

13 QUERY SUPPORT FILES

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```

*****
* Check GW/QW Support Files -- NWIS-4_4_0-20040329
*   You are using Water-Quality Database Number 01
*****

Code  Program Description          Code  Program Description
----  -
1 : List Site Records by Site ID
2 : List Parameter by Code or Name
3 : List Geologic Unit by Code or Name
4 : List Hydrologic Unit by Code or Name
5 : List Country/State/County (FIPS) Information by Code or Name
6 : List Country/State/County with Geographical Information by Code
7 : Dump Parameter Code Dictionary without Precision Codes
8 : Dump Parameter Code Dictionary with Precision Codes

98 : Exit to Previous Menu          99 : Exit to UNIX

Enter UNIX Command or Select Program Code:

```

13.1 Option 1 – List Site Records (/usr/opt/nwis/bin/qwshowsite)

Option 1 produces a list of the contents of site information for selected sites from the Sitefile. Retrieval specifications are entered through a series of prompts.

Output may either be displayed on the user’s terminal or written to a text file. If the user elects to send the output to a file, the program prompts the user to enter a filename; if no file name is entered at the prompt, output will be written to a file named SITE_FILE in the current user directory. The filename may include the pathname to the file (up to 128 characters) if the file is not to be located in the users current operating directory.

Station numbers may either be entered from the users terminal or from a file containing a list of sites for which site information is to be retrieved. A maximum of 400 station numbers may be retrieved. If more than 400 sites are submitted, only the first 400 are used. If the user elects to enter station numbers from the terminal, a blank line is displayed. Enter agency code in the first 5 columns, left justified, followed by the station number in columns 6 – 20, also left justified. If the agency code is only 4 characters (e.g. USGS), there will be a blank space in column 5 between the agency code and station number. Depending on the agency code and length of station number, the input would look like the following examples:

```
          1          2
12345678901234567890
USGS 01123456
USEPA01123457
USGS 474251114385201
```

If the user chooses to get a list of station numbers from a text file by responding N or NO at the prompt for source of entered station numbers, the user will be prompted to enter a file name, including a pathname (up to 128 characters) if not in the users current operating directory. The format for station number in the text file is the same as described above for interactive entry.

The output file contains carriage-control characters and should be printed with the “asa” UNIX command using the following syntax:

```
asa test_showsite | lp -dprintername
```

13.2 Option 2 – List Parameter by Name or Code (/usr/opt/nwis/util/gwckparm)

Option 2, the gwckparm routine, retrieves records from the Parameter Code Dictionary and displays the parameter code and descriptive name at the terminal. Parameter codes are five-digit. Parameter codes are five-digit numbers used to identify water-quality constituents and properties in the USGS National Water Information System, and the U.S. Environmental Protection Agency STORET Legacy Data Center. Parameter information may be selected either by parameter name or parameter code.

To retrieve Parameter Code information, select Option 2 from the Query Support Files Menu; the following menu will appear:

```
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)?
```

Parameter code information may be selected individually by **parameter code** by selecting “1” from the menu. Enter the 5-digit code of the parameter code. This will result in the display of the parameter code and the long name of the related parameter. For example if the description for Parameter Code 00400 was desired:

```

What do you want to do (0-2)? 1

Enter 5-character parameter code: 00400

PARAMETER
CODE      NAME
00400    pH, water, unfiltered, field, standard units

```

Parameter code information may be selected by **parameter name** by selecting “2” from the menu. Enter either the specific parameter name, or a partial parameter name string at the prompt. Typing in the beginning string of characters for a parameter will result in a list of all parameters whose name begins with the entered string. For example, typing “Temperature, air” will result in the following list of parameter codes and their long name:

```

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

Enter parameter name: Temperature, air

PARAMETER
CODE      NAME
00020    Temperature, air, degrees Celsius
00021    Temperature, air, degrees Fahrenheit

```

To EXIT the program, select “0”.

13.3 Option 3 – List Geologic Unit by Code or Name (/usr/opt/nwis/util/gwckaqr)

Option 3, the gwckaqr routine, retrieves geologic unit codes and names, and displays this information at the users terminal. The user may select geologic units by code or by name, and may further restrict retrieval by specifying Country and State in the selection criteria.

To retrieve Geologic Unit Code information, select Option 3 from the Query Support Files Menu; the following menu will appear:

```

Geologic Unit Name and Code Retrieval Routine

Options for Retrieving Geologic Unit Name or Code:

1 -- Retrieve/Select a Geologic Unit by Code
2 -- Retrieve/Select a Geologic Unit by Name
3 -- Select a Country and State (no state will list all matches)
0 -- Quit

What do you want to do (0-3)?

```

Geologic Unit Code information may be selected individually by **Unit Code** by selecting “1” from the menu. Enter the 8-character Geologic Unit Code at the prompt. This will result in the display of the Geologic Unit Code and Name for any Country and State in the database. For example, if the Geologic Unit description for “231HLYK” is desired:

```

What do you want to do (0-3)? 1

Enter 8-character geologic unit code: 231HLYK

GEOLOGIC
UNIT CODE  NAME

231HLYK    HOLYOKE BASALT

```

NOTE: Currently, if the geologic unit code describes more than one geologic unit in different states, the program will only display the first unit found in the master aageol.all.states list of geologic unites associated with that code.

Geologic Unit Code information may be selected by **Geologic Unit Name** by selecting “2” from the menu. Enter either the specific Geologic Unit name or partial Geologic Unit name. Typing in the beginning string of characters for a Geologic Unit name will result in the display of all Geologic Units that begin with those characters. For example, typing in “alle” will result in the following list of Geologic Unit Codes and their description:

```

What do you want to do (0-3)? 2

Enter geologic unit name: alle

GEOLOGIC
UNIT CODE  NAME

211ALVL    ALLEN VALLEY SHALE OF INDIANOLA GROUP
211ARDG    ALLEN RIDGE FORMATION
324ALGN    ALLEGHENY FORMATION
324ALPV    ALLEGHENY AND POTTSVILLE GROUPS, INDIFF.
337ALMN    ALLEN MOUNTAIN LIMESTONE OF MADISON GROUP
341ALGP    ALLEGRIPPIS SANDSTONE MEMBER OF CHEMUNG FORMATION
371ALNN    ALLENTOWN DOLOMITE'

```

The user can restrict Geologic Unit selection by Country and State by selecting “3” from the menu. Enter the Country/State codes at the prompts. Once this has been entered all subsequent retrievals of geologic unit codes or names while still in the program will be restricted to geologic units within the entered state. If no codes or names are valid for the state, the program will display a warning to that effect. For example, 231HLYK is a Geologic Unit that resides in Massachusetts. If the state code for Montana is entered using option 3 on this menu, the following will occur if 231HLYK is entered:

```

What do you want to do (0-3)? 3

Enter 2-character country code (<CR> = none): US

Enter 2-character state code (<CR> = none): 30

Options for Retrieving Geologic Unit Name or Code (US State: 30):

  1 -- Retrieve/Select a Geologic Unit by Code
  2 -- Retrieve/Select a Geologic Unit by Name

  3 -- Select a Country and State (no state will list all
matches)

  0 -- Quit

What do you want to do (0-3)? 1

Enter 8-character geologic unit code: 231HLYK

No such Geologic Unit Code for this State.

```

To restore selection of all geologic unit codes or names, select “3” from the menu, and type in a carriage return (<CR> = none).

To exit the program, select “0” from the menu.

13.4 Option 4 – List Hydrologic Unit by Code or Name (/usr/opt/nwis/util/gwckhuc)

Option 4, the gwckhuc routine, retrieves Watershed Hydrologic Unit Boundary Codes and Names for all US states, and displays this information at the users terminal. The user may select hydrologic units by code or by name, and may further restrict retrieval by specifying Country and State in the selection criteria.

To retrieve Hydrologic Unit Code (HUC) information, select Option 4 from the Query Support Files Menu; the following menu will appear:

```

Hydrologic Unit Name and Code Retrieval Routine

Options for Retrieving Hydrologic Unit Name or Code:

  1 -- Retrieve/Select a Hydrologic Unit by Code
  2 -- Retrieve/Select a Hydrologic Unit by Name

  3 -- Select a Country and State (no state will list all matches)

  0 -- Quit

What do you want to do (0-3)?

```

Hydrologic Unit Code information may be selected by **Unit Code** by selecting “1” from the menu. Hydrologic Unit Codes are currently defined by 2-, 4-, 6-, or 8-numerical character codes. The 2-character codes define Region (most general description); 4-character code defines subregion; 6-character code defines accounting units, and the 8-character code defines cataloging unit (most specific description). The user may specify 1 to 8 characters; all codes beginning with the entered characters will be displayed to the users terminal screen. Entry of a 1-character code will result in the most general selection of Hydrologic Unit codes and the greatest number of codes displayed; entry of an 8-character code will result in the selection of a specific unit and display only 1 unit. For example, if “190604” is entered as the Unit Code, the following will be displayed:

```

What do you want to do (0-3)? 1

Enter hydrologic unit code: 190604

HYDROLOGIC
UNIT CODE      NAME
190604         Prudhoe Bay
19060401       Kuparuk River
19060402       Sagavanirktok River
19060403       Mikkelsen Bay
    
```

Hydrologic Unit Code information may be selected by Unit Name by selecting “2” from the menu. Enter either the specific Hydrologic Unit name or partial Hydrologic Unit name. Typing in the beginning string of characters for Hydrologic Unit name will result in the display of all Hydrologic Units that begin with those characters. For example, typing in “des” will result in the following list of Hydrologic Unit Codes and their description:

```

What do you want to do (0-3)? 2

Enter hydrologic unit name: des

HYDROLOGIC
UNIT CODE      NAME
071000         Des Moines
07100001       Des Moines Headwaters
07120004       Des Plaines
09010002       Des Lacs
17110016       Deschutes
    
```

The user can restrict Hydrologic Unit Code selection by Country and State by selecting “3” from the menu. Enter the Country/State codes at the prompts. Once this has been entered all subsequent retrievals of hydrologic unit codes or names while still in the program will be restricted to hydrologic units within the entered state. If no codes or names are valid for the state, the program will display a warning to that effect. For example, 17110016 is a HUC for Washington State. If the state code for Wyoming is

entered using option 3 on this menu, the following will occur if 17110016 is entered as a HUC:

```
What do you want to do (0-3)? 3

Enter 2-character country code (<CR> = none): us

Enter 2-character state code (<CR> = none): 56

Options for Retrieving Hydrologic Unit Name or Code (US State: 56:

    1 -- Retrieve/Select a Hydrologic Unit by Code
    2 -- Retrieve/Select a Hydrologic Unit by Name
    3 -- Select a Country and State (no state will list all matches)
    0 -- Quit

What do you want to do (0-3)? 1

Enter hydrologic unit code: 17110016

No such Hydrologic Unit Code for this State.
```

To restore selection of all hydrologic unit codes or names, select “#” from the menu, and type in a carriage return (<CR> = none).

To exit the program, select “0” from the menu.

13.5 Option 5 – List Country/State/County (FIPS) Information by Code or Name **(/usr/opt/nwis/util/gwckfips)**

Standardized codes for Countries, States, and Counties have been established by the Federal Information Processing Standards (FIPS). These codes are stored within the NWIS database, along with other descriptive information such as altitude, latitude, and longitude ranges. Since these codes are terse, by their nature, and do not always convey an intuitive meaning, this utility is provided to translate codes to their intended meaning.

Option 5, the gwckfips routine, is used to browse the FIPS Code File (FIPSFIL) and retrieve codes and names for Countries, States, and Counties.

To retrieve FIPS information, select Option 5 from the Query Support Files Menu; the following menu will appear:

Country/State/County Name and Code Retrieval Routine**Options for Retrieving Country, State, or County Name or Code:**

- 1 -- Retrieve/Select a Country by Code
- 2 -- Retrieve/Select a Country by Name
- 3 -- Retrieve/Select a US State by Code
- 4 -- Retrieve/Select a US State by Name
- 5 -- Retrieve/Select a US State by Abbreviation
- 6 -- Retrieve/Select a US County by Code
- 7 -- Retrieve/Select a US County by Name

- 0 - Quit

Country, State, and County names may be selected by their FIPS **Codes** by selecting option 1, 3, or 6, respectively, from the menu. Enter the 2 alpha character code for countries (US for United States is the assumed default for country code), 2-digit number for states, and 3-digit number for counties at the prompt.

- Country Code (1) – Country Code and Country Name will be displayed at the users terminal. If a country code other than the default (US) is selected, this country code will be displayed in the descriptions of Options 4 – 7 in the menu. To reset the selection, go back to option 1 or 2 to enter the desired default country code. For example, if Canada is selected:

What do you want to do (0-7)? 1**Enter 2-character country code (<CR> = US): cn****COUNTRY CODE: CN COUNTRY NAME: CANADA****Options for Retrieving Country, State, or County Name or Code:**

- 1 -- Retrieve/Select a Country by Code
- 2 -- Retrieve/Select a Country by Name
- 3 -- Retrieve/Select a CN State by Code
- 4 -- Retrieve/Select a CN State by Name
- 5 -- Retrieve/Select a CN State by Abbreviation
- 6 -- Retrieve/Select a CN County by Code
- 7 -- Retrieve/Select a CN County by Name

- 0 - Quit

- State Code (3) – Country Code, Country Name, State Code, State Name, and State Abbreviation will be displayed at the users terminal. If a state within a country other than US, which is the default country, is desired, the country will have to be selected before this option is selected. Once a state is selected it becomes the default state for counties and is displayed on the menu.

```

What do you want to do (0-7)? 3

Enter 2-character state code: 56

COUNTRY CODE:   US           COUNTRY NAME:   UNITED STATES OF AMERICA
STATE CODE:     56           STATE NAME:     WYOMING      STATE ABBREV: WY
    
```

- County Code (6) – Country Code, Country Name, State Code, State Name, State Abbreviation, County Code, and County Name will be displayed at the users terminal. If Country and State have not been selected yet, the country is defaulted to US, and the user will be prompted to enter the state name and then the county code.

```

What do you want to do (0-7)? 6

Enter 2-character state code: 56

Enter 3-character county code: 001

COUNTRY CODE:   US           COUNTRY NAME:   UNITED STATES OF AMERICA
STATE CODE:     56           STATE NAME:     WYOMING      STATE ABBREV: WY
COUNTY CODE:   001         COUNTY NAME:    ALBANY
    
```

Country, State, and County FIPS codes may be selected by their **Name** by selecting option 2, 4, or 7, respectively, from the menu. Enter the entire name for the Country, State, and/or County at the prompt. Partial names may be entered, and all Countries, States, or Counties that begin with that string will be displayed, but further processing may not work correctly because a single country is required to get the state information and a single state is required to get the county information. These options work just as options 1, 3, and 6, except the user needs to type in the Country, State, or County Name.

State information may be selected by their FIPS abbreviation by selecting option 5 from the menu. Enter the FIPS State Abbreviation. Country Code, Country Name, State Code, State Name, and State Abbreviation will be displayed.

```

What do you want to do (0-7)? 5

Enter 2-character state abbreviation: ma

COUNTRY CODE:   US           COUNTRY NAME:   UNITED STATES OF AMERICA
STATE CODE:     25           STATE NAME:     MASSACHUSETTS  STATE
ABBREV: MA
    
```

Type in a “0” to exit this utility.

13.6 Option 6 – List Country/State/County with Geographical Information by Code

(/usr/opt/nwis/util/gwstcty)

Option 6, the gwstcty routine, interacts with the FIPSFIL, and is used to retrieve a tabular list of state names, state abbreviations, state codes, minimum and maximum latitudes and longitudes, and minimum and maximum altitudes (if available) in various formats and configurations.

Retrieval and output specifications for all of the utilities are entered at prompts for each of the utilities before the utility is run:

- Output may be run in the background or interactively at the users terminal
- Output may be directed either to the users terminal (default) or to a user specified file. A carriage return without entering a file name will result in the information being displayed at the screen. If the list of information is displayed at the users terminal

To retrieve Geographical information, select Option 6 from the Query Support Files menu; the following menu will appear:

```
Country/State/County Info Retrieval Routine
```

```
Options for Checking Country, State, and County Data:
```

- ```
1 -- Retrieve Information for One State, By Country and State Codes
2 -- Retrieve All States for One Country, By Country Code
3 -- Retrieve All States for All Countries
4 -- Retrieve One County, By Country, State, and County Codes
5 -- Retrieve All Counties for One State, By Country and State Code
6 -- Retrieve All Counties for All States, By Country Code
7 -- Retrieve All Counties for All Countries and All States

0 -- Quit
```

```
What do you want to do (0-7)?
```

To retrieve state information, select Option 1, 2, or 3 from the menu. These result in the retrieval of Country Name, Country Code, State Name, Abbreviation, and Code, Latitude and Longitude ranges and the date these data were last updated for one state, all states in one country, and all states in all countries, respectively. States, Counties, or Latitude/Longitude ranges may not be available for countries or outside of the US. An example of a retrieval of state information for one state is shown below:

```
What do you want to do (0-7)? 1
```

```
Enter name for output file (<CR> = Output to Screen):
```

```
Enter 2-character country code (<CR> = US):
```

```
Enter 2-digit state code: 56
```

```
COUNTRY NAME: UNITED STATES OF AMERICA CODE: US
STATE NAME: WYOMING MIN LAT: 405927
STATE ABBR: WY MAX LAT: 450029
STATE CODE: 56 MIN LONG: 1040257
LAST UPDATE: 19860915 MAX LONG: 1110341
```

To retrieve **county** level information, select Options 4 – 7 from the menu. These result in the retrieval of Country Name, Country Code, State Name, Abbreviation, and Code, County Name and Code, Latitude and Longitude ranges and the date these data were last updated for one or all counties by state and/or country. States, Counties, or Latitude/Longitude ranges may not be available for countries, states or counties outside of the US. An example of a retrieval of county information for one county is shown below:

```
What do you want to do (0-7)? 4
```

```
Enter name for output file (<CR> = Output to Screen):
```

```
Enter 2-character country code (<CR> = US):
```

```
Enter 2-digit state code: 56
```

```
Enter 3-digit county code: 017
```

```
COUNTRY NAME: UNITED STATES OF AMERICA CODE: US
STATE NAME: WYOMING CODE: 56
STATE ABBR: WY MIN LAT: 432713
COUNTY NAME: HOT SPRINGS MAX LAT: 440454
COUNTY CODE: 017 MIN LONG: 1073504
LAST UPDATE: 19831108 MAX LONG: 1091822
```

Type "0" to exit the utility.

## 13.7 Option 7 – Dump Parameter Code Dictionary without Precision Codes

(/usr/opt/nwis/bin/qwpcdlist)

Option 3, the qwpcdlist routine, retrieves and lists the entire Parameter Code Dictionary. After the dictionary has been read, it can be sorted in any combination of parameter code, long name, table order number, and short name. Run times for this utility can be very long because of the size of the Parameter Code Dictionary. The user may run this utility either interactively or in the background.

To dump the Parameter Code Dictionary, select option 7 from the Query Support Files menu. The following will be displayed on the users monitor:

```
QW Parameter Code List Retrieval Routine

Do you want to run the retrieval in the background? n

READING PARAMETER CODE DICTIONARY ... PLEASE WAIT.

A -- PARAMETER CODE C -- TABLE ORDER NUMBER
B -- LONG NAME D -- SHORT NAME

YOU MAY SORT THE RECORDS ON ANY COMBINATION OF THE ABOVE FIELDS
THE FIRST FIELD WILL BE THE PRIMARY SORT,
THE NEXT WILL BE SECONDARY SORT 1, ETC....
PLEASE ENTER THE DESIRED SORT CODES ON ONE LINE,
WITH NO INTERVENING BLANKS
```

Prior to running the sort, the user has the option of outputting the long name or not. Including the long name in the printout will increase its size significantly and may want to be omitted if the output file qwpcdlist is to be printed.

## 13.8 Option 8 – Dump Parameter Code Dictionary with Precision Codes

(/usr/opt/nwis/bin/qwpcddump)

Option 8, the qwpcddump routine, retrieves and lists selected columns of the entire Parameter Code Dictionary. There are two output options, the long name or the short name. The long name output includes the parameter code, the short name, the table order, 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 precision.

To dump the Parameter Code Dictionary with Precision Codes, select option 8 from the Query Support Files menu. The following will be displayed on the users monitor:

```

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)

```

If the user wants to generate a list in the “long name” format, either type a carriage return “<CR>” or “Y”. To list in the “short name” format, type “N”.

Default precision codes from the Parameter Code Dictionary will be added for values that are entered into the database with no precision code specified. For each parameter code in the Parameter Code Dictionary, the default precision code is stored for a range of expected values. The Parameter Code Dictionary contains one ten-element integer array (PROUND) that contains the default precision 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                                    |
| >=100000.0              | 3                                    |
| Max Decimal Places      | 1                                    |

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 create an output file called pcdump. This file is 300 to 400 UNIX records, depending on the option selected.