

### 3.6 Support Files

Options in the Support Files Menu include access to files that a user may need to reference while using QWDATA.

**QWDATA PROCESSING ROUTINE REV NWIS-4\_2\_0-20020726**

**YOU ARE USING WATER-QUALITY DATABASE NUMBER 01**

**Support Files**

- 1 -- List Site Records**
- 2 -- Check Parameter Code Dictionary**
- 3 -- List Parameter Code Dictionary**
- 4 -- Check Geologic Unit Code File**
- 5 -- Check Federal Information Processing Standards (FIPS) Code**
- 6 -- List State/County Data**
- 7 -- Dump Parameter Code Dictionary (optionally with Precision Codes)**
- 8 -- Display Contents of Algorithm File**
- 9 -- Display Contents of Parm Method Table**
  
- 98 -- Exit menu**
  
- 99 -- Exit system**

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

**Support Files Menu Options**

#### 3.6.1 Option 1 -- List Site Records

Option 1, List site records, produces a list of the contents of the site information for selected sites from the Site File. If the output is selected to go to a file, the program asks for the output file name; if you do not enter a file name, the output will be put into a file named SITE\_FILE. The output can also be directed to the screen. You are then asked if station numbers will be entered from the terminal. A maximum of 400 station numbers are accepted; if more than 400 are submitted, only the first 400 will be used. If the station numbers are entered from the terminal, a blank line is displayed. Enter the five-character code (a blank space will follow if a four-character agency code is entered) and the station number. Depending on the agency code and length of station ID, the input would look like the following example:

```
USGS 01123456
USEPA01123457
USGS 390000110300001
```

If **NO**, you are prompted for the name of a file that contains a list of station numbers. The input file should be in the following format:

**Agency code -- 5 characters (left-justified)**  
**Station number -- 15 characters (left-justified)**

The output file includes carriage-control characters, and should be spooled with the "asa" U command. Example output is included in [Appendix C](#).

### 3.6.2 Option 2 -- Check Parameter Code Dictionary

Option 2, check parameter code dictionary, retrieves records from the parameter code dictionary and displays the parameter code and descriptive name on the screen. [Parameter codes \(section 2.1.3\)](#) are 5-digit numbers used to identify water-quality constituents and properties. Two types of retrievals are available: by parameter name or by parameter code.

After starting the **qwckpcd** routine, the user must decide if the records will be retrieved by parameter name or parameter code from the following menu:

**Parameter Name and Code Retrieval Routine:**

**Options for Retrieving Parameter Name or Code:**

- 1 – Retrieve/Select a Parameter by Code**
- 2 – Retrieve/Select a Parameter by Name**
  
- 0 – Quit**

**What do you want to do (0-2)?**

Screen to check the parameter code dictionary

If option 1 is selected, one parameter is retrieved when a valid parameter code is entered. If option 2 is selected, a list of parameters that contain the name entered is displayed on the screen. To exit this program, enter a 0, and you will return to the Support Files menu.

### 3.6.3 Option 3 -- List Parameter Code Dictionary

Option 3, list parameter code dictionary, retrieves and lists the entire parameter code dictionary and is somewhat time consuming, depending on system activity. When the dictionary has been read, it can be sorted by combinations of parameter code, long name, table order number, and short name. Again, the sort requires some time to run because of the size of the dictionary. After the sort finishes, you have the option to eliminate the long name from the output (to save paper and/or viewing and printing time). Once again, time to create the output is lengthy. The output file is **qwpcdlist** and a warning message about its length is included in the program-ending message. Example output is included in

[Appendix C](#). If you would like to retrieve the Parameter Code Dictionary with precision codes, see [option 7](#) below.

### 3.6.4 Option 4 -- Check Geologic Unit Code File

Option 4, check geologic unit code file, retrieves geologic unit codes and formation names and displays them at the terminal. The program asks for a geologic unit code and retrieves the associated name.

You can either provide the entire geologic unit code (for example, 111ALVM) and, if that code exists, get back the formation name (Holocene alluvium), or a partial geologic unit code (from one to eight characters). An entry of the partial geologic unit code (12) results in retrieval (by partial key search) of all geologic unit codes and associated formation names between 120xxxxx and 129xxxxx. A blank geologic unit code terminates the program. The file of valid geologic unit codes is located at: [/usr/opt/nwis/support/aageol.states.all](#).

### 3.6.5 Option 5 -- Check Federal Information Processing Standards (FIPS) Code File

Option 5, check FIPS code file, is used to browse the FIPS Code File and retrieve a State code given a State name, a State name given a State code, a county code given a State-county name, and a county name given a State-county code. The following options are displayed on the screen:

```
FIPS CHECK OPTIONS :

1 -- Exit the program,
2 -- Get a State code,
3 -- Get a State name,
4 -- Get a county code, or
5 -- Get a county name.

Please enter 1, 2, 3, 4, or 5.
```

Screen to Browse FIPS Code File

After the user makes a choice from the menu, the program requires the user to enter the required information from the terminal. All responses from the program are to the screen only.

### 3.6.6 Option 6 -- List State/County Data

Option 6, list state/county data, interacts with the FIPS file, and is used to retrieve a tabular list of State names, State abbreviations, State codes, minimum and maximum latitudes, minimum and maximum longitudes, and minimum and maximum altitudes. You

may also retrieve county names, county codes, minimum and maximum latitudes, minimum and maximum longitudes for a single State, and both of the previous lists of data for all counties for all States (this is long and time-consuming). The output can be to the terminal or to a file. Example output is included in [Appendix C](#).

### 3.6.7 Option 7 -- Dump Parameter Code Dictionary (optionally with Precision Codes)

Option 7, dump parameter code dictionary, retrieves and lists (dumps) selected columns of the entire parameter code dictionary. Within the QWDATA software, the term 'precision code' is analogous to 'rounding code'. There are two output options, the long name or the short name. The long name output includes the parameter code, the short name, and the full long name (up to 170 characters). The short name output includes the parameter code, the short name, the table order, the first 40 characters of the long name, the units, and the rounding array.

When the program is initiated, the user must decide to include the long-name or the short-name output. This program takes a few minutes to execute and creates an output file called **pcddump**. This file is 300 to 400 UNIX records, depending on the option selected. An example of the short name output is in [Appendix C](#).

The following query will appear to determine whether you would like the long or short version of the dump:

**You have two output options long name or short name. The long name option returns parameter code, short name, and full long name (up to 170 characters).**

**The short name option returns parameter code, short name, table order, first 40 characters of the long name, units, and precision code.**

**Do you want the full long name output (Y/N,<CR>=Y)**

For each parameter code in the parameter code dictionary, a rounding array is stored for a range of expected values. **This rounding array is not used by the QWDATA software** unless an entry for a specific parameter-method code combination is missing from the parameter-method table. Information about the parameter-method table is available in [Sections 3.6.9](#) and [2.5.6](#). The parameter code dictionary contains one ten-element integer array (PROUND) that contains the default rounding codes for a parameter. The magnitude of the greatest significant figure in a result determines which PROUND element (1-9) is used to round the result. The tenth element of the array (MAXDEC) indicates the maximum number of decimal places that may be used to display a value for the parameter. The other nine elements of the PROUND array have definitions as shown below:

An example of precision code output for parameter code 00010, water temperature, is 0012333331:

For values in the range	Display number of significant digits
<0.01	0 (values this small not expected)
>=0.01 - <0.1	0 (values this small not expected)
>=0.1 - <1.0	1
>=1.0 - <10.0	2
>=10.0 - <100.0	3
>=100.0 - <1000.0	3
>=1000.0 - <10000.0	3
>=10000.0 - <100000.0	3
>=100000.000	3
Max Decimal Places	1

For more information on rounding codes, see [section 2.7.1 - Rounding](#). Rounding codes for 10-16 are represented by the symbols ‘:’, ‘.’, ‘<’, ‘=’, ‘>’, ‘?’, and ‘@’.

### 3.6.8 Option 8 -- Display Contents of Algorithm File

Option 8, Display Contents of Algorithm file, retrieves and lists the algorithms for calculated parameters. Additional information about the algorithms is included in [Appendix D](#). There are two output options, the algebraic equation form or a report that lists the steps used to perform the calculation. This calculation includes preferences when more than one parameter code can be used in the calculation (for example: 00902--noncarbonate hardness uses either 00916 Calcium Total Recoverable mg/L as Ca or 00918, Calcium, Total Recoverable mg/L, preferring 00916). Limitations on the calculations include the exclusion of results that have an accompanying remark code; this may result in no calculated value appearing in output. The algebraic equation output prompts you for a specific algorithm or all of the algorithms to be converted.

```

Algorithm display/report program
You have 2 options for reporting from the algorithm file:

1 Display algorithm in equation form
2 Create report listing operations

Enter option desired: 1
      DO YOU WISH TO WRITE RESULTS TO A FILE (YES OR NO)? n
      WHAT ALGORITHM DO YOU WISH TO SEE (A FOR ALL)? 00902

PARAMETER 00902 CONVERTED ALGORITHM
(((((((00916.!00918.)*0.0499)+((00927.!00921.)*0.08229))+(((01082.!01084.)*0.00002283)!0.0))+
((01007.!01009)*0.00001456)!0.0))-(((00450.!(00440.!99440.))*0.01639)+
0(((00447.0!(00445.!99445.))*0.03333)!0.0002)!((00419.!(00410.!(29813.!(99430.!00431.))))/50.05)
))* 50.05)
    
```

Screen displaying contents of algorithm file

Following is an example of the report that lists the steps used to perform the calculation:

```

Algorithm display/report program
You have 2 options for reporting from the algorithm file--
1 Display algorithm in equation form
2 Create report listing operations
Enter option desired: 2
Algorithm Report
Enter start algorithm (<CR>=first available): 00607
Enter end algorithm (<CR>=last available: 00607
Enter name for report file (<CR>=algfile.listing):

```

Below is the output included in algfile.listing:

```

00607 T 1 0.000000000 2 [#] Constant
2 623.000000000 11 [P] Quit if parameter absent
3 608.000000000 11 [P] Quit if parameter absent
4 0.000000000 4 [-] Subtraction of right from left
5 0.15 [V] Set to missing if right < left

```

*Note : In the example above, if "Type" is coded with a T and all the required parameters are present, the parameter is calculated on output when you request CALCV. If "Type" is left blank, it is not calculated on output when you request CALCV, even if all the required parameters are present (for example: 90851, Trihalomethane, Water, Unfiltered, Calculated Total mg/L).*

### 3.6.9 Option 9 -- Display Contents of Parm Method Table

Option 9, Display Contents of Parm Method Table, lists contents of the parameter-method reference table used for rounding of results when default rounding is selected. The contents of this reference table are parameter code, method code, parameter name, and rounding array. A description of the rounding array is included in [section 3.6.7](#). The output can include all parameter-method pairs in the output or you can select specific parameters and methods. Sample output can be found in [Appendix C](#). When this option is selected, the following menu is displayed:

```

1: Dump all parm method pairs displaying long names
2: Dump all parm method pairs displaying short names
3: Dump selected parm method pairs displaying long names
4: Dump selected parm method pairs displaying short names

Please enter (1,2,3,4,<CR> to quit):

```

When option 1 or 2 is selected, the user is able to direct the output to the screen or to a file that is named by the user. If option 3 or 4 is selected, the selected parameters can be entered interactively or using an input file. The format of the input file is described in [Appendix G](#). Below are the queries when the parameter-method combinations are entered interactively for option 3 or 4:

```
Do you want to enter parm method pairs from the terminal? (y,n, CR=>y): y
Enter parameter code-method code combinations (<CR> to quit):

(Method code entry is optional.  If method code is not included,
all method codes will be retrieved for that parameter.
To retrieve a range of parameter codes, enter the following:
PCODE [METHOD] - PCODE [METHOD] on one line below)

1: 00025 _
2: 00095 - 00400

Do you want the output to go to the terminal? (y,n, <CR>=y):
```

When selected parameters are entered either with a file or interactively, the following tips might be helpful:

- 1) If the method code is not included, all method codes for the valid parameter code are included in the output.
- 2) Between the parameter and method code, there must be space. If no space is included, an error message will appear that the input data are not in a valid format.
- 3) If a range of parameters is entered, they should be entered in the following format (with or without a method code):

**00025 A - 01020**