

### 3 PROGRAMS

The data entry, editing, review, retrieval, support, and utility programs in **QWDATA** are initiated by selecting a program through a series of menus. Section 3 of this user documentation describes the various programs available in QWDATA. To display the main QWDATA menu, type:

#### **qwdata**

on the command line, adding a two-digit number if a database other than the default database 01 is desired (e.g. **qwdata02**). In response to the **qwdata** command, the menu below is displayed showing the current installed version of the software and the database number used.

```

QWDATA PROCESSING ROUTINE  REV NWIS_4_0+20010111

YOU ARE USING WATER-QUALITY DATABASE NUMBER 01

Water-Quality System Main Menu

1 -- Login Samples
2 -- Modify Samples or Results
3 -- Data Review
4 -- Data Output
5 -- Graphs
6 -- Support Files
7 -- Utilities
8 -- Batch Processing

99 -- Exit system

Please enter a number from the above list or a Unix command:

```

#### Main QWDATA Menu

This menu displays the eight main options available in QWDATA and lists the various program functions. The user can select one of the eight option numbers or type a UNIX command after the prompt at the bottom of the page.

UNIX commands, such as **more** or **ls** can be entered to look at file names or list a file from menu screens. At the conclusion of each program, the main QWDATA menu is redisplayed until **99--EXIT TO SYSTEM** is selected to exit and return to the UNIX prompt. The individual functions and options available in QWDATA are described on the following pages of this section.

#### 3.1 Option 1 -- Login Samples

The login sample program can be used to enter sample information and field data and is started by selecting Option 1 on the main QWDATA menu. A *record number* is generated after the sample information has been entered. Multiple samples for a site can be logged in with this program, as well as samples for multiple sites. The login sample form is shown below:

**Note** : The site must exist in the *NWIS Sitefile* before samples can be logged in or water-quality data can be entered. The program for adding a new site to the NWIS database is described in the Option 7--Utilities section, [3.7.2 Option 2--Add new site or modify site information](#). Access to this program may be restricted to more experienced database users.

```

(1) Agency Code: USGS (2) Station Number: _____
(3) Begin Date: YYYYMMDD (4) Begin Time: HHMM
(5) End Date: YYYYMMDD (6) End Time: HHMM
(7) Time Datum: _____ (8) Time-Datum Reliability: _
(9) Medium Code: _____
(10) Sample Type: 9
(11) Analysis Status: H
(12) Hydrologic Condition: A (13) Hydrologic Event: 9
(14) Analysis Source: A
(15) Analysis Types: _____
(23) Geologic Unit Code: * _____
(24) Lab Number: _____ (25) Project Number: _____
(26) Organism Code (ITIS): * _____ (27) Body Part Code: * _____
(28) Sample field comment: N Add?: _
(29) Sample lab comment: N Add?: _

Options: ? ^D # / /x /+x /-x /@ /c /q -- Enter ?/ for help
    
```

Login sample form (shaded text indicates mandatory items)

**Note :** Fields containing an asterisk (\*) are not available for entry unless the appropriate medium code is entered. See additional information for items 23, 26, and 27.

The options at the bottom of the screen allow the user to move from item to item, screen to screen, and to other parameters. The valid cursor control characters and options are shown at the bottom of the screen and are described in [section 2.2.2 Cursor control](#) and [Tip Sheet 5.1](#). The items on the Login Sample screen are described below and on [Tip Sheet 5.2](#).

(1) The cursor is initially positioned at the U in *USGS*. If this agency code is correct, it is accepted by entering a carriage return; if not, any valid agency code (for example, USEPA) may be entered followed by a carriage return. A list of valid codes is available in *documentation for the [Ground-Water Site Inventory System](#)*.

(2) The cursor is then positioned to the first blank following *STATION NUMBER:* and the program waits for input. Enter the station number, followed by a carriage return. At this point the program checks to determine if the agency code and *station number* (also referred to *station identification, site identification, or site id*) are in the *Site File*. If the agency code and station identification are found in the *Site File*, the station name is displayed and the cursor moves to the next item. If the agency code and station identification are not found in the *Site File*, an error message is displayed and the cursor returns to the first blank following *AGENCY CODE*.

(3) When a station number has been accepted, the cursor is moved to the first Y following *BEGIN DATE*. The begin date is a required item and must be entered in the correct format. The date is checked for validity, including if the date is less than or equal to the current date (future dates are invalid). If the begin date is more than 1 year prior to the current date, a message is displayed and there is an opportunity to reenter the date.

**Note :** *For sample composites, the full end date (year, month, and day) must be entered. There are no restrictions on composites that span the end of the month. The only checks made on end date are to ensure that the date is valid and the end date is not earlier than the begin date. (If a composite spans more than 30 days, a warning message is displayed*

**and there is an opportunity to change the end date).**

(4-6) The next three items (*BEGIN TIME*, *END DATE*, and *END TIME*) are optional and may be skipped by entering carriage returns.

(7) The *TIME DATUM* is a required item and is checked against a list of valid codes. This field will be automatically populated from the site file settings for the site entered. A list of valid time datums can be displayed on the screen by typing a “?”. Additional information for time datums is available in [Section 2.1.9 and 2.4.6](#) and a list of valid time datum codes is available in [Appendix J, table 1](#).

If a time datum that does not match the site file setting for the site is entered, the following warning will appear at the bottom of the screen:

**Warning! Time zone does not match site file settings. Re-enter (Y/N)?**

This is only a warning, because the time datum entered is unexpected and the user is given the chance to change it. There may be a valid reason for the time datum to be different and the software will store the time datum entered.

When a daylight saving time datum for a sample date that is not during the daylight saving time period is entered, the following warning will appear at the bottom of the screen:

**Warning! Daylight saving time not normally used on this date. Re-enter (Y/N)?**

This is an unusual circumstance and most likely is a mistake; therefore the user is given an opportunity to change it.

For composite samples that contain a time period that straddle the daylight saving time date change, the standard time datum is recommended. For example, if the begin date is April 1, 2002 and the end date is April 30, 2002, the standard time datum should be used. In the eastern time zone, EST (Eastern Standard Time) should be used. If a daylight saving time datum is used, the following warning will appear at the bottom of the screen:

**Use standard time datum if Start/End date is standard time. Re-enter (Y/N)?**

This gives the user the opportunity to change the value entered.

(8) The *TIME DATUM RELIABILITY* is a required item and is checked against a list of valid codes. This field will be automatically populated as ‘K’ (known). The value can be changed to any valid code. If the code entered is other than ‘K’, the time datum stored with the sample will not appear in all output formats. A list of valid reliability codes can be displayed on the screen by typing a “?”. Additional information for this field is available in [Section 2.4.7](#) and a list of valid time datum codes is available in [Appendix J, table 2](#).

(9) The *MEDIUM CODE* is a required item and is checked against a list of valid medium codes.

A list of medium codes can be displayed on the screen by typing a "?". The cursor is repositioned in the space following *MEDIUM CODE* after the list is displayed. Medium codes are described in *section 2.3.3* and a list is available in [Appendix A; table 1](#).

**(10-14)** Default values are displayed on the screen for items: *SAMPLE TYPE*, *ANALYSIS STATUS*, *HYDROLOGIC CONDITION*, *HYDROLOGIC EVENT*, and *ANALYSIS SOURCE*. The default values are: 9--Regular sample for *SAMPLE TYPE*; H--Initial entry for *ANALYSIS STATUS*; A--Not determined for *HYDROLOGIC CONDITION*; 9--Routine sample for *HYDROLOGIC EVENT*; and A--Not determined for *ANALYSIS SOURCE*. The default values can be replaced by entering the desired value. Entering a "?" for any of the items displays a list of valid codes on the screen. Valid codes for *SAMPLE TYPE*, *ANALYSIS STATUS*, *HYDROLOGIC CONDITION*, *HYDROLOGIC EVENT*, and *ANALYSIS SOURCE* are available in [Appendix A; tables 5, 7, 3, 4, 8](#).

**Note** : If a "6" indicating Ground Water has been entered for the medium code, the items *HYDROLOGIC CONDITION* and *HYDROLOGIC EVENT* are automatically changed to the default value X--Not applicable. On the rare occasions when some other value is desired, the items can be changed before the record is stored.

**(15-22)** These items are optional and may be skipped by entering a carriage return. Valid codes for *ANALYSIS TYPES* are displayed by entering a "?" and are available in [Appendix A; table 6](#). A total of eight *ANALYSIS TYPE* codes can be entered. To enter, type in a valid analysis type followed by a carriage return.

**(23)** If the medium code is anything other than "6--Ground Water" or "S—QA sample - Ground Water", the *GEOLOGIC UNIT CODE* item is skipped. A valid list of *GEOLOGIC UNIT CODES* are displayed by typing a "?" and at least two characters of the *GEOLOGIC UNIT CODE* or name. Valid codes can be viewed through the check support files, Option 6, described in [section 3.6.4](#). A complete list of valid geologic unit codes can be found in the file /usr/opt/nwis/support/ageol.states.all

**(24)** The *LAB NUMBER* item refers to the lab identification number, which is established when the sample is received at the USGS National Water Quality Laboratory. Normally, the *LAB NUMBER* is not known when the sample is being logged in and this item should be left blank by entering a carriage return. If a value is entered at District login time, then that value will not be updated by subsequent lab-data input programs.

**(25)** The *PROJECT NUMBER* allows the user to enter a District project number.

**(26)** Samples with medium codes: C, animal tissue; D, plant tissue; X, quality assurance sample-animal tissue; or Y, quality assurance sample-plant tissue, automatically converts *ORGANISM CODE* to a required item. To search for valid *ORGANISM CODES*, type a "?", and at least two characters that appear in the organism name, followed by a carriage return. To improve the results of the search, enter as many characters as are known; shorter entries could result in a long list of results.

**(27)** Login of samples with medium codes of C, D, X, or Y automatically converts *BODY PART CODE* to a required item. Valid *BODY PART CODES* can be displayed by typing a "?", followed by a carriage return and are available in [Appendix A; table 19](#).

**(28 & 29)** If a *SAMPLE COMMENT* item has not been entered, an 'N' appears between the ':' and the 'Add?' query. If the user enters a 'Y' and a carriage return after the 'Add?' query, a separate editor will appear where the user can enter the *SAMPLE COMMENT*. If a *SAMPLE COMMENT* item has already been entered, a 'Y' appears after the ':' and the 'Add?' query will appear as 'Edit?'. If the user chooses to edit the existing comment by putting a Y after the 'Edit?' query, the comment is displayed in a separate editor and the user is given the option to edit or delete the comment, or cancel, to retain the existing comment. **NOTE: Comments may not be entered in the login screen. If anything other than a Y or y is entered after the 'Add?' or 'Edit?' queries, the entry will not be accepted, and no change will be made to the comment field.**

After completing entry of the *SAMPLE LAB COMMENT*, the user is prompted with an option to make changes to any of the previously entered items on the login sample screen. If any of the valid item numbers (1-27) are entered, the cursor is repositioned at the selected item. Changes made to any entry are subject to the same edit criteria as during initial entry. A carriage return after item 27 or a "/q" allows the user to complete the login sample form.

Following the carriage return after field #27 or after using "/q", the database is searched to ensure that the *header information* is unique. The *header information* is a unique combination of agency code, station number, medium code, dates, and times. If a record with the same header information is found, the entry is rejected with the following error message:

- **That RECORD already EXISTS – RECORD NUMBER #####**
- **Login another record (Y/N, <CR>=Y)?**

If the header information is unique, the next screen asks the user:

- **Do you want to add parameters 00027 and 00028 (Y/N)?**

A fixed value code is required for parameter codes 00027 (*COLLECTING AGENCY*) and 00028 (*ANALYZING AGENCY*) and acceptable fixed-value codes are listed in [Appendix B](#). If the user responds by typing a "Y", the default value, 1028 (*U.S. GEOLOGICAL SURVEY*), is entered for both values. There is an opportunity to change the values after answering the next question:

- **Do you want to enter any data for this record (Y/N)?**

If the user responds with an "N" this step is skipped. If the answer was "Y" for entering the *COLLECTING and ANALYZING AGENCY* and "N" for entering field data, an edit-entry form for 00027 and 00028 is displayed. If the user responds with a "Y", the following query appears:

- **Are you entering lab (L) or field (F) data? (L or F, <CR>=F):**

If "F" is chosen, the field data entry screen is the same as described in [section 3.2.1](#). If "L" is chosen, the laboratory data entry screen is the same as described in [section 3.2.2](#). After entering or not entering data, a record is created and the assigned *record number* is displayed. Many users write the record number on the National Water Quality Laboratory Analytical Services Request Form or water-quality field notes.

**Saving record --**

**STATION NAME: SWIFTCURRENT CREEK AT SHERBURNE, MONT.**

**AGENCY CODE: USGS SITE NUMBER: 05016000**  
**BEGIN DATE: 20010101 BEGIN TIME: 2001**  
**END DATE: 20010301 END TIME: 2003**  
**MEDIUM CODE: H**

**RECORD entered - record number = 00100010**

**Login another record (Y/N)?**

**Screen displaying the creation of a record number for the sample**

Next, the user is asked if he or she wishes to:

Login another record (Y/N)?

An "**N**" ends the program, whereas a "**Y**" produces the prompt:

Do you wish to edit the same header (Y/N)?

and allows the user to edit the header information. If the user has chosen to edit the record header of the previous sample and a comment was entered for the sample, then the user is given an opportunity to retain or edit the sample comment on the next screen where the previous sample information is redisplayed with prompts for the item numbers the user wishes to change.

The ability to edit the previous sample information allows for the rapid login (data entry) of samples with mostly repetitious information (e.g. samples at the same site that differ only by time, such as vertical measurements in a lake). An "**N**" causes a new input form to be displayed (without the previously entered values). The dialog proceeds as before, with the cursor positioned at the U in *USGS* of the *AGENCY CODE*. A maximum of 500 parameters can be stored in a single QWDATA file record.

## **3.2 Option 2 -- Modify Samples or Results**

Option 2 of the main menu has three options that can be used to modify samples or results through the submenus. The first option, Enter Field Data, is a program used to add field water-quality data to existing records in the QWDATA database. The second option, Enter Laboratory Results, can be used to add non-USGS laboratory data to QWDATA. The third option, Edit Samples or Results, can be used to edit existing header information or results. **Note** : A record must exist in the database before any of these programs can be used. The record number or agency, site number, date, time and medium code must be known before any of these programs can be used. The program for logging in a sample is described in [section 3.1](#).

```

QWDATA PROCESSING ROUTINE  REV NWIS_4_0+20010111
YOU ARE USING WATER-QUALITY DATABASE NUMBER 01

      Modify Samples or Results

1 -- Enter Field Results
2 -- Enter Laboratory Results
3 -- Edit Samples or Results

98 -- Exit menu

99 -- Exit system
Please enter a number from the above list or a Unix command:
    
```

Modify Samples or Results submenu options

### 3.2.1 Option 1 -- Enter Field Results

Field data results can be entered into QWDATA with this program as well as in the Login Sample program described in [section 3.1](#), and the Enter Laboratory Results program described in [section 3.2.2](#).

The Enter Field Results program uses a field form, which is a list of parameter codes and associated information in a file named *field.parmsnn*, stored in the directory */usr/opt/nwis/data/auxdata/qw\_field\_forms/*, where "nn" represents the 2-digit form number (e.g. field.parms01). Example of the format needed for a field form is shown in appendix G. Additional information about field forms is available in [section 2.9](#) and [Tip sheet 5.3](#). After option 1 has been selected, the user is prompted to enter the record number for the sample or a carriage return to identify a sample by agency code, station number, start date, start time, end date, end time, and medium code. The record number and sample information are displayed and the user is asked if this is the desired record.

```

qwfield -- Water Quality Field Data Entry Program
Processing in database: 01
Record Number: 99501617
Station Name: ST. MARY RIVER NEAR ST. MARY, MT
Agency Code: USGS  Site Number: 05013600
Begin Date: 19950802  Begin Time: 1300
End Date:           End Time:
Medium Code: 9
Is this the desired record (Y/N,<CR>=Y)?
    
```

Screen displaying the sample information and asking if this is the desired record

If this is not the desired record, or the record is not found in the database, the user is given another opportunity to enter a record number or agency code, station number, dates, times, and medium code. To quit from this application a "Q" can be entered in place of the record number. After the desired sample is displayed and accepted by typing a "Y" or a carriage return, the user is prompted to enter a field form number.

Available field forms can be listed to the screen by typing a "?" and carriage return. Detailed contents of the field form may be displayed by entering "?#" where "#" is the number of the field form. After the number of the desired field form has been identified and entered, followed by a

carriage return, the program displays the parameter codes and names from the requested field form, with spaces for the entry of values and attributes. The cursor is positioned in the value field of the first parameter. If the sample already contains data for any of the specified parameters, the stored values are displayed as shown below:

```
(1) 00010 WATER TEMPERATURE Meth: A V: 13 Rd: 3 13.0
Rmk: _ QA: I DQI: S Null Qual: _
Val Qual Codes: _ _ _ Result field comment: N Add?: _

(2) 00020 AIR TEMPERATURE Meth: _ V: 11.5 Rd: 3 11.5
Rmk: _ QA: I DQI: S Null Qual: _
Val Qual Codes: _ _ _ Result field comment: N Add?: _

(3) 00027 COLLECTING AGENCY Meth: _ V: 1028 Rd: 5 1028.0
Rmk: _ QA: I DQI: S Null Qual: _
Val Qual Codes: _ _ _ Result field comment: N Add?: _

(4) 00028 ANALYZING AGENCY Meth: _ V: 80020 Rd: 5 80020
Rmk: _ QA: I DQI: S Null Qual: _
Val Qual Codes: _ _ _ Result field comment: N Add?: _

(5) 00061 DISCHARGE, INST. Meth: _ V: 605 Rd: 3 605
Rmk: _ QA: I DQI: S Null Qual: _
Val Qual Codes: _ _ _ Result field comment: N Add?: _

Options: ? ^D # / /x /+x /-x /@ /n /d /a /c /q -- Enter ?/ for help
```

Example of the field-results data entry format (shaded values are mandatory)

The program begins at the first parameter with the cursor at the value "V" field. The options for moving around the screen from parameter to parameter and screen to screen are displayed at the bottom of the screen. They are also described in [section 2.2.2](#) and can be listed on the screen by typing a "?/". A description of each item in the field-data entry form follows:

**Meth:** The method code is not a mandatory field for the result value, but the method code is validated when entered or edited. General information on the method code can be found in [section 2.5.6](#). To review valid method codes, use [option 9](#) of the Support Files ([section 3.6.9](#)) menu to review the contents of the parameter-method table. If the method code is changed for a result, the following message will appear on the screen:

```
You have changed the method code for an existing record.
Your options are:
  1: Replace result_rd with selection from PMT
  2: Enter a new rounding code
  3: Keep the existing result_rd

Enter 1, 2, or 3 (<CR>=1):
```

This message is related to the link between the method code and the rounding behavior for that result. **Option 1** (default) will change the rounding code for that result to the value derived from the parameter-method table. **Option 2** allows you to enter any rounding code for that result.



**Option 3** will result in the rounding code remaining the same as it was prior to changing the method code.

**V:** The value for the individual parameter. A decimal point at the end of the value is assumed for values entered without a decimal point. The decimal point for values that are not whole numbers must be entered. A carriage return with no data is interpreted as no data, and that parameter is not stored. Entry of a "#" signifies a null value and the user is required to qualify the null value with a null-value remark code or null-value qualifier code. If a value exists for a parameter in the field form, a carriage return retains the old value; entry of a new value replaces the old one; and an entry of "/d" causes the parameter to be deleted from the record.

**Rd:** The rounding precision is used to display the data. Rounding is described in [section 2.7.1](#).

**Rmk:** Remark codes are used to qualify data values, as well as null values. Remark codes are listed in [Appendix A; table 10](#), described in [section 2.5.1](#), and can be listed on the screen by typing a "?" after the Rmk prompt.

**QA:** The default quality assurance code for parameters is I, indicating USGS field value in review. Quality assurance codes are listed in [Appendix A; table 2](#), described in [section 2.5.6](#), and can be listed on the screen by typing a "?" after the QA prompt.

**DQI:** The data quality indicator code is a mandatory entry for the result that indicates the review status of the result, controls whether the batch-update programs can overwrite the result, and affects whether the result will be included in retrievals. Valid DQI codes and meanings are listed in [Appendix A; table 14](#), described in [section 2.5.3](#), and can be listed on the screen by typing a "?" after the DQI prompt.

**Null Qual:** If the parameter value is entered as a null value, a null-value remark or a null-value qualifier is required. The valid null-value remarks and null-value qualifier codes are listed in [Appendix A; table 15](#) and described in [section 2.5.4](#).

**Val Qual Codes:** The value qualifiers provide additional information about the result values, which may be used for interpretation and archival of the results. QWDATA can store as many as three value qualifiers for each result from the valid codes listed in [Appendix A](#), described in [section 2.5.2](#), and can be listed on the screen by typing a "?" after the Val Qual Codes prompt.

**Result field comment:** Result comments are used to describe any information that the user might want to associate with the result value. For example, if the pH meter could not be calibrated with buffer solutions and the pH value was suspect, that information could be stored with the pH value and other parameters, such as alkalinity and bicarbonate, that were measured using the same pH meter. Description of comment fields is included in [section 2.8](#).

Result field comments can be added or edited by inserting a "Y" at the "Add" or "Edit" prompt after the "Result field comment". A new screen is displayed for adding a new comment that includes up to 900 characters of information--15 lines consisting of up to 60 characters per line. Control "c" cancels the comment entry and control "e" saves the comment and exits. The user then receives the following prompt:

Do you want to apply the comment to other parameters (Y/N)?

If the user answers "Y", a new screen is displayed with four options.

The first option is to enter additional parameter codes at the terminal, where the parameter codes are typed in one at a time and a carriage return ends the program. This brings the user back to the field data entry form. The comment can be applied to as many as 500 parameter codes.

The second option applies the comment to parameters contained in a file; the pathname of the file is entered at the prompt.

The third option is to update all parameters in a sample with the comment.

The fourth option is to update all the parameters in the sample but confirm each before updating.

A new screen with three options is displayed for editing an existing comment. The first option allows the user to edit the comment. The second option allows the user to delete the comment and

the third option cancels the editing process.

When data entry is complete, the user can exit the program by either using **"/q"** or inserting a carriage return after the last parameter in the form. The program provides an opportunity to modify the data by displaying the prompt:

Changes? Enter item number to change or <CR> to continue.

Additional parameters may be added to the sample without having to add them to the *field.parmsnn* file by entering **"/a"** at any time. The parameter appears at the next line and the cursor is positioned to accept a value.

As each value is entered, the following checks are made:

1. If the value is negative, the parameter code is checked against a list of codes for which negative values are permitted; if the entry is invalid, a message is displayed and the value is rejected. Negative Values are described in [section 2.7.3](#) and listed in [Appendix H](#).
2. If the value is for a parameter that should contain fixed values, the fixed values file list is checked; if the value is invalid for that parameter, a message is displayed and the value is rejected. Fixed values are listed in [Appendix B](#) and described in [section 2.6.3](#).
3. If the value for pH (parameter code 00400) is greater than 14, a message is displayed and the value is rejected. If the value for pH is outside the range of 4.5 to 9.0, a message will be displayed during data entry, but the value will be retained.

When data entry is complete, the record is stored and the dialog restarted with the request for a record number or **"Q"** to end. Users will need to run the Chemical Validation Checks program describe in [section 3.3.5](#) to validate updates. General information about chemical validation checks is described in [section 2.7](#).

### **3.2.2 Option 2 -- Enter Laboratory Results**

The Enter Laboratory Results program is used to interactively enter and edit data from cooperator laboratories or USGS laboratory data that are not loaded into QWDATA from other programs. (Another program is used for adding analytical data from the USGS National Water Quality Laboratory and the Ocala Water Quality and Research Laboratory and is described in [section 3.8](#)). Laboratory data values can be entered into QWDATA with this program as well as in the Login Sample program described in [section 3.1](#), and the Enter Field Results program described in [section 3.2.1](#).

The Enter Laboratory Results program uses a field form, which is a list of parameter codes and associated information in a file named *field.parmsnn* , stored in the directory */usr/opt/nwis/data/auxdata/qw\_field\_forms/* , where *"nn"* represents the 2-digit form number. Information about adding and designing a field form is available in [section 2.9](#) and [Tip sheet 5.3](#).

After option 2 has been selected, the user is prompted to enter the record number for the sample or a carriage return to identify a sample by agency code, station number, start date, start time, end date, end time, and medium code. The record number and sample information are displayed and

the user is asked if this is the desired record.

If this is not the desired record, or the record is not found in the database, the user is given another opportunity to enter a record number or agency code, station number, dates, times, and medium code. To quit from this application a `Q` can be entered in place of the record number. After the desired sample is displayed and accepted by typing a "Y" or a carriage return, the user is prompted to enter a field form number.

Available field forms can be listed to the screen by typing a "?" and carriage return. Detailed contents of the field form may be displayed by entering "?#", where "#" is the number of the field form. After the number of the desired field form has been identified and entered followed by a carriage return, the program displays the parameter codes and names from the requested field form, with spaces for the entry of values and attributes. The cursor is positioned in the value field of the first parameter. If the sample already contains data for any of the specified parameters, the stored values are displayed as shown below:

```

(1) 00010 WATER TEMPERATURE   Meth:  V:   6.5 Rd: 2   6.5
    Lab Std Dev: #           Rmk:  _ QA: 3 DQI: S Null Qual:  _
    Val Qual Codes:  _ _ _ Rpt Lev:  _____ Rpt Lev Cd: * _____
    Prep Set No:  _____ Anl Set No:  _____
    Prep Dt: YYYYMMDD Anl Dt: YYYYMMDD Result field comment: N Add?:  _
    Result lab comment: N Add?:  _

(2) 00020 AIR TEMPERATURE     Meth:  V:   16 Rd: 3   16.0
    Lab Std Dev: #           Rmk:  _ QA: 3 DQI: S Null Qual:  _
    Val Qual Codes:  _ _ _ Rpt Lev:  _____ Rpt Lev Cd: * _____
    Prep Set No:  _____ Anl Set No:  _____
    Prep Dt: YYYYMMDD Anl Dt: YYYYMMDD Result field comment: N Add?:  _
    Result lab comment: N Add?:  _

Options: ? ^D # / /x /+x /-x /@ /n /d /a /c /q -- Enter ?/ for help
    
```

Screen showing an example of the laboratory results data entry format (shaded values are mandatory)

The program begins at the first parameter with the cursor at the value "V" field. The options for moving around the screen from parameter to parameter and screen to screen are displayed at the bottom of the screen. They are also described in [section 2.2.2](#) and can be listed on the screen by typing a "?/". A list of acceptable codes for some fields can be shown on the screen by typing a "?" in the field. A description of each item in the field-data entry form follows:

**V:** The value for the individual parameter. A decimal point at the end of the value is assumed for values entered without a decimal point. The decimal point for values that are not whole numbers must be entered. A carriage return with no data is interpreted as no data, and that parameter is not stored. Entry of a "#" signifies a null value and the user is required to qualify the null value with a null-value remark code or null-value qualifier code. If a value exists for a parameter in the field form, a carriage return retains the old value; entry of a new value replaces the old one; and an entry of "/d" causes the parameter to be deleted from the record.

**Rd:** The rounding precision that is used to display the data. Rounding is described in [section 2.7.1](#).

**LSDEV:** The laboratory standard deviation will be used to round the result value if default

rounding is selected and a value for laboratory standard deviation is present. The laboratory standard deviation is discussed in [section 2.5.5](#).

**Rmk:** Remark codes are used to qualify data values, as well as null values. Remark codes are listed in [Appendix A; table 10](#) described in [section 2.5.1](#).

**QA:** The default quality-assurance code for parameters is set to I, indicating USGS field value, in review. Quality assurance codes are listed in [Appendix A; table 2](#), described in [section 2.5.6](#).

**Meth:** The method code attributes are described in [section 2.5.5](#).

**DQI:** The data quality indicator code is a mandatory entry for the result that indicates the review status of the result, controls whether the batch-update programs can overwrite the result, and affects whether the result will be included in retrievals. Valid DQI codes and definitions are listed in [Appendix A; table 14](#), described in [section 2.5.3](#).

**Null Qual:** The null-value qualifier code is mandatory if a null value is entered and a null-value remark code is not included. The valid null-value remarks and null-value qualifier codes are listed in [Appendix A; table 15](#), and described in [section 2.5.4](#).

**Val Qual Codes:** The value qualifiers provide additional information about result values, which may be used for interpretation and archival of results. QWDATA can store as many as three value qualifiers for each result from the valid codes listed in [Appendix A](#) and described in [section 2.5.2](#).

**Rpt Lev:** The reporting level value field contains the reporting level in use for censoring values for the laboratory, constituent, method, and instrument at the time of analysis. Laboratory information is described in [section 2.4.4](#).

**Rpt Lev Cd:** The report level code describes the type of analytical reporting level in use for censoring data values by the laboratory at the time of analysis. Valid report level codes are listed in [Appendix A; table 17](#). Laboratory information is described in [section 2.5.9](#).

**Prep Set No:** The preparatory set number is a laboratory identifier used for a group of field-submitted samples and laboratory-supplied quality control blank and spike samples. These samples are prepared for analytical processing at the same time using the same method and reagents. Laboratory information is described in [section 2.5](#).

**Anl Set No:** The analytical set number is a laboratory identifier used for a group of field and laboratory samples, analyzed together by the same analyst, using the same equipment at the same time. Laboratory information is described in [section 2.5](#).

**Prep Dt:** The preparation date is supplied by the laboratory and represents the date that sample extraction or preparation began.

**Anl Dt:** The analysis date is supplied by the laboratory and represents the date that analysis began.

**Result field comment:** Result field comments are used to describe any field information that the user might want to associate with the result value. For example, if the pH meter could not be calibrated with buffer solutions and the pH value was suspect, that information could be stored with the pH value and other parameters, such as alkalinity and bicarbonate, that were measured using the same pH meter. Description of comment fields is included in [section 2.8](#).

Result field comments can be added or edited by inserting a "Y" at the "Add" or "Edit" prompt after the "Result field comment." A new screen is displayed for adding a new comment that includes up to 900 characters of information--15 lines consisting of up to 60 characters per line. Control "c" cancels the comment entry and control "e" saves the comment, exits, and then prompts:

**Do you want to apply the comment to other parameters (Y/N)?**

If the user answers "Y", a new screen is displayed with four options. The first option is to enter additional parameter codes at the terminal, where the parameter codes are typed in one at a time. A carriage return ends the program bringing the user back to the field data entry form. The comment can be applied to as many as 500 parameter codes. The second option applies the

comment to parameters contained in a file; the pathname of the file is entered at the prompt. The third option is to update all parameters in a sample with the comment, and the fourth option is to update all the parameters in the sample, but confirm each before updating.

A new screen with three options is displayed for editing an existing comment. The first option allows the user to edit the comment. The second option allows the user to delete the comment and the third option cancels the editing process.

**Result lab comment:** Result lab comments are used to describe any laboratory information that might be associated with the value. The prompts and screens are the same as the "Results field comment", which is described above. Text fields for comments are described in [section 2.8](#). When data entry is completed, the user can exit the program by either using **"/q"** or inserting a carriage return after the last parameter in the form. The program provides an opportunity to modify the data by displaying the prompt:

**Changes? Enter item number to change or <CR> to continue:**

Additional parameters may be added to the sample without having to add them to the *field.parmsnn* file by entering **"/a"** at any time. The parameter appears at the next line and the cursor is positioned to accept a value.

As each value is entered, the following checks are made:

1. If the value is negative, the parameter code is checked against a list of codes for which negative values are permitted; if the entry is invalid, a message is displayed and the value is rejected. Negative Values are described in [section 2.7.3](#) and listed in [Appendix H](#).
2. If the value is for a parameter that should contain *fixed values*, the fixed values file list is checked; if the value is invalid for that parameter, a message is displayed and the value is rejected. Fixed values are listed in [Appendix B](#) and described in [section 2.6.3](#).
3. If the value for pH (parameter code 00400) is greater than 14, a message is displayed and the value is rejected. If the value for pH is outside the range of 4.5 to 9.0, a message will be displayed during data entry, but the value will be retained.

When data entry is complete, the record is stored and the dialog restarted with the request for a record number or **"Q"** to end. Users will need to run the Chemical Validation Checks program described in [section 3.3.5](#). ([Option 5 of Function 3, Data Review](#)) to validate updates. General information about chemical validation checks is described in the table in [section 2.7.1](#).

### **3.2.3 Option 3 -- Edit Samples or Results**

The Edit Samples or Results program is used to modify the record header information for a sample, to modify the analytical results for a sample by adding, changing, or deleting parameter values or attributes, or to delete a sample record.

After option 3 has been selected, the user is prompted to enter the record number for the sample, or a carriage return to identify a sample by agency code, station number, start date, start time, end date, end time, and medium code. The record number and sample information are displayed and the user is asked if this is the desired record.

If this is not the desired record, or the record is not found in the database, the user is given another opportunity to enter either a record number or agency code, station number, dates, times, and medium code. To quit from this application a `Q` can be entered in place of the record number. After the desired sample is displayed and accepted by typing a "Y" or a carriage return, the following screen is displayed:

```

qwedit -- Water Quality Edit Program

Processing in database: 01

Record Number: 98107995

EDIT OPTIONS:

1 -- Select another record

2 -- Modify the record header

3 -- Modify the analytical data

4 -- Delete the record

Please enter your choice:
    
```

Screen showing the edit samples and results options and record number of the sample

When a record has been retrieved, the user is given four options: select another record, modify the record header, modify the analytical data, or delete the record. If **Option 1**, select another record is chosen, the user is prompted and taken back to the previous screen to enter a record number or sample information. **Option 2**, modify the record header, allows the users to change the sample header information and is the same program as described in the [login sample program \(section 3.1\)](#). **Option 3**, modify the analytical data, allows the user to add, change, or delete parameter values or attributes with the sample program as described in the [enter laboratory results program \(section 3.2.2\)](#). **Option 4**, delete the record, allows the users to completely remove all parameter values and attributes as well as the sample header information. As a precaution, the program verifies the delete request by prompting:

**Are you sure you want to DELETE that record? (Must answer YES)**

The user must reply by typing all of the letters in the word "**YES**" in capital letters before the record will be deleted. If the record is deleted, a line of text flashes across the bottom of the screen,

RECORD nnnnnnnn DELETED

where nnnnnnnn is the sample record number. If the response to the prompt was something other than "**YES**", the line

RECORD nnnnnnnn NOT DELETED

flashes across the bottom of the screen. **Note** : Deleted records or values are removed immediately and cannot be recovered except by reentering.

The user can exit this program by choosing **Option 1**, select another record, and then typing in a “**Q**” at the record number prompt or by entering “/q” in the data editing screen, then entering a “**Q**” at the record number prompt.

An alternative for deleting a record is to place the word DELETE in the GEOLOGIC UNIT CODE field (cols. 36-43) on a 1-card. This is explained in section 4.2 ( **qw\_enter** ).

To validate any updates or edits, users will need to run the Chemical Validation Checks program in the Data Review submenu described in [section 3.3.5](#).