.
3=CLASS III
These are moderately hard rapids. Rapids may contain numerous boulders and holes that could flip a kayak or canoe and occasionally some rafts. Waves can be up to five feet high. Maneuvering is required to miss rocks and holes. Scouting is helpful for inexperienced boaters to plan their route. More experienced boaters may be able to scout from the river as they run through it.
4=CLASS IV
Skillful maneuvering is required in running the rocky, constricted channels of these difficult rapids. Hazards may include large holes that can flip any craft, strong cross currents, and sharp turns. Waves are over five feet high. Kayakers should know how to roll. In most cases, class IV drops should be scouted.
5=CLASS V
These extremely difficult, violent, turbulent rapids may require complicated maneuvering through a series of hazards, usually including large drops. Holes can be huge, unrelenting, difficult to avoid, and able to flip the largest of whitewater craft. Usually class V rapids are the domain of kayaks and decked canoes, but they sometimes are run by rubber boats. Kayakers and decked canoe boaters must be able to execute a reliable roll. Rescue is very difficult and when it is possible, the probability of injury or death from an accident or swim is high. These rapids must be scouted.
6=CLASS VI
Most boaters term this classification as unrunnable. Those who do attempt class VI rapids have a high likelihood of injury or death.

0=UNKNOWN Insufficient information available to evaluate whitewater class.

LOOKUP TABLE XI - RECREATION SITE TYPE

1=Forest Service Campground
2=Bureau of Land Management
3=National Park
4=National Recreation Area
5=National Historic Site
6=National Battlefield
7=National Park Service Campground
8=State Park
9=State Fishing Access Site
10=State Wildlife Management Area
12=National Recreation Trail
13=Wildlife Viewing Area
14=Other Recreation Area

APPENDIX E

THE EPA RIVER REACH NUMBERING SYSTEM

The U.S. Environmental Protection Agency (EPA) has developed a systematic method of uniquely identifying and numbering stream segments. Streams are divided into distinct reaches at tributary junctions or confluences. A "river reach number" (RRN) is assigned to each reach; each RRN is 16 digits:

1) the first eight digits represent the USGS Cataloging Unit (CU) that identifies the hydrologic basin within which the stream reach is located;

2) the next three digits represent a unique "segment number" that, in combination with the CU, identifies the reach within a basin;

3) the last four digits (5 spaces including the decimal point) represent the mile point number that identifies a section or sub-reach within a stream.

In the late 1970s, EPA used this system to catalog approximately 68,000 reaches in the contiguous U.S. and then digitized the segments at 1:250,000 scale. General information for these stream segments was collected and is currently maintained in the EPA Reach File database. This geographically-linked network of stream segments and the Reach File are well suited for use in Geographic Information Systems (GIS). Consequently, the Reach File and digital reach data are being used widely in a variety of data management systems throughout the U.S. In 1989, an effort was initiated to convert the MDFWP Water Codes to the EPA River Reach Numbers. This conversion has made the MRIS compatible with the other River Information Systems in Washington, Oregon, and Idaho, has standardized reach breaks at stream confluences, and makes it easier to transfer the MRIS data only a Geographic Information System.

Recently, the Bonneville Power Administration, the Northwest Power Planning Council, in cooperation with the EPA, has embarked on a project to revise the digital reach data and EPA Reach File to reflect the hydrography on a 1:100,000 scale. This mapping effort will increase the accuracy of the hydrography data and insures its value in the long term. For Montana, this effort has only included western Montana up to this point.

Appendix B-14 shows a map of the hydrologic units and their abbreviated hydrologic unit codes.

APPENDIX F

Files

These Program files are in the \FISHUP directory:

```
BASE50    PLL  - Required for running Clipper programs.
DUPSTRM   EXE  - Stream reach duplicating utility.
EDENV     EXE  - Environment editing utility; includes:

COLORS.SYS     } Both created when the program is first run.
DIRS.SYS       }

EDSTREAM  EXE  - Edit/Entry program.
EDSTRME   EDA
EDFISHE   EDA
EDFISHM   EDA
EDSTRMM   EDA
```

These Database files are in the \FISHUP directory:

```
ACCTUNIT  DBF
ADMNOWN   DBF
AGEGROW   DBF
AGENCYLU  DBF
ALTERED   DBF
BARRIER   DBF
BARRSPEC  DBF
BASIN     DBF
BOUNDARY  DBF
CATUNIT   DBF
CODEXAGY  DBF
COMMENTS  DBF
COMMENTS  DBT
COUNTY    DBF
COUNTYLU  DBF
DTASOURC  DBF
FISHLU    DBF
FISHPLNT  DBF
FISHSPEC  DBF
FLOWTEMP  DBF
HABITAT   DBF
LANDBANK  DBF
LINKS     DBF
LOCATION  DBF
MINFLOW   DBF
MISCCODE  DBF
MTRRN     DBF
OWNERLU   DBF
PHYSICAL  DBF
POOL      DBF
POPESTIM  DBF
PRESSURE  DBF
RANGES    DBF
REQUIRED  DBF
SAGENCY   DBF
SPAWNING  DBF
STREAM    DBF
STRMBTM   DBF
TRAIT     DBF
TRAITLU   DBF
TREE      DBF
TREELU    DBF
USAGE     DBF
USAGELU   DBF
WILDNESS  DBF
```

These Index files are created by the Edit/Entry Program and are found in the \FISHUP directory:

AC_NAME NTX
AG_SRRN NTX
AL_SAGY NTX
AL_SRRN NTX
AO_SRRN NTX
BA_UNIT NTX
BO_SRRN NTX
BR_SRRN NTX
BS_SRRN NTX
CAT_NAME NTX
CAT_NO NTX
CM_SRRN NTX
CO_FIPS NTX
CO_NAME NTX
CO_SRRN NTX
DT_SRRN NTX
FL_CODE NTX
FL_GAME NTX
FL_NAME NTX
FL_SRRN NTX
FP_SRRN NTX
FS_SRRN NTX
HB_SRRN NTX
LB_SRRN NTX
LI_SRRN NTX
LO_SRRN NTX
MF_SRRN NTX
MISCCODE NTX
MR_RRN NTX
OL_NAME NTX
OL_SAGY NTX
PE_SRRN NTX
PH_SRRN NTX
PL_SRRN NTX
PR_SRRN NTX
RA_ABBR NTX
RA_TEXT NTX
RQ_SRRN NTX
SAGCY_AB NTX
SAGCY_TX NTX
SB_SRRN NTX
SP_SRRN NTX
ST_HYDNM NTX
ST_NAME NTX
[illegible]_RRN NTX
TL_ABBR NTX
TL_TEXT NTX
TR_CODE NTX
TR_NAME NTX
TR_SRRN NTX
TT_SRRN NTX
UL_CODE NTX
UL_TEXT NTX
US_SRRN NTX

APPENDIX G

CREATING YOUR OWN REPORTS

The reporting options for the MRIS data sets are being designed and will be available by January 1993. The reporting options will include a full report, a brief report, a stream listing report, and the ability to design your own report for your own uses in annual reports and other documents. At this time, reviewing the data will have to be done on screen.

Until the reporting options are available, and if you need to make your own reports, there are several possibilities. You have been sent or given a floppy with **MTSTREAM.DBF** which contains all the location, RRN, water codes, and other reach location information for a given reach in your management area. If you are familiar with DBASE, relations can be set or databases can be joined with fields from MTSTREAM.DBF to create reports. **All other data bases are related to MTSTREAM.DBF with SHORT_RRN+SECTION.** MRIS also has R & R software, a report writing software which can use up to 9 separate databases, with multi fields and a variety of other possibilities. If this is of interest or you need help in designing a temporary reporting system, call Janet Decker-Hess.

APPENDIX H

Customizing the Edit/Entry Program

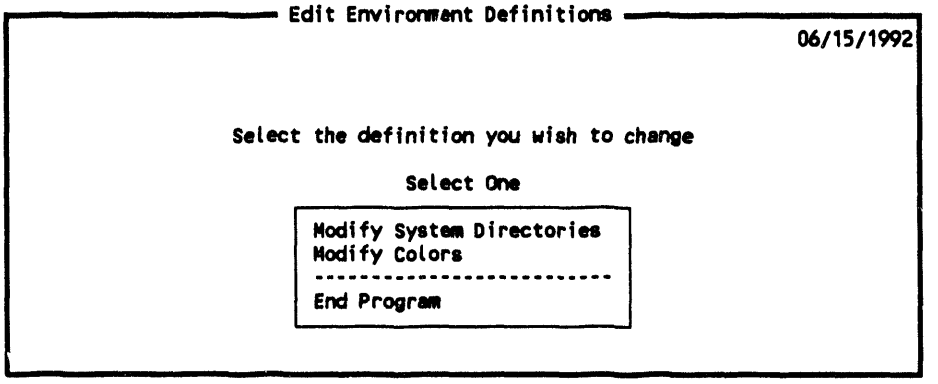
The Data Directory can be customized using the system configuration utility, EDENV. EDENV allows you to modify several features of the Data Directory including:

1) where system and application files are located,
2) screen colors.

This program maintains the following two ".SYS" files which contain the current values for each of the features.

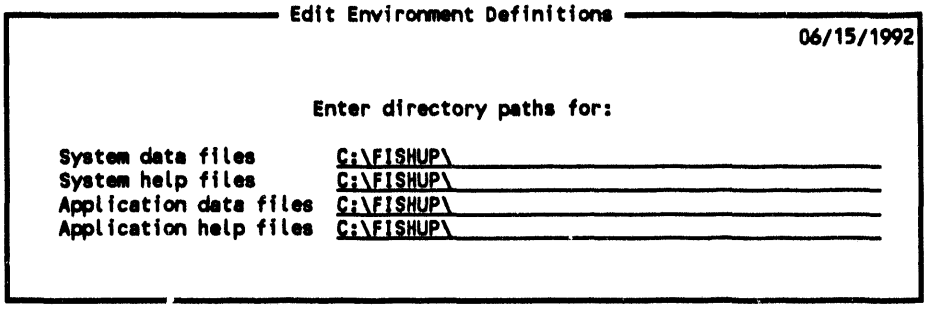
DIRS.SYS - System Directories
COLORS.SYS - System Colors for a color monitor

The program is loaded by entering EDENV from the DOS prompt. The program will display the following screen:



SYSTEM DIRECTORIES

To modify the system directories use the arrow keys to highlight the **Modify System Directories** option. When you press Enter a screen similar to the following screen will appear:



System Directory Paths are used to specify where data and help files are located. Five directories are defined:

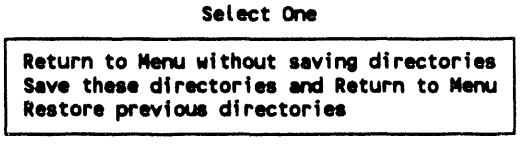
System data files - the directory where data files used by system utilities can be found.

System help files - the directory where help files used by system utilities (such as EDSYS.HLP, the help file for this program) can be found.

Application data files - the directory where the program's data files can be found.

Application help files - the directory where the program's help files can be found.

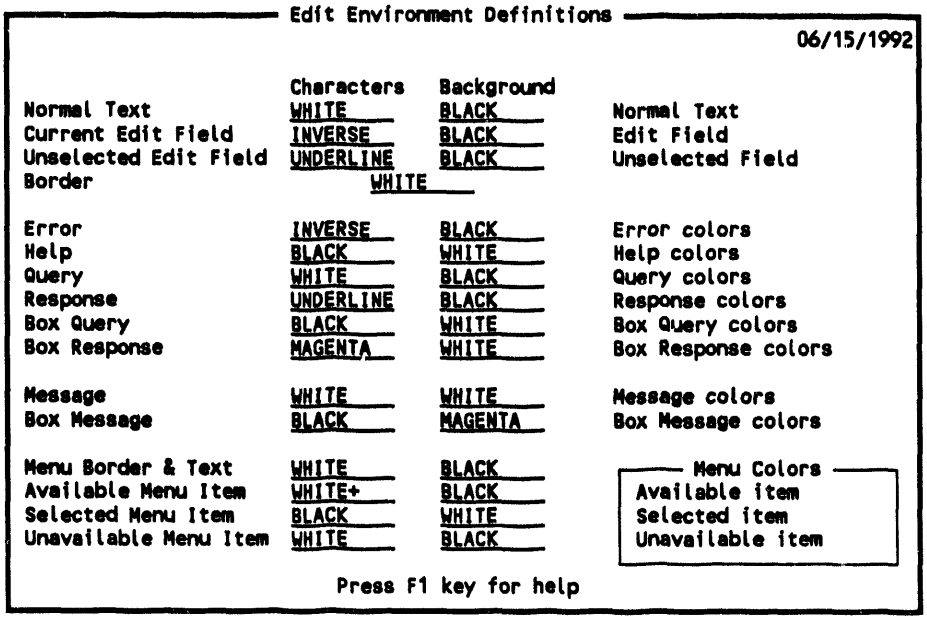
Enter the directory paths for the above files. If you need help press the F1 key. When you have entered all of the paths the following menu will appear on the screen.



If you like your modifications save them by choosing the second menu item. If you do not, select either of the other two options. You will return to the opening screen.

SCREEN COLORS

If you want to change the screen colors use the arrow keys to highlight the **Modify Colors** option. When you press Enter a screen similar to the following screen will appear.



System Colors are used for various screen functions. You can enter colors for each item by typing the name into the appropriate field. If you enter an invalid color a pop-up table with the available colors will appear. Highlight the color you want and press enter. You can move from field to field with the up and down arrow keys.

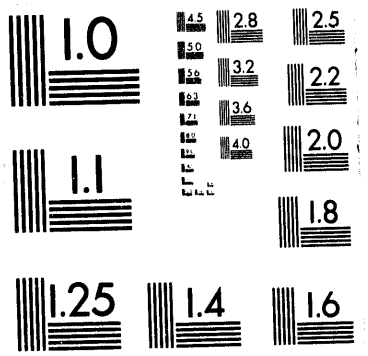
Field Descriptions

Text being displayed, such as prompts and headings, use the Normal Text Foreground color on the Normal Text Background color. A field being entered uses the Current Edit Field Foreground and Background colors. Other fields available for editing use the Unselected Edit Field Foreground and Background colors.

The error Foreground and Background colors are used to display error messages.

Help messages are displayed using the Help Text Foreground color on the Help Text Background color.

The Query and Response colors are the colors used by some requests for input. Parameters entered for reports use these colors. The question or prompt is displayed in the Query colors and the answer is displayed in the Response colors.


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0

2 of 2

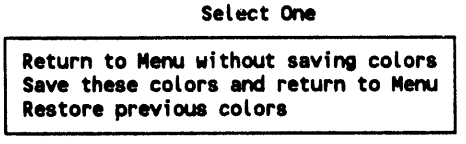
The border and heading of a menu use the Menu Border and Text Foreground colors. The menu choices that cannot be selected use the Unavailable Item colors. The menu choices that can be selected use the Available Menu Item colors. The current menu choice uses the Selected Menu Item colors.

The border color is the color of the area of the screen beyond the useable area of the monitor. For many computers & monitors it is ignored and the Normal Text Background color is used.

For color monitors the available colors are: BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN, WHITE, GRAY, and YELLOW. Adding a '+' will brighten the color. It will not affect the Background color fields. Adding a '*' to a color will cause blinking.

For monochrome monitors the available colors are: BLACK, WHITE, BLANK, UNDERLINE, and INVERSE. Adding a '+' will intensify the color. It will not affect the Background colors. Adding a '*' to a color will cause blinking.

When you have entered the keys the following menu will appear on the screen.



If you like the screen colors save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen.

DATE
FILMED
5/6/94
END