

NATIONAL WATER INFORMATION SYSTEM USER'S MANUAL  
VOLUME 2, CHAPTER 4. GROUND-WATER SITE INVENTORY SYSTEM

Edited by Sharon B. Mathey

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# CONVERSION FACTORS

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
foot (ft)	0.3048	meter (m)
foot squared per day (ft <sup>2</sup> /d)	0.0929	meter squared per day (m <sup>2</sup> /d)
cubic foot per second (ft <sup>3</sup> /s)	0.02832	cubic meter per second (m <sup>3</sup> /s)
gallon per minute (gal/min)	0.0630	liter per second (L/s)
million gallon per day (Mgal/d)	0.0438	cubic meter per second (m <sup>3</sup> /s)
inch (in.)	25.40	millimeter (mm)
inch per year (in/yr)	25.40	millimeter per year (mm/yr)
mile (mi)	1.609	kilometer (km)
square mile (mi <sup>2</sup> )	2.590	square kilometer (km <sup>2</sup> )

Temperature in degrees Fahrenheit (°C) as follows:

$$^{\circ}\text{F} = 1.8 \times ^{\circ}\text{C} + 32$$

# NATIONAL WATER INFORMATION SYSTEM USER'S MANUAL

## VOLUME 2, CHAPTER 4. GROUND-WATER SITE INVENTORY SYSTEM

### ABSTRACT

The Ground-Water Site Inventory (GWSI) System is a ground-water data storage and retrieval system that is part of the National Water Information System developed by the U.S. Geological Survey. The National Water Information System is a distributed water data base in which data can be processed over a network of minicomputers at U.S. Geological Survey offices throughout the United States. This system comprises the Automated Data Processing System, the GWSI System, the Quality of Water System, and the Water-Use Data System.

The Ground-Water Site Inventory System provides for entering new sites, updating existing sites within the local data base, and updating the Water Data Storage and Retrieval System (WATSTORE), which is the national data base. In addition, the GWSI System provides for retrieving and displaying ground-water and surface-water data stored in the local data base. Finally, the GWSI System provides for routine maintenance of the local and national data files. This manual contains instructions for users of the System and discusses the general operating procedures for the programs found within the main menu.

### 1 INTRODUCTION

The National Water Information System (NWIS) documentation comprises three volumes to describe the use and operation of NWIS software: Volume 1, Administrator's Manual; Volume 2, User's Manual; and Volume 3, Programmer's Manual. Chapter 4 in each of these manuals pertains to Ground-Water Site Inventory operations.

This section is an introduction to the Ground-Water Site Inventory User's Manual. It presents a management overview, description of the Ground-Water Site Inventory (GWSI) System, purpose of the manual, an acknowledgment of personnel who contributed to the completion of this manual, and a list of suggested references.

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\* Use of firm names and trade names in this manual is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.



## 1.1 Management Overview

The U.S. Geological Survey investigates the occurrence, quantity, quality, distribution, and movement of the surface and underground water resources of the Nation. Hydrologic data collected during investigations of our resources provide valuable information that can be used for practical management of America's water. Easy access to hydrologic data facilitates the management process.

The GWSI is part of the NWIS, which is a data storage and retrieval system for hydrologic data collected by the U.S. Geological Survey and its cooperators. The Automated Data Processing System (ADAPS), Quality of Water (QW) System, and Water-Use Data System (WUSE) comprise the other parts of the NWIS.

## 1.2 Description of the GWSI

The storage of ground-water data has evolved over approximately 20 years from hand-written field notes stored in file cabinets at the District level to a distributed data base where data can be processed over a network of 49 minicomputers at U.S. Geological Survey offices throughout the United States. Digital storage of data has developed from a punch-card data system in the late 1960's, to a national data base in the mid 1970's, to a distributed data base in the mid-1980's. Turn-around time for data storage and retrieval procedures has dropped during this period from several days to minutes. Luckey (1987) gives a more detailed description of the ground-water data base.

The Ground-Water Site Inventory is currently an interactive system on the U.S. Geological Survey's Prime minicomputer that maintains a dialog with the GWSI user through menus and prompts. The GWSI provides a vehicle to enter new sites and update existing sites within the local data base and to update the National Water Data Storage and Retrieval System (WATSTORE) on the Amdahl computer at U.S. Geological Survey Headquarters. The GWSI also provides a vehicle to retrieve and display, in several useful formats, ground-water and surface-water data that are stored in the local data base. Finally, the GWSI provides for routine maintenance of the local and national data files.

The Ground-Water Site Inventory contains descriptive elements about sites where ground water is accessed either from wells, test holes, springs, tunnels, drains, ponds or other excavations. There are approximately 300 components that make up the descriptive elements of the GWSI. These components are stored in one general data file called the Site File, which contains site information common to all members of the NWIS, and eight GWSI data files that contain ground-water-related information. The Site File primarily contains identification parameters, physical and political descriptors, and data-collection methods at the sites. The eight GWSI data files contain well-construction, ground-water level, ground-water discharge, miscellaneous, geohydrologic, observation-well heading, hydraulic, and State water-use data.

Ground-water data manipulations are initiated through 13 GWSI modules accessed through the GWSI Main Menu and Utilities submenu. The GWSI Main Menu is normally accessed by typing the system command "GWSI" at the user's terminal. The GWSI provides two programs for entering field data into files that are used to update the local and national data base; the Ground-Water Input program and the Screen Entry Input and Update program. Another data-entry program, the System 2000 GWSI Convert Program, is accessed through the Utilities submenu, and is used to prepare commercially transcribed data, which is in System 2000 format, for updating the local and national data base. Files created by the entry programs are surveyed by the Ground-Water Edit program to ensure that entered data conforms to expected criteria. Once the data pass the edit phase, they are entered into the data bases using the Ground-Water Update program. Data may be retrieved from the local data base through the Ground-Water Retrieval/Tabling program and displayed in graphical form using the Ground-Water Hydrograph program.

Updating the national data base, maintenance of the local data files, and other GWSI administrative tasks, are accomplished through the GWSI System Menu. Both the national Header and national GWSI files are updated through this menu. Data Dictionary modifications and Site ID changes and deletes are other options on the GWSI System Menu. A complete discussion of the updating and maintenance functions of the GWSI System Menu is presented in the NWIS Administrator's Manual (Vol. 1, Chapter 4, in preparation).

### 1.3 Purpose of the Manual

The purpose of this User's Manual is to document the numerous operating modules of the GWSI and provide additional operating instructions to the user. The documentation contained in the User's Manual is provided in the WATSTORE>GW>DOC directory on the Prime minicomputer in both ASCII and WordMARC formats.

The GWSI User's Manual describes the primary user functions found in the GWSI Main Menu and submenus and is divided into 14 sections as listed below.

1. Abstract and Introduction
2. Ground-Water Site Inventory Coding Instructions
3. Ground-Water Site Inventory Menus
4. Ground-Water Input Program
5. Screen Entry Input and Update Program
6. Ground-Water Edit Program
7. Ground-Water Update Program
8. Ground-Water Retrieval/Tabling Program
9. Ground-Water Hydrograph Program
10. Local Translation Program
11. System 2000 GWSI Convert Program
12. Ground-Water and Water-Quality Inventory
13. Query Support Program
14. Error Messages

The **Ground-Water Site Inventory Coding Instructions** (sec. 2 of this manual) describe every data component contained in the Site File and in the eight ground-water data files. Component descriptions consist of the component name, component number, the format of the entry, and a brief explanation of what the component is and how it is entered. MANDATORY components are identified. Several components are limited in response to a list of acceptable names or terms; acceptable responses are tabulated in the manual for those components.

The **Ground-Water Site Inventory Menus** (sec. 3) and their elements are described. Most of the nationally supported GWSI software that is used to submit and retrieve data are accessed from the Main Menu. There are currently 10 data entry and retrieval selections on the GWSI Main Menu, two submenus (Utilities and Documentation), access to a District-specific Local Menu, and two exit modes from the Main Menu. The Utilities submenu contains access to four data utility programs and two exit modes. The Documentation submenu contains nine documentation print options and two exit modes.

The **Ground-Water Input Program** (sec. 4) is the first of two modules in the GWSI Main Menu used to prepare raw ground-water data for editing and updating. While both modules create card images in user-specified files ultimately used for updating national and local data bases, neither module DIRECTLY updates data bases. The Ground-Water Input program is an interactive program that prompts the user with a list of GWSI components; it stores user responses along with the required component numbers, delimiters and other program-generated elements in a user-specified output file.

The **Screen Entry Input and Update Program** (sec. 5) is the second module used to prepare ground-water data for editing and updating. Screen Entry Input paints the terminal screen with a "form" to be filled in by the user from the terminal keyboard; it stores user responses along with the required component numbers, delimiters and other program-generated elements in a user-specified output file.

The **Ground-Water Edit Program** (sec. 6) performs edit validation and logical data checks on the output files created by the Ground-Water Input, Screen Input, and System 2000 GWSI Convert programs. Edit checks may be initiated for interactive processing or batch processing; both of these modes are discussed in section 6.

The **Ground-Water Update Program** (sec. 7) is used to update the NWIS Site File and the eight GW data files on the local data base after the data files have successfully passed the edit check. It is also used to prepare data files to be submitted for updating the national data base, which resides on the Amdahl computer at U.S. Geological Survey Headquarters in Reston, Virginia. This program is also available in either interactive or batch modes.

The **Ground-Water Retrieval and Tabling Program** (sec. 8) provides access to the data stored in the local data base. Retrieved data may be obtained in several formats: two types of general data tables, four types of water-level tables, and as a data file that can be used as input into other programs. A list of all component numbers and their descriptions is included in this section.

The **Ground-Water Hydrograph Program** (sec. 9) provides graphical representation of ground-water levels. Data are retrieved using the Retrieval and Tabling Program and plotted by various graphics output devices, which are defined by each District.

The **Ground-Water Local Translation Program** (sec. 10), which is initiated within the Utilities submenu, is an interactive procedure that translates the local number of a site or sites into the agency code and station identification number of the site(s).

The **System 2000 GWSI Convert Program**, (sec. 11), which is initiated within the Utilities submenu, is used to convert GWSI 80-character records formatted for input to System 2000, to the format required for input into the NWIS/GWSI edit procedure. These records are often prepared by commercial transcribers.

The **Ground-Water and Water-Quality Inventory** module (sec. 12), which is initiated within the Utilities submenu, retrieves sites by agency and site ID listed in a user-specified input file and reports the number of records in the Site File, the eight ground-water data files, and the water-quality data file for that site.

The **Query Support Files** procedure (sec. 13), which is initiated within the Utilities submenu, displays a menu that accesses specified site records, checks and lists the Parameter Code Dictionary, accesses the Geologic Unit Code file and the FIPS Code file, and lists State and county data.

**Error Messages** (sec. 14) lists the code number and description of all error messages that occur during edit or update procedures.

Most of the GWSI modules are user-friendly; that is, the user is led through the basic modules by a series of prompts and questions. In many instances, **help** is provided when the user types in a question mark (?) in response to a prompt that is not clear to them. Additional documentation is available either from the User's Manual or documentation files contained within the GWSI system.

#### 1.4. Acknowledgments

In addition to the authors of the programs within the GWSI System, acknowledgment is given to several people who contributed by testing software, and preparing and reviewing documentation. These personnel include:

Charles O. Morgan  
Ruth E. Thornberg  
Diane M. Stephens  
Timothy J. McElhone  
Gail L. Keeter  
Charles A. Collins

#### 1.5. Selected References

Baker, C.H., Jr., and Foulk, D.G., 1975, WATSTORE user's guide, v. 2, ground-water file: U.S. Geological Survey Open-File Report 75-589.

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VOLUME 2. USER'S MANUAL

Chapter 4. Ground-Water Site Inventory System

Section 2. Ground-Water Site-Inventory Coding Instructions

Written by  
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January 1990

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END OF TABLE

## SECTION 2. GROUND-WATER SITE INVENTORY CODING INSTRUCTIONS

There are nine sections in this coding manual, one for each of the data files in the GWSI System. The Site File is shared by the Automated Data Processing System (ADAPS), the Quality of Water System, and the GWSI System. Most of the components defined in this coding manual were originally defined in the WATSTORE User's Guide, Volume 2, Ground-Water File, Section B (Baker and Foulk, 1975).

Each section of this manual contains several subsections defining the individual components stored in each of the files. Each subsection includes the: (a) component description, (b) component variable name used by the software, (c) component number, (d) length of each component, and (e) the component's position in the file. For example:

LAT-LONG ACCURACY  
(SCORAC/C11 - CHAR X in position 85)

where:

LAT-LONG ACCURACY	= Description
SCORAC	= Variable name
C11	= Component number
CHAR X	= Length
position 85	= Position in file

Primary Key (PK) is the group of components used to uniquely define the record in the data base; for the Site File the primary key is the combination of Source Agency Code (C4) and Site Identification Number (C1). Also, some components are secondary keys (SK), which facilitate retrieving data from the data base. Components that are commonly used for retrieving data are secondary keys.

## 1. SITE FILE COMPONENTS

The Site File stores location and general information about ground-water, surface-water, and meteorological sites. The Site File record is 550 characters long and the first 20 characters define the primary key; the source agency code and primary are mandatory. The primary key (PK) uniquely identifies each individual site in the data base. The secondary keys (SK) facilitate retrieving data on the most commonly used fields.

The C700 series are ground-water components, the C800 series are primarily surface-water components and also components converted from the WATSTORE Header file, and the C900 series are redefinitions of existing fields. Component numbers greater than C700 do not exist in the WATSTORE System 2000 GWSI data base system.

<u>Sub-section</u>	<u>Component Name</u>	<u>Description</u>
1.1	SAGNCY	-- Source agency code (C4) (PK C4+C1) MANDATORY
1.2	SID	-- Site identification number (C1) MANDATORY
1.3	SNAME	-- Station name (SK1) (C12) MANDATORY
1.4	SLAT	-- Latitude (SK8) (C9) MANDATORY
1.5	SLONG	-- Longitude (SK9) (C10) MANDATORY
1.6	SCORAC	-- Lat-long coordinate accuracy (C11)
1.7	SDIST	-- District code (C6) MANDATORY
1.8	SSTATE	-- State code (C7) (SK7 combined C7+C8) MANDATORY
1.9	SCNTY	-- County code (C8) (See above) MANDATORY
1.10	SLNDNT	-- Land-net location (C13)
1.11	SMAP	-- Name of location map (C14)
1.12	SMSCAL	-- Scale of location map (C15)
1.13	SDATUM	-- Gage or land-surface datum (C16)
1.14	SALTM	-- Method altitude determined (C17)
1.15	SALTAC	-- Altitude accuracy code (C18)
1.16	SHUC	-- Hydrologic unit code (SK5) (C20)
1.17	SBASIN	-- Drainage basin code (SK3) (C801)
1.18	STOPO	-- Topographic setting code (C19)
1.19	STYPE	-- Station-type codes (20 values) (C802) MANDATORY
1.20	SUSE	-- Agency use of site code (SK2) (C803) MANDATORY
1.21	SDATA	-- Flags-type of data collected (30 values) (C804)
1.22	SINST	-- Flags-instruments at site (30 values) (C805)
1.23	SREMRK	-- Remarks (C806)
1.24	SINVD	-- Date site established/inventoried (C711)
1.25	SCRDAT	-- Date record created (C303)

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1.26  SUPDAT  -- Date of last update (C40)
1.27  SBASEQ  -- Base discharge (C807)
1.28  SAREA   -- Drainage area (C808)
1.29  SCNTRB  -- Contributing drainage area (C809)
1.30  SCSGUE  -- Crest-stage upstream elevation (C810)
1.31  SCSGDE  -- Crest-stage downstream elevation (C811)
1.32  SGHPZF  -- Gage height of zero flow (C812)
1.33  SMGTOF  -- Mean Greenwich time offset (C813)
1.34  SCLASS  -- Data Reliability code (C3) MANDATORY
1.35  SGWFLE  -- Data-other GW files (20 values) (C712)
1.36  SGWTYP  -- Type of ground-water site (C2) MANDATORY FOR
              GW
1.37  SCONDT  -- Date well constructed (C21)
1.38  SUSE1   -- Primary use of site (SK11) (C23) MANDATORY
              FOR GW SITES except Springs
1.39  SUSE2   -- Secondary use of site (C301)
1.40  SUSE3   -- Tertiary use of site (C302)
1.41  SWUSE1  -- Primary use of water (SK6) (C24)
1.42  SWUSE2  -- Secondary use of water (C25)
1.43  SWUSE3  -- Tertiary use of water (C26)
1.44  SAQTYP  -- Aquifer-type code (C713)
1.45  SAQUFR  -- Aquifer code (SK4) (C714)
1.46  SWDEPT  -- Well depth (C28)
1.47  SHDEPT  -- Hole depth (C27)
1.48  SWDSRC  -- Source-of-depth data (C29)
1.49  SPRNO   -- Project number (SK10) (C5)
1.50  SINVWL  -- Inventory water level (C30)
1.51  SIWLDT  -- Date of water-level measurement (C31)
              MANDATORY FOR WL
1.52  SIWLMT  -- Method water level measured (C34)
1.53  SIWLST  -- Site status at water-level measurement (C37)
1.54  SIWLSC  -- Source of water-level data (C33)
1.55  SLSTFL  -- Local standard time flag (C814)
1.56  SLOCSN  -- Station locator sequence number
1.57  SRES2   -- Reserved for District use

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### 1.1 SOURCE AGENCY CODE

(SAGNCY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reports the data. Enter, left-justified, the appropriate code. The reporting agency is mandatory and a part of the primary MIDAS key. Data for a site will not be stored if this field is blank.

## 1.2 SITE IDENTIFICATION NUMBER

(SID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

For ground-water sites, this is a 15-digit identification number assigned to the site, and contains no blanks or alphabetic characters. It is used primarily as an internal control number within the computer files. Although the site identification number is formed initially from the latitude and longitude of a point believed to represent the location of the site, the number is an IDENTIFIER and not a LOCATOR. The site identification number is a mandatory entry. Data will not be stored for the site if the identification number is missing or invalid.

It cannot be too strongly emphasized that the site identification number, once assigned, is used as a pure number and HAS NO LOCATIONAL SIGNIFICANCE, beyond representing the best location available at the time the site ID was assigned. The latitude and longitude fields should be used for location.

The site identification number is assigned as follows:  
Plot the site on the best available map as accurately as possible.

### IF

### PLOT

a tunnel	the mouth of the tunnel
a drain	discharge point of the drain
a pond or multiple well field	center of the pond or well field

Using an appropriate scaling aid, determine the latitude and longitude of the point on the map. The location of this point is always scaled to the nearest second of latitude and longitude, even if there is doubt about the exact location of the site or the accuracy of the map.

The first 6 digits of the identification number are the value of latitude, the 7th through 13th digits are the value of longitude, and the 14th and 15th digits are a sequence number used to distinguish between sites at the same location.

Use leading zeros if the value of latitude is less than 10 degrees, the value of longitude is less than 100 degrees, or the sequence number is less than 10.

For surface-water sites, an 8- to 14-digit downstream order number is usually used for onstream sites where records are systematically collected. Examples of sites that meet these criteria are:

- Regular surface-water stations
- Partial record (surface-water and water-quality) stations
- Regular water-quality sites
- Spring stations where discharge measurements are made

When downstream order is used, the first 8 to 14 positions of the field must contain digits. The remaining positions are blank.

A latitude-longitude sequence number identifier may be assigned to onstream sites where there is difficulty in assigning a meaningful downstream order number, or where data are obtained intermittently. In this case, positions 1-6 are coded with latitude, 7-13 are coded with longitude, and 14-15 are coded with a sequence number. Examples of surface-water sites that meet these criteria are:

- Water-quality grab sample sites
- Surface-water sites at which miscellaneous measurements are made
- Sites within large open-water areas (lakes, reservoirs, bays)

### 1.3 LOCAL NUMBER or STATION NAME

Ground-water site (SNAME/C12 - MANDATORY SECONDARY-KEY CHAR X(24) in 21-44); Surface-water site (SNAME/C900 - MANDATORY SECONDARY-KEY CHAR X(50) in positions 21-70):

For ground-water sites, if a District well-numbering system is used, enter the system's number for the site here. The local number should be entered as it is to be printed; include all edit characters to be used in printing the local number. Note: This is a text field.

For surface-water stations, enter the station name and location or local identifier. This field contains 50 characters, including spaces and punctuation. It should take a form similar to:

PENDLETON HILL BK NR LITTLETON FALLS PA

Meaningful and approved abbreviations may be used.



**1.4 LATITUDE**

(SLAT/C9 - MANDATORY SECONDARY-KEY CHAR X(7) in positions 71-77):

Enter the best available value for the latitude of the site in degrees, minutes, and seconds. Use leading zeros if needed. The value of latitude should be updated as more precise information becomes available. Six digits must be coded. If latitude of the site is south of the Equator, precede the numbers with a minus sign (-). (The first position of the field is reserved for the sign, if required.) Latitude is a mandatory entry. Data will not be stored for the site if the field is blank.

**1.5 LONGITUDE**

(SLONG/C10 - MANDATORY SECONDARY-KEY CHAR X(8) in positions 78-85):

Enter the best available value for the longitude of the site, in degrees, minutes, and seconds. Use leading zeros if needed. The value of longitude should be updated as more precise information becomes available. Seven digits must be coded. If longitude of the site is east of the Greenwich Meridian, precede the numbers with a minus sign (-). (The first position of the field is reserved for the sign, if required.)

The values of latitude and longitude entered in these fields are LOCATORS: They should represent the best available information about the location of the site. The location should be entered as precisely as it is known, and the accuracy of the location should be indicated by a suitable entry in the next field. Longitude is a mandatory entry; data will not be stored for the site if this field is blank.

**1.6 LAT-LONG COORDINATE ACCURACY**

(SCORAC/C11 - CHAR X in position 86):

Enter the appropriate code on the schedule to indicate the accuracy of the latitude-longitude values. The codes and their meanings are:

- S - The measurement is accurate to  $\pm$  1 second.
- F - The measurement is accurate to  $\pm$  5 seconds.
- T - The measurement is accurate to  $\pm$  10 seconds.
- M - The measurement is accurate to  $\pm$  1 minute.

No value (blank field) indicates that the accuracy is unknown and is, therefore, assumed to be greater than 1 minute.

**1.7 DISTRICT CODE**

(SDIST/C6 - MANDATORY CHAR X(3) in positions 87-89):

Enter in the first two positions of the field, the District code identifying the WRD District that reported the data. If data are collected by a Subdistrict office, a one-character code assigned by the District may be entered in the third position to identify the Subdistrict office. The two-character district code is mandatory; data will not be stored for the site if this field is blank.

**1.8 STATE CODE**

(SSTATE/C7 - MANDATORY SECONDARY-KEY CHAR X(2) in positions 90-91):

Enter the FIPS numeric code for the State in which the site is located. State code is a mandatory entry (combined with SCNTY for secondary key). Include leading zero if appropriate; data will not be stored for the site if this field is blank.

**1.9 COUNTY CODE**

(SCNTY/C8 - MANDATORY SECONDARY-KEY CHAR X(3) in positions 92-94):

Enter the FIPS numeric code for the county or county equivalent in which the site is located. County code is a mandatory entry (combined with SSTATE for secondary key). Include leading and trailing zeros if appropriate; data will not be stored if this field is blank.

**1.10 LAND-NET LOCATION**

(SLNDNT/C13 - CHAR X(23) in positions 95-117):

Enter the legal description of the 10-acre tract in which the site is located, if applicable. The abbreviations NE, NW, SE, and SW are used for the quarter, quarter-quarter, and quarter-quarter-quarter. The smallest subdivision is listed first. Enter the appropriate code in the space. For "meridian", for example, 5th principal meridian = 5, Boise meridian = B.

**1.11 LOCATION MAP**

(SMAP/C14 - CHAR X(20) in positions 118-137):

Enter the name of the best available map on which the site can be located, preferably a USGS topographic quadrangle. If no topographic map is available for the area, a county highway map or similar map may be used.

**1.12 MAP SCALE**

(SMSCAL/C15 - CHAR X(7) in positions 138-144):

Enter the scale of the map identified in the previous entry, as follows: If the map scale is given as a ratio (1:24,000 1:62,500, and so forth) omit figure "1" and the colon, and enter the remaining number without the comma. If the scale is given in miles per inch, as on many county highway maps, convert the scale to a ratio (multiply miles per inch by 63,360) and proceed as above. A 7 1/2-minute quadrangle (1:24,000 scale) would be entered as 24000; a county or other map of 2 inches to the mile would be entered as 31680.

**1.13 ALTITUDE**

(SDATUM/C16 - CHAR X(8) in positions 145-152):

For ground-water sites, enter the altitude of the land surface at the site, in feet NGVD. For surface-water sites, enter the altitude of the floor of the gage house or the point of zero flow in the stream channel, in feet NGVD. Precision to two decimal places can be coded, if available. Altitudes below NGVD should be preceded by a minus sign (-).

**1.14 METHOD OF ALTITUDE DETERMINED**

(SALTMT/C17 - CHAR X in position 153):

Enter the appropriate code for the method used to determine the altitude. The codes and their meanings are:

- A - Altimeter
- L - Level or other surveying method
- M - Interpolated from topographic map

Failure to select one of these values (blank field) implies that the method is unknown.

**1.15 ALTITUDE ACCURACY**

(SALTAC/C18 - CHAR X(3) in positions 154-156):

Enter the accuracy of the altitude in terms of the possible error in feet. An accuracy of  $\pm 0.1$  foot would be entered as ".1". Spot elevations of wells shown on many topographic maps of western States are accurate to  $\pm 1$  foot. The "method of measurement" should be shown as M and the accuracy as 1. In general, the accuracy of altitudes interpolated from the contours on topographic maps is plus or minus one-half of the contour interval.

**1.16 HYDROLOGIC UNIT CODE**

(SHUC/C20 - SECONDARY-KEY CHAR X(8) in positions 157-164):

Enter the hydrologic unit code for the Office of Water Data Coordination (OWDC) cataloging unit in which the site is located. This eight-digit code consists of four parts:

- 1) Hydrographic region code
- 2) Subregion code designated by the Water Resources Council
- 3) Accounting unit within the National Water Data Network
- 4) Cataloging unit of the USGS's "Catalog of Information on Water Data."

State Hydrologic Unit maps delineating the hydrographic boundaries of these units are available from the following address:

USGS Map Sales  
Federal Center, Box 25286  
Denver, Colorado 80225.

If the site does not lie within a currently designated hydrologic unit (e.g., offshore wells), the eight-digit code 99999999 should be entered in this field.

**1.17 DRAINAGE BASIN CODE**

(SBASIN/C801 - SECONDARY-KEY CHAR X(2) in positions 173-174):

Enter a two-digit code that further subdivides the hydrologic unit code (C20). This two-digit code is defined by the District.

**1.18 TOPOGRAPHIC SETTING CODE**

(STOPO/C19 - CHAR X in position 175):

Enter the code that best describes the topographic setting in which the site is located. Topographic setting refers to the geomorphic features in the vicinity of the site. Allowable codes are:

- A - Alluvial fan
- B - Playa
- C - Stream channel
- D - Local depression
- E - Dunes
- F - Flat surface
- G - Flood plain
- H - Hilltop
- K - Sinkhole
- L - Lake, swamp, or marsh
- M - Mangrove swamp
- O - Offshore (estuary)
- P - Pediment
- S - Hillside (slope)
- T - Alluvial or marine terrace
- U - Undulating
- V - Valley flat (valleys of all sizes)
- W - Upland draw

Figure 1 (next page) is a diagrammatic sketch of the topographic features.

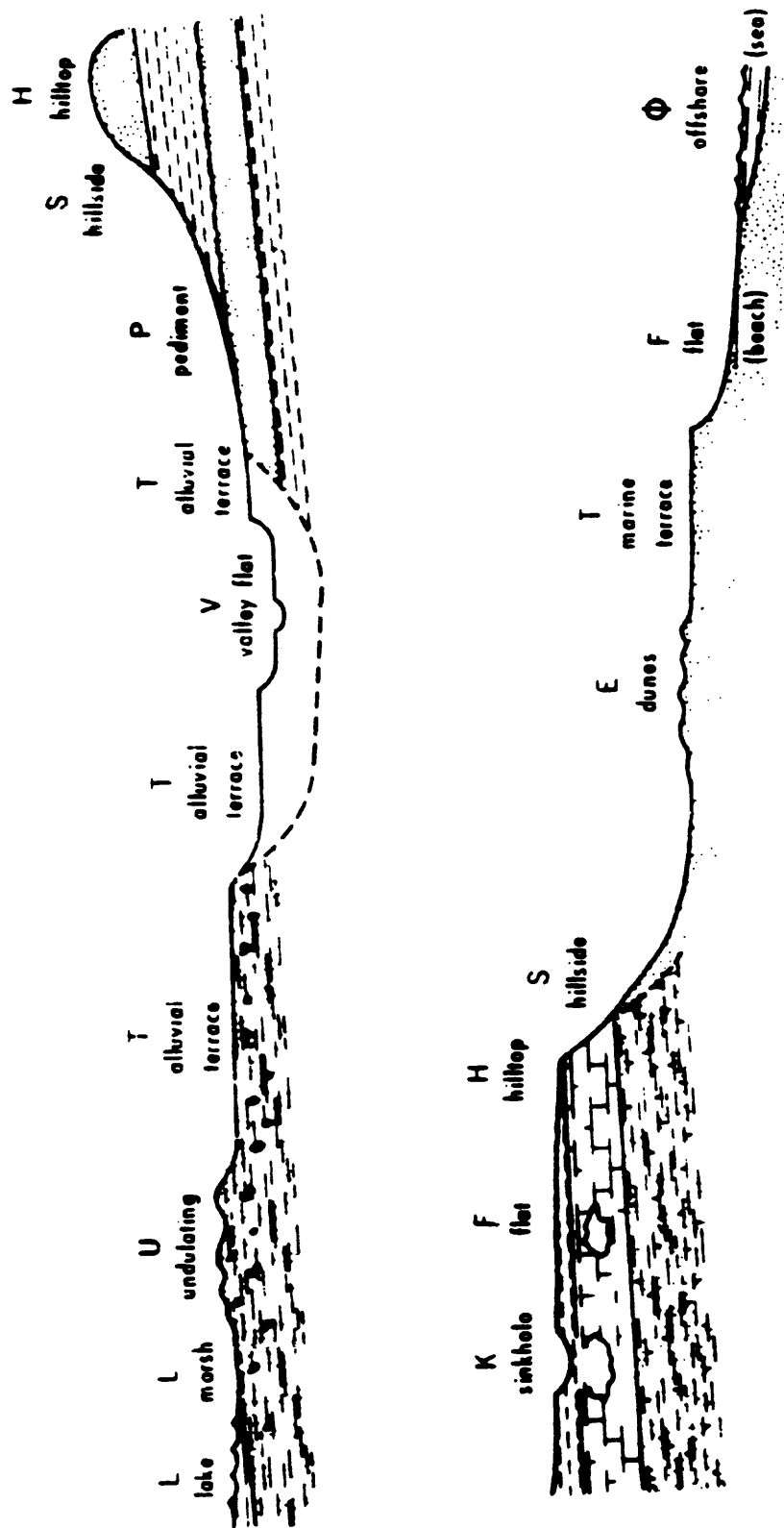


Figure 1. Diagrammatic sketch of topographic features

- (A) Alluvial fan refers to a low, outspread, relatively flat to gently sloping, mass of loose rock material; shaped like an open fan or a segment of a cone, deposited by a stream at a place where it issues from a narrow mountain valley upon a plain or broad valley.
- (B) Playa refers to a dried-up, vegetation-free, flat-floored area composed of thin, evenly stratified sheets of fine clay, silt or sand, and represents the bottom part of a shallow, completely closed or undrained desert lake basin in which water accumulates and is quickly evaporated, usually leaving deposits of soluble salts.
- (C) Stream channel refers to the bed in which a natural stream of water runs. It is the trench or depression washed or cut into the surface of the earth by the moving water that it periodically or continuously contains. This term includes washes, arroyos, and coulees.
- (D) A local depression is an area that has no external surface drainage. Some depressions, such as those in the High Plains, are only a few acres in extent, but others may cover a square mile. Do not use this designation for small 'interdune depressions' or those on an undulating surface of glacial drift (use undulating). Do not use for large closed basins, such as those on the Basin and Range province (use local features).
- (E) Dunes refers to mounds and ridges of windblown, or eolian, sand. This term should not be used for an isolated mound unless it has a rather extensive area and is of hydrologic significance to the site.
- (F) A flat surface may be part of a larger feature, such as an upland flat, mesa or plateau, coastal plain, lake plain, or pediment terrace and valley flat, which are special varieties of flat surfaces, and are classified separately.
- (G) Flood plain refers to the surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river in its existing regimen and covered with water when the river overflows its banks at times of high water.

- (H) A hilltop is the upper part of a hill or ridge above a well-defined break in slope. A site on the crest of an escarpment or top of a cuesta slope (see fig. 1) should be in this category. Use this category for hills of significant height (such as drumlins) above a generally flat area, but not for small "swells" a few feet high on an undulating surface such as a till plain or valley flat.
- (K) A sinkhole is a special type of depression that results from the dissolving of soluble rocks (salt, gypsum, limestone) and the subsequent collapse of the earth into the solution cavity. As such, it has special significance to the understanding of the hydrology in the vicinity of the site.
- (L) Lake refers to a body of inland water. However, this code also may be used for swampy or marshy areas where the ground may be saturated, or water may stand above the land surface for a significant period of time.
- (M) Mangrove swamp refers to a tropical or subtropical marine swamp characterized by abundant mangrove trees.
- (O) Offshore refers to a site along a coast or estuary that is continuously submerged.
- (P) Pediment refers to a plain of combined erosion and deposition that forms at the foot of a mountain range.
- (S) A hillside is the sloping side of a hill--that is, the area between a hilltop and valley flat. The important factor is the general aspect of the site. The steepness of the slope or height of the hill are not significant.
- (T) An alluvial or marine terrace is generally a flat surface usually parallel to, but elevated above, a stream valley or coast line. Characteristically, steep slopes or escarpments separate the terrace from an adjacent upland on one side, and a lowland (coast or valley) on the other. Due to the effects of erosion, the terrace surface may not be as smooth as a valley flat, and within the general terrace area there may be undulating areas of dune sand or hill slopes.



- (U) Undulating topography is characteristic of areas which have many small depressions and low mounds. An undulating surface is primarily a depositional feature, not an erosional one. The term should not be misused for areas that have slightly irregular surfaces resulting from erosion.
- (V) A valley flat is a low flat area between valley walls and bordering a stream channel. It includes the flood plain and, generally, is the flattest area in the valley. The surface may have a slight slope toward the main stream, toward the valley walls, or may be marked by valleys or smaller streams. Generally, the valley flat is separated from alluvial terraces, or from the upland, by a pronounced break in slope. Sometimes, however, the erosion of adjacent upland and the deposition of colluvium may make the outer edge of the alluvial flat. Use this code for sites in small valleys on a plain, if the site taps alluvium or the valley situation has hydrologic significance.
- (W) An upland draw is a small natural drainageway or depression, usually dry, on a hillside or upland.

#### 1.19 STATION TYPE

STYPE/C802 - MANDATORY 20-POSITION ARRAY CHAR X in positions 176-195):

Code in the proper location within the array the following:

Enter Y for Yes      Leave Blank for No entry

For example, a Y in position 1 (STYPE(1)) designates the site type as a "stream". A Y in position 5 designates the site type as a "spring". Only one type can be assigned for a site.

STYPE(20)	20*1	Type of site (code)
STYPE(1)		Stream
STYPE(2)		Lake or reservoir
STYPE(3)		Estuary
STYPE(4)		Unassigned
STYPE(5)		Spring
STYPE(6)		Ground water other than spring
STYPE(7)		Meteorological
STYPE(8)-(20)		Unassigned

**1.20 AGENCY USE OF SITE**

(SUSE/C803 - MANDATORY SECONDARY-KEY CHAR X in position 196):

A code for the agency (SAGNCY) use of site is mandatory, and allowable codes are as follows:

- A - Active data-collection site
- I - Inactive or discontinued data-collection site
- O - Inventory data site only

**1.21 TYPE OF DATA COLLECTED**

(SDATA/C804 - 30-POSITION ARRAY CHAR X in positions 197-226):

Code in the proper location or locations in the array, one (or more) of the following codes:

- A - Active data-collection
- I - Inactive or discontinued data-collection
- O - Inventory data

These codes act as flags for the types of data collected.

SDATA(30) 30\*1 Positions for types of data collected, as follows:

SDATA(1)	Stage or water levels--continuous
SDATA(2)	Stage or water levels--intermittent
SDATA(3)	Water quality--continuous
SDATA(4)	Water quality--intermittent
SDATA(5)	Precipitation--continuous
SDATA(6)	Precipitation--intermittent
SDATA(7)	Evaporation--continuous
SDATA(8)	Evaporation--intermittent
SDATA(9)	Wind velocity
SDATA(10)	Tide--continuous
SDATA(11)	Tide--intermittent
SDATA(12)	Sediment concentration
SDATA(13)	Sediment particle size
SDATA(14)	Peak flows
SDATA(15)	Low flows
SDATA(16)	State water use
SDATA(17)-(30)	Unassigned

**1.22 INSTRUMENTS AT SITE**

(SINST/C805 - 30-POSITION ARRAY CHAR X in positions 227-256):

Code a Y for yes, leave blank for no instrument at site; multiple instruments can be identified for a site. For example: a Y in position 1 designates the site has a digital recorder, and a Y in position 14 shows that a tipping-bucket rain gage is also operating at the site.

SINST(30) 30\*1 Flags-instrumentation installed at this site, as follows:

SINST(1)	Digital recorder
SINST(2)	Graphic recorder
SINST(3)	Telemetry--land line
SINST(4)	Telemetry--radio
SINST(5)	Telemetry--satellite relay
SINST(6)	AHDAS
SINST(7)	Crest-stage gage
SINST(8)	Tide gage
SINST(9)	Deflection meter
SINST(10)	Bubble gage
SINST(11)	Stilling well
SINST(12)	CR-type recorder
SINST(13)	Weighing rain gage
SINST(14)	Tipping-bucket rain gage
SINST(15)-(30)	Unassigned

**1.23 REMARKS**

(SREMRK/C806 - CHAR X(50) in positions 257-306):

This field is designed for a significant remark about the site. If multiple remarks need storing, use the remarks record in the Miscellaneous File.

**1.24 DATE SITE ESTABLISHED OR INVENTORIED**

(SINVDT/C711 - CHAR X(8) in positions 307-314):

Enter the date that site was established or inventoried in the following format: MMDDYYYY (12121984). If the month or day is not known, enter 00 in the spaces, and use leading zeros for month or day values less than 10.

**1.25 DATE RECORD CREATED**

(SCRDAT/C303 - CHAR X(8) in positions 315-322):

This field contains the date on which the specified site was initially stored in the Site File data base. This field is produced by the Site File update program, and the value will never change once established.

**1.26 DATE OF LAST UPDATE**

(SUPDAT/C40 - CHAR X(8) in positions 323-330):

This field contains the date that the last valid transaction of add, modify, or delete occurred for any item of the specified site. The field is updated by the Site File update program.

**1.27 BASE DISCHARGE**

(SBASEQ/C807 - CHAR X(8) in positions 331-338):

Enter the base discharge at a surface-water site (in cubic feet per second) above which peak-discharge data are published; this value is selected so that an average of three to five peaks a year will be presented. If the value contains a fractional part, the decimal point must be entered.

**1.28 DRAINAGE AREA**

(SAREA/C808 - CHAR X(8) in positions 339-346):

Enter the total drainage area at a surface-water site (in square miles) of the drainage basin. If the value contains a fractional part of a square mile, the decimal point must be entered.

**1.29 CONTRIBUTING DRAINAGE AREA**

(SCNTRB/C809 - CHAR X(8) in positions 347-354):

Enter the contributing drainage area at a surface-water site (in square miles). This item need be entered only if the contributing area is different from the total drainage area. This situation can occur when part of the drainage area consists of very porous soil or depressions that either allow runoff to enter the ground-water zone, or traps the water in ponds so that rainfall does not contribute to runoff. A transbasin diversion can also affect the total drainage area.

**1.30 CREST-STAGE GAGE UPSTREAM ELEVATION**

(SCSGUE/C810 - CHAR X(8) in positions 355-362):

Enter the elevation (gage height) of the index pin used to obtain the flood crest at upstream gage (usually at upstream side of culvert or bridge opening); code decimal point if needed. This gage may also be referred to as "headwater" gage.

**1.31 CREST-STAGE GAGE DOWNSTREAM ELEVATION**

(SCSGDE/C811 - CHAR X(8) in positions 363-370):

Enter the elevation (gage height) of the index pin used to obtain the flood crest at the downstream gage; code decimal point if needed. This gage may also be referred to as "tailwater" gage.

**1.32 GAGE HEIGHT OF ZERO FLOW**

(SGHPZF/C812 - CHAR X(6) in positions 371-376):

Enter the elevation (gage height) of zero flow for natural channel or artificial control; code decimal point if needed; code a minus sign if needed.

**1.33 MEAN GREENWICH TIME OFFSET**

(SMGTOF/C813 - CHAR X(3) in positions 377-379):

Enter the offset, in hour Mean Greenwich Time. The value ranges from -12 to +12. For example: St. Louis, Missouri, is -06 from Mean Greenwich Time.

**1.34 DATA RELIABILITY**

(SCLASS/C3 - MANDATORY CHAR X in position 380):

Enter the code indicating the reliability of the data available for the site. The codes and their meanings are:

C - Data have been field checked by the reporting agency.

L - Location not accurate.

M - Minimal data.

U - Data have not been field checked by the reporting agency, but the reporting agency considers the data reliable.

Enter the code that best represents the reliability of the site's inventory data according to the reporting agency. When in doubt, always select the code which portrays the lesser confidence. (Note: The codes are listed in order of decreasing confidence.)

**1.35 OTHER GROUND-WATER DATA FILES**

(SGWFLE/C712 - MANDATORY FOR GROUND-WATER 20-POSITION  
ARRAY CHAR X in positions 381-400):

This field is automatically set by the EDIT/UPDATE program and reflects the availability of data in other ground-water files:

Y -- Yes, file exists.

Blank -- No, file does not exist.

SGWFLE(20) 20\*1 Data in other ground-water files.

SGWFLE(1) Construction (GW.CONNS) data for site.

SGWFLE(2) Miscellaneous (GW.MISC) data for site.

SGWFLE(3) Discharge (GW.DISC) data for site.

SGWFLE(4) Geohydrologic (GW.GEOH) data for site.

SGWFLE(5) Hydraulic (GW.HYDR) data for site.

SGWFLE(6) Water-level (GW.LEV) data for site.

SGWFLE(7) Observation-heading (GW.OBS) data for site.

SGWFLE(8) State water-use (GW.STWU) data for site.

SGWFLE(9)-(20) Unassigned

**1.36 TYPE OF GROUND-WATER SITE**

(SGWTYPE/C2 - MANDATORY FOR GW SITES CHAR X in position 401):

Enter the code indicating the type of site to which these data apply. The codes and their meanings are:

- C - Collector or Ranney type well.
- D - Drain dug to intercept the water table or potentiometric surface to either lower the ground-water level or serve as a water supply.
- E - Excavation.
- H - Sinkhole.
- I - Interconnected wells, also called connector or drainage wells; that is, a well interconnected via an underground lateral.
- M - Multiple wells. Use only for well field consisting of a group of wells that are pumped through a single header and for which little or no data about the individual wells are available.
- O - Outcrop.
- P - Pond dug to intercept the water table or potentiometric surface and serve as a water supply.
- S - Spring (used only on spring schedule).
- T - Tunnel, shaft, or mine from which ground water is obtained.
- W - Well, for single wells other than wells of the collector or Ranney type.
- X - Test hole, not completed as a well.

**1.37 DATE OF FIRST CONSTRUCTION**

(SCONDT/C21 - CHAR X(8) in positions 402-409):

Enter the earliest date for which data are available for the site or the date when construction began, whichever is earlier. The date stored is checked against dates for data entered afterwards, and no data will be accepted if associated with an earlier date than that stored. If the month or day are not known, enter 00 in the spaces, and use leading zeros for month or day values less than 10. Enter four digits for year.

**1.38 PRIMARY USE OF SITE**

(SUSE1/C23 - MANDATORY (GROUND WATER) except Springs CHAR  
X in position 410):

Enter the code indicating the principal use of the site or the purpose for which the site was constructed (the former always holds precedence over the latter). If site is used for more than one purpose, enter the principal use here and enter the subordinate uses in the following two fields. The codes and their meanings are:

A - Anode	P - Oil or gas well
C - Standby emergency supply	R - Recharge
D - Drain	S - Repressurize
E - Geothermal	T - Test
G - Seismic	U - Unused
H - Heat reservoir	W - Withdrawal of water
M - Mine	X - Waste disposal
O - Observation	Z - Destroyed

- (A) Anode is a hole used as an electrical anode. Include in this category wells used solely to ground pipelines or electronic relays and other installations.
- (C) Standby emergency supply refers to a water-supply source that is used only when the principal supplier of water is unavailable.
- (D) Drainage refers to the drainage of surface water underground.
- (E) Geothermal well is a hole drilled for geothermal energy development. Use this category for "dry" geothermal wells or wells into which water is injected for heating. For "wet" geothermal wells, through which water is withdrawn, use "W - withdrawal of water" for the use of site, and "E - power generation" for the primary use of water.
- (G) Seismic hole is one drilled for seismic exploration. If it has been converted to water supply, it is used to withdraw water. A seismic hole used as an observation well should be in the observation-well category.
- (H) Heat reservoir refers to a well in which a fluid is circulated in a closed system. Water is neither added to, nor removed from, the aquifer.



- (M) Mine includes any tunnel, shaft, or other excavation constructed for the extraction of minerals.
- (O) Observation well is a cased test-hole or well, drilled for either water-level or water-quality observations. Do not use this category for an oil-test hole, or water-supply well used only incidentally as an observation well.
- (P) Oil or gas well is any well or hole drilled in search of, or for production of, petroleum or gas. It includes any oil or gas production well, dry hole, core hole, injection well drilled for secondary recovery of oil, etc. An oil-test hole converted to a water-supply well should be classified as withdrawal (W).
- (R) Recharge site is a site constructed or converted for use in replenishing the aquifer. An irrigation well used to return water to the aquifer during nonpumping periods is a well for withdrawing water, not a drainage or recharge well. Use this category for wells that are used to return water to the aquifer after use, such as those for returning air-conditioning water.
- (S) Repressurize refers to pumping water into an aquifer in order to increase the pressure in the aquifer for a specific purpose; for example, water flood purposes in oil fields.
- (T) Test hole is an uncased hole (or one cased only temporarily) that was drilled for water, or for geologic or hydrogeologic testing. It may be equipped temporarily with a pump in order to make a pumping test, but if the well is destroyed after testing is completed, it is still a test hole. A core hole drilled as a part of mining or quarrying exploration work should be in this class.
- (U) An unused site is an abandoned water-supply site or one for which no use is contemplated. At an abandoned farmstead, a well originally used for domestic purposes may be classed as unused, even though it is equipped with a pump. Similarly, a stock well with a pump may become unused when a pasture or corral is put into cultivation. An irrigation well that is not equipped with a pump, nor used because the yield is too low or the water is too mineralized, belongs in this class.

- (W) Withdrawal of water refers to a site that supplies water for one of the purposes shown under use of water. It includes a dewatering well, if the dewatering is accomplished by pumping ground water.
- (X) A waste-disposal site is one used to convey industrial waste, domestic sewage, oil-field brine, mine drainage, radioactive waste, or other waste fluid into an underground zone. An oil-test or deep-water well converted to waste disposal should be in this category.
- (Z) A destroyed site is one that is no longer in existence. The casing of most destroyed wells will be pulled, but some may be plugged or filled. Do not use this category for an abandoned site that merely is not in use.

**1.39 SECONDARY-SITE USE**

(SUSE2/C301 - CHAR X in position 411):

If the site is used for more than one purpose, show the secondary use here. Enter an appropriate code from the above list.

**1.40 TERTIARY-SITE USE**

(SUSE3/C302 - CHAR X in position 412):

If needed, a third use of the site can be shown here. Enter an appropriate code from the above list.

**1.41 PRIMARY USE OF WATER**

(SWUSE1/C24 - SECONDARY-KEY CHAR X in position 413):

Enter the code indicating the principal use of water from the site. If water from the site is used for more than one purpose, enter the principal use here and enter the subordinate uses in the following two fields. The codes and their meanings are:

A - Air conditioning	I - Irrigation	R - Recreation
B - Bottling	J - Industrial (cooling)	S - Stock
C - Commercial	K - Mining	T - Institutional
D - Dewater	M - Medicinal	U - Unused
E - Power	N - Industrial	Y - Desalination
F - Fire	P - Public supply	Z - Other (explain
H - Domestic	Q - Aquaculture	in remarks)

- (A) Air conditioning refers to water supply used solely or principally for heating or cooling a building. Water used to cool industrial machinery belongs in the industrial category, not in the air-conditioning category.
- (B) Bottling refers to the storage of water in bottles and use of the water for potable purposes (see Medicinal).
- (C) Commercial use refers to use by a business establishment that does not fabricate or produce a product. Filling stations and motels are examples of commercial establishments. If some product is manufactured, assembled, remodeled, or otherwise fabricated, use of water for that plant should be considered industrial, even though the water is not used directly in the product or in the manufacturing of the product.
- (D) Dewatering means the water is pumped for dewatering a construction or mining site, or to lower the water table for agricultural purposes. In this respect, it differs from a drainage well that is used to drain surface water underground. If the main purpose for which the water is withdrawn is to provide drainage, dewatering should be indicated even though the water may be discharged into an irrigation ditch and subsequently used to irrigate land.
- (E) Power generation refers to use of water for generation of any type of power.

- (F) Fire protection refers to the principal use of the water and should be indicated if the site was constructed principally for this purpose, even though the water may be used at times to supplement an industrial or defense supply, to irrigate a golf course, fill a swimming pool, or for other use.
- (H) Domestic use is water used to supply household needs, principally for drinking, cooking, washing, and sanitary purposes, but including watering a lawn and caring for a few pets. Most domestic wells will be at suburban or farm homes, but wells supplying small quantities of water for domestic purposes for one-classroom schools, turnpike gates, and similar installations, should be in the domestic category.
- (I) Irrigation refers to the use of water to irrigate cultivated plants. Most irrigation sites will supply water for farm crops, but the category should include wells used to water the grounds of schools, industrial plants, or cemeteries, if more than a small amount of water is pumped and that is the sole use of the water.
- (J) Industrial cooling refers to a water supply used solely for industrial cooling.
- (K) Mining refers to a water supply used solely for mining purposes.
- (M) Medicinal refers to water purported to have therapeutic value. Water may be used for bathing and/or drinking. If use of water is mainly because of its claimed therapeutic value, use this category even though the water is bottled.
- (N) Industrial use is within a plant that manufactures or fabricates a product. The water may or may not be incorporated into the product being manufactured. Industrial water may be used to cool machinery, to provide sanitary facilities for employees, to air-condition the plant, and to irrigate the ground at the plant.

- (P) Public Supply use is water that is pumped and distributed to several homes. Such supplies may be owned by a municipality or community, a water district, or a private concern. In most States, public supplies are regulated by departments of health which enforce minimum safety and sanitary requirements. If the system supplies five or more homes, it should be considered a public supply, as four or less classify use as domestic. Water supplies for trailer or summer camps with five or more living units should be in this category, but motels and hotels are classified as commercial. Most public supply systems also furnish water for a variety of other uses, such as industrial, institutional, and commercial.
- (Q) Aquaculture refers to a water supply used solely for aquaculture, such as fish farms.
- (R) Recreation refers to water discharged into pools (or channels which are dammed downstream to form pools), for swimming, boating, fishing, ice rinks, and other recreational uses.
- (S) Stock Supply refers to the watering of livestock.
- (T) Institutional refers to water used in the maintenance and operation of institutions such as large schools, universities, hospitals, rest homes, or similar installations. Owners of institutions may be individuals, corporations, churches, or governmental units.
- (U) Unused means water is not being removed from the site for one of the purposes described above. A test hole, oil or gas well, recharge, drainage, observation, or waste-disposal well will be in this category.

Do not use this classification for an irrigation, domestic, stock, or other well during "off season" or temporary periods of nonuse. The use of water from a newly constructed site should be considered as the use for which it is intended even though it may not yet be in use when inventoried.

- (Y) Desalination refers to water used in a desalting process whereby dissolved solids are removed to make water potable or suitable for other uses. Enter the type of use of the desalinated water in the next column, "Secondary Water Use".
- (Z) Other refers to miscellaneous uses not included in the listed categories.

**1.42 SECONDARY USE OF WATER**

(SWUSE2/C25 - CHAR X in position 414):

If water from the site is used for more than one purpose, show the secondary use here. Enter an appropriate code from the list above.

**1.43 TERTIARY USE OF WATER**

(SWUSE3/C26 CHAR X in position 415):

If needed, a third use of water from the site can be shown here. Enter an appropriate code from the list above.

**1.44 AQUIFER TYPE CODE**

(SAQTYP/C713 - CHAR X in position 416):

Enter the appropriate code to describe the type of aquifer(s) encountered by the well.

- U - Unconfined single aquifer
- N - Unconfined multiple aquifers
- C - Confined single aquifer
- M - Confined multiple aquifers
- X - Mixed (confined and unconfined) multiple aquifers

**1.45 PRIMARY AQUIFER**

(SAQUFR/C714 - SECONDARY-KEY CHAR X(8) in positions 417-424):

Enter the eight-character code identifying the primary aquifer unit from which the water is obtained. Use codes given in the "Catalog of Aquifer Names and Geologic Unit Codes used by the Water Resources Division." The primary aquifer code is automatically updated.

If C93 (aquifer code in geohydrologic file) exists and C304 (contributing unit) is equal to "P", then C714 (primary aquifer) is set equal to C93.

**1.46 HOLE DEPTH**

(SHDEPT/C27 - CHAR X(8) in positions 433-440):

Enter the total depth to which the hole was drilled, in feet below the land-surface datum, even though it may have been plugged back in completing the well. For collector or Ranney type wells, enter the depth of the central shaft. For multiple-well fields, ponds, tunnels, or drains, leave the space blank.

**1.47 WELL DEPTH**

(SWDEPT/C28 - CHAR X(8) in positions 425-432):

Enter the depth of the finished well, in feet below land-surface datum. The depth of the well is the greatest depth to which the well can be sounded; if measurement is not practicable, enter the reported depth at which the well was finished.

This field should be completed for wells whenever possible. If the hole depth is given, all other depths entered on the schedule will be compared with it for validity. Precision may be carried to two decimal places.

**1.48 SOURCE OF DEPTH DATA**

(SWDSRC/C29 - CHAR X in position 441):

Enter an appropriate code to indicate how the information about the depth of the well was obtained. The codes and their meanings are:

- A - Reported by another government agency. Do not use "A" if the reporting agency is the owner of the well--use "O".
- D - From driller's log or report.
- G - Private geologist-consultant or university associate.
- L - Depth interpreted from geophysical logs by personnel of source agency.
- M - Memory (owner, operator, driller).
- O - Reported by the owner of the well.
- R - Reported by person other than the owner, driller, or another government agency.
- S - Measured by personnel of reporting agency.
- Z - Other source (explain in remarks).

**1.49 PROJECT NUMBER**

(SPRNO/C5 - SECONDARY-KEY CHAR X(12) in positions 442-453):

This optional field is a retrieval key by means of which all the data collected for a particular project can be retrieved conveniently. If the field is used, enter the 12-character WRD project number associated with data collection at the site. Where no project number is applicable, leave the field blank.

**1.50 INVENTORY WATER LEVEL**

(SINVWL/C30 - CHAR X(7) in positions 454-460):

Enter the water level at the ground-water site, in feet below land surface. Precision can be carried to two decimal places. If the water level is above land surface, enter the water level in feet above land surface preceded by a minus sign (-). If the site flows but the head is not known, the site is dry, the level cannot be measured, measurement has been discontinued, or the well destroyed, leave this space blank and see SITE STATUS.

The inventory water level will not automatically be included on tables and hydrographs; the data also must be coded in the water-level record.



**1.51 DATE MEASURED**

(SIWLDT/C31 - MANDATORY (SINVWL) CHAR X(8) in positions 461-468):

This date is mandatory only if an "inventory water level" or "site status" was entered for the ground-water site. Enter the date on which the water level was measured. Show month, day, and year in the spaces indicated. If the day or month is not known, code the appropriate field with 00. Use leading zeros for values of month and day that are less than 10, and provide all four digits of the year.

**1.52 METHOD OF WATER-LEVEL MEASUREMENT**

(SIWLMT/C34 - CHAR X in position 469):

Enter the code indicating how the water level was measured. The codes and their meanings are:

- A - Airline measurement
- B - Analog or graphic recorder
- C - Calibrated airline measurement
- E - Estimated
- G - Pressure-gage measurement
- H - Calibrated pressure-gage measurement
- L - Interpreted from geophysical logs
- M - Manometer measurement
- N - Nonrecording gage
- R - Reported, method not known
- S - Steel-tape measurement
- T - Electric-tape measurement
- V - Calibrated electric-tape measurement
- Z - Other

**1.53 SITE STATUS FOR WATER LEVEL**

(SIWLST/C37 - CHAR X in position 470):

Enter the code indicating the status of the site at the time the water-level was measured. If the inventoried water-level measurement represents a static level, leave this field blank. The codes and their meanings are:

- D - The site was dry (no water level is recorded).
- E - The site was flowing recently.
- F - The site was flowing, but the head could not be measured (no water level is recorded).
- G - A nearby site that taps the same aquifer was flowing.
- H - A nearby site that taps the same aquifer had been flowing recently.
- I - Injector site (recharge water being injected into the aquifer).
- J - Injector site monitor (a nearby site that taps the same aquifer is injecting recharge water).
- N - The measurements at this site were discontinued.
- O - An obstruction was encountered in the well above the water surface (no water level is recorded).
- P - The site was being pumped.
- R - The site had been pumped recently.
- S - A nearby site that taps the same aquifer was being pumped.
- T - A nearby site that taps the same aquifer had been pumped recently.
- V - A foreign substance was present on the surface of the water.
- W - The well was destroyed.
- X - The water level was affected by stage in nearby surface-water site.
- Z - Other conditions that would affect the measured water level (explain in remarks).

If no site status is indicated, the inventoried water-level measurement represents a static level.

**1.54 SOURCE OF WATER-LEVEL DATA**

(SIWLSC/C33 - CHAR X in position 471):

Enter the code that best indicates source of the water-level data. The codes are the same as those used for Source of Depth Data (SWDSRC). See section 1.48, Source of Depth Data.

**1.55 LOCAL STANDARD TIME FLAG**

(SLSTFL/C814 - CHAR X in position 472):

Enter a "Y" for Yes or an "N" for No to indicate whether the site is in an area that switches to Local Standard Time (Daylight Savings Time) for a part of the year.

**1.56 STATION LOCATOR SEQUENCE NUMBER**

(SLOCSN/C815 - CHAR X(2) in position 473):

The station locator sequence number corresponds to the sequence number portion of the station locator in System 2000. It is automatically populated with the last two characters (default value) found in the station identification (C1) during QUERY or FULL SCREEN Entry. The default value for this component may be changed as required.

**1.57 RESERVED SPACE - FUTURE DISTRICT USE**

(SRES2 - CHAR X(50) in positions 501-550):

## 2. CONSTRUCTION FILE COMPONENTS

(Construction File Record defined December 13, 1984)

The CONSTRUCTION data file is used to store components related to the construction of the well. Eight types of these data are included, each identified by a component record type (CDRTYP). The following is a list of the component codes used in the data file.

LIFT	-	Includes lift, major pump, and standby pump
CONS	-	Includes basic construction data
HOLE	-	Includes hole data
CSNG	-	Includes casing data
OPEN	-	Includes openings data
REPR	-	Includes minor repairs data
SPNG	-	Includes spring data
MPNT	-	Includes measuring-point data

The CONSTRUCTION record is 160 characters in length. The first 35 characters are formatted the same for each of the 8 categories as listed above. The remaining 125 characters vary according to the category. The first 35 characters of the record define the primary key and are coded as follows:

### 2.1 SOURCE AGENCY

(CDAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for the site will not be stored if this field is blank.

### 2.2 SITE IDENTIFICATION NUMBER

(CDID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the construction data applies. If the site has not been entered into the Site File, this operation must be completed before the construction data are input. The SITE ID number is mandatory and a part of the primary key.

### 2.3 RECORD TYPE

(CDRTYP - MANDATORY SECONDARY-KEY CHAR in positions 21-24):

The RECORD TYPE identifies the category of data included in the record. There are eight categories with the CONSTRUCTION data. This field is mandatory and is a secondary key. The categories are as follows:

- LIFT - Lift record (C752)
- CONS - Construction record (C754)
- HOLE - Hole record (C756)
- CSNG - Casing record (C758)
- OPEN - Openings record (C760)
- REPR - Repairs record (C762)
- SPNG - Spring record (C764)
- MPNT - Measuring-point record (C766)

### 2.4 RECORD SEQUENCE NUMBER

(CDRNUM - MANDATORY PRIMARY-KEY CHAR X(3) in positions 25-27):

The record sequence number is assigned at the time of data entry to keep data by record type in a logical order. This number is mandatory and a part of the primary key. The component number for the record sequence number depends on the record type as follows:

- LIFT - Lift record (C254)
- CONS - Construction record (C723)
- HOLE - Hole record (C724)
- CSNG - Casing record (C725)
- OPEN - Openings record (C726)
- REPR - Repairs record (C165)
- SPNG - Spring record (C727)
- MPNT - Measuring-point record (C728)

## 2.5 DATE RECORD LAST UPDATED

(CDUPDT - CHAR X(8) in positions 28-35):

This is the date when the data record was entered or modified. Entry of this date is by the EDIT/UPDATE software. The component number for the date of last update depends on the record type as follows:

- LIFT - Lift record (C753)
- CONS - Construction record (C755)
- HOLE - Hole record (C757)
- CSNG - Casing record (C759)
- OPEN - Openings record (C761)
- REPR - Repairs record (C763)
- SPNG - Spring record (C765)
- MPNT - Measuring-point record (C767)

## 2.6 DATA DEPENDENT ON RECORD TYPE

(CDDATA - CHAR X(125) in positions 36-160):

These fields are described below for each record type.

### 2.6.1 Lift Record -- CDRTYP = LIFT

The first 35 characters of the lift data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	LIFT
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of lift data is identified by the coding of "LIFT" in component CDRTYP (positions 21-24) of the record. Enter the LIFT components as follows:

2.6.1.1 CDLTYP -- Type of lift (SK2) (C43) MANDATORY  
 2.6.1.2 CDLDAT -- Date this lift was installed or recorded (C38)  
 2.6.1.3 CDLINT -- Depth to intake (C44)  
 2.6.1.4 CDLPWR -- Type of power (C45)  
 2.6.1.5 CDLHPR -- Horsepower rating (SK3) (C46)  
 2.6.1.6 CDLMFR -- Manufacturer of lift device (C48)  
 2.6.1.7 CDLSER -- Serial number of lift device (C49)  
 2.6.1.8 CDLPCO -- Name of power company (C50)  
 2.6.1.9 CDLACT -- Power-company account number (C51)  
 2.6.1.10 CDLMTR -- Power-meter number (C52)  
 2.6.1.11 CDLCNS -- Pump rating (C53)  
 2.6.1.12 CDLADL -- Additional lift (above land surface (C255)  
 2.6.1.13 CDLMNT -- Name of company that maintains the lift (C54)  
 2.6.1.14 CDLCAP -- Rated pump capacity (C268)  
 2.6.1.15 CDLSBY -- Type of standby power (C56)  
 2.6.1.16 CDLSHP -- Horsepower of standby power source (C57)  
 2.6.1.17 CDLRES -- Reserved

#### 2.6.1.1 TYPE OF LIFT

(CDLTYP/C43 - MANDATORY SECONDARY-KEY CHAR X in position 36):

Enter the code indicating the type of pump or lift. This entry is mandatory; lift data will not be stored if this field is blank. Allowable codes are:

A - Air lift	R - Rotary pump
B - Bucket	S - Submergible pump
C - Centrifugal pump	T - Turbine pump
J - Jet pump	U - Unknown
P - Piston pump	Z - Other (explain in remarks)

- (A) Air lift is a type of lift in which a jet of air pumped below the water table causes a stream of mixed air and water to issue from the well.
- (B) Bucket includes the familiar "rope and bucket," chain and bucket lifts, and the small bailer lifted by a rope or chain and pulley.

- (C) Centrifugal pumps have rotating impellers in a closed chamber that draw the water into the pump. The water is then discharged from the pump, commonly under great pressure, by centrifugal force. Such pumps have maximum lift of about 25 feet but can force water to considerable heights above the pump.
- (J) Jet pumps have two pipes extending from the pump into the well. One pipe forces water down the hole under pressure while the other pipe discharges water that has been forced to the surface by the action of the jet. Jet pumps are used principally for small water supplies, such as would be used for a suburban home, farm, or small commercial establishment.
- (P) Piston pumps include the familiar lift and pitcher pumps common in many rural areas. The old "reciprocating" pumps and the "deep-well with walking-beam jacks" are of the piston type.
- (R) Rotary pumps operate on the principle that direct pressure is created by squeezing the water between specially designed runners. A relatively high vacuum may be created on the intake side so the suction lift is comparable to that for centrifugal pumps.
- (S) A submergible pump is a special type of turbine in which an electric motor is connected directly to the impellers and submerged beneath the water. It can be recognized by the presence of insulated electric wire leading into the well and the absence of any pump or power unit at the surface.
- (T) Turbines are of several types and may be either for a deep or shallow well. A series of impellers, placed below the surface of the water, are rotated by a vertical shaft connected to a power source at the land surface. These impellers "pick up" the water and force it to the surface through the pump column. Such pumps are commonly used to lift large amounts of water at high pressure. They are used in high-capacity wells for public, industrial, or irrigation supply.
- (U) Use unknown only if the site is equipped with a pump about which other data are available, but the type of pump cannot be identified.



- (Z) Other. Place in this category any lifting device that does not belong in one of the other categories. Examples are: helical rotor, hydraulic ram, and siphon.

#### 2.6.1.2 DATE LIFT INSTALLED OR RECORDED

(CDLDAT/C38 - CHAR X(8) in positions 37-44):

Enter the date on which the lift data were collected. If the day and/or month are not known, enter 00 in the spaces. Use leading zeros for month or day less than 10, and specify all 4 digits for the year.

#### 2.6.1.3 DEPTH TO INTAKE

(CDLINT/C44 - CHAR X(5) in positions 45-49):

Enter the depth to the bottom of the pump bowls or intake, in feet below land surface. The value desired for this entry is the maximum distance the water level can be drawn down before the pump breaks suction.

#### 2.6.1.4 TYPE OF POWER

(CDLPWR/C45 - CHAR X in position 50):

Enter the code indicating the type of power used to power the pump. The codes and their meanings are:

D - Diesel engine	L - LP gas (propane or
E - Electric motor	butane engine)
G - Gasoline engine	N - Natural-gas engine
H - Hand	W - Windmill
	Z - Other (explain in
	remarks)

#### 2.6.1.5 HORSEPOWER RATING

(CDLHPR/C46 - SECONDARY-KEY CHAR X(7) in positions 51-57):

Enter the horsepower rating of the primary power source. Two decimal places are provided for small motors.

**2.6.1.6 MANUFACTURER OF LIFT DEVICE**

(CDLMFR/C48 - CHAR X(12) in positions 58-69):

Enter the name of the company that manufactured the pump. Use meaningful abbreviations or acronyms if needed to fit the space.

**2.6.1.7 SERIAL NUMBER OF LIFT DEVICE**

(CDLSER/C49 - CHAR X(12) in positions 70-81):

Enter the serial number of the pump.

**2.6.1.8 NAME OF POWER COMPANY**

(CDLPCO/C50 - CHAR X(12) in positions 82-93):

Enter the name of the company that furnished electricity, natural gas, or other fuel for the pump. Use meaningful abbreviations if needed to fit the space.

**2.6.1.9 POWER COMPANY ACCOUNT NO.**

(CDLACT/C51 - CHAR X(10) in positions 94-103):

Enter the account number under which the power company stores information on power consumption at the site.

**2.6.1.10 POWER METER NO.**

(CDLMTR/C52 - CHAR X(12) in positions 104-115):

Enter the meter number of the electric or gas meter which records the power consumption of the pump.

**2.6.1.11 PUMP RATING**

(CDLCNS/C53 - CHAR X(8) in positions 116-123):

Enter the rating of the pump as the volume of water lifted per unit of power consumed. The value should be expressed as millions of gallons of water per kilowatt-hour of electricity, cubic foot of natural gas, gallon of liquid fuel or engine hour, depending upon the type of power coded under "lift data" above. (If the volume of water pumped is measured in other units, i.e., feet or metric units, convert to millions of gallons.)

**2.6.1.12 ADDITIONAL LIFT**

(CDLADL/C255 - CHAR X(3) in positions 124-126):

Enter the additional head (above land-surface datum) against which the pump works, in feet of water. For a sprinkler system for irrigation, this is the height of the sprinklers above land-surface datum plus the pressure at the sprinklers (in feet of water).

**2.6.1.13 PERSON OR COMPANY WHO MAINTAINS THE PUMP**

(CDLMNT/C54 - CHAR X(12) in positions 127-138):

Enter the name of the person or company who is responsible for maintenance of the pump, if known.

**2.6.1.14 RATED PUMP CAPACITY**

(CDLCAP/C268 - CHAR X(5) in positions 139-143):

Enter the manufacturer's pump capacity rating in gallons per minute.

**2.6.1.15 TYPE OF STANDBY POWER**

(CDLSBY/C56 - CHAR X in position 144):

Enter the code indicating the type of standby power available. The codes are listed for type of power under "lift data." Use the same codes listed in section 2.6.1.4, Type of Power.

**2.6.1.16 HORSEPOWER OF STANDBY POWER**

(CDLSHP/C57 - CHAR X(7) in positions 145-151):

Record the horsepower rating of the standby power source.

**2.6.1.17 RESERVED FOR FUTURE USE (CDLRES - CHAR X(9) in positions 152-160):**

## 2.6.2 Construction Record -- CDRTYP = CONS

The first 35 characters of the construction data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	CONS
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of construction data is identified by coding "CONS" in component CDRTYP (positions 21-24) of the record. The CONS components are entered as follows:

2.6.2.1	CDCODT -- Date of construction (SK4) (C60)
2.6.2.2	CDCOCT -- Name of contractor (C63)
2.6.2.3	CDCOSC -- Source of construction data (C64)
2.6.2.4	CDCOME -- Method of construction (C65)
2.6.2.5	CDCOFI -- Type of finish (SK5) (C66)
2.6.2.6	CDCOSL -- Type of seal (C67)
2.6.2.7	CDCOSD -- Depth to bottom of seal (C68)
2.6.2.8	CDCODM -- Method of development (C69)
2.6.2.9	CDCODV -- Hours of development (C70)
2.6.2.10	CDCOST -- Special treatment (C71) during development
2.6.2.11	CDCORS -- Reserved

### 2.6.2.1 DATE OF COMPLETED CONSTRUCTION

(CDCODT/C60 - CHAR X(8) in positions 36-43):

Enter the date on which the work was completed. If the day or month is not known, enter 00 in the spaces. Use leading zeros for values of day and month less than 10, and specify all 4 digits for the year. For many sites, this date will be the same as the one entered earlier as date of first construction (C21); however, it must be entered here.

**2.6.2.2 NAME OF CONTRACTOR/DRILLER**

(CDCOCT/C63 - CHAR X(12) in positions 44-55):

Enter the name of the individual or company that did the work. For company names, use meaningful abbreviations or acronyms if needed to fit the space.

**2.6.2.3 SOURCE OF CONSTRUCTION DATA**

(CDCOSC/C64 - CHAR X in position 56):

Enter the code that best indicates the source of construction data; that is, who furnished the data. The codes are the same as those used for Source of Depth Data. See section 1.48.

**2.6.2.4 METHOD OF CONSTRUCTION**

(CDCOME/C65 - CHAR X in position 57):

Enter the code that best indicates the method by which the site was constructed. Allowable codes are:

A - Air-rotary	P - Air percussion
B - Bored or augered	R - Reverse rotary
C - Cable-tool	T - Trenching
D - Dug	V - Driven
H - Hydraulic rotary	W - Drive and wash
J - Jetted	Z - Other (explain in remarks)

- (A) Air-rotary method is one in which a stream of air is used to cool the bit and bring the rock cuttings to the surface.
- (B) A bored or augered hole is one in which the earth materials are cut and removed from the hole with an auger. The auger may be powered by hand or machinery.
- (C) Cable-tool refers to a well drilled by the familiar "percussion" or "churn-drill" method, whereby a heavy drilling tool is raised and lowered with enough force to pulverize the rock. The rock debris is commonly removed from the hole with a bailer. The California mud-scow method is a special variation of the cable-tool method.

- (D) Dug holes are excavated by hand tools or power-driven digging equipment. Caissons, Ranney-type collectors, and galleries belong in this classification, even though they may have laterals that are driven or jetted. Tunnels would also be in this category.
- (H) The hydraulic-rotary well is constructed by rotating a length of pipe (drill stem) equipped with a bit that cuts or grinds the rocks. Water or drilling mud is pumped down the drilling stem. Cuttings are carried to the surface in the annular space between the drilling stem and the wall of the hole. Note that separate categories are provided for air-rotary and reverse-rotary.
- (J) Jetted wells are excavated by using high-velocity streams of water pumped through a pipe having a restricted opening or "jetting" nozzle. For some types of earth materials a cutting bit is attached to the end of the jetting pipe. The material cut or washed from the hole is carried to the surface in the annular space outside the pipe as by the hydraulic-rotary method. This method is most suitable for construction of small-diameter wells in unconsolidated material.
- (P) An air-percussion drill is a cutting tool powered by compressed air. It uses a rapid percussion effect, coupled with rotary action, to drill hard rocks. Compressed air also is used to blow the cuttings from the hole. Air-percussion drills are generally used in conjunction with air-rotary drilling rigs.
- (R) Reverse rotary is similar to the hydraulic rotary except that the water or drilling mud flows down the annular space between the drilling stem and the wall of the hole and the cuttings are pumped out through the drill stem.
- (T) Trenching refers to the construction of a sump or open pit from which ground water may be pumped. Trenching may be done by hand, but more commonly power equipment such as a bulldozer, dragline power shovel, or a backhoe is used. Ponds and drains belong in this category of construction.

- (V) Driven wells are constructed by driving a length of pipe, usually of small diameter and generally equipped with a sand point, to the desired depth. The wells may be driven by hand or with air hammer or other power equipment. An essential feature of a driven well is that no earth material is removed as the well is constructed.
- (W) Drive and wash wells are constructed by driving a small diameter open-end casing a few feet into the earth, then washing out the material from inside the casing with a jet of water. The process is repeated until the well has penetrated a sufficient depth into the aquifer.

#### 2.6.2.5 TYPE OF FINISH

(CDCOFI/C66 - CHAR X in position 58):

Enter the code indicating the method of finish or the nature of the openings that allow water to enter the well. Allowable codes are:

C - Porous concrete	S - Screen
F - Gravel pack w/perforations	T - Sand point
G - Gravel pack w/screen	W - Walled
H - Horizontal gallery	X - Open hole
O - Open end	Z - Other (explain in
P - Perforated or slotted	remarks)

- (C) Porous concrete is concrete casing that is pervious enough to allow ground water to seep into the well.
- (F & G) A gravel-pack well is a drilled or dug well that has a gravel envelope opposite the part through which water enters. Commonly, these wells will be finished either with commercial screen or with slotted casing.
- (H) A horizontal gallery or collector essentially is a horizontal type well in which the screen, slotted pipe, or gravel-filled trench is horizontal. All horizontal wells should be in this class, including Ranney collectors and infiltration galleries.
- (O) An open-end well is one that is cased to the bottom of the hole so that water can enter the well only through the bottom of the hole.

- (P) Perforated or slotted casing is well pipe that has had holes punched or slots cut in it to admit water. Do not use this designation if the well has a gravel pack. Use "F" instead.
- (S) Screen refers to commercial well screen manufactured for the purpose of admitting water to a well. Common types of screen are wire mesh, wrapped trapezoidal wire, and shutter screen. Do not use this designation if the well also has a gravel pack. Use "G" instead.
- (T) A sand point is the screen part of a drive point and usually is part of a driven well.
- (W) A walled or shored well is usually a dug well in which the walls have been shored up with open-jointed fieldstone, brick, tile, concrete blocks, wood cribbing, or other material. A few wells of this type may have gravel walls; however, they should be placed in this category instead of F or G. A dug well that is mostly open hole but has even a few feet of cribbing, corrugated pipe, or other shoring to prevent caving, should be in this category.
- (X) An open-hole well is one that has a finished open hole in the aquifer. A well belongs in this class even if the casing does not actually extend to the geologic unit or zone from which the water is obtained.

#### 2.6.2.6 TYPE OF SEAL

(CDCOSL/C67 - CHAR X in position 59):

Enter the code indicating the type of material used to seal the well against the entry of surface water. Allowable codes are:

B - Bentonite  
C - Clay or cuttings  
G - Cement grout

N - None  
Z - Other (explain in remarks)



**2.6.2.7 DEPTH TO BOTTOM OF SEAL**

(CDCOSD/C68 - CHAR X(4) in positions 60-63):

Enter the depth to the bottom of the seal, in feet below land surface, to the nearest foot.

**2.6.2.8 METHOD OF DEVELOPMENT**

(CDCODM/C69 - CHAR X in position 64):

Enter the code indicating the method used to develop the well. The codes and their meanings are:

A - Pumped with air lift	N - None
B - Bailed	P - Pumped
C - "Blown" or surged w/compressed air	S - Surged with surge block
J - Washed or jetted	Z - Other (explain in remarks)

**2.6.2.9 HOURS OF DEVELOPMENT**

(CDCODV/C70 - CHAR X(3) in positions 65-67):

Enter the number of hours that the well was bailed, pumped, and so forth, for development.

**2.6.2.10 SPECIAL TREATMENT DURING DEVELOPMENT**

(CDCOST/C71 CHAR X in position 68):

Enter the code indicating any special treatment that was applied during development of the well. The codes and their meanings are:

C - Chemical (acid, and so forth)	H - Hydrofracturing
D - Dry ice	M - Mechanical abrasion
E - Explosives	Z - Other (explain in remarks)
F - Deflocculent	

**2.6.2.11 RESERVED FOR FUTURE USE (CDCORS - CHAR X(92) in positions 69-160):**

### 2.6.3 Hole Record -- CDRTYP = HOLE

The first 35 characters of the hole data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	HOLE
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of hole data is identified by the coding of "HOLE" in component CDRTYP (positions 21-24) of the record. The HOLE components are entered as follows:

- 2.6.3.1 CDHPNT -- Sequence number of "parent" record (C59)  
MANDATORY
- 2.6.3.2 CDHTOP -- Depth to top of this interval (C73)  
MANDATORY
- 2.6.3.3 CDHBOT -- Depth to bottom of this interval (C74)
- 2.6.3.4 CDHDIA -- Diameter of this interval (C75)
- 2.6.3.5 CDHRES -- Reserved

#### 2.6.3.1 SEQUENCE NUMBER OF PARENT CONSTRUCTION (CONS) RECORD (CDHPNT/C59 - MANDATORY CHAR X(3) in positions 36-38):

Enter the sequence number (C723) of the construction (CONS) record to which the HOLE record is to be related. The CONS sequence number (C723) is the parent sequence number of HOLE, CSNG, and OPEN records, and relates the HOLE data to the proper construction record. This entry is mandatory; no information about the hole will be stored without a valid value for this field.

#### 2.6.3.2 DEPTH TO TOP OF INTERVAL (CDHTOP/C73 - MANDATORY CHAR X(8) in positions 39-46):

Enter the depth to the point where this section of hole begins, in feet below land surface. The first section of hole always begins at depth 0. This value is mandatory.

**2.6.3.3 DEPTH TO BOTTOM OF INTERVAL**

(CDHBOT/C74 - CHAR X(8) in positions 47-54):

Enter the depth to the bottom of the hole segment, in feet below land surface.

**2.6.3.4 DIAMETER OF INTERVAL**

(CDHDIA/C75 - CHAR X(5) in positions 55-59):

Enter the nominal diameter of the bit used to drill this section of the hole or the diameter to which the hole was reamed, in inches.

**2.6.3.5 RESERVED FOR FUTURE USE (CDHRES - CHAR X(101) in positions 60-160****2.6.4 Casing Record -- CDRTYP = CSNG**

The first 35 characters of the casing data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	CSNG
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of casing data is identified by coding of "CSNG" in component CDRTYP (positions 21-24) of the record. The CSNG components are entered as follows:

- 2.6.4.1 CDCSPT -- Sequence number of "parent" record (C901) MANDATORY
- 2.6.4.2 CDCSTP -- Depth to top of this casing interval (C77) MANDATORY
- 2.6.4.3 CDCSBT -- Depth to bottom of this casing interval (C78)
- 2.6.4.4 CDCSDI -- Diameter of this casing interval (SK6) (C79)
- 2.6.4.5 CDCSMT -- Casing material (C80)
- 2.6.4.6 CDCSTK -- Casing thickness (C81)
- 2.6.4.7 CDCSRS -- Reserved

**2.6.4.1 SEQUENCE NUMBER OF PARENT CONSTRUCTION (CONS) RECORD**  
(CDCSPT/C901 - MANDATORY CHAR X(3) in  
positions 36-38):

Enter the sequence number (C723) of the construction (CONS) record to which the CSNG record is to be related. The CONS sequence number (C723) is the parent sequence number of HOLE, CSNG, and OPEN records, and relates the CSNG data to the proper construction record. This entry is mandatory; no information about the casing will be stored without a valid value for this field.

**2.6.4.2 DEPTH TO TOP OF CASING**  
(CDCSTP/C77 - MANDATORY CHAR X(8) in  
positions 39-46):

Enter the depth to the top of this section of casing, in feet below land surface. If the casing extends above land surface, enter the height of the casing above land surface preceded by a minus sign (-). This field is mandatory; the casing information will be rejected if a value is not specified.

**2.6.4.3 DEPTH TO BOTTOM OF CASING**  
(CDCSBT/C78 - CHAR X(8) in positions 47-54):

Enter the depth to the bottom of this section of casing, in feet below land surface.

**2.6.4.4 DIAMETER OF CASING**  
(CDCSDI/C79 - CHAR X(5) in positions 55-59):

Enter the diameter of this section of casing, in inches. Two decimal places are provided for fraction sizes ( $1 \frac{1}{4} = 1.25$ ).

**2.6.4.5 CASING MATERIAL**

(CDCSMT/C80 - CHAR X in position 60):

Enter the code indicating the material from which the casing is made. The codes and their meanings are:

B - Brick	R - Rock or stone
C - Concrete	S - Steel
D - Copper	T - Tile
G - Galvanized iron	U - Coated steel
I - Wrought iron	W - Wood
M - Other metal	Z - Other material
P - PVC, fiberglass, other plastic	(explain in remarks)

**2.6.4.6 CASING THICKNESS**

(CDCSTK/C81 - CHAR X(6) in positions 61-66):

Enter the thickness of the casing wall, in inches. Three decimal places are provided.

**2.6.4.7 RESERVED FOR FUTURE USE (CDCSRS - CHAR X(94) in positions 67-160:**

### 2.6.5 Openings Record -- CDRTYP = OPEN

The first 35 characters of the openings data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	OPEN
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of openings data is identified by the coding of "OPEN" in component CDRTYP (positions 21-24) of the record. The OPEN components are entered as follows:

2.6.5.1	CDOPNT	--	Sequence number of "parent" record (C902)
			MANDATORY
2.6.5.2	CDOTOP	--	Depth to top of this open interval (C83)
			MANDATORY
2.6.5.3	CDOBOT	--	Depth to bottom of this open interval (C84)
2.6.5.4	CDODIA	--	Diameter of this open interval (C87)
2.6.5.5	CDOMAT	--	Material in this interval (C86)
2.6.5.6	CDOTYP	--	Type of openings in this interval (C85)
			MANDATORY
2.6.5.7	CDOLEN	--	Length of openings (C89)
2.6.5.8	CDOWID	--	Width of openings (C88)
2.6.5.9	CDORES	--	Reserved

#### 2.6.5.1 SEQUENCE NUMBER OF PARENT CONSTRUCTION (CONS) RECORD (CDOPNT/C902 - MANDATORY CHAR X(3) in positions 36-38):

Enter the sequence number (C723) of the construction (CONS) record to which the OPEN record is to be related. The CONS sequence number (C723) is the parent sequence number of HOLE, CSNG, and OPEN records, and relates the OPEN data to the proper construction record. This entry is mandatory; no information about the open intervals will be stored without a valid value for this field.

**2.6.5.2 DEPTH TO TOP OF OPENING INTERVAL**  
(CDOTOP/C83 - MANDATORY CHAR X(8) in positions 39-46):

Enter the depth to the top of the open section, in feet below land surface. This field is mandatory; information about the open interval will not be stored if this field does not contain a valid entry.

**2.6.5.3 DEPTH TO BOTTOM OF OPENING INTERVAL**  
(CDOBOT/C84 - CHAR X(8) in positions 47-54):

Enter the depth to the bottom of the open section, in feet below land surface.

**2.6.5.4 DIAMETER OF OPENING INTERVAL**  
(CDODIA/C87 - CHAR X(5) in positions 55-59):

Enter the inside diameter, in inches, of perforated or slotted pipe, the diameter of a screen, or the diameter of the hole, if the well is finished open-hole.

**2.6.5.5 MATERIAL TYPE**  
(CDOMAT/C86 - CHAR X in position 60):

Enter the code indicating the type of material from which the screen or other open section is made. The codes and their meanings are:

B - Brass or bronze	P - PVC, fiberglass, or
C - Concrete	other plastic
G - Galvanized iron	R - Stainless steel
I - Wrought iron	S - Steel
M - Other metal	T - Tile
	Z - Other (explain in remarks)

**2.6.5.6 TYPE OF OPENING**

(CDOTYP/C85 - MANDATORY CHAR X in position 61):

Enter the code indicating type of open section. The codes and their meanings are:

F - Fractured rock	S - Screen, type not known
L - Louvered or shutter-type screen	T - Sand point
M - Mesh screen	W - Walled or shored
P - Perforated, porous, or slotted casing	X - Open hole
R - Wire-wound screen	Z - Other (explain in remarks)

This field is mandatory; information about the openings will not be stored if this field is blank.

**2.6.5.7 LENGTH OF OPENING**

(CDOLEN/C89 - CHAR X(6) in positions 62-67):

Enter the long dimension of perforations or slots, in inches. This refers to the individual openings in the screen or slotted pipe.

**2.6.5.8 WIDTH OF OPENING**

(CDOWID/C88 - CHAR X(6) in positions 68-73):

Enter the short dimension of perforations or slots, or the mesh size of screens, in inches.

**2.6.5.9 RESERVED FOR FUTURE USE** (CDORES - CHAR X(87) in positions 74-160):



### 2.6.6 Repairs Record -- CDRTYP = REPR

The first 35 characters of the repairs data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	REPR
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of minor site-repairs data is identified by the coding of "REPR" in component CDRTYP (positions 21-24) of the record. The REPR components are entered as follows:

2.6.6.1	CDRNAT -- Nature of repairs (C166) MANDATORY
2.6.6.2	CDRDAT -- Date of repairs (C167)
2.6.6.3	CDRCTR -- Name of contractor who made repairs (C169)
2.6.6.4	CDRCHG -- Percent change in performance after repairs (C170)
2.6.6.5	CDRRES -- Reserved

#### 2.6.6.1 NATURE OF REPAIR

(CDRNAT/C166 - MANDATORY CHAR X in position 36):

Enter the code that best describes the nature of the repair work. The codes are:

B - Blocked off	O - Slotted or perforated
C - Cleaned	P - Plugged back
D - Deepened	S - Screen replaced
I - Pump intake lowered	Z - Other
L - Liner installed	

Nature of work is a mandatory entry; repair data will not be stored without a value for this field.

**2.6.6.2 DATE OF REPAIR**

(CDRDAT/C167 - CHAR X(8) in positions 37-44):

Enter the date on which the repair work was completed. If the month and/or day are not known, enter "00" in the spaces. Use leading zeros for month and day less than 10, and use 4 digits for year.

**2.6.6.3 NAME OF CONTRACTOR**

(CDRCTR/C169 - CHAR X(12) in positions 45-56):

Enter the name of the individual or company that did the work. Use meaningful abbreviations or acronyms if needed to fit the space provided.

**2.6.6.4 PERCENT PERFORMANCE CHANGE**

(CDRCHG/C170 - CHAR X(3) in positions 57-59):

Enter the percentage by which the well performance was changed as a result of the work. Use whole numbers only. If the performance was decreased, enter the value with a preceding minus sign (-).

**2.6.6.5 RESERVED FOR FUTURE USE (CDRRES - CHAR X(101) in positions 60-160:**

### 2.6.7 Spring Record -- CDRTYP = SPNG

The first 35 characters of the spring data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	SPNG
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of spring data is identified by the coding of "SPNG" in component CDRTYP (positions 21-24) of the record. Enter the SPNG components as follows:

2.6.7.1	CDSNAM -- Name of spring (C172)
2.6.7.2	CDSTYP -- Type of spring (C173)
2.6.7.3	CDSPRM -- Permanence of spring (C174)
2.6.7.4	CDSSPH -- Sphere of discharge (C175)
2.6.7.5	CDSIMP -- Improvements (C176)
2.6.7.6	CDSNOP -- Number of spring openings (C177)
2.6.7.7	CDSVAR -- Flow variability (C178)
2.6.7.8	CDSACC -- Accuracy of flow variability (C179)
2.6.7.9	CDSRES -- Reserved

#### 2.6.7.1 NAME OF SPRING

(CDSNAM/C172 - CHAR X(40) in positions 36-75):

If the spring has a name by which it is known locally, enter the name here. Space is provided for up to 40 characters. If the name is longer, use meaningful abbreviations.

**2.6.7.2 TYPE OF SPRING**

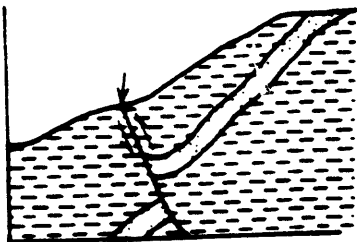
(CDSTYP/C173 - CHAR X in position 76):

Enter the code indicating the type of spring. The codes and their meanings are:

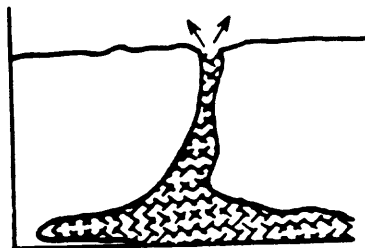
A - Artesian	K - Artesian and seepage or filtration
B - Perched and contact	L - Fracture and depression
C - Contact	P - Perched
D - Depression	O - Perched and fracture
E - Perched and depression	R - Perched and seepage or filtration
F - Fracture	S - Seepage or filtration
G - Geyser	T - Tubular - cave
H - Perched and tubular	Z - Other
J - Artesian and depression	

Refer to Figure 2, which illustrates the principal types of springs.

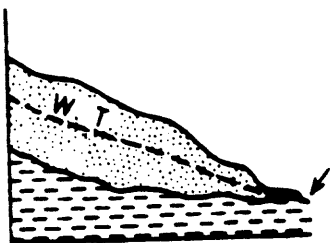
A. Artesian



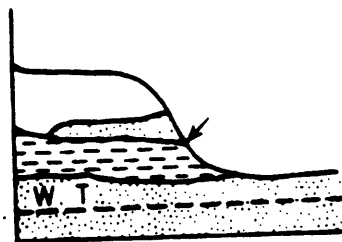
G. Geyser



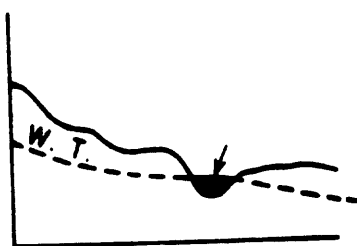
C. Contact



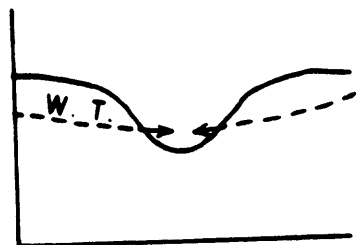
P. Perched



D. Depression



S. Seep or filtration



F. Fracture



T. Tubular

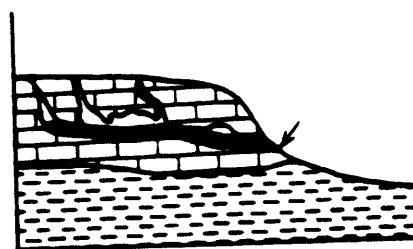


Figure 2. Sketch showing principal types of springs

**2.6.7.3 PERMANENCE**

(CDSPRM/C174 - CHAR X in position 77):

Enter the code indicating the permanence of the spring. The codes and their meanings are:

P - Perennial	G - Geyser
I - Intermittent	E - Periodic - ebb and flow
R - Response to precipitation	Z - Other
S - Seasonal	

- (P) Perennial refers to springs that discharge continuously.
- (I) Intermittent refers to springs that discharge only during certain periods but at other times are dry. Although all springs may be considered to be either perennial or intermittent, more descriptive detail can be included if it is available. The following characteristics describe special types of intermittent springs that may be coded:
- (R) Response to precipitation refers to springs which exist only after periods of rainfall.
- (S) Seasonal refers to springs that exist only during periods of high water levels.
- (G) Geyser refers to springs that discharge at more or less regular intervals. Discharge is caused by expansive force of highly heated steam.
- (E) Periodic - Ebb and Flow refers to springs that normally have periods of relatively greater discharge at regular and frequent intervals. Periodic springs may be perennial or intermittent. Periodic springs resemble geysers somewhat in their rhythmic action.

**2.6.7.4 SPHERE OF DISCHARGE**

(CDSSPH/C175 - CHAR X in position 78):

Enter the code indicating the sphere into which the spring discharges. The codes and their meanings are:

A - Subaerial	W - Subaqueous
---------------	----------------

**2.6.7.5 IMPROVEMENTS**

(CDSIMP/C176 - CHAR X in position 79):

Enter the code indicating the type of improvements that have been constructed at or in association with the spring. The codes and their meanings are:

B - Boxed or small covered basin	R - Pipe (not for
C - Concrete basin	conduction of water
G - Gallery	from spring)
H - Spring house	T - Trough
L - Lined	Z - Other (explain in
N - None	remarks)
P - Pond	

**2.6.7.6 NUMBER OF OPENINGS**

(CDSNOP/C177 - CHAR X(3) in positions 80-82):

Enter the number of openings through which water discharges from the spring. If the openings are too numerous to count, enter a value of 999.

**2.6.7.7 FLOW VARIABILITY**

(CDSVAR/C178 - CHAR X(3) in positions 83-85):

Where sufficient data are available to calculate or estimate the variability adequately, enter discharge variability of the spring, in percent, as expressed by the formula:

$$V = 100 \times [(a-b)/c]$$

V = Variability, in percent  
a = Maximum discharge  
b = Minimum discharge  
c = Average discharge

**2.6.7.8 BASIS FOR VARIABILITY**

(CDSACC/C179 - CHAR X in position 86):

Enter the code indicating the basis on which the variability of the spring was determined. The codes and their meanings are:

- A - Calculated from less than 1 year of continuous discharge record
- B - Calculated from 1 to 5 years of continuous discharge record
- C - Calculated from more than 5 years of continuous discharge record
- D - Calculated from intermittent measurements made over a period of more than 1 year
- E - Calculated from less than 1 year of record, or estimated
- Z - Determined by other method (explain in remarks)

**2.6.7.9 RESERVED FOR FUTURE USE (CDSRES - CHAR X(74) in positions 87-160):**



### 2.6.8 Measuring-Point Record -- CDRTYP = MPNT

The first 35 characters of the measuring-point data record are entered following the instructions in sections 2.1 through 2.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	MPNT
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of measuring-point data is identified by coding of "MPNT" in component CDRTYP (positions 21-24) of the record. Enter the MPNT components as follows:

- 2.6.8.1 CDMPBD -- Begin date for use of this measuring point (C321)
- 2.6.8.2 CDMPED -- End date for use of this measuring point (C322)
- 2.6.8.3 CDMPHT -- Height of this measuring point (C323)
- 2.6.8.4 CDMPRM -- Description of this measuring point (C324)
- 2.6.8.5 CDMPRS -- Reserved

#### 2.6.8.1 BEGINNING DATE

(CDMPBD/C321 - CHAR X(8) in positions 36-43):

Enter the date on which the measuring point was established. If the day and/or month are unknown, show them as 00. Use leading zeros for values of month and day that are less than 10, and specify all 4 digits for year. NOTE: Date is a control field; therefore, two entries with the same date will not be accepted.

#### 2.6.8.2 ENDING DATE

(CDMPED/C322 - CHAR X(8) in positions 44-51):

If this measuring point is no longer used, enter the date on which it was last used as a measuring point. A new occurrence of the measuring-point data should be used for the new measuring point. In this way, a history of measuring-point data corresponding to each water level can be maintained.

**2.6.8.3 HEIGHT OF MEASURING POINT**

(CDMPHT/C323 - CHAR X(6) in positions 52-57):

For observation wells or other wells where repeated measurements are made, enter the height of the measuring point above or below land surface datum. Values for measuring points below land surface should be preceded by a minus sign (-).

**2.6.8.4 MEASURING POINT DESCRIPTION**

(CDMPRM/C324 - CHAR X(94) in positions 58-151):

A detailed description of the measuring point may be entered here. Up to 94 characters of remarks are allowed.

**2.6.8.5 RESERVED FOR FUTURE USE (CDMRES - CHAR X(9) in positions 152-160):**

### 3. WATER-LEVEL FILE COMPONENTS

(Water-Level File defined December 13, 1984)

The WATER-LEVEL record is used to store water-level data for ground-water sites, and is 50 characters in length. The first 32 characters compose the primary key; the source agency, site ID, and measurement date are mandatory.

- 3.1 WLAGY -- Source agency code (C4) MANDATORY
- 3.2 WLID -- Site ID (C1) MANDATORY
- 3.3 WLDATE -- Measurement date (C235)  
MANDATORY
- 3.4 WLTIME -- Measurement time (C709)
- 3.5 WLEVL -- Depth to water (C237) MANDATORY EXCEPT  
WLSTAT = D, F, N, O, P, W
- 3.6 WLSTAT -- Status code (C238)
- 3.7 WLMETH -- Method code (C239)
- 3.8 WLREF -- Reference code (C240)
- 3.9 WLACC -- Accuracy code (C276)
- 3.10 WLDACC -- Date accuracy code (C236)
- 3.11 WLRES -- Reserved for later use

#### 3.1 SOURCE AGENCY

(WLAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in  
positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for a site will not be stored if this field is blank.

#### 3.2 SITE ID

(WLID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in  
positions 6-20):

Enter the 15-digit site identification number of the site to which the water levels apply. If a site schedule has not been previously entered into the data base, the appropriate schedule must accompany this schedule. Data on water levels will not be stored unless the mandatory location information for the site accompanies the water-level data or is already in the system.

**3.3 DATE**

(WLDATE/C235 - MANDATORY PRIMARY-KEY CHAR X(8) in positions 21-28):

Enter the date on which the water level was measured. If the day or month are unknown, show them as 00. Use leading zeros for values of month and day that are less than 10, and specify all 4 digits for year.

NOTE: Date is a control field; therefore, two entries with the same date and time will not be accepted. Furthermore, if the date is known to the year only, one entry only for that year may be specified. This is a mandatory field. The year is used as a secondary key.

**3.4 TIME OF MEASUREMENT**

(WLTIME/C709 - PRIMARY-KEY CHAR X(4) in positions 29-32):

Enter the time of day, when known, using the 24-hour clock.

**3.5 WATER LEVEL**

(WLEVL/C237 - MANDATORY (Except for WLSTAT equal to D, F, N, O, P, and W) CHAR X(7) in positions 33-39):

Enter the water level at the site, in feet below land surface. Precision can be carried to two decimal places. If the water level is above land surface, precede the value with a minus sign (-). If the site flows but the head is not known, the site is dry, the level cannot be measured, measurement has been discontinued, or the well was destroyed, leave this field blank and record the appropriate code under STATUS. With these five exceptions, this field is mandatory.

**3.6 STATUS**

(WLSTAT/C238 - CHAR X in position 40):

Enter the code indicating the status of the site at the time the water level was measured. If the water level measured represents a static level, leave this field blank. The codes and their meanings are:

- D - The site was dry (no water level is recorded).
- E - The site was flowing recently.
- F - The site was flowing, but the head could not be measured (no water level is recorded).
- G - A nearby site that taps the same aquifer was flowing.
- H - A nearby site that taps the same aquifer had been flowing recently.
- I - Injector site (recharge water being injected into the aquifer).
- J - Injector site monitor (a nearby site that taps the same aquifer is injecting recharge water).
- N - The measurement was discontinued.
- O - An obstruction was encountered in the well above the water surface (no water level is recorded).
- P - The site was being pumped.
- R - The site had been pumped recently.
- S - A nearby site that taps the same aquifer was being pumped.
- T - A nearby site that taps the same aquifer had been pumped recently.
- V - Foreign substance was present on the surface of the water.
- W - The well was destroyed.
- X - The water level was affected by stage in nearby surface-water site.
- Z - Other conditions that would affect the measured water level (explain in remarks).

If no site status is indicated, the reported water-level measurement represents a static level.

**3.7 METHOD OF MEASUREMENT**

(WLMETH/C239 - CHAR X in position 41):

Enter the code indicating how the water level was measured.  
The codes and their meanings are:

- A - Airline measurement
- B - Analog or graphic recorder
- C - Calibrated airline measurement
- E - Estimated
- G - Pressure-gage measurement
- H - Calibrated pressure-gage measurement
- L - Interpreted from geophysical logs
- M - Manometer measurement
- N - Nonrecording gage
- R - Reported, method not known
- S - Steel-tape measurement
- T - Electric-tape measurement
- V - Calibrated electric-tape measurement
- Z - Other

**3.8 STATISTICS CODE**

(WLREF/C240 - CHAR X in position 42):

If the measurement was made by a continuous recorder (analog or digital), enter the code which indicates how the measurement was selected from the readings available for that day. The possible codes and their meanings are as follows:

- M - Water level shown is a daily maximum  
(i.e., deepest water level for the day).
- N - Water level shown is a daily minimum  
(i.e., shallowest water level for the day).
- A - Water level is 12:00 noon reading.
- P - Water level is 12:00 midnight reading.

**3.9 WATER-LEVEL ACCURACY**

(WLACC/C276 - CHAR X in position 43):

The accuracy of the water level can be coded as an aid to proper table formatting. Use the following codes:

- 0 - Water-level accuracy to nearest foot
- 1 - Water-level accuracy to nearest tenth of a foot
- 2 - Water-level accuracy to nearest one-hundredth of a foot

**3.10 DATE ACCURACY**

(WLDACC/C236 - CHAR X in position 44):

Code for accuracy of date--M to nearest month, Y to nearest year, D to nearest day. If left blank, this field is automatically generated based on the contents of WLDATE (C235).

**3.11 RESERVED FOR FUTURE USE (WLRES - CHAR X(6) in positions 45-50):**

#### 4. DISCHARGE FILE COMPONENTS

(Discharge File Record defined December 13, 1984)

The DISCHARGE OR WITHDRAWAL record is used to store water-level and discharge data needed to estimate well performance for both flowing and pumped sites.

The DISCHARGE record is 100 characters in length. The first 31 characters compose the primary key and are mandatory. The DISCHARGE record is coded as follows:

- 4.1 DIAGY -- Source agency code (C4) MANDATORY
- 4.2 DIID -- Site identification number (C1) MANDATORY
- 4.3 DISEQ -- Record sequence number (C147) MANDATORY
- 4.4 DIDTE -- Date discharge measured (C148) MANDATORY
- 4.5 DIUPDT -- Date record last updated (C702)
- 4.6 DITYPE -- Type of discharge -- pump or flow (SK1) (C703)
- 4.7 DIVAL -- Discharge, in gpm (SK2) (C150) MANDATORY
- 4.8 DISRC -- Source of discharge data (C151)
- 4.9 DIMET -- Method discharge measured (C152)
- 4.10 DIPROD -- Producing water level (C153)
- 4.11 DISTAT -- Static water level (C154)
- 4.12 DILVSC -- Source of water-levels data (C155)
- 4.13 DILVME -- Method water levels measured (C156)
- 4.14 DIDUR -- Duration of discharge before producing level (C157)
- 4.15 DISPCP -- Specific capacity (C272)
- 4.16 DIDRDN -- Drawdown (C309)
- 4.17 DIRESV -- Reserved

##### 4.1 SOURCE AGENCY

(DIAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for the site will not be stored if this field is blank.



**4.2 SITE ID**

(DIID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the discharge data applies. If the site has not been entered into the Site File, this operation must be completed before the discharge data are input. The SITE ID number is mandatory and a part of the primary key.

**4.3 RECORD SEQUENCE NUMBER**

(DISEQ/C147 - MANDATORY CHAR X(3) in positions 21-23):

Each entry of production data for a site must have an identifying number in this space. The numbers do not have to be in sequence, but a number may be used only one time at a site. The entry number is mandatory; production data will not be stored if the field is blank.

**4.4 DATE DISCHARGE MEASURED**

(DIDTE/C148 - MANDATORY CHAR X(8) in positions 24-31):

Enter the date on which the discharge data were determined. If the day and/or month are not known, enter 00 in the spaces. Use leading zeros for values of month or day less than 10, and specify all 4 digits of the year.

**4.5 DATE RECORD LAST UPDATED**

(DIUPDT/C702 - CHAR X(8) in positions 32-39):

This is the date when the data record was entered or modified. Entry of this date is by the EDIT/UPDATE software.

**4.6 TYPE OF DISCHARGE**

(DITYPE/C703 - MANDATORY SECONDARY-KEY CHAR X in position 40):

Enter the code for type of discharge recorded in the record.

P - Pumped discharge  
F - Flow discharge

**4.7 DISCHARGE**

(DIVAL/C150 - MANDATORY SECONDARY-KEY CHAR X(10) in positions 41-50):

Enter the discharge from the site in gallons per minute. If discharge is determined in other units (such as cfs or metric units), convert to gallons per minute. Two decimal places are provided for very small discharges. Discharge is a mandatory entry; production data will not be stored if this field is blank.

**4.8 SOURCE OF DATA**

(DISRC/C151 - CHAR X in position 51):

Enter the code that indicates who furnished the data. The codes are the same as those for source-of-depth data (SWDSRC-C29) (see section 1.48 under Site File Components).

**4.9 METHOD OF DISCHARGE MEASUREMENT**

(DIMET/C152 - CHAR X in position 52):

Enter the code that best describes the method used to determine the discharge. The codes are:

- A - Acoustic meter (transient-time meter)
- B - Bailer
- C - Current meter--either propeller-type meter in the discharge pipe, or propeller- or cup-type meter in the discharge channel.
- D - Doppler meter
- E - Estimated
- F - Flume
- M - Totaling meter
- O - Orifice
- P - Pitot-tube meter, includes Cox meter, Collins meter, and the like.
- R - Reported, method not known
- T - Trajectory method (free-fall method)
- U - Venturi meter
- V - Volumetric measurement: bucket or barrel and stopwatch
- W - Weir
- Z - Other

**4.10 PRODUCTION LEVEL**

(DIPROD/C153 - CHAR X(8) in positions 53-60):

Enter the water level, in feet below land surface, while the well was discharging. The difference between this value and the value for the next entry, static level, will be the drawdown. If the discharge is by natural flow, the production level (if measurable) is the head above land surface preceded by a minus sign (-).

**4.11 STATIC LEVEL**

(DISTAT/C154 - CHAR X(8) in positions 61-68):

Enter the static water level, in feet below land surface. This may be the same value as the water level coded for SINVWL (C30) (section 1.50 in Site File). If the static level is above land surface, enter the head above land surface (if measurable) preceded by a minus sign (-).

**4.12 SOURCE OF DATA**

(DILVSC/C155 - CHAR X in position 69):

Enter the code indicating who provided the water-level data. The codes are the same as those used for source-of-depth data (SWDSRC/C29). (See sec. 1.48 under Site File Components).

**4.13 METHOD OF WATER-LEVEL MEASUREMENT**

(DILVME/C156 - CHAR X in position 70):

Enter the code indicating the method by which the water levels were determined. The codes and their meanings are the same as those shown for water level method SIWLMT (C34). (See sec. 1.52 under Site File Components). If the static level and the production level were measured by different methods, record the method considered least accurate.

**4.14 PUMPING PERIOD**

(DIDUR/C157 - CHAR X(7) in positions 71-77):

Enter the length of time, in hours, that the well was pumped prior to the measurement of production levels. One decimal place is provided for times shorter than 1 hour.

**4.15 SPECIFIC CAPACITY**

(DISPCP/C272 - CHAR X(8) in positions 78-85):

If production or static levels are not known, but a specific capacity value is available, record that value in this field. Space is provided for recording precision to hundredths of a (gal/min)/ft drawdown. Specific capacity will be automatically computed and stored if discharge and drawdown are known.

**4.16 DRAWDOWN**

(DIDRON/C309 - CHAR X(8) in positions 86-93):

Enter the drawdown, in feet, observed in a pumping well (static level minus pumping level). Drawdown will be automatically computed and stored if production and static levels are known.

**4.17 RESERVED FOR FUTURE USE (DIRESV - CHAR X(7) in positions 94-100):**

## 5. MISCELLANEOUS FILE COMPONENTS

(Miscellaneous File Record defined December 13, 1984)

- 5.1 MGAGY -- Source agency code MANDATORY
- 5.2 MGDID -- Site identification number MANDATORY
- 5.3 MGDTYPE -- Record type (see below) (SK1) MANDATORY
- 5.4 MGDSEQ -- Record sequence number MANDATORY
- 5.5 MGDUPD -- Date record last updated
- 5.6 MGDATA -- Remainder of record (depend on record type)

The MISCELLANEOUS data file is used to store components that do not relate to a specific category. Eleven types of these data are included, each identified by a component record type (MGDTYP). The following is a list of the component codes used in the MISCELLANEOUS data file.

- OWNR - Includes owner's name data
- OTID - Includes other-identifier data
- OTDT - Includes other-data-available data
- VIST - Includes site-visits data
- QUAL - Includes field water-quality data
- LOGS - Includes geophysical logs data
- NETW - Includes networks data
- SPEC - Includes special-cases data
- MSVL - Includes miscellaneous-values data
- COOP - Includes cooperator's data
- RMKS - Includes remarks data

The MISCELLANEOUS record is 90 characters in length. The first 35 characters are formatted the same for each of the 11 categories as listed above. The remaining 55 characters vary according to the category. The primary key is defined as source agency, site identification number, record type, and record sequence number; all of these entries are mandatory. Enter the first 35 characters of the record as follows:

### 5.1 SOURCE AGENCY

(MGAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for the site will not be stored if this field is blank.

## 5.2 SITE ID

(MGDID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the miscellaneous data applies. If the site has not been entered into the Site File, this operation must be completed before the miscellaneous data are input. The SITE ID number is mandatory and a part of the primary key.

## 5.3 RECORD TYPE

(MGDTYP - MANDATORY SECONDARY-KEY CHAR in positions 21-24):

The RECORD TYPE identifies the category of data included in the record. There are 11 categories with the MISCELLANEOUS data. This field is mandatory and is a secondary key. The categories are as follows:

OWNR	-	Owner's record (C768)
OTID	-	Other-identifiers record (C770)
OTDT	-	Other-data-available record (C772)
VIST	-	Site-visits record (C774)
QUAL	-	Field water-quality record (C776)
LOGS	-	Geophysical logs record (C778)
NETW	-	Networks record (C780)
SPEC	-	Special-cases record (C782)
MSVL	-	Miscellaneous-values record (C784)
COOP	-	Cooperator's data record (C786)
RMKS	-	Remarks record (C788)

## 5.4 RECORD SEQUENCE NUMBER

(MGDSEQ - MANDATORY PRIMARY-KEY CHAR X(3) in positions 25-27):

A number assigned at time of data entry to keep data by category in logical order. This number is mandatory and a part of the primary key. The component number for the record sequence number depends on the record type as follows:

OWNR - Owner's record (C718)  
OTID - Other-identifiers record (C736)  
OTDT - Other-data-available record (C312)  
VIST - Site-visits record (C737)  
QUAL - Field water-quality record (C738)  
LOGS - Geophysical logs record (C739)  
NETW - Networks record (C730)  
SPEC - Special-cases record (C729)  
MSVL - Miscellaneous-values record (C313)  
COOP - Cooperator's data record (C734)  
RMKS - Remarks record (C311)

## 5.5 DATE RECORD LAST UPDATED

(MGDUPD - CHAR X(8) in positions 28-35):

This is the date when the data record was entered or modified. Entry of this date is by the EDIT/UPDATE software. The component number for the date of last update depends on the record type as follows:

OWNR - Owner's record (C769)  
OTID - Other-identifiers record (C771)  
OTDT - Other-data-available record (C773)  
VIST - Site-visits record (C775)  
QUAL - Field water-quality record (C777)  
LOGS - Geophysical logs record (C779)  
NETW - Networks record (C781)  
SPEC - Special-cases record (C783)  
MSVL - Miscellaneous-values record (C785)  
COOP - Cooperator's data record (C787)  
RMKS - Remarks record (C789)

## 5.6 DATA DEPENDENT ON RECORD TYPE

(MGDATA - CHAR X(55) in positions 36-90):

These fields are described below for each record type.

### 5.6.1 Owner's Record -- MGD TYP = OWNR

The first 35 characters of the owner's data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	OWNER
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

If the site is used, leased, or occupied by someone other than the owner, this fact should be entered in the RMKS data record, together with the name of the user, lessee, or tenant.

The entry of owner's name data is identified by the coding of "OWNER" in component MDGTYP (positions 21-24) of the record. Enter the OWNER components as follows:

#### 5.6.1.1 DATE OF OWNERSHIP

(MGDODA/C159 - CHAR X(8) in positions 36-43):

Enter the date that this owner acquired ownership of the well, spring, etc., or the earliest date on which this owner was known to own the source. If the day and/or month are not known, enter 00 in these spaces. Use leading zeros for month and day values less than 10. Specify all 4 digits of the year.

#### 5.6.1.2 OWNER'S NAME

(MGDONM/C161, C162, C163 - MANDATORY CHAR X(42) in positions 44-85):

Enter the name of the owner. This is a mandatory entry; if a name is not specified, ownership data will not be stored. The recommended format for entering an individual's name is: last name, first name, middle initial. If a company's name will not fit into 42 characters, use meaningful abbreviations. Use of special characters #, =, and single quotes, are not allowed for this field; they are reserved characters for both Prime GWSI and WATSTORE GWSI.

#### 5.6.1.3 RESERVED FOR FUTURE USE (MGDORS - CHAR X(5) in positions 86-90):



## 5.6.2 Other-Identifiers File Record -- MGD TYP = OTID

5.6.2.1 MGDOID -- Other identifier (C190) MANDATORY

5.6.2.2 MGDOIA -- Assigner (C191) MANDATORY

The first 35 characters of the other-identifier's data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	OTID
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of other site identification numbers is identified by the coding of "OTID" in component MGD TYP (positions 21-24) of the record. This record provides for recording identifying numbers or names assigned to the sites by other agencies or individuals. The COOP record provides another means of defining other site identifiers. Enter the OTID components as follows:

### 5.6.2.1 OTHER IDENTIFIER

(MGDOID/C190 - MANDATORY SECONDARY-KEY CHAR X(15) in positions 36-50):

Enter the name or number by which the site is identified. This is a mandatory data element; information will not be stored without a value for this field.

### 5.6.2.2 ASSIGNER

(MGDOIA/C191 - MANDATORY CHAR X(15) in positions 51-65):

Enter the name of the person or organization that assigned the number for the site. Space is provided for up to 15 characters. If the name is longer, use meaningful abbreviations or acronyms.

If this record is used for identifiers assigned to many sites, such as numbers assigned by the District office or by a State agency, care must be taken to ensure that the identical name, abbreviation, or acronym is used in all cases. Failure to do so will lead to problems in retrieving specific values from the record.

**5.6.2.3 RESERVED FOR FUTURE USE (MGDOIR - CHAR X(25) in positions 66-90):**

**5.6.3 Other-Data-Available Record -- MGD TYP = OTDT**

- 5.6.3.1 MGDODT -- Other data type (C181) MANDATORY
- 5.6.3.2 MGDODL -- Other data location (C182)
- 5.6.3.3 MGDODF -- Format of other data (C261)
- 5.6.3.4 MGDODR -- Reserved

The first 35 characters of the other-data-available record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	OTDT
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The other-data-available record is used to indicate the availability of additional data pertinent to the site.

The entry of other-data-available data is identified by the coding of "OTDT" in component MGD TYP (positions 21-24) of the record. Enter the OTDT components as follows:

**5.6.3.1 OTHER DATA TYPE**  
(MGDODT/C181 - MANDATORY CHAR X(38) in positions 36-73):

Describe the type of data that are available for the site. Use meaningful abbreviations if needed. This field is mandatory; other available data information will not be stored if this field is blank.

**5.6.3.2 OTHER DATA LOCATION**

(MGDODL/C182 - CHAR X in position 74):

Enter the code that identifies the location of the data. The codes are:

C - Cooperator's office	R - Reporting agency office
D - District office (USGS only)	Z - Other (explain in remarks)

**5.6.3.3 FORMAT**

(MGDODF/C261 - CHAR X in position 75):

Enter the code that best describes the form in which the data are stored. The codes and their meanings are:

F - Files (raw data)	P - Published (report or basic-data release)
M - Machine readable	Z - Other (explain in remarks)

**5.6.3.4 RESERVED FOR FUTURE USE** (MGDODR - CHAR X(15) in positions 76-90):**5.6.4. Site-Visits Record -- MGD TYP = VIST**

5.6.4.1 MGDVDT -- Date of visit (C187) MANDATORY  
5.6.4.2 MGDVPN -- Person who made visit (C188)  
5.6.4.3 MGDVRS -- Reserved

The first 35 characters of the site-visits data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	VIST
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The site-visits record is used to record the date of the site visit and the name of the person who made the visit. If desired, this record may be repeated to keep a history of the inventory activity at the site or an indication of the data's most recent reverification.

The entry of site-visit data is identified by the coding of "VIST" in component MGD TYP (positions 21-24) of the record. Enter the VIST components as follows:

#### **5.6.4.1 DATE OF VISIT**

(MGDVDT/C187 - MANDATORY CHAR X(8) in positions 36-43):

Enter the date on which the site was visited. Use leading zeros for values of day or month less than 10. Specify all 4 digits for the year. This entry is mandatory.

#### **5.6.4.2 NAME OF PERSON**

(MGDVPN/C188 - CHAR X(22) in positions 44-65):

Enter last name and the initials of the person who made the site inventory or visit. Leave a space between the last name and initials, do not include periods. For example, Charlie Arthur Brown would be entered as BROWNbCbA (b=blank).

#### **5.6.4.3 RESERVED FOR FUTURE USE** (MGDVRS - CHAR X(25) in positions 66-90):

### 5.6.5 Field Water-Quality Record -- MGD TYP = QUAL

- 5.6.5.1 MGDQDT -- Date of QW measurement (C193) MANDATORY
- 5.6.5.2 MGDQAQ -- Aquifer sampled (C195)
- 5.6.5.3 MGDQPC -- Parameter code (SK4) (C196) MANDATORY
- 5.6.5.4 MGDQVL -- Value of parameter (C197) MANDATORY
- 5.6.5.5 MGDQRS -- Reserved

The first 35 characters of the field water-quality data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	QUAL
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The field water-quality record is used to record the values of water-quality parameters collected on a one-time basis in the field. The results of laboratory analyses or repetitive field measurements should not be included here, but should be stored in the Water-Quality File.

The entry of field water-quality data is identified by the coding of "QUAL" in component MGD TYP (positions 21-24) of the record. Enter the QUAL components as follows:

#### 5.6.5.1 DATE SAMPLED

(MGDQDT/C193 - MANDATORY CHAR X(8) in positions 36-43):

Enter the date on which the field water-quality data were collected. If the day or month are not known, enter 00 in these spaces. Use leading zeros for values of day or month that are less than 10. Specify all 4 digits of the year. Date is a mandatory component; field water-quality data will not be stored if this field is blank.

**5.6.5.2   AQUIFER SAMPLED**

(MGDQAQ/C195 - CHAR X(8) in positions 44-51):

Enter the eight-character code that identifies the aquifer or geologic unit from which the water sample came. This field is mandatory only if the combination of date and STORET parameter code cannot guarantee unique identification of a measurement; for example, when temperatures for two separate hydrologic units are recorded at a site.

**5.6.5.3   PARAMETER CODE**

(MGDQPC/C196 - MANDATORY SECONDARY-KEY CHAR X(5) in positions 52-56):

Enter the appropriate water-quality parameter code for a field-determined water-quality characteristic. This entry is mandatory; information will not be stored without a value for this field.

Following are the legal STORET codes:

00010 Temperature, water (degrees C)  
00095 Specific conductance (microsiemens/cm  
at 25 degrees C)  
00300 Oxygen, dissolved (DO), MG/L  
00400 pH (standard units)  
00405 Carbon dioxide, dissolved (MG/L as CO<sub>2</sub>)  
00410 Alkalinity, water, whole, total, field,  
as CaCO<sub>3</sub>, MG/L  
00430 Alkalinity, carbonate (MG/L as CaCO<sub>3</sub>)  
00440 Bicarbonate, water, whole, total, field,  
as HCO<sub>3</sub>, MG/L  
00445 Carbonate, water, whole, total, field,  
as CO<sub>3</sub>, MG/L  
00900 Hardness, total (MG/L as CaCO<sub>3</sub>)  
00940 Chloride, dissolved (MG/L as CL)  
00945 Sulfate, dissolved (MG/L as SO<sub>4</sub>)  
00950 Fluoride, dissolved (MG/L as F)  
01045 Iron, total (ug/L as FE)  
31501 Coliform, membrane filter, immediate M-endo  
medium (colonies/100 ML)  
31625 Coliform, fecal, .7 UM-MF (colonies/100 ML)  
31673 Streptococci, fecal, membrane filter, KF agar  
(colonies/100 ML)  
71820 Density (GM/ML at 20 degrees C)  
71830 Hydroxide, water, whole, total, field,  
as OH, MG/L

#### 5.6.5.4 VALUE

(MGDQVL/C197 - MANDATORY CHAR X(9) in  
positions 57-65):

Enter the measured value for the field water-quality characteristic. Except for conductance, space is provided to indicate precision to one decimal place. However, the values should be recorded in the units and to the precision required by the water-quality reporting system for that parameter; for example, report temperature to tenths of degrees Celsius and conductance in whole microsiemens. This entry is mandatory.

5.6.5.5 **RESERVED FOR FUTURE USE** (MGDQRS - CHAR X(25) in positions 66-90):

**5.6.6 Geophysical-Logs Record -- MGD TYP = LOGS**

- 5.6.6.1 MGD LTY -- Type of log (SK5) (C199) MANDATORY
- 5.6.6.2 MGD LTP -- Depth to top of logged interval (C200)
- 5.6.6.3 MGD LBT -- Depth to bottom of logged interval (C201)
- 5.6.6.4 MGD LSC -- Source of log data (C202)
- 5.6.6.5 MGD LRS -- Reserved

The first 35 characters of the geophysical-logs data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	LOGS
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The logs record is used to enter information about types of geophysical or other logs available for the site.

The entry of geophysical logs data is identified by the coding of "LOGS" in component MGD TYP (positions 21-24) of the record. Enter the LOGS components as follows:



**5.6.6.1 TYPE OF LOG**

(MGDLTY/C199 - MANDATORY SECONDARY-KEY CHAR X in position 36):

Enter the code that best describes the log type. This field is mandatory. The codes are:

A - Drilling time	M - Microlog
B - Casing collar	N - Neutron
C - Caliper	O - Microlateral log
D - Drillers	P - Photographic
E - Electric	Q - Radioactive-tracer
F - Fluid-conductivity	S - Sonic
G - Geologists or sample	T - Temperature
H - Magnetic	U - Gamma-gamma
I - Induction	V - Fluid velocity
J - Gamma ray	X - Core
K - Dipmeter survey	Z - Other (explain in remarks)
L - Lateral log	

**5.6.6.2 BEGINNING DEPTH**

(MGDLTP/C200 - CHAR X(8) in positions 37-44):

Enter the depth to the top of the logged interval in feet below land surface.

**5.6.6.3 ENDING DEPTH**

(MGDLBT/C201 - CHAR X(8) in positions 45-52):

Enter the depth to the bottom of the logged interval, in feet below land surface.

**5.6.6.4 SOURCE OF DATA**

(MGDLSC/C202 - CHAR X in position 53):

Enter the code that indicates who provided the information. The codes are the same as those used for source-of-depth data (SWDSRC-C29).

**5.6.6.5 RESERVED FOR FUTURE USE** (MGDLRS - CHAR X(37) in positions 54-90):

**5.6.7 Networks Record -- MGD TYP = NETW**

- 5.6.7.1 MGDNDT -- Data type (SK6) (QW - WL - WD) (C706)  
MANDATORY
- 5.6.7.2 MGDNBY -- Begin year of data collection (C115)  
MANDATORY
- 5.6.7.3 MGDNEY -- End year of data collection (C116)
- 5.6.7.4 MGDNTY -- Type of analyses (C120)  
(water-quality only)
- 5.6.7.5 MGDNSC -- Source agency for network data (C117)
- 5.6.7.6 MGDNFQ -- Frequency of data collection (C118)
- 5.6.7.7 MGDNMT -- Method of data collection (C133)  
(withdrawal only)
- 5.6.7.8 MGDNAA -- Agency that analyzes samples  
(water-quality only) (C307)
- 5.6.7.9 MGDNT1 -- Network--Primary (C257)
- 5.6.7.10 MGDNT2 -- Network--Secondary (C708)
- 5.6.7.11 MGDNRS -- Reserved

The first 35 characters of the networks data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	NETW
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The networks record is used to indicate the availability of the site as an established data-collection station for water-quality, water-level, or withdrawal data. If there are periods of significant interruption in the measurements or if the frequency of measurement changes, multiple entries may be reported to reflect the variations.

The entry of network data is identified by the coding of "NETW" in component MGD TYP (positions 21-24) of the record. Enter the NETW components as follows:

**5.6.7.1 TYPE OF NETWORK**

(MGDNDT/C706 - MANDATORY SECONDARY-KEY CHAR X(2) in positions 36-37):

Enter the code for the type of network. This component is mandatory for the entry of network data. The following codes are valid:

QW - Water-quality network station  
WL - Water-levels network station  
WD - Pumpage or withdrawals network station

**5.6.7.2 BEGINNING YEAR**

(MGDNBY/C115 - MANDATORY CHAR X(4) in positions 38-41):

Enter the year in which the data collection began at the site. Use four digits. Begin year is mandatory; information about data collection will not be stored if this field is blank.

**5.6.7.3 ENDING YEAR**

(MGDNEY/C116 - CHAR X(4) in positions 42-45):

Enter the year in which the data collection was ended at the site. Use four digits. If the site is currently monitored, leave this field blank.

**5.6.7.4 TYPE OF ANALYSES**

(MGDNTY/C120 - CHAR X(2) in positions 46-47):

Enter the code that indicates the type of water-quality data generally collected at the site. This is a two-character field; if two types of water-quality data are collected, code both. The codes and their meanings are:

- |                                |                        |
|--------------------------------|------------------------|
| A - Physical properties        | L - Trace elements,    |
| B - Common ions                | pesticides             |
| C - Trace elements             | and nutrients          |
| D - Pesticides                 | M - All or most of the |
| E - Nutrients                  | above                  |
| F - Sanitary analysis          | N - Common ions, trace |
| (organisms)                    | elements and           |
| G - Pesticides and common ions | radioactive            |
| H - Nutrients and common ions  | P - Common, trace, and |
| I - Common ions/trace          | physical               |
| elements                       | Z - Other (explain in  |
| J - Sanitary analysis and      | remarks)               |
| common ions                    |                        |
| K - Pesticides and nutrients   |                        |

**5.6.7.5 SOURCE AGENCY FOR NETWORK DATA**

(MGDNSC/C117 - CHAR X(5) in positions 48-52):

Enter the code identifying the principal agency responsible for collection of data. This field is mandatory only if necessary to uniquely identify the data-collection network of more than one agency.

**5.6.7.6 FREQUENCY OF COLLECTION**

(MGDNFQ/C118 - CHAR X in position 53):

Enter the code indicating frequency with which data are collected at the site. The codes and their meanings are:

- |                                 |                       |
|---------------------------------|-----------------------|
| A - Annually                    | S - Semiannually      |
| B - Bimonthly (every 2 months)  | W - Weekly            |
| C - Continuously (recorder)     | Z - Other (explain in |
| D - Daily                       | remarks               |
| F - Semimonthly (twice a month) | 2 - Biannually        |
| I - Intermittently              | 3 - Every 3 years     |
| M - Monthly                     | 4 - Every 4 years     |
| O - One time only               | 5 - Every 5 years     |
| Q - Quarterly                   | X - Every 10 years    |

**5.6.7.7 METHOD OF COLLECTION**

(MGDNMT/C133 - CHAR X in position 54):

Enter the code indicating the method by which water-withdrawal data are collected at the site. The codes are:

C - Calculated from	M - Metered
power-consumption records	U - Unknown
E - Estimated	Z - Other (explain in remarks)

**5.6.7.8 ANALYZING AGENCY**

(MGDNAA/C307 - CHAR X(5) in positions 55-59):

Enter up to five characters to indicate which agency performed the analyses on the water-quality data collected for this site.

**5.6.7.9 PRIMARY NETWORK SITE**

(MGDNT1/C257 - CHAR X in position 60):

Enter one of the codes listed below to indicate the management level of the network. If more than one network for an individual agency defined in section 5.6.7.5, Source Agency for Network Data, is entered, this field is mandatory in the WATSTORE System 2000 GWSI data base. Following are the codes and their meanings:

1 - National	3 - Project
2 - District	4 - Cooperator

**5.6.7.10 SECONDARY NETWORK SITE**

(MGDNT2/C708 - CHAR X in position 61):

This component provides each District with an additional field to better define District-specific networks. No allowable codes are defined at the national level, and each District can define codes for their individual systems. Ignore this field if it is not needed.

**5.6.7.11 RESERVED FOR FUTURE USE** (MGDNRS - CHAR X(29) in positions 62-90):

**5.6.8 Special-Cases Record -- MGDTYPE = SPEC**

- 5.6.8.1 MGDSWN -- Number of wells/laterals in a group (C204-220)
- 5.6.8.2 MGDSWD -- Depth of deepest well in group (C205)
- 5.6.8.3 MGDSWS -- Depth of shallowest well in group (C206)
- 5.6.8.4 MGDSWM -- Method wells in group constructed (C207)
- 5.6.8.5 MGDSWZ -- Diameter of well group (C262)
- 5.6.8.6 MGDSPL -- Length of pond, tunnel, or drain (C209)
- 5.6.8.7 MGDSPW -- Width of pond, tunnel, or drain (C210)
- 5.6.8.8 MGDSPD -- Depth of pond, tunnel, or drain (C211)
- 5.6.8.9 MGDSPB -- Bearing (azimuth) of pond, tunnel, or drain (C263)
- 5.6.8.10 MGDSPL -- Dip of tunnel (C264)
- 5.6.8.11 MGDSL D -- Depth of lateral in collector well (C221)
- 5.6.8.12 MGDSL L -- Length of lateral in collector well (C222)
- 5.6.8.13 MGDSL S -- Diameter of lateral in collector well (C223)
- 5.6.8.14 MGDSL M -- Mesh of screen in lateral (C224)
- 5.6.8.15 MGDSRS -- Reserved

The first 35 characters of the special-cases data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	SPEC
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The special-cases record is used to record data about multiple wells, ponds, tunnels, drains, and laterals or collector wells.

The entry of special-cases data is identified by the coding of "SPEC" in component MGDTYPE (positions 21-24) of the record. Enter the SPEC components as follows:

**5.6.8.1 NUMBER WELLS/LATERALS IN GROUP**

(MGDSWN/C204, C220 - CHAR X(3) in positions 36-38):

Enter the number of wells that make up this well group.

**5.6.8.2 DEPTH OF DEEPEST WELL**

(MGDSWD/C205 - CHAR X(3) in positions 39-41):

Enter the depth of the deepest well in the group, in feet below land surface.

**5.6.8.3 DEPTH OF SHALLOWEST WELL**

(MGDSWS/C206 - CHAR X(3) in positions 42-44):

Enter the depth of the shallowest well in the group, in feet below land surface.

**5.6.8.4 METHOD WELLS CONSTRUCTED**

(MGDSWM/C207 - CHAR X in position 45):

Enter the code indicating the method by which the wells were constructed. The codes are:

D - Drilled  
J - Jetted  
V - Driven

W - Drive-wash  
Z - Other

**5.6.8.5 DIAMETER OF GROUP**

(MGDSWZ/C262 - CHAR X(7) in positions 46-52):

Enter the mean diameter of the well field, in feet; that is, the diameter of a circle that will enclose the well group.

**5.6.8.6 LENGTH OF POND, TUNNEL, OR DRAIN**

(MGDSPL/C209 - CHAR X(5) in positions 53-57):

Enter whichever of the following is applicable (in feet): The length of a tunnel or drain, the longer dimension of a noncircular pond, or the diameter of a circular pond.

**5.6.8.7 WIDTH OF POND, TUNNEL, OR DRAIN**

(MGDSPW/C210 - CHAR X(3) in positions 58-60):

Enter whichever of the following is applicable (in feet): The width of a drain or noncircular tunnel, the diameter of a circular tunnel, or the shorter dimension of a noncircular pond.

**5.6.8.8 DEPTH OF POND, TUNNEL, OR DRAIN**

(MGDSPD/C211 - CHAR X(3) in positions 61-63):

Enter whichever of the following is applicable (in feet):  
The depth of a drain, the height of a noncircular tunnel, or the average depth of a pond.

**5.6.8.9 AZIMUTH OF POND, TUNNEL, OR DRAIN**

(MGDSPB/C263 - CHAR X(3) in positions 64-66):

Enter the orientation of a tunnel or drain or of the long dimension of a noncircular pond, in degrees bearing from due north. Bearings are read clockwise; from northeast is 90, south is 180, west is 270, etc.

**5.6.8.10 DIP OF TUNNEL**

(MGDSPA/C264 - CHAR X(3) in positions 67-69):

Enter the dip of a tunnel in degrees above or below (-) the horizontal.

**5.6.8.11 DEPTH TO LATERAL**

(MGDSL D/C221 - CHAR X(3) in positions 70-72):

Enter the depth to the lateral, in feet below land surface.

**5.6.8.12 LENGTH OF LATERAL**

(MGDSL L/C222 - CHAR X(3) in positions 73-75):

Enter the length of the lateral, in feet.

**5.6.8.13 DIAMETER OF LATERAL**

(MGDSL S/C223 - CHAR X(3) in positions 76-78):

Enter the diameter of the lateral, in inches.



**5.6.8.14 LATERAL SCREEN MESH**

(MGDSLML/C224 - CHAR X(3) in positions 79-81):

Enter the mesh of the lateral screen, in inches.

**5.6.8.15 RESERVED FOR FUTURE USE** (MGDSRS - CHAR X(9) in positions 82-90):**5.6.9 Miscellaneous-Values Record -- MGDTP = MSVL**

- 5.6.9.1 MGDMV1 -- MISC-VALUE-1 (C251)
- 5.6.9.2 MGDMV2 -- MISC-VALUE-2 (C252)
- 5.6.9.3 MGDMV3 -- MISC-VALUE-3 (C253)
- 5.6.9.4 MGDMV4 -- MISC-VALUE-4 (C314)
- 5.6.9.5 MGDMRS -- RESERVED

The first 35 characters of the miscellaneous-values data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	MSVL
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

For those users who want to enter data that are not of national significance but are essential to their operation, the MISC VALUES record is available.

The entry of miscellaneous-values data is identified by the coding of "MSVL" in component MGDTP (positions 21-24) of the record. Enter the MSVL components as follows:

**5.6.9.1 MISCELLANEOUS VALUE ONE**

(MGDMV1/C251 - CHAR X(7) in positions 36-42):

This is a real number with two numbers allowed to the right of the decimal. The value will not be edited except for format consistency.

**5.6.9.2 MISCELLANEOUS VALUE TWO**

(MGDMV2/C252 - CHAR X(11) in positions 43-53):

This is a CHARACTER type component. The value will not be edited except for format consistency.

**5.6.9.3 MISCELLANEOUS VALUE THREE**

(MGDMV3/C253 - CHAR X(10) in positions 54-63):

This is a CHARACTER type component. The value will not be edited except for format consistency.

**5.6.9.4 MISCELLANEOUS VALUE FOUR**

(MGDMV4/C314 - CHAR X(7) in positions 64-70):

This is an integer component with an allowance of a length of seven digits. The value will not be edited except for format consistency.

**5.6.9.5 RESERVED FOR FUTURE USE (MGDMRS - CHAR X(20) in  
positions 71-90):**

**5.6.10 Cooperator's Data Record -- MGD TYP = COOP**

- 5.6.10.1 MGDCID -- COOPERATOR'S ID (C213)
- 5.6.10.2 MGDCRN -- CONTRACTOR'S REGISTRATION  
NUMBER (C214)
- 5.6.10.3 MGDCST -- INSPECTION STATUS (C215)
- 5.6.10.4 MGDCAP -- REASON UNAPPROVED (C216)
- 5.6.10.5 MGDCIN -- DATE INSPECTED (C217)
- 5.6.10.6 MGDCRK -- COOPERATOR'S REMARKS (C218)
- 5.6.10.7 MGDCRS -- RESERVED

The first 35 characters of the cooperator's data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	COOP
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The Cooperator's Data Record is provided for entering data not included on other schedules.

The entry of cooperator's data is identified by the coding of "COOP" in component MGD TYP (positions 21-24) of the record. Enter the COOP components as follows:

**5.6.10.1 COOPERATOR'S SITE ID**

(MGDCID/C213 - CHAR X(10) in positions 36-45):

Enter the identification number used by the cooperating agency for the site, if different from the local well number.

**5.6.10.2 REGISTRATION NO.**

(MGDCRN/C214 - CHAR X(7) in positions 46-52):

Enter the registration or license number of the individual or firm that constructed the well or other type of site.

**5.6.10.3 INSPECTION STATUS**

(MGDCST/C215 - CHAR X(2) in positions 53-54):

Enter a code indicating whether or not the site has been inspected and approved. Cooperators can create their own set of meaningful codes, depending on the requirements of their agency.

**5.6.10.4 REASON UNAPPROVED**

(MGDCAP/C216 - CHAR X in position 55):

Enter a code indicating the reason why an inspected and unapproved site was not approved. Each cooperator can create his own set of meaningful codes, depending on the requirements of his agency.

**5.6.10.5 INSPECTION DATE**

(MGDCIN/C217 - CHAR X(8) in positions 56-63):

Enter the date on which the site was inspected by cooperator personnel. Use leading zeros for month and day less than 10, and 4 digits for year.

**5.6.10.6 REMARKS**

(MGDCRK/C218 - CHAR X(25) in positions 64-88):

Enter any additional pertinent cooperator data.

**5.6.10.7 RESERVED FOR FUTURE USE (MGDCRS - CHAR X(2) in positions 89-90):**

**5.6.11 Remarks Record -- MGD TYP = RMKS**

- 5.6.11.1 MGD RDT -- REMARK DATE (C184)
- 5.6.11.2 MGD RMK -- REMARK (C185)
- 5.6.11.3 MGD RRS -- RESERVED

The first 35 characters of the remarks data record are entered following the instructions in sections 5.1 through 5.5. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	RMKS
25-27	Record sequence number
28-35	Date of last update (generated by Update program)

The entry of remarks data is identified by the coding of "RMKS" in component MGD TYP (positions 21-24) of the record. Enter the RMKS components as follows:

**5.6.11.1 REMARK DATE**

(MGD RDT/C184 -CHAR(8) in positions 36-43):

Date pertaining to origin of remark.

**5.6.11.2 REMARKS**

(MGD RMK/C185 - CHAR X(44) in positions 44-87):

The remarks record is provided for entering meaningful data for which no specific field is available. Data in this field will be stored exactly as punched, together with the date of entry and sequence number. Use this space to explain entries of "other" for coded fields on the schedule, and to enter any other pertinent comments about the site.

For each comment, a three-digit sequence number is required (MGD SEQ) so that individual comments in the remarks record may be deleted or modified without affecting other entries. This field is mandatory.

Establish a local procedure for formatting remarks so that they may be more usable. For instance:

1. Start each remark with the number of the field it relates to in the first three or four positions of its remark.
2. Follow this with the values which uniquely identify the appropriate record occurrence, if applicable.
3. Continue the remark to subsequent entries, indenting several spaces on continuations to highlight remark beginnings.

**5.6.11.3 RESERVED FOR FUTURE USE**

(MGDRRS - CHAR X(3) in positions 88-90):

## 6. GEOHYDROLOGIC LOGS FILE COMPONENTS

(Geohydrologic Logs File Record defined December 13, 1984)

- 6.1 LGAGY -- Source agency code (C4) MANDATORY
- 6.2 LGID -- Site identification number (C1) MANDATORY
- 6.3 LGTYP -- Record type (C748-C750) (SK1) MANDATORY
- 6.4 LGSEQ -- Record sequence number (C721) MANDATORY
- 6.5 CNASEQ -- Record sequence number of parent (C256)  
MANDATORY
- 6.6 LGUPDT -- Date of last update (C749-C751)
- 6.7 LGDATA -- Data dependent on record types

The GEOHYDROLOGIC UNITS record is used for recording geohydrologic data about the site. The record can be used to record as little as the principal aquifer or aquifers, or as much as an entire log for the site. Each entry of this record describes a lithologic interval. The interval is not necessarily an entire formation or an entire aquifer. The following is a list of the component codes used in the GEOHYDROLOGIC UNIT data file.

- GEOH - Includes the aquifer description and depth interval
- AQFR - Includes the water level and contribution

The GEOHYDROLOGIC UNIT record is 200 characters in length. The first 38 characters are formatted the same for both categories listed above. The remaining 162 characters vary according to the category. The first 38 characters of the record are coded as follows:

### 6.1 SOURCE AGENCY

(LGAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for the site will not be stored if this field is blank.

**6.2 SITE ID**

(LGID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the geohydrologic unit data applies. If the site has not been entered into the Site File, this operation must be completed before the geohydrologic unit data are input. The SITE ID number is mandatory and a part of the primary key.

**6.3 RECORD TYPE**

(LGTYP/C748-C750 - MANDATORY SECONDARY-KEY CHAR in positions 21-24):

The RECORD TYPE identifies the category of data included in the record. There are two categories with the GEOHYDROLOGIC data. This field is mandatory and is a secondary key. The categories are as follows:

GEOH - Geologic unit record (C748)  
AQFR - Aquifer record (C750)

**6.4 RECORD SEQUENCE NUMBER**

(LGSEQ/C721-C742 - MANDATORY PRIMARY-KEY CHAR X(3) in positions 25-27):

A number assigned at time of data entry to keep data by category in logical order. This number is mandatory and a part of the primary key. The component number for the record sequence number depends on the record type as follows:

GEOH - Geologic unit record (C721)  
AQFR - Aquifers record (C742)

**6.5 PARENT SEQUENCE NUMBER (FOR AQFR ONLY)**

(CNASEQ/C256 - MANDATORY PRIMARY-KEY CHAR X(3) in positions 28-30):

Each aquifer unit described for a site must have a unique identifying number in this space. The numbers need not be in sequence, but each can be used only once for that site. The entry number is mandatory; aquifer data will not be stored if the field is blank. This field relates each aquifer record to the



correct parent GEOHYDROLOGIC record, and the sequence number entered in this field must match the sequence number in positions 25-27 of the related GEOH record.

#### 6.6 DATE RECORD LAST UPDATED

(LGUPDT/C749-C751 - CHAR X(8) in positions 31-38):

This is the date when the data record was entered or modified. Entry of this date is by the EDIT/UPDATE software. The component number for the date of last update depends on the record type as follows:

GEOH - Geologic unit record (C749)

AQFR - Aquifer record (C751)

#### 6.7 DATA DEPENDENT ON RECORD TYPE

(LGDATA - CHAR X(162) in positions 39-200):

These fields are described below for each record type.

##### 6.7.1 Geohydrologic Units Record -- LGTYP = GEOH

- 6.7.1.1 LGTOP -- Depth to top of interval (C91)
- 6.7.1.2 LGBOT -- Depth to bottom of interval (C92)
- 6.7.1.3 LGAQFR -- Aquifer code (SK2) (C93) MANDATORY
- 6.7.1.4 LGLITH -- Lithology code (SK3) (C96)
- 6.7.1.5 LGCONT -- Contributing unit (C304)
- 6.7.1.6 LGRESV -- Reserved for future use
- 6.7.1.7 LGDESC -- Description of material (C97)

The first 38 characters of the geohydrologic units data record are entered following the instructions in sections 6.1 through 6.6. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	GEOH
25-27	Record sequence number
28-30	Parent record sequence number (blank)
31-38	Date of last update (generated by Update program)

The geohydrologic units data record is used to provide descriptive information about the geologic units.

The entry of geohydrologic data is identified by the coding of "GEOH" in component LGTYP (positions 21-24) of the record. Enter the GEOH components as follows:

**6.7.1.1 DEPTH TO TOP OF UNIT**

(LGTOP/C91 - CHAR X(8) in positions 39-46):

Enter the depth to the top of this lithologic unit, in feet below land surface.

**6.7.1.2 DEPTH TO BOTTOM OF UNIT**

(LGBOT/C92 - CHAR X(8) in positions 47-54):

Enter the depth to the bottom of this lithologic unit, in feet below land surface. This field should be specified for all units except the last one in the hole.

**6.7.1.3 UNIT IDENTIFIER**

(LGAQFR/C93 - MANDATORY SECONDARY-KEY CHAR X(8) in positions 55-62):

Enter the eight-character code identifying the lithologic unit (see App. F in the WATSTORE User's Guide). (The terms BASEMENT and BEDROCK will be accepted as legal values.) The unit identifier is mandatory.

**6.7.1.4 LITHOLOGY**

(LGLITH/C96 - SECONDARY-KEY CHAR X(4) in positions 63-66):

Enter the code indicating the principal lithology of this unit. The codes are:

Rock Term	Abbreviation
-----	-----
Alluvium	ALVM
Anhydrite	ANDR
Anorthosite	ANRS
Arkose	ARKS
Basalt	BSLT
Bentonite	BNTN
Boulders	BLDR
Boulders and sand	BLSD
Boulders, silt, and clay	BLSC
Breccia	BRCC
Calcite	CLCT
Caliche (hard pan)	CLCH
Chalk	CHLK
Chert	CHRT
Clay	CLAY
Clay, some sand	CLSD
Claystone	CLSN
Coal	COAL
Cobbles	COBB
Cobbles and sand	COSD
Cobbles, silt, and clay	COSC
Colluvium	CLVM
Conglomerate	CGLM
Coquina	CQUN
Diabase	DIBS
Diorite	DORT
Dolomite	DLMT
Drift	DRFT
Evaporite	EVPR
Gabbro	GBBR
Glacial (undifferentiated)	GLCL
Gneiss	GNSS
Granite	GRNT
Granite, gneiss	GRGN
Gravel	GRVL
Gravel and clay	GRCL
Gravel, cemented	GRCM
Gravel, sand, and silt	GRDS
Gravel, silt and clay	GRSC
Graywacke	GRCK
Greenstone	GNST
Gypsum	GPSM
Hard pan	HRDP
Igneous (undifferentiated)	IGNS
Lignite	LGNT
Limestone	LMSN

Rock Term -----	Abbreviation -----
Limestone and Dolomite	LMDM
Loam	LOAM
Loess	LOSS
Marble	MRBL
Marl	MARL
Marlstone	MRLS
Metamorphis (undifferentiated)	MMPC
Muck	MUCK
Mud	MUD
Mudstone	MDSN
Other	OTHR
Outwash	OTSH
Overburden	OBDR
Peat	PEAT
Quartzite	QRTZ
Residium	RSDM
Rhyolite	RYLT
Rock	ROCK
Rubble	RBBL
Sand	SAND
Sand and clay	SDCL
Sand and gravel	SDGL
Sand and silt	SDST
Sand, gravel, and clay	SGVC
Sand, some clay	SNCL
Sandstone	SNDS
Sandstone and shale	SDSL
Saprolite	SPRL
Schist	SCST
Sedimentary (undifferentiated)	SDMN
Serpentine	SRPN
Shale	SHLE
Silt	SILT
Silt and clay	STCL
Siltstone	SLSN
Slate	SLTE
Soil	SOIL
Syenite	SYNT
Till	TILL
Travertine	TRVR
Tuff	TUFF
Volcanic (undifferentiated)	VLCC

**6.7.1.5 CONTRIBUTING UNIT**

(LGCONT/C304 - CHAR X in position 67):

Enter the following code to indicate whether the unit is to be considered the principal aquifer. If this field is left blank, the edit program will value this component with a default of "U" and will print a warning message to that effect.

- P - Principal contributing aquifer (only one per site)
- S - Secondary contributing aquifer
- N - Contributes no water
- U - Unknown contribution

If C93 (aquifer code in geohydrologic file) exists and C304 (contributing unit) is equal to "P", then C714 (primary aquifer) is set equal to C93.

**6.7.1.6 RESERVED FOR FUTURE USE** (LGRESV - CHAR X(10) in positions 68-77):**6.7.1.7 LITHOLOGIC MODIFIER**

(LGDESC/C97 - CHAR X(123) in positions 78-200):

Enter the adjective modifiers needed to describe the rock type. This field is free form--there are no assigned codes. Use meaningful abbreviations whenever possible. With the use of this field, and the field for primary lithology, nearly any rock type can be described satisfactorily.

Examples: for soft, chalky grey limestone

Lithology: LMSN, modifier: GREY, SOFT, CHALKY

or for a hard red sandstone, iron stained

Lithology: SNDS, modifier: HARD, RED, FE STND

**6.7.2 Aquifers Record -- LGTYP = AQFR**

- 6.7.2.1 CNAQDT -- Aquifer date (C95) MANDATORY
- 6.7.2.2 CNAQSL -- Aquifer static level (C126)
- 6.7.2.3 CNAQCN -- Aquifer contribution (C132)
- 6.7.2.4 CNARES -- Aquifer--reserved space

The first 38 characters of the geohydrologic data record are entered following the instructions in sections 6.1 through 6.6. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	AQFR
25-27	Record sequence number
28-30	Parent record sequence number (blank)
31-38	Date of last update (generated by Update program)

The aquifers record is a lower-level record within the geohydrologic units record. Data will not be stored in the aquifers record if any mandatory entry in the geohydrologic unit record is missing. The aquifer record is used for entering hydrologic data about each lithologic unit if such data are available.

The entry of the aquifer data is identified by the coding of "AQFR" in component LGTYP (positions 21-24) of the record. Enter the AQFR components as follows:

**6.7.2.1 DATE**

(CNAQDT/C95 - MANDATORY CHAR X(8) in positions 39-46):

Enter the date on which the aquifer data were collected. If the month or day are not known, enter 00 in the spaces. Use leading zeros for month or day less than 10, and specify all 4 digits for the year. Date is a mandatory entry; hydrologic data for the unit will not be stored if this field is blank.

**6.7.2.2 STATIC WATER LEVEL**

(CNAQSL/C126 - CHAR X(7) in positions 47-53):

Enter the static water level in this lithologic unit, if known, in feet below land surface. If the water level is above land surface, enter the head above land surface preceded by a minus sign (-).

**6.7.2.3 PERCENT WATER CONTRIBUTED**

(CNAQCN/C132 - CHAR X(3) in positions 54-56):

Enter the percentage of the total yield of the well that is contributed by this lithologic unit, if known. If part of the water that the well would otherwise produce is lost to this unit, enter the percentage of the water lost preceded by a minus sign (-).

**6.7.2.4 RESERVED FOR FUTURE USE (CNARES - CHAR X(144) in positions 57-200):**

## 7. OBSERVATION WELL HEADING FILE COMPONENTS

(Observation Well Heading File Record defined  
December 13, 1984)

- 7.1 HDAGY -- Source agency code (C4) MANDATORY
- 7.2 HDSID -- Site identification number (C1) MANDATORY
- 7.3 HDSEQ -- Observation well heading seq.no. (C315)  
MANDATORY
- 7.4 HDUPDT -- Date of last update (C707)
- 7.5 HDLINE -- Observation well heading line (C270)
- 7.6 HDRES -- Observation well heading reserved space

The observation well heading record is used to specify headings for producing tabular water-level reports.

### 7.1 SOURCE AGENCY

(HDAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in  
positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for a site will not be stored if this field is blank.

### 7.2 SITE ID

(HDSID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in  
positions 6-20):

Enter the 15-digit site identification number of the site to which the observation headings apply. If the site has not been entered into the Site File, this operation must be completed before the observation headings are input. The SITE ID number is mandatory and a part of the primary key.

### 7.3 RECORD SEQUENCE NUMBER

(HDSEQ/C315 - MANDATORY PRIMARY-KEY CHAR X(3) in  
positions 21-23):

For each heading line code a three-digit number, which is mandatory, so that individual lines in this schema record may be deleted or modified. The SEQUENCE NUMBER is a part of the primary key.



**7.4 DATE OF LAST UPDATE**

(HDUPDT/C707 - CHAR X(8) in positions 24-31):

The date of update is entered by the EDIT/UPDATE software.

**7.5 HEADING LINE**

(HDLINE/C270 - CHAR X(115) in positions 32-146):

Enter for this field up to 115 characters of CHARACTER data. The value will not be edited except to remove leading, redundant internal, and trailing blanks. The value cannot exceed 115 characters, but more than one entry can be made per site (no limit on the number of entries).

**7.6 RESERVED FOR FUTURE USE (HDRES - CHAR X(4) in  
positions 147-150):**

## 8. HYDRAULICS FILE COMPONENTS

(Hydraulics File Record defined December 12, 1984)

- 8.1 HYAGY -- Source agency code (C4) MANDATORY
- 8.2 HYID -- Site ID number (C1) MANDATORY
- 8.3 HYTYP -- Record type (SK1) (C744) MANDATORY
- 8.4 HYSEQ -- Record sequence number (C790-C106) MANDATORY
- 8.5 HYCSEQ -- Parent sequence number (C99) MANDATORY
- 8.6 HYUPDT -- Date of last update (C745-C747)
- 8.7 HYDATA -- Data dependent on record types

The HYDRAULICS data file is used to store components that relate to the hydraulics of the aquifer. Two types of hydraulics data are included, each identified by a component record type (HYTYP). The following is a list of the component codes used in the HYDRAULICS data file.

- HYDR - Includes the aquifer and test interval
- COEF - Includes the aquifer coefficients

The HYDRAULICS record is 120 characters in length. The first 38 characters are formatted the same for each of the 2 categories as listed above. The remaining 82 characters vary according to the category. The first 38 characters of the record are coded as follows:

### 8.1 SOURCE AGENCY

(HYAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reported the data. Enter, left-justified, the appropriate code from the SOURCE AGENCY code list. The reporting agency is mandatory and a part of the primary key. Data for the site will not be stored if this field is blank.

### 8.2 SITE ID

(HYID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the hydraulics data applies. If the site has not been entered into the Site File, this operation must be completed before the hydraulics data are input. The SITE ID number is mandatory and a part of the primary key.

**8.3 RECORD TYPE**

(HYTYP/C744-C746 - MANDATORY SECONDARY-KEY CHAR X(4) in positions 21-24):

The RECORD TYPE identifies the category of data included in the record. There are two categories with the HYDRAULIC data. This field is mandatory and is a secondary key. The categories are as follows:

HYDR - Hydraulic unit record (C744)  
COEF - Coefficients record (C746)

**8.4 RECORD SEQUENCE NUMBER**

(HYSEQ/C790-C106 - MANDATORY PRIMARY-KEY CHAR X(3) in positions 25-27):

A number assigned at time of data entry to keep data by category in logical order. This number is mandatory and a part of the primary key. The component number for the record sequence number depends on the record type as follows:

HYDR - Hydraulic unit record (C790)  
COEF - Coefficients record (C106)

**8.5 PARENT SEQUENCE NUMBER (FOR COEF ONLY)**

(HYCSEQ/C99 - MANDATORY PRIMARY-KEY CHAR X(3) in positions 28-30):

Each coefficient record for a site must have a unique identifying number in this space. The numbers need not be in sequence, but each can be used only once for that site. The entry number is mandatory; if this field is blank, coefficient data will not be stored. This field relates each coefficient record to the correct parent HYDRAULICS record, and the sequence number entered in this field must match the sequence number entered in positions 25-27 of the related HYDR record.

**8.6 DATE RECORD LAST UPDATED**

(HYUPDT/C745-C747 - CHAR X(8) in positions 31-38):

This is the date when the data record was entered or modified. Entry of this date is by the EDIT/UPDATE software. The component number for the date of last update depends on the record type as follows:

HYDR - Hydraulic unit record (C745)  
COEF - Coefficients record (C747)

**8.7 DATA DEPENDENT ON RECORD TYPE**

(HYDATA - CHAR X(82) in positions 39-120):

These fields are described below for each record type.

**8.7.1 Hydraulic Records -- HYTYP = HYDR**

8.7.1.1 HYHYUN -- Hydraulic unit ID (SK2) (C100) MANDATORY  
8.7.1.2 HYHTOP -- Test interval -- top (C101)  
8.7.1.3 HYHBOT -- Test interval -- bottom (C102)  
8.7.1.4 HYHTYP -- Hydraulic unit type (C103) MANDATORY  
8.7.1.5 HYHRMK -- Hydraulic--remarks (C104)  
8.7.1.6 HYHSAG -- Hydraulic source agency (C305)  
8.7.1.7 HYHRES -- Reserved for future use

The first 38 characters of the geohydrologic data record are entered following the instructions in sections 8.1 through 8.6. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	HYDR
25-27	Record sequence number
28-30	Parent record sequence number (blank)
31-38	Date of last update (generated by Update program)

The hydraulic data record is used to provide information about the geohydraulic unit to which the formation hydraulics data apply and the means by which the data were obtained.

The entry of hydraulic test interval data is identified by the coding of "HYDR" in component HYTYP (positions 21-24) of the record. The HYDR components are entered as follows:

**8.7.1.1 HYDRAULIC UNIT**

(HYHYUN/C100 - MANDATORY SECONDARY-KEY CHAR X(8) in positions 39-46):

Enter the eight-character code for the geohydrologic unit to which the formation hydraulics data apply. Use the codes given in the "Catalog of Aquifer Names and Geologic Unit Codes Used by the Water Resources Division." This field is mandatory.

**8.7.1.2 DEPTH TO TOP OF INTERVAL**

(HYHTOP/C101 - CHAR X(7) in positions 47-53):

Enter the depth to the top of the tested interval, in feet below land surface.

**8.7.1.3 DEPTH TO BOTTOM OF INTERVAL**

(HYHBOT/C102 - CHAR X(7) in positions 54-60):

Enter the depth to the bottom of the tested interval, in feet below land surface.

**8.7.1.4 HYDRAULIC UNIT TYPE**

(HYHTYP/C103 - MANDATORY CHAR X in position 61):

Enter the code indicating the hydraulic character of the unit tested. The codes and their meanings are:

- A - Aquifer
- C - Confining layer

This entry is mandatory; hydraulic data will not be entered if this value is not specified.

**8.7.1.5 REMARKS**

(HYHRMK/C104 - CHAR X(40) in positions 62-101):

Briefly describe the means by which the formation hydraulics data were determined. Forty characters are allowed. Use meaningful abbreviations. Examples:

- "Distance-drawdown, 3 wells, Theis solution"
- "Specific-capacity test"
- "Recovery, straight-line solution"

**8.7.1.6 HYDRAULIC SOURCE AGENCY**

(HYHSAG/C305 - CHAR X(5) in positions 102-106):

Enter the agency code of the organization that collected the hydraulic data.

**8.7.1.7 RESERVED FOR FUTURE USE (HYHRES -- CHAR X(14) in positions 107-120):****8.7.2 Coefficients Records -- HYTYP = COEF**

- 8.7.2.1 HYCTRN -- Transmissivity (C107)
- 8.7.2.2 HYCHHY -- Horizontal conductivity (C108)
- 8.7.2.3 HYCVHY -- Vertical conductivity (C109)
- 8.7.2.4 HYCSTR -- Storage coefficient (C110)
- 8.7.2.5 HYCLKC -- Leakance (C111)
- 8.7.2.6 HYCDIF -- Diffusivity (C112)
- 8.7.2.7 HYCSPS -- Specific storage (C113)
- 8.7.2.8 HYCBRE -- Barometric efficiency (C271)
- 8.7.2.9 HYCPOR -- Porosity (C306)
- 8.7.2.10 HYCRES -- Reserved for future use

The first 38 characters of the geohydrologic data record are entered following the instructions in sections 8.1 through 8.6. Here is a brief review for your convenience:

Positions	Description
1-5	Source agency
6-20	Site identification number
21-24	COEF
25-27	Record sequence number
28-30	Parent record sequence number (blank)
31-38	Date of last update (generated by Update program)

The coefficients record is used to record the hydraulic coefficients determined by the test data. This record is a lower-level record within the HYDRAULIC record.

The entry of coefficients data is identified by the coding of "COEF" in component HYTYP (positions 21-24) of the record. Definitions of the COEF components in the following sections are from Geological Survey Water-Supply Paper 1188, "Definitions of Selected Ground-Water Terms--Revisions and Conceptual Refinements" (Lohman and others, 1974). Enter the COEF components as follows:

**8.7.2.1 TRANSMISSIVITY**

(HYCTR/C107 - CHAR X(7) in positions 39-45):

Transmissivity is the rate at which water of the prevailing kinematic viscosity is transmitted through the unit width of the geohydrologic unit under a unit hydraulic gradient. Enter the computed transmissivity (T) in feet squared per day.

**8.7.2.2 HORIZONTAL CONDUCTIVITY**

(HYCHY/C108 - CHAR X(12) in positions 46-57):

The hydraulic conductivity of the medium is the volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow. Enter the computed horizontal hydraulic conductivity (K) in feet per day.

**8.7.2.3 VERTICAL CONDUCTIVITY**

(HYCVHY/C109 - CHAR X(12) in positions 58-69):

Enter the computed vertical hydraulic conductivity (K) in feet per day.

**8.7.2.4 STORAGE COEFFICIENT**

(HYCSTR/C110 - CHAR X(8) in positions 70-77):

The storage coefficient is the volume of water a geohydrologic unit releases from or takes into storage per unit surface area of the geohydrologic unit per unit change in head. In an unconfined water body the storage coefficient is virtually equal to the specific yield. Enter the computed storage coefficient (S), dimensionless.

**8.7.2.5 LEAKANCE**

(HYCLKC/C111 - CHAR X(9) in positions 78-86):

The leakance is the vertical conductivity of the geohydrologic unit divided by the thickness of the unit. Enter the computed leakance in 1/day.

**8.7.2.6 DIFFUSIVITY**

(HYCDIF/C112 - CHAR X(13) in positions 87-99):

The hydraulic diffusivity is the parameter  $T/S$ . Enter the computed hydraulic diffusivity ( $T/S$ , in feet squared per day).

**8.7.2.7 SPECIFIC STORAGE**

(HYCSPS/C113 - CHAR X(10) in positions 100-109):

The specific storage is the storage coefficient divided by the thickness of the geohydrologic unit. It is the volume of water the geohydrologic unit releases per unit volume per unit change in head. Enter the computed specific storage, dimensionless.

**8.7.2.8 BAROMETER EFFICIENCY**

(HYCBRE/C271 - CHAR X(3) in positions 110-112):

Enter efficiency of the aquifer's response to barometric changes, in percent.

**8.7.2.9 POROSITY**

(HYCPOR/C306 - CHAR X(4) in positions 113-116):

The porosity of the geohydrologic unit is its property of containing interstices or voids and may be expressed quantitatively as the ratio of the volume of its interstices to its total volume. At most, three digits are allowed. Enter the porosity as a decimal fraction; include the decimal point.

**8.7.2.10 RESERVED FOR FUTURE USE** (HYCRES - CHAR X(4) in positions 117-120):



**9. STATE WATER-USE FILE COMPONENTS**

(State Water-Use File Record defined May 16, 1986)

- 9.1 STAGY -- Source agency code (C4) MANDATORY
- 9.2 STWSID -- Site identification number (C1) MANDATORY
- 9.3 STWENO -- State water-use record sequence number  
(C715) MANDATORY
- 9.4 STWUDT -- Date of last update (C716)
- 9.5 STWCNO -- Certificate number (C278)
- 9.6 STWPDY -- Priority date (C282)
- 9.7 STWANO -- Application number (C280)
- 9.8 STWPNO -- Permit number (C281)
- 9.9 STWLDV -- Legal diversion (C279)
- 9.10 STWIAC -- Irrigated acreage (C288)
- 9.11 STWLAL -- Legal allowance (C298)
- 9.12 STWLDT -- Date legal irrigation begins (C285)
- 9.13 STWEDT -- Date legal irrigation ends (C286)
- 9.14 STWRSD -- State water-use reserved space

The STATE WATER-USE record is used to store water-use information. The record is 110 characters in length. The primary key is defined by the source agency code, site identification number, and the State water-use record number; these fields are mandatory.

**9.1 SOURCE AGENCY**

(STAGY/C4 - MANDATORY PRIMARY-KEY CHAR X(5) in positions 1-5):

The agency that reports the data. Enter, left-justified, the appropriate code. The reporting agency is mandatory and a part of the primary MIDAS key. Data for a site will not be stored if this field is blank.

**9.2 SITE ID**

(STWID/C1 - MANDATORY PRIMARY-KEY CHAR X(15) in positions 6-20):

Enter the 15-digit site identification number of the site to which the water use data applies. If the site has not been entered into the Site File, this operation must be completed before the water-use data are input. The SITE ID is mandatory and a part of the primary key.

**9.3 RECORD SEQUENCE NUMBER**

(STWENO/C715 - MANDATORY PRIMARY-KEY CHAR X(3) in positions 21-23):

A number assigned at time of data entry to keep data by category in logical order. This number is mandatory and a part of the primary key.

**9.4 DATE OF LAST UPDATE**

(STWUDT/C716 - CHAR X(8) in positions 24-31):

This field is the date when the data record was entered or modified by the EDIT/UPDATE software.

**9.5 CERTIFICATE NUMBER**

(STWCNO/C278 - CHAR X(7) in positions 32-38):

Enter the sequential number assigned by the State Water Resources Agency (SWRA) to each water right upon completion of a survey of field acreage.

**9.6 PRIORITY DATE**

(STWPDT/C282 - CHAR X(8) in positions 39-46):

Enter the date of receipt of application for the water right by the SWRA.

**9.7 APPLICATION NUMBER**

(STWANO/C280 - CHAR X(7) in positions 47-53):

Enter the sequential number assigned by the SWRA to each application for water right.

**9.8 PERMIT NUMBER**

(STWPNO/C281 - CHAR X(7) in positions 54-60):

A sequential number assigned by the SWRA to each water right when it is processed.

**9.9       LEGAL DIVERSION**

(STWLDV/C279 CHAR X(5) in positions 61-65):

Enter the maximum rate at which water is allowed to be pumped for the water right--in cubic feet per second (cfs).

**9.10       IRRIGATED ACREAGE**

(STWIAC/C288 CHAR X(15) in positions 66-80):

Enter two 7-digit numbers, separated by a slash, for primary and supplemental irrigated acreage. This is a character field and allows for acreage to be reported with decimal fractions.

**9.11       LEGAL ALLOWANCE**

(STWLAL/C298 CHAR X(6) in positions 81-86):

Enter the maximum amount of water (in acre-feet) legally allowed per year for a water right.

**9.12       DATE LEGAL IRRIGATION BEGINS**

(STWLDT/C285 CHAR X(8) in positions 87-94):

Date irrigation can legally begin in the spring. The date is stored as YYYYMMDD, but the screen-entry program allows entry as MMDDYYYY.

**9.13       DATE LEGAL IRRIGATION ENDS**

(STWEDT/C286 CHAR X(8) in positions 95-102):

Date irrigation should legally end in the fall. The date is stored as YYYYMMDD, but the screen-entry program allows entry as MMDDYYYY.

**9.14       RESERVED FOR FUTURE USE (STWRSD - CHAR X(8) in  
positions 103-110):**

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VOLUME 2. USER'S MANUAL

Chapter 4. Ground-Water Site Inventory System

Section 3. Ground-Water Site Inventory Menus

Written by  
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and  
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January 1990

### 3 GROUND-WATER SITE INVENTORY MENUS

Most of the nationally supported GWSI programs are accessed through the GWSI Main Menu. (See fig. 1.) There are 15 menu codes available; the first 10 codes (1-10) directly call the most commonly used GWSI procedures. The next three codes on the GWSI Main Menu (95-97) are submenus that call less frequently used GWSI procedures. The last two codes (98-99) provide an exit from the menu; these codes are available on all GWSI menus and submenus.

There are 10 procedures called directly from the GWSI Main Menu. These procedures (codes 1-10) prepare data for entry into the GWSI data base, edit the data for accuracy, update the local data base, and retrieve data from the local data base, presenting the data in tabular and graphical formats.

The GWSI Main Menu contains three submenus. The Utilities submenu (code 95) shown in figure 2 calls six utility programs, which include:

- translating a station name into agency and station identification number,
- inventorying the number of records in the site, water-quality, and ground-water files,
- accessing support files (parameter code dictionary, geologic unit code file, FIPS code file, and state/county code file, etc.),
- preparing data written in System 2000 format for entry into the GWSI data base,
- accessing the movable file (GPAT) menu, and
- changing a user's default data base number when multiple data bases are used at a site and the user has access rights to more than one of them.

The documentation submenu (code 96) shown in figure 3 calls nine programs that produce printed copies of GWSI documentation. Code 97 calls the Local submenu, which can be modified by individual Districts for their specific purposes.

If attached to a directory that contains WATSTORE in the pathname when the GWSI Main or Local menu is invoked, you will be changed to your origin directory.

A PRIMOS command or user abbreviation may be executed from any GWSI menu. Virtually any command may be used, but if the command closes the unit on which the GWSI menu was active, control cannot be returned to the menu.

The 10 programs on the GWSI Main Menu can be broken into the following 7 categories:

<u>Category</u>	<u>Code</u>	<u>Program Name</u>
Data Entry	1	Query Entry
	2	Screen Entry
Data Edit	3	Interactive Edit
	7	Batch Edit
Data Transmit	9	Move files for Update
Data Update	4	Interactive Update
	8	Batch Update
	5	Site File only Update
Data Use	6	Retrieval/Tables
	10	Hydrographs
Data Support	95	Utilities Submenu
User Documentation	96	Documentation Submenu

Each of the major programs has its own documentation, which you can print for reference by selecting Option 96 from the Main Menu and then selecting your choice from the documentation submenu, or by spooling directly from the directory called

WATSTORE>GW>DOC>ASCII

These programs are explained in more detail in the following sections of this manual.

OK, GWSI (System Command to call up NWIS/GWSI Menu)

\*\*\*\*\*  
MAIN MENU FOR WRD GWSI DATA BASE #1 -- REV NWIS 90.1 -- JAN 1990  
\*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1	: QUERY ENTRY (GWINPUT)		
2	: FULL SCREEN ENTRY (HDRINP)		
3	: RUN EDIT PROCEDURE (ON 1-2)	7	: RUN EDIT PROCEDURE IN BATCH
4	: UPDATE GW FILES (FROM 3)	8	: UPDATE GW DATA IN BATCH
5	: UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6	: GW RETRIEVAL/TABLES		
9	: COPY FILE (FROM 1-2) TO DIRECTORY WATIN		
10	: PLOT HYDROGRAPHS		
95	: UTILITIES SUBMENU		
96	: DOCUMENTATION SUBMENU		
97	: GO TO LOCAL MENU		
98	: EXIT TO MAIN MENU (DEFAULT)		
99	: EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? 95

Figure 3.--GWSI Main Menu.

\*\*\*\*\*  
UTILITIES SUBMENU FOR WRD GWSI DATA BASE #1--REV NWIS 90.1 - JAN 1990  
\*\*\*\*\*

CODE    PROGRAM DESCRIPTION  
-----

1 : TRANSLATE STATION NAME INTO AGENCY AND SITE ID  
2 : INVENTORY STATION IN SITE, GW, AND QW FILES  
3 : QUERY SUPPORT FILES  
4 : SYSTEM 2000 GWSI FORMAT CONVERSION  
5 : DATA DICTIONARY LIST  
6 : CHANGE DEFAULT DATA BASE #  
7 : LIST SITE RECORDS

98 : EXIT TO MAIN MENU (DEFAULT)  
99 : EXIT TO PRIMOS

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? 98

Figure 4.--Utilities Submenu

\*\*\*\*\*  
DOCUMENTATION SUBMENU FOR WRD GWSI DATA BASE #1  
REV NWIS 90.1 - JAN 1990  
\*\*\*\*\*

CODE    GROUND-WATER DOCUMENTATION  
-----

1 : PRINT GW ADMINISTRATOR'S MANUAL (VOL 1, CH 4)  
2 : PRINT GW USER'S MANUAL (VOL 2, CH 4)  
3 : PRINT GW PROGRAMMER'S MANUAL (VOL 3, CH 4)  
4 : PRINT GW CODING INSTRUCTIONS  
5 : PRINT QUERY ENTRY USER DOC  
6 : PRINT FULL SCREEN ENTRY USER DOC  
7 : PRINT EDIT-UPDATE USER DOC  
8 : PRINT GW TABLING-RETRIEVAL USER DOC  
9 : PRINT GW ERROR MESSAGE LISTING

98 : EXIT TO MAIN MENU (DEFAULT)  
99 : EXIT TO PRIMOS

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? 98

Figure 5.--Documentation Submenu



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Chapter 4. Ground-Water Site Inventory

Section 4. Ground-Water Input Program

Written by  
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January 1990

## 4 GROUND-WATER INPUT PROGRAM

The Ground-Water Input (GWINPUT) Program is an interactive program to prepare updates to GWSI data.

### 4.1 Introduction

The GWINPUT Program was designed to appear similar to the WATSTORE/GWSI system in order to minimize the impact of change-over from the Amdahl mainframe to the Prime. It is important to understand that this program will display the existing value of a field, but does not directly update the GWSI system. Updates are written to a user-specified disk file for editing and checking by the edit and update programs.

### 4.2 Program Installation

This program is normally installed as part of a master installation procedure executed by your System Administrator. However, the System Administrator can install only program GWINPUT by attaching to WATSTORE>GW>INSTALL and executing the program INSTALL.GWINPUT.CPL.

### 4.3 Program Operation

The GWINPUT program may be selected from the GWSI selection menu by entering the number "1". The program will identify itself and, after a brief pause to obtain some information from disk, will ask you for an agency code and the file in which to write the output (GWSI updates) from this program. The usual response is a new file, or an existing file of GWSI updates (information will be added to the end). Since the agency code only appears once at the beginning of the output file, information may only be appended to an existing file if the agency code is the same. It is possible to try using the program without saving any GWSI output by entering an asterisk. When this is done, all GWSI updates are written only to the user terminal as they are generated.

You may then select prompts for every GWSI component, or for only a subset. The subset can be obtained from a file or generated interactively and, if desired, saved in a file to be used again. The program will not allow you to omit certain control fields that are mandatory.

Next, the GWINPUT program prints a few lines of instructions and begins prompting for information. The first field is always a station identification number, or the Q or QUIT command to exit the program. An "=" duplicates the previously entered station identification number and is a great timesaver when accessing the same station more than once.

All other prompts accept END, ?, DEL, or ABT, in addition to the actual field value to be entered.

END     will terminate the current prompt sequence early  
         and ask for another station identification number.

      ?     will display code lists when appropriate.

DEL     allows an existing field to be deleted.

ABT     discards all data entered since the last time a  
         station identification number was explicitly  
         entered.

Fields are updated by entering a nonblank value. RETURN skips a nonmandatory field or repeating group with no change to the data. Prompts for repeating group transaction codes can optionally ring the terminal bell as an aid to the user.

Entered fields are checked for maximum length, and validity when criterion exist. A sample run of the Ground-Water Input program is shown in figure 6.

## SAMPLE RUN

ENTER AGENCY CODE FOR THIS SESSION? USGS  
 FOR CARDS GENERATED BY THIS PROGRAM,  
 (DO NOT ADD ON WITH A DIFFERENT AGENCY CODE)  
 ENTER OUTPUT FILE (Terminal=\*)? MY.NEW.DATA  
 DO YOU WANT PROMPTS FOR EVERY COMPONENT (Y;N) [?]? Y

"Q" OR "QUIT" TERMINATES PROGRAM WHEN ENTERED FOR SITE-ID,  
 "=" DUPLICATES PREVIOUSLY ENTERED SITE-ID,  
 "END" COMPLETES SITE EARLY AND PROMPTS FOR NEXT SITE-ID,  
 "?" MAY PROVIDE CODING LISTS OR ADDITIONAL INFORMATION,  
 "DEL" DELETES AN EXISTING FIELD IN AN EXISTING SITE,  
 "ABT" DISCARDS ALL DATA FOR CURRENT SITE,  
 "CARRIAGE-RETURN" SKIPS A REPEATING GROUP OR NONMANDATORY  
 ENTRY.

PROMPTS FOR MANDATORY FIELDS ARE IN UPPERCASE.  
 WARNING MESSAGES ARE ENCLOSED IN DASHES, AND  
 FATAL MESSAGES ARE ENCLOSED IN ASTERISKS.

1) SITE-ID (C1) (CHAR X(15))? 404040073404001  
 NEW SITE, DO YOU WANT TO CONTINUE (Y;N)? Y  
 5) Project No. (C5)(CHAR X(12))? 12345  
 12) STATION NAME (C12)(CHAR X(24))? N77ABC  
 9) LATITUDE (C9)(INTEGER X(7))?  
 CURRENT VALUE = 404040? <CR>  
 815) STATION LOCATOR SEQUENCE NUMBER (C815)(CHAR X(2))?  
 CURRENT VALUE = 01? <CR>  
 11) Lat-Long Accuracy (C11) (CHAR X)? ?  
 .  
 .  
 .  
 1) SITE-ID (CHAR X(15))? QUIT  
 5 CARDS WRITTEN.  
 TOTAL ELAPSED WALL TIME IS: 0 HR 1 MI 22.02727 SEC  
 TOTAL ELAPSED CPU TIME IS: 0 HR 0 MI 2.74208 SEC

\*\*\*\*STOP

Figure 6.-Ground-Water Input

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Chapter 4. Ground-Water Site Inventory System

Section 5. Screen Entry Input and Update Program

HDRINP Program

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January 1990

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## 5 SCREEN ENTRY INPUT AND UPDATE PROGRAM

The Data Screen Entry Input and Update (HDRINP) Program is an interactive screen editor program used to modify or add data to the Prime version of the WATSTORE System.

### 5.1 Introduction

The HDRINP Program does not directly modify the data base, but creates a card-image transaction file, which is then used by the updating program to make the specified additions or corrections. New data can be added to the data base by "filling in" the form displayed on the user's terminal screen. Any data which have previously been defined are displayed in the proper field on the screen form. Existing data can then be modified by positioning the cursor to the desired data field and making the desired changes using the program's editing functions. The cursor can be positioned to the various data fields and also to specific character positions within the data fields for modification. Cursor movement is accomplished through one or more of the many codes described below.

To obtain a complete copy of this document, including the appendix, spool the file:

```
WATSTORE>GW>SOURCE>HDRINP>DOCUMENTATION>HDRINP.COMPLETE.DOCUMENT.
```

### 5.2 Program Installation

HDRINP can be independently installed by giving the following commands:

```
A WATSTORE>GW>INSTALL  
PH INSTALL.HDRINP.COMI
```

A COMO file is created during the installation process called INSTALL.HDRINP\$COMO, which can be checked to make sure the installation was successful. During the installation process, the program is compiled, loaded, and copied to the directory WATSTORE>GW>RUN. After compilation, the binary and other temporary files are automatically deleted and the source directory is cleaned up.

### 5.3 Program Terminal Support

The HDRINP program uses the DISCUR cursor control package. Documentation for the DISCUR package is found in the directory named <NWIS>DISCUR>DOC. Any CRT terminal that has been installed in the DISCUR package and has cursor positioning capability, with character replacement rather than character overprint, will work with the HDRINP program.

The terminal type is set outside of the HDRINP program using the TERMNL command. To use the command, type "TERMNL" and then select a terminal from the list provided. If the terminal selected is OTHER, (the default on installation of DISCUR), the HDRINP program will print a list of terminals and ask the user to select a terminal type. On systems that have terminals hardwired to the Prime, TERMNL need be used only once, unless the terminal is replaced with a new type. On systems that have the terminals connected through a port-sharing device, through a dial-up modem, or on remote logins, the TERMNL command should be used once during each login session. This ensures that the person using the connection before you has not set the terminal type to one other than the one you are using.

The terminal chosen can be the specified terminal, or any terminal that emulates the specified terminal. No other terminal types should be used with the HDRINP program. If another terminal is used, unpredictable results may occur.

### 5.4 Data Field-Editing Codes

While the HDRINP program is executing, two lines containing some of the entry field-editing control codes are maintained at the bottom of the screen. These same two lines are used to display error messages, warnings, and special prompts. If a detectable error is made, an error message is displayed on the bottom line and a continuation prompt is displayed on the line above the error message. Special messages and prompts are displayed in the same manner. When the special message or prompt is no longer needed, the control code listing is restored.

The special-entry field-editing codes are as follows:



- A BACKSPACE leaves the character at the current position unchanged and moves the cursor and string pointer one character back.
- A SPACE leaves the character at the current position unchanged and moves the cursor and string pointer one character forward.
- A DELETE blanks the entire string and sets the cursor and string pointer to character position one in the entry field.
- An \* terminates the string with the previous character, deleting itself and all characters in the entry field which follows. Control is then passed to the next entry field.
- A # replaces the character at the current position with a blank if a blank is permitted at that location.
- An \_ inserts a blank at the current character position, then shifts the characters which follow to the right. The cursor and string pointer are left at their current positions.
- A \ deletes the character at the current character position, then shifts the characters which follow to the left. The cursor and string pointer are left at their current positions.
- A " puts the program in data mode. This allows the next single character to be accepted as data, even if it is one of the special control codes. The cursor and string pointer are left at their current positions and the next character is accepted as data at that position if it is a legal character. After the data character has been input, the program proceeds in the normal mode.
- An ^ puts the program in temporary control mode. This allows one of the characters that are executed as control in column one, or one of the other special control characters, to be executed as control anywhere in the field. The cursor and string pointer are left at their current positions and the next character causes the special function to be performed. If a character that has

no special function is input as the character following the ^, it is ignored. The program returns to normal mode after the control character is input. No change is made to the data field at the cursor position.

A RETURN or TAB enters the string as it currently appears. Control is then passed to the next entry field.

Any legal noncontrol character will replace the character at the current character position within the entry field.

If either end of the entry field is passed, the string is entered as it currently appears. Control is then passed to the next or to the previous entry field, depending on which end of the field was passed.

The following characters are executed as control when occurring in column one, or when the program has been placed in temporary control mode (following an ^):

A \$ starts the current string over again. The entry is reinitialized to its former content.

A ? produces a list of the valid options if there are any. These are listed near the bottom of the screen.

A > enters the string as it currently appears. Control is then passed to the next entry field.

A < enters the string as it currently appears. Control is then passed to the previous entry field.

An & switches screen modes between input and edit. If the program is in input mode, and if all of the required fields contain valid data, the program enters edit mode which allows the selective editing of screen data. If the program is in input mode, and one or more of the required fields has not been defined, the cursor is positioned to the next required field and remains in input mode. If the program is in edit mode, the program reenters the input mode at the currently selected entry field.

An ! exits the current program level, aborting any changes that have been made in the current screen.

A % repaints the entire screen. This is used to repair screens that have somehow been damaged.

The following characters position the cursor to the specified location within the field when used in the temporary control mode (following an ^):

An A positions the cursor one character past the last nonblank character in the field. If that would be past the end of the field, then the cursor is placed on the last character in the field. -(Append)-

A B positions the cursor on the first character in the field. -(Beginning)-

An E positions the cursor on the last character in the field. -(End)-

An F positions the cursor on the first nonblank character in the field. -(First)-

An L positions the cursor on the last nonblank character in the field. -(Last)-

A P positions the cursor one character before the first nonblank character in the field. If that would be before the beginning of the field, then the cursor is placed on the first character in the field. -(Prefix)-

Many of Prime's EMACS commands are also accepted as control. In the list below, an ^ means that the control key is pressed simultaneously with the specified character. <ESC> means that the ESC or Escape key is pressed before the specified character or characters. Where applicable, the non-EMACS equivalent has been given in the parenthesis following the command description. These commands are as follows:

^A positions the cursor to the beginning of the field. (B)

^B positions the cursor backward one character. (<BS>)

^C reexecutes the most recent command.

^D deletes the character under the cursor.

^E positions the cursor to the end of the field. (E)

^F positions the cursor forward one character. ( )

^G cancels a multiple character command that has been started.

**^H** (also backspace key) does not delete a character as it does in EMACS, but instead positions the cursor backward one character. (<BS>)

**^I** (also tab key) positions the cursor to the next subfield. (<TAB>)

**^K** kills or clears the field. (<DEL>)

**^L** refreshes the screen. (%)

**^M** (also return key) positions the cursor to the next field. (<CR>)

**^N** positions the cursor to the next field. (>)

**^O** opens the line and inserts one character. (\_)

**^P** (also break key) breaks to PRIMOS. (<BREAK>)

**^Q** inserts the next character as data. (") (Ignored on most terminals)

**^R** positions the cursor to the previous field. (<)

**^S** positions the cursor to the next field. (>) (X-OFF on most terminals should not be used)

**^V** switches from input mode to edit mode, or from edit mode to input mode. (&)

**^W** kills or clears the field after moving the field contents to the kill buffer.

**^X** is used as a prefix to other commands, which are listed below.

**^Y** replaces the field with the contents of the kill buffer.

**^Z** positions the cursor to the previous field. (<)

**^\_** lists any valid values for field. (?) (Ignored on most terminals)

**^X^C** aborts the screen. (!)

**^X^G** ignores the ^X prefix.

`^X^H` kills or clears the field left of the cursor.

`^X^I` inserts one blank character. (`_`)

`^X^K` kills or clears the field left of the cursor.

`^X^L` converts entire field to lowercase characters.

`^X^S` switches from input mode to edit mode, or from edit mode to input mode. (`&`). (`X-OFF` on most terminals should not be used.)

`^X^U` converts entire field to uppercase characters.

`^X^W` switches from input mode to edit mode, or from edit mode to input mode. (`&`)

`^X^Z` is used as a prefix to other commands, which are listed below.

`^XQ` inserts the next character as data. (`"`)

`^XR` refreshes the screen. (`%`)

`^XS` switches from input mode to edit mode, or from edit mode to input mode. (`&`)

`^XV` positions the cursor to the previous field. (`<`)

`^X[` positions the cursor to the previous field. (`<`)

`^X]` positions the cursor to the next field. (`>`)

`^X^Z^A` positions the cursor to the previous field. (`<`)

`^X^Z^E` positions the cursor to the next field. (`>`)

`^X^Z^G` ignores the `^X^Z` prefix.

`^X^Z^H` kills or clears the field left of the cursor.

`^X^Z^K` kills or clears the field right of the cursor. The character in the position of the cursor is also deleted.

`^X^Z^Y` replaces the field with the contents of the kill buffer.

<ESC>^D kills or clears the field right of the cursor. The character in the position of the cursor is also deleted.

<ESC>^G ignores the <ESC> prefix.

<ESC>^O opens the line and inserts one character. ( \_ )

<ESC>^V positions the cursor to the next field. ( > )

<ESC>^Y replaces the field with the contents of the kill buffer.

<ESC><SP> (escape followed by space) deletes a character. ( \ )

<ESC>< positions the cursor to the previous field. ( < )

<ESC>> switches from input mode to edit mode, or from edit mode to input mode. ( & )

<ESC>? lists any valid values for field. ( ? )

<ESC>@ terminates the field at the cursor position. ( \* )

<ESC>A positions the cursor to the previous field. ( < )

<ESC>B positions the cursor to the previous subfield.

<ESC>D kills or clears the field. ( <DEL> )

<ESC>E positions the cursor to the next field. ( > )

<ESC>F positions the cursor to the next subfield. ( <TAB> )

<ESC>G switches from input mode to edit mode, or from edit mode to input mode. ( & )

<ESC>K kills or clears the field right of the cursor. The character in the position of the cursor is also deleted.

<ESC>L converts entire field to lowercase characters.

<ESC>M positions the cursor to the first nonblank character. ( F )

<ESC>N positions the cursor to the next field. ( > )

<ESC>P positions the cursor to the previous field. ( < )

<ESC>R positions the cursor to the previous field. (<)  
<ESC>S positions the cursor to the next field. (>)  
<ESC>U converts entire field to uppercase characters.  
<ESC>V positions the cursor to the previous field. (<)  
<ESC>W copies field into kill buffer.  
<ESC>Y replaces the field with the contents of the kill  
buffer.  
<ESC>~ unmodifies the field. (\$)  
<ESC><DEL> kills or clears the field. (<DEL>)  
<DEL> does not delete a character as it does in EMACS, but  
kills or clears the field. (<DEL>)

## 5.5 Program Operation

HDRINP is invoked by selecting one of several options within the WATSTORE system. These options are as follows:

Ground-Water Program (GWSI) - Full-Screen Entry Option  
Water-Quality Program - Site-File Update Option  
Site File Update Program - Full-Screen Entry Option

HDRINP can also be run by giving the command:

R WATSTORE>GW>RUN>HDRINP

but this method is not recommended.

### 5.5.1 Screen Entry Formats

From this point, all terminal input and output of the data is handled by the screen input routines. The program divides this data I/O into a number of pages or screens, each of which contains related options or information. The screen numbers given in parentheses below refer to the numbered screen illustration in the file:

WATSTORE>GW>SOURCE>HDRINP>DOCUMENTATION>HDRINP.COMPLETE.DOCUMENT.

#### 5.5.1.1 Transaction File Name Selection (Screen 1)

If the program is executed from the Ground-Water menu, the first screen will prompt for an output file name. A default file name has been provided for the user, and if this file name is not modified, it will be the name of the file used to store the transaction data. If the specified file exists, the program will ask if the file is to be overwritten. An answer of "Y" (yes) causes the old file to be deleted, and a new one to be created in its place. An answer of "N" (no) causes the new data to be appended to the end of the existing file. If the program is executed from one of the other menus, the transaction file will be handled entirely by the WATSTORE System, and the first screen will be the Site ID prompt as below.



#### 5.5.1.2 Site ID Selection (Screen 2)

The Site ID Selection screen prompts the user for the Agency code and Site ID of the station to be modified or added. The Site ID is expected to contain either an 8-digit ID (surface water only) or a 15-digit latitude-longitude-sequence number. A 15-digit ID is checked for proper latitude and longitude values and a warning is given if an invalid number is found. No additional checking is done on an 8-digit ID number. After either item has been input, the user is prompted as to whether the input values are correct. If they are not correct, the user can reenter the correct values after answering "N" to the prompt. If the prompt is answered with a "Y" or a carriage return, a search is made for the specified ID and control is passed to the next screen.

The next screen depends upon whether or not the specified station was found. If it was not found, the program proceeds to the Site Header Entry screen. If the site was found, the program proceeds to the Program Options screen.

#### 5.5.1.3 Data Entry Screens

From this point, there are basically three types of entry screens. One type of entry screen is the Program Options screen. The second type of entry screen is the Record Selection screen. The third type of entry screen is the Record Data Entry screen.

##### 5.5.1.3.1 Program Options Screen

The Program Options screen consists of a list of program options and a single prompt to select the desired option. The Program Options screen has two forms. The shortest form is the form used for a surface-water station, which lists three options. The form used for a ground-water station lists the same three options and an additional eight options which correspond to the eight additional ground-water data records. These options are:

- 1 Exit HDRINP Program
- 2 Select New Site
- 3 General Site Data Record
- 4 Construction Data Record
- 5 Miscellaneous Data Record
- 6 Discharge Data Record
- 7 Geohydrologic Data Record
- 8 Hydraulic Data Record
- 9 Water-Level Data Record
- 10 Observation Data Record
- 11 State Water-Use Data Record

Option 1 closes the data transaction file and terminates execution of the HDRINP program.

Option 2 allows the user to select a different site to add or modify. Once a site is selected, all data transactions will refer to that site until the site ID is again changed using this option.

Options 3 through 11 call routines which allow the addition of, or modification of, the 9 data record types. If the site is a surface-water site, only the General Site Data record will be permitted.

This screen is used by the program only when entered through the Ground-Water Program.

#### 5.5.1.3.2 Record Selection Screens

The Record Selection screen consists of from one to three data record descriptors which are used to further select the Data Record type and screen format, as well as the specific entry number. There are eight of these Record Selection screens. They correspond to each of the ground-water data records. The General Site Data Record has no special Record Selection screen, it is selected automatically when a nonexistent site is selected in option 2, or when option 3 is selected. The screen prompts for the key information that is required to identify both the data type and the specific entry where multiple entries are permitted. The Record Selection screens are:

- Construction Data Record (Screen 6)
- Miscellaneous Data Record (Screen 15)
- Discharge Data Record (Screen 27)
- Geohydrologic Data Record (Screen 29)
- Hydraulic Data Record (Screen 32)
- Water-Level Data Record (Screen 35)
- Observation Data Record (Screen 37)
- State Water-Use Data Record (Screen 39)

#### 5.5.1.3.3 Record Data Entry Screens

The Record Data Entry screens consist of multiple data descriptors and entry fields. The Record Data Entry screen has many forms, each one corresponding to one of the data record types. These forms are:

- General Site Data Record
  - General Site Data screen (Screen 3)
  - Surface-Water Site Data screen (Screen 4)
  - Ground-Water Site Data screen (Screen 5)
- Construction Data Record
  - Lift Data screen (Screen 7)
  - Construction Data screen (Screen 8)
  - Hole Data screen (Screen 9)
  - Casing Data screen (Screen 10)
  - Openings Data screen (Screen 11)
  - Repairs Data screen (Screen 12)
  - Spring Data screen (Screen 13)
  - Measuring-Point Data screen (Screen 14)
- Miscellaneous Data Record
  - Owner Data screen (Screen 16)
  - Other-ID Data screen (Screen 17)
  - Other Data screen (Screen 18)
  - Site-Visit Data screen (Screen 19)
  - Water-Quality Data screen (Screen 20)
  - Geophysical Logs Data screen (Screen 21)
  - Network Data screen (Screen 22)
  - Special-Cases Data screen (Screen 23)
  - Miscellaneous-Values Data screen (Screen 24)
  - Cooperator Data screen (Screen 25)
  - Remarks screen (Screen 26)
- Discharge Data Record
  - Flow-Discharge Data screen (Screen 28)
  - Pumped-Discharge Data screen (Screen 28)

**Geohydrologic Data Record**

Geohydrologic Units Data screen (Screen 30)  
Aquifer Data screen (Screen 31)

**Hydraulic Data Record**

Hydraulic Data screen (Screen 33)  
Coefficients Data screen (Screen 34)

**Water-Level Data Record**

Water-Level Data screen (Screen 36)

**Observation Data Record**

Observation Well Data screen (Screen 38)

**State Water-Use Data Record**

State Water-Use Data screen (Screen 40)

**5.5.2 Required Fields**

Many of the screens have certain fields that are required. The data items that are used by the WATSTORE System to identify the record are always required (Primary Keys). Other important data items have also been defined as being required. When a record is added to the WATSTORE System using HDRINP, all required fields must be defined before the program will allow the data to be stored. If an existing record is modified and a required field is found to be missing, the program forces the user to supply the required data before the data can be stored.

**5.5.3 Error-Checking**

The program performs error-checking using the same criteria as the edit and update programs. Full error-checking is performed as the data are entered. Several different types of tests are performed. In numeric fields, nonvalid characters are rejected immediately upon input. Other values are checked for valid choices where a list of valid codes are available. Dates are checked to see that they do not occur on nonexistent days, or after the current date. Latitude and longitude values are checked for validity also. Where a list of valid codes is available, the codes can be listed by inputting a "?" in column one of the appropriate field, or by entering a "?" while in the temporary control mode. If an error is detected, an error message is displayed at the bottom of the screen. There are two types of errors; warnings and fatal errors. Error messages that

begin and end with five dashes (-----) are warnings only. Error messages that begin and end with five asterisks (\*\*\*\*\* ) are fatal errors and are rejected either immediately, or after an unchanged conflicting value.

#### 5.5.4 Default Data

In some cases, defaults are provided. These defaults are displayed in the data field, and may be used by inputting a carriage return without modifying the data field.

One special default occurs on the site header record. If the site has a 15-digit site identifier, the latitude and longitude values default to the values reflected in the site identifier. The station locator field defaults to the last two digits of the site identifier, but is modified to reflect the geographical quadrant specified by the latitude and longitude values. As with all defaults, however, the values can be modified easily.

#### 5.5.5 Data Field Justification

Character and integer fields are left-justified; that is, the characters are shifted to the left until the leftmost nonblank character is in the leftmost field character position. However, some integer fields such as the sequence numbers are actually right-justified first, and then the leading blanks are replaced with "0"s. Floating point numbers are right-justified; that is, the characters are shifted to the right until the rightmost nonblank character is in the rightmost field character position.

## 5.6 Transaction Data Output File

The HDRINP program writes the data to a formatted sequential access (flat) file. This file is a temporary file which contains all of the information for performing the specified transactions. The format of a transaction file record is very similar to the old GWSI card-image format. If the HDRINP program is executed through the Ground-Water Program, the output file can be modified externally with the editor before processing through the update program. If the editor is used, however, special care must be taken to prevent errors in the modified data. The particular errors to watch out for include: illegal item numbers, illegal characters in numeric fields, missing field terminators, and records which have been extended past the proper record length (80 characters).

When a new site or data record is added, all defined fields are written to the output file. All required fields must be defined before the data can be output to the transaction file.

If a record is being modified, only the descriptor fields and those fields which have actually been modified are written to the output file. If a required field is encountered that has not been defined, such as in a record that has been input to the system by some other program, that data field must be defined before any further modification is permitted.

NWIS 90.1

VOLUME 2. USER'S MANUAL

Chapter 4. Ground-Water Site Inventory System

Section 6. Ground-Water Edit Program

Written by  
Colleen A. Babcock  
October 1985

January 1990

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## 6 GROUND-WATER EDIT PROGRAM

The Ground-Water Edit (EDITGW) Program performs edit validation and logical data checks. Release 90.1 of EDITGW includes checks for existence of data in the GWSI data base.

### 6.1 Introduction

The EDITGW Program performs edit validation and logical data checks on the output files created using HDRINP (screen-entry program), GWINPUT (query-entry program), or ORCONV (program to convert S2K input records to Prime GWSI). Edit checks are performed using the GWSI Expanded Edit feature and include: code validation against lookup tables, reasonable value checks, proper date fields, and proper numeric values. The EDITGW program is terminal independent. Data passing edit checks are reformatted into input files that are accepted by the GWSIUPT procedure.

### 6.2 Program Operation

The EDITGW program may be selected from the NWIS/GWSI menu by selecting Option 3 for interactive processing or Option 7 for batch processing. Interactive processing is recommended for small amounts of data; the batch option has been provided for medium to large amounts of data. It is not uncommon for large files to take up to an hour to run on some Prime systems.

The program will identify itself, display the data-base number to which the user is currently assigned, and ask for the input file name. This is the name of the output file created by HDRINP, GWINPUT, or ORCONV. The program will then ask for a batch code, which can be a single character 0-9 or A-Z. The batch code is used to identify the transaction files created by EDITGW and passed as input to the GWSIUPT routines. If the data-base number does not reflect the data base the user wants to access, change the number by using Option 6 (CHANGE DATA BASE #) of the GWSIMENU submenu UTILITIES.

### 6.3 Files Used by the Ground-Water Edit Program

Several files are necessary for the successful operation of EDITGW. The following is a list of the necessary files and their location in the WATSTORE directory structure:

<u>File name in WATSTORE directory</u>	<u>Purpose</u>
GW>RUN>EDITGW	Run code for edit program
SUPPORT>EDIT.TABLES>variable.EDI	Lookup table for specific variables
SUPPORT>FIPFILE	Midas for State/county codes
SUPPORT>AQFILE	Midas for aquifer codes
SUPPORT>PARMFILE	Midas for water-quality parameter codes

The input file for program EDITGW is the output file generated from HDRINP, GWINPUT, or ORCONV. A file name or full pathname can be used by this program. Several temporary files are also created by the EDITGW procedure and follow the naming convention EDIT.file.date.time; these files are automatically deleted upon successful completion of the procedure. If EDITGW abnormally terminates for any reason, these files need to be deleted. EDITGW creates several output files, which are created in the directory from which the program was run. For easy identification, all output file names are concatenated with the BATCH CODE entered when the program first started. Listed below are the output file names and a description of each file:

Listed below are the output file names and a description of each file. NOTE: "xx" indicates the DATA-BASE NUMBER (leading zeros included) and "a" indicates the BATCH CODE entered when the program was first initiated.

<u>File Name</u>	<u>Description</u>
SITE.TRAN.DBxx.a	Contains Site File transaction records that successfully pass the edit routines.
GW.CONST.TRAN.DBxx.a	Contains Construction transaction records that successfully pass the edit routines.
GW.MISC.TRAN.DBxx.a	Contains Miscellaneous transaction records that successfully pass the edit routines.
GW.DISC.TRAN.DBxx.a	Contains Discharge transaction records that successfully pass the edit routines.
GW.HYDR.TRAN.DBxx.a	Contains Hydraulics transaction records that successfully pass the edit routines.
GW.GEOH.TRAN.DBxx.a	Contains Geohydrologic transaction records that successfully pass the edit routines.
GW.LEV.TRAN.DBxx.a	Contains Water-Level transaction records that successfully pass the edit routines.
GW.OBS.TRAN.DBxx.a	Contains Observation well heading transaction records that successfully pass the edit routines.
GW.STWU.TRAN.DBxx.a	Contains State Water-Use transaction records that successfully pass the edit routines.
ERRFILE.DBxx.a	Listing of fatal and warning messages indicated by the edit routines.

#### 6.4 Error Checks

EDITGW performs the following functions:

- checks logical data,
- verifies that a record with the same Site ID does not exist before one is added,
- verifies that a record does exist before a modify or delete transaction is attempted,
- verifies that a record exists in the Site File before adding other record types associated with that site, and
- verifies that parent records exist before adding lower-level records.

Checks are performed on all date fields to prevent future dates and dates prior to the date of construction of the site. All depth fields are checked against the depth of the hole. No depths deeper than the hole depth are allowed.

#### 6.5 Error Correction

Errors indicated in ERRFILE.a should be identified and corrected in the input file. The format of ERRFILE.a includes two lines of output for each error, as described below:

<u>Column</u>	<u>Description</u>
1-4	Record sequence number
6-9	Error message number
11-25	Station identification number
26	Blank
27-80	First line of data record being checked. The error might not appear on line displayed; may actually occur in the next few lines of the input file.
1-3	***
4-80	Description of error message

Error message numbers and descriptions are listed in Section 14.

Here is a sample run of Option 3 (EDIT GW DATA), interactive processing of ground-water data.

OK, GWSI (System command to call up NWIS/GWSI menu)

```
*****
MAIN MENU FOR WRD GWSI DATA BASE #1 -- REV 90.1 - JAN 1990
*****
```

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1 :	QUERY ENTRY (GWINPUT)		
2 :	FULL SCREEN ENTRY (HDRINP)		
3 :	EDIT GW DATA (FROM 1-2)	7 :	EDIT GW DATA IN BATCH
4 :	UPDATE GW FILES (FROM 3)	8 :	UPDATE GW DATA IN BATCH
5 :	UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6 :	GW RETRIEVAL/TABLES		
9 :	SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10 :	PLOT HYDROGRAPHS		
95 :	UTILITIES SUBMENU		
96 :	DOCUMENTATION SUBMENU		
97 :	GO TO LOCAL MENU		
98 :	EXIT TO MAIN MENU (DEFAULT)		
99 :	EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : 3  
(Editing GW data)

NWIS EDIT PROGRAM  
RELEASE VERSION 90.1

DATA BASE NUMBER 5

INPUT FILE NAME IS D.JGBROWN.010  
ENTER BATCH ID, VALID OPTIONS ARE 0-9, A-Z A  
(Enter batch code of A)

Deleting existing batch files

Loading edit tables - please be patient  
Processing data - please be patient  
END OF INPUT FILE  
\*\*\*\* STOP

Figure 7.--Ground-water edit

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? <CR>

\*\*\*\*\*  
 MAIN MENU FOR WRD GWSI DATA BASE #1 -- REV 90.1 - JAN 1990  
 \*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1	: QUERY ENTRY (GWINPUT)		
2	: FULL SCREEN ENTRY (HDRINP)		
3	: EDIT GW DATA (FROM 1-2)	7	: EDIT GW DATA IN BATCH
4	: UPDATE GW FILES (FROM 3)	8	: UPDATE GW DATA IN BATCH
5	: UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6	: GW RETRIEVAL/TABLES		
9	: SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10	: PLOT HYDROGRAPHS		
95	: UTILITIES SUBMENU		
96	: DOCUMENTATION SUBMENU		
97	: GO TO LOCAL MENU		
98	: EXIT TO MAIN MENU (DEFAULT)		
99	: EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? SLIST ERRFILE.A

\*\*\*\*\*Screen list error file\*\*\*\*\*

Error messages for input file ed1

Line Error

Num Num First line of input for record being processed

```

9    99 USGS 312714110223201 R=58* T=A* 723#001* 60=19811217* 63=BABCOCK*
** Numeric field invalid--WARNING
24   500 USGS 312714110223201 R=171* T=A* 727#001*
** Spring data not allowed for record types other than spring--FATAL
24  1151 USGS 312714110223201 R=171* T=A* 727#001*
** GW.CONNS record failed Edit must be corrected before update--FATAL
38   99 USGS 312714110223201 R=250* T=A* 313#001* 251=1254.0* 252=TEST VALU
** Numeric field invalid--WARNING
56   905 AZ014322658114293301 R=234* T=A* 235#19851217* 237=    70* 238=S*
** Water levels are allowed for wells only--FATAL
57   905 AZ014322658114293301 R=234* T=A* 235#19861217* 237=    75* 238=G*
** Water levels are allowed for wells only--FATAL
58   905 AZ014322658114293301 R=234* T=A* 235#19871217* 237=    78* 238=S*
** Water levels are allowed for wells only--FATAL

```

Figure 8.--Ground-water edit, listing of error file

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? <CR>

\*\*\*\*\*  
 MAIN MENU FOR WRD GWSI DATA BASE #1 -- REV 90.1 - JAN 1990  
 \*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1 :	QUERY ENTRY		
2 :	FULL SCREEN ENTRY		
3 :	EDIT GW DATA (FROM 1-2)	7 :	EDIT GW DATA IN BATCH
4 :	UPDATE GW FILES (FROM 3)	8 :	UPDATE GW DATA IN BATCH
5 :	UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6 :	GW RETRIEVAL/TABLES		
9 :	SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10 :	PLOT HYDROGRAPHS		
95 :	UTILITIES SUBMENU		
96 :	DOCUMENTATION SUBMENU		
97 :	GO TO LOCAL MENU		
98 :	EXIT TO MAIN MENU (DEFAULT)		
99 :	EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE?

\*\*\*\*\* Use the line editor to correct errors \*\*\*\*\*

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : ED D.JGBROWN.010  
 (User Input)

EDIT

L 9

```

USGS 343434111111112 R=0* T=A* 12='A-01-03 15ACC2'* 9=332551*
C/332551/343434/ (Correct Latitude)
USGS 343434111111112 R=0* T=A* 12='A-01-03 15ACC2'* 9= 343434*
C/1120210/1111111/ (Correct Longitude)
USGS 343434111111112 R=0* T=A* 12='A-01-03 15ACC2'* 9= 343434*
P3
USGS 343434111111112 R=0* T=A* 12='A-01-03 15ACC2'* 9= 343434*
USGS 343434111111112 11=S* 6=004* 7=04* 8=013* 13=SWSWNE15 T01N
USGS 343434111111112 14=PHOENIX* 15=24000* 16=1101.* 17=M* N
USGS 343434111111112 20=15060106* 19=V* 802=NNNNNYNNNNNNNNNN....
A 803=A* (Append missing Agency Code value pair)
USGS 343434111111112 20=15060106* 19=V* 802=NNNNNYNNNNNNNNNN....
L R=76 (Editor command to Locate R=76)
USGS 343434111111112 R=76* T=A* * 59#001* 77# 0.* 79# 36.*
C/ * /725#001*/ (Correct missing sequence number value pair)
USGS 343434111111112 R=76* T=A*725#001*59#001* 77# 0.* 79# 36.*
FILE (Replace existing file with correct file)
D.JGBROWN.010

```

Figure 9.--Ground-water edit, use of line editor

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? <CR>

\*\*\*\*\*  
 MAIN MENU FOR WRD GWSI DATA BASE # -- REV 90.1 - JAN 1990  
 \*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1 :	QUERY ENTRY		
2 :	FULL SCREEN ENTRY		
3 :	EDIT GW DATA (FROM 1-2)	7 :	EDIT GW DATA IN BATCH
4 :	UPDATE GW FILES (FROM 3)	8 :	UPDATE GW DATA IN BATCH
5 :	UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6 :	GW RETRIEVAL/TABLES		
9 :	SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10 :	PLOT HYDROGRAPHS		
95 :	UTILITIES SUBMENU		
96 :	DOCUMENTATION SUBMENU		
97 :	GO TO LOCAL MENU		
98 :	EXIT TO MAIN MENU (DEFAULT)		
99 :	EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : 3  
 (Run edit option again)

NWIS EDIT PROGRAM

VERSION 90.1

INPUT FILE NAME IS D.JGBROWN.010 (Corrected data file)

ENTER BATCH ID, VALID OPTIONS ARE 0-9, A-Z A  
 (Okay to use same batch code)

Deleting existing batch files

Loading edit tables - please be patient

Processing data - please be patient

END OF INPUT FILE

\*\*\*\* STOP

Figure 10.--Ground-water edit (continued)



ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? <CR>

\*\*\*\*\*  
 MAIN MENU FOR WRD GWSI DATA BASE # 1 -- REV 90.1 - JAN 1990  
 \*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1	: QUERY ENTRY		
2	: FULL SCREEN ENTRY		
3	: EDIT GW DATA (FROM 1-2)	7	: EDIT GW DATA IN BATCH
4	: UPDATE GW FILES (FROM 3)	8	: UPDATE GW DATA IN BATCH
5	: UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6	: GW RETRIEVAL/TABLES		
9	: SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10	: PLOT HYDROGRAPHS		
95	: UTILITIES SUBMENU		
96	: DOCUMENTATION SUBMENU		
97	: GO TO LOCAL MENU		
98	: EXIT TO MAIN MENU (DEFAULT)		
99	: EXIT TO PRIMOS		

\*\*\*Slist error file again, prompt to return to menu indicates  
 clean edit\*\*\*

Figure 11.--Ground-water edit (continued)

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : SLIST ERRFILE.A

Error messages for input file ED2

Line Error

Num Num First line of input for record being processed

\*\*\*\*\*  
MAIN MENU FOR WRD GWSI DATA BASE # 1 -- REV 90.1 - JAN 1990  
\*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1	: QUERY ENTRY		
2	: FULL SCREEN ENTRY		
3	: EDIT GW DATA (FROM 1-2)	7	: EDIT GW DATA IN BATCH
4	: UPDATE GW FILES (FROM 3)	8	: UPDATE GW DATA IN BATCH
5	: UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6	: GW RETRIEVAL/TABLES		
9	: SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10	: PLOT HYDROGRAPHS		
95	: UTILITIES SUBMENU		
96	: DOCUMENTATION SUBMENU		
97	: GO TO LOCAL MENU		
98	: EXIT TO MAIN MENU (DEFAULT)		
99	: EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : <CR>

Figure 12.--Ground-water clean edit

NOTE: At this point you have a clean edit and can proceed to the UPDATE step. See documentation on GWSIUPT (sec. 7) for the example run of UPDATE.

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Chapter 4. Ground-Water Site Inventory System

Section 7. Ground-Water Update Procedure

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## 7 GROUND-WATER UPDATE PROGRAM

The Ground-Water Site Inventory Update (GWSIUPT) procedure is used to update the NWIS Site File and eight ground-water data files.

### 7.1 Introduction

The Ground-Water Site-Inventory Update (GWSIUPT) procedure is used to update the NWIS Site File and eight ground-water data files. In addition to updating the NWIS data base on the Prime, the procedure creates two files for transfer to the Amdahl to update GWSI-S2K and the Site Header File. This procedure can only be run after successful completion of procedure EDITGW. GWSIUPT is terminal independent.

### 7.2 Program Operation

The GWSIUPT procedure may be selected from the NWIS/GWSI menu using Option 4 for interactive processing and Option 8 for batch processing. Batch processing is recommended for medium to large amounts of data.

GWSIUPT must be run from the directory containing the output files from EDITGW.

The only interactive input required by the GWSIUPT procedure is the batch code used in the EDITGW procedure. After obtaining the batch code from you, the procedure then verifies that the transaction files exist and opens them. If there are no transaction files available, the procedure tells you and terminates processing. At this point, verify that the batch code was entered correctly and that you are attached to the appropriate directory. Run the procedure again.

The GWSIUPT program uses the file WATSTORE>SUPPORT>EDIT.TABLES>SDIST.EDI to determine if the District has multiple District codes. The program checks for the existence of this file and, if it is found, prompts you for the proper District code. This code is appended to the end of the WATSAVE>GWSIUPT file and facilitates the processing of national updates.

This procedure will ADD and MODIFY records for the Site File and eight ground-water data files. GWSIUPT will delete records from the eight ground-water data files. To delete records from the Site File, you must contact the Data Base Administrator.

### 7.2.1 Update Files

Listed below are the input and output file names and a description of each file. NOTE: "xx" indicates the DATA-BASE NUMBER (leading zeros included) and "a" indicates the BATCH CODE entered when the program was first initiated.

<u>File Name</u>	<u>Description</u>
SITE.TRAN.DBxx.a	Contains Site File transaction records that successfully pass the EDITGW procedure.
GW.CON.S.TRAN.DBxx.a	Contains Construction transaction records that successfully pass the EDITGW procedure.
GW.MISC.TRAN.DBxx.a	Contains Miscellaneous transaction records that successfully pass the EDITGW procedure.
GW.DISC.TRAN.DBxx.a	Contains Discharge transaction records that successfully pass the EDITGW procedure.
GW.HYDR.TRAN.DBxx.a	Contains Hydraulics transaction records that successfully pass the EDITGW procedure.
GW.GEOH.TRAN.DBxx.a	Contains Geohydrologic transaction records that successfully pass the EDITGW procedure.
GW.LEV.TRAN.DBxx.a	Contains Water-Level transaction records that successfully pass the EDITGW procedure.
GW.OBS.TRAN.DBxx.a	Contains Observation well heading transaction records that successfully pass the EDITGW procedure.
GW.STWU.TRAN.DBxx.a	Contains State Water-Use transaction records that successfully pass the EDITGW procedure.
GW.UPTERR.DBxx.a	Listing of fatal and warning messages indicated by the GWSIUPT procedure. This is the only user output file for GWSIUPT.

### 7.2.2 Error Checks

GWSIUPT performs the following functions:

- checks logical data,
- verifies that a record with the same Site ID does not exist before one is added,
- verifies that a record does exist before a modify or delete transaction is attempted,
- verifies that a record exists in the Site File before adding other record types associated with that site, and
- verifies that parent records exist before adding lower-level records.

Checks are performed on all date fields to prevent future dates and dates prior to the date of construction of the site. All depth fields are checked against the depth of the hole. No depths deeper than the hole depth are allowed.

Following is an example using Option 4 (UPDATE GW FILES), interactive processing of ground-water data.

OK, GWSI (System command to call up NWIS/GWSI menu)

```
*****
MAIN MENU FOR WRD GWSI DATA BASE # 1 -- REV 90.1 - JAN 1990
*****
```

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1 :	QUERY ENTRY (GWINPUT)		
2 :	FULL SCREEN ENTRY (HDRINP)		
3 :	EDIT GW DATA (FROM 1-2)	7 :	EDIT GW DATA IN BATCH
4 :	UPDATE GW FILES (FROM 3)	8 :	UPDATE GW DATA IN BATCH
5 :	UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6 :	GW RETRIEVAL/TABLES		
9 :	SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10 :	PLOT HYDROGRAPHS		
95 :	UTILITIES SUBMENU		
96 :	DOCUMENTATION SUBMENU		
97 :	GO TO LOCAL MENU		
98 :	EXIT TO MAIN MENU (DEFAULT)		
99 :	EXIT TO PRIMOS		

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : 4 (Updating GW  
NWIS UPDATE PROGRAM data)  
RELEASE VERSION 90.1  
JANUARY 1990

ENTER BATCH CODE FROM EDIT ROUTINE A  
(The following messages indicate which files have  
transactions that need processing.)

SITE FILE TRANSACTIONS WILL BE PROCESSED  
CONSTRUCTION TRANSACTIONS WILL BE PROCESSED  
MISCELLANEOUS TRANSACTIONS WILL BE PROCESSED

Updates processing, please be patient  
UPDATE PROCESSING COMPLETED--CHECK UPT.ERR.A  
for ERROR MESSAGES and STATISTICS  
NUMBER OF SITES ADDED = 1  
NUMBER OF CONSTRUCTION RECORDS ADDED = 4  
NUMBER OF MISCELLANEOUS RECORDS ADDED = 4  
\*\*\*\* STOP

Figure 13.--Ground-water update



ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE? <CR>

\*\*\*\*\*  
 MAIN MENU FOR WRD GWSI DATA BASE # 1 -- REV 90.1 - JAN 1990  
 \*\*\*\*\*

CODE	PROGRAM DESCRIPTION	CODE	PROGRAM DESCRIPTION
----	-----	----	-----
1	: QUERY ENTRY (GWINPUT)		
2	: FULL SCREEN ENTRY (HDRINP)		
3	: EDIT GW DATA (FROM 1-2)	7	: EDIT GW DATA IN BATCH
4	: UPDATE GW FILES (FROM 3)	8	: UPDATE GW DATA IN BATCH
5	: UPDATE SITE FILE ONLY (RUNS 2,3,4)		
6	: GW RETRIEVAL/TABLES		
9	: SEND FILE (FROM 1-2) TO UPDATE SYSTEM		
10	: PLOT HYDROGRAPHS		
95	: UTILITIES SUBMENU		
96	: DOCUMENTATION SUBMENU		
97	: GO TO LOCAL MENU		
98	: EXIT TO MAIN MENU (DEFAULT)		
99	: EXIT TO PRIMOS		

\*\*\*\*\*List error file to screen\*\*\*\*\*

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : SLIST UPT.ERR.A  
 NUMBER OF SITES ADDED = 1  
 NUMBER OF CONSTRUCTION RECORDS ADDED = 4  
 NUMBER OF MISCELLANEOUS RECORDS ADDED = 4

ENTER PRIMOS COMMAND OR SELECT PROGRAM CODE : 99 (Exit from menu)

Figure 14.--Ground-water update (continued)

### 7.2.3 National Update Files

The files created by the GWSIUPT procedure for the update of the WATSTORE System 2000 GWSI data base are:

<u>File Name</u>	<u>Description</u>
HDR\$UPT.01	Contains updates to the WATSTORE Header File
GWSI\$UPT.01	Contains updates to the WATSTORE GWSI File

The suffix .01 defines the data-base number that you are currently using. Multiple data bases are allowed, but are used infrequently; the default data-base number is 01.

G.890315.140004	Temporary file created by GWSIUPT and STNCHANGE to hold the WATSTORE update records for the System 2000 GWSI data base until the update program is complete.
H.890315.14000	Temporary file created by GWSIUPT and STNCHANGE to hold the WATSTORE update records for the Header file until the update program is complete.

The temporary files are time-tagged with the current date (890315) and the current time (140004) for each run.

These temporary files are necessary for multiple users to update the Prime GWSI data base at the same time. These files will automatically be appended to the end of the GWSI\$UPT.01 and HDR\$UPT.01 files at the successful completion of the GWSIUPT or STNCHANGE programs. If the GWSI\$UPT.01 and/or HDR\$UPT.01 files are being used by someone else, the update programs will attempt the append for 1 minute; then the update program displays a message that the G. and H. files need to be manually appended to the GWSI\$UPT.01 and HDR\$UPT.01 files. The G. and H. files will be left in the WATSAVE directory.

The Prime Editor can be used to manually append the G. and H. files to the GWSI\$UPT.01 and HDR\$UPT.01 files. To perform the append, enter the following sequence of commands:

```
A WATSAVE
ED GWSI$UPT.01
Bottom
Load G.890315.140004
File
```

```
A WATSAVE
ED HDR$UPT.01
Bottom
Load H.890315.140004
File
```

If the GWSIUPT or STNCHANGE program abnormally terminates, the G. and H. Files remain in the WATSAVE directory and need to be appended to the GWSI\$UPT.01 and HDR\$UPT.01 files. Before the temporary files are appended to the national update files, be sure that the files contain data and that the updates are appended in chronological order.

After the G. and H. files are appended to the national update files, delete them from the WATSAVE directory.

#### 7.2.4 Transaction Files

The GWSIUPT and STNCHANGE programs create transaction or audit trail files of all updates made to the Site File and the eight GWSI data files. These transaction files contain a complete record of adds, deletes, and modifies made against the data base. The purpose of these files is for recovering the updates made to the data base in case any or all of the data files are damaged. Recovering damaged data files is possible using the NWIS program RECOVER. Each data base on the District Prime has an individual transaction file for each individual MIDAS file. The names of the transaction files related to the GWSI data base are:

File Name	Description
TRANS.01SITE	Transaction file for site file
TRANS.01CONS	Transaction file for construction file
TRANS.01MISC	Transaction file for miscellaneous file
TRANS.01DISC	Transaction file for discharge file
TRANS.01LEV	Transaction file for water-level file
TRANS.01OBS	Transaction file for observation well headings file
TRANS.01GEOH	Transaction file for geohydrologic unit file
TRANS.01HYDR	Transaction file for hydraulics unit file
TRANS.01STWU	Transaction file for State water-use file

Note: The .01 in the above file names is the data-base number.

## 7.2.5 National Update Concerns

The GWSIUPT procedure creates update records for the WATSTORE/GWSI system on the Amdahl. Following is a list of several differences that exist between WATSTORE/GWSI and NWIS/GWSI:

<u>Component</u>	<u>Name</u>	<u>Difference</u>
C12	Station name	Mandatory in NWIS.
C13	Landnet location	Internal blanks maintained in NWIS.
C35	Pump used	Deleted from NWIS.
C36	Source of geohydrologic data	Deleted from NWIS.
R47	Major pump data	Only one occurrence allowed per LIFT entry in NWIS.
R55	Standby pump data	Only one occurrence allowed per LIFT entry in NWIS.
R146	Discharge record	Flowing (R134) and Pumped (R146) combined into one record in NWIS.
C324	Measuring point	Field length of 94 characters in NWIS, truncated when updated in WATSTORE.
C709	Water level time	New field in NWIS. This field allows multiple water levels per day; WATSTORE recognized only first record added for a day. This could lead to erroneous updating of water-level records in WATSTORE.
C161	Owner's name	Last name, first name, and middle initial are concatenated to form owner's name.
C162	First name	Deleted from NWIS.
C163	Middle initial	Deleted from NWIS.
C191	Other Assignor ID	Field length of 15 characters in NWIS, truncated when updated in WATSTORE.
C188	Visit name	Field length of 22 characters in NWIS, truncated when updated in WATSTORE.
NETW	Network records	Records for water quality (R114), water level (R121), and water withdrawal (R127) combined into one record type NETW in NWIS; no effect on WATSTORE update.

SPEC	Special cases	Records for well groups (R203), Pond, tunnels, drains (R208), and Laterals (R219) have been combined into one record type SPEC in NWIS; no update made in WATSTORE.
C184	Remark date	Automatically generated by WATSTORE, NWIS allows user-selected date.
C185	Remark	Field length of 44 characters in NWIS; truncated when updated in WATSTORE.
C97	Lithologic modifier	Field length of 123 characters in NWIS; truncated when updated in WATSTORE.
R269	Well headings	Field length for C270 is 115 characters in NWIS; no WATSTORE update for this record.
C277	State water use	No WATSTORE update for this record.

NWIS 90.1

VOLUME 2. USER'S MANUAL

Chapter 4. Ground-Water Site Inventory System

Section 8. Ground-Water Retrieval/Tabling Program

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January 1990

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## 8 GROUND-WATER RETRIEVAL/TABLING PROGRAM

The Ground-Water Retrieval and Tabling program is a general-purpose retrieval and tabling program for the Prime version of the Site File and all of the associated GWSI files.

### 8.1 Introduction

The Ground-Water Retrieval and Tabling program can be used to generate two types of general data tables, four types of water-level tables, or a file suitable for input into other programs. The program is completely user-friendly and could be used without documentation. This document summarizes the program for those users who desire documentation.

This retrieval and tabling program allows the user to retrieve information from the USGS Site File and the associated Ground-Water Site-Inventory (GWSI) files on the Prime computers. Retrieved data may be obtained in the form of general data tables (two kinds), water-level tables (four kinds), or as a file which may be used as input to another program. This program is user-friendly and will prompt for any information that it needs. A large part of this documentation is from the detailed explanation that the program can generate. The first few times that you use this program, you should ask for the detailed explanation to lead you through it. Later, you can select the minimum explanation option to speed processing. When using this program with minimum explanations, you may usually obtain further information about program queries by entering a question mark (?) in response to a prompt.

Upon entry to the program, you will be asked for setup parameters. The possible setup parameters are:

Explanation level:

- (T) Terse. Minimum explanation will be provided.
- (V) Verbose. Detailed explanation will be provided.

You must specify T or V for the level of detail you require.

Type of execution:

- (I) Interactive. You will be prompted to provide all necessary data.
- (C) Control file. Required information will be read from a control file that was created in a previous run of this program. You will be allowed to override any option obtained from the control file.
- (R) Resume after phantom/batch. No file processing required, but use this program to display/spool output from previously processed phantom/batch job.

You must specify either I, C, or R for the type of control required for this program. For example, if you wish a detailed explanation and are processing interactively, enter "VI" or just "V". This is what you should select the first time you use the program.

After entering the setup parameters, you are prompted to enter a root path name. The root path name is used to build the default path names for the various files that are required during the retrieval. The default root name is GW, but you may enter a different root name. The program then generates default path names by adding a suffix to the root name you specify. For example, if you were building a retrieval for the "Stillwater Project," you might specify a root name of "STILLWATER." Pathnames beginning with STILLWATER (STILLWATER.CTRL, STILLWATER.TABLE, etc.) would be generated by the program. You are prompted whenever a new file is required in the program and given the choice of using the default path name (generated by the program using the root) or giving the file a different path name. See section 8.9 for further information about the various files used in the program.

To make a retrieval, you are prompted for the following:

- (1) Gross selection of sites to be retrieved based on one of 11 key fields in the Site File. This selection will limit the number of sites considered in subsequent steps.
- (2) Qualification/limitation of site selection. Sites selected may be further restricted by one or more of the following:

- (a) Latitude-longitude polygon boundary of a geographic area.
  - (b) Detail testing of values of any site file or GWSI-related file fields.
  - (c) Type of site (stream, spring, well, etc.).
  - (d) Count of occurrences of:
    - o Sites selected by key field (gross test).
    - o Sites passing polygon, detail and site type tests.
    - o Records written to output file.
- (3) Format of output. You will specify type of output (standard table, dump format table, machine-readable subfile or water levels tables), rounding specifications, sorting specifications, etc.

At the end of the setup, you may selectively review or reenter any or all of the retrieval/tabling specifications. You may save the setup specifications in a file. This file can then be used in a subsequent execution of this program. This allows you to begin your retrieval/tabling design from a similar retrieval/tabling execution. With this capability, you may generate one or more "canned" setups for recurring retrievals or for use as a pattern for typical retrievals or tables.

## 8.2 Fields Available

All fields in the Site File and the associated GWSI files are available to this program. Fields are identified by component numbers. Fields (components) are specified by entering the code "Cxxx" for the field desired. Enter "M" in place of "C" if the metric equivalent of the field is required. You need not enter leading zeros in field codes. Most of the field numbers or component numbers are carried over from the System 2000 version of GWSI. Use the GWSI coding manual to determine the component numbers; component numbers are listed by number and by key word in sections 8.11 and 8.12, and also are found in the file named WATSTORE>GW>DOC>DATA.DICTIONARY. You can even ask the program for a list of component numbers. Some new component numbers, generally numbered C7xx and C8xx, have been added to the Prime version of GWSI. Components C7xx are generally in the associated GWSI files and components C8xx are nonground-water fields in the Site File.

If you enter a field code with a prefix of "?", a field description is displayed. You are then asked to confirm the field before it is used. For example, if you enter "?C28" in response to the prompt "Enter field code:" the following is displayed:

```
        That field is: Depth of well
              File: Site File
Enter <CR> to accept, "R" to reject
```

If you enter a carriage return, the field is used. If you enter "R", the field is not used and you are asked to enter another field code. You may obtain a display of the fields available any time that a field code entry is requested. Enter "+" for a complete list or "+Cxxx" for a listing of 20 components beginning with field Cxxx. A list of 20 components is displayed; you have a choice of continuing the display of components or resuming normal processing.

### 8.2.1 QW Subfile

The QW subfile (QUAL) of the miscellaneous ground water file has the following components in each subfile record:

```
C193 (date), C195 (aquifer), C196 (parameter code),
and C197 (value).
```

There is no convenient way to report values for various parameters as separate columns on a page.

This program provides a capability to restructure QW data temporarily in a horizontal format with the following components in one record:

```
QDATE (date), QAQFR (aquifer), and aaaaa, bbbbbb, . . .
where the aaaaa, bbbbbb are the values associated with
parameter codes aaaaa, bbbbbb, . . . .
```

For example, if you wish to report parameters 00010, 00300, and 00400 by date, specify "QDATE", "00010", "00300", and "00400" as output fields.

### 8.2.2 Temporary Fields

You may create up to 20 temporary fields. Temporary fields are fields containing the results of mathematical operations on numeric GWSI fields, or the results of some logical process on character GWSI fields.

Temporary fields are denoted as "T1", "T2", . . . "T999". You will be prompted to define a temporary field the first time you invoke it. Temporary fields may be used as any GWSI fields--for testing, output or sorting.

Numeric temporary fields contain the result of a sequence of operations on numeric constants and/or GWSI fields. The operations are defined using Reverse Polish Notation (RPN) which allows evaluation of algebraic expressions without regard for parentheses. Operations are entered as operands (numeric values or fields) and/or one of the operators (+-/\*^).

The current value of a term is modified according to the operation specified. If no operator is included, a new term is started. If no operand is included, the operation is applied using the last term computed and the current term. Any equation can be reduced to a sequence of these RPN operations. For example, to define a temporary field equal to site altitude (C16) less well depth (C28), you would specify the following sequence:

C16 C28-

To define the more complex (rather nonsensical) expression

$(C16 - C28) + (C28 - 100)^{.5}$

you would specify the following sequence of operations:

C16 C28- C28 100- .5^ +

Character temporary fields contain the result of a logical operation on a character GWSI field. The operations currently available are:

P Partial field--extract a substring from a field.

S Sort key--create a sort key using a field in the form:

TTTTRRRSSQQQQNN (township-range-section-qtr sec-sec).

The field created when used to sort the file will cause output to be ordered from north to south by township and, within township, to be ordered from west to east by range.

- J Julian day number--convert a date field to a 5-character day number referenced to a specified year.
- D Degree conversion--convert latitude or longitude in degrees-minutes-seconds to a 9-digit decimal degrees with 4 decimal places.

A special operator "=" is available for either character or numeric fields. This operator causes a test to be performed so that the temporary field is set to the value of the first operand only if the value of the second operand (a field) is equal to the third operand (a constant). The first and second operands must occur in the same related file. For example, you might define the temporary fields T1 and T2 to be:

```
C115 C760 = WL
C115 C760 = QW
```

T1 would contain the value of C115 (network begin year) whenever C760 (data type) was "WL" (water levels), and T2 would contain the value of C115 whenever C760 was "QW" (water quality). Variation of this operation allows the first or last occurrence of a related file field to be retrieved. For example, the temporary field T1 could be defined as:

```
C190 C190 = @L
```

and T1 would be set to the value of the last occurrence of C190. Conversely, the operand @F would specify that the first occurrence is to be retrieved. This temporary field would be useful for sorting on a related file field when data is being retrieved from multiple related files. Whenever a temporary field is defined using the "=" operator, that field is evaluated before output for the site begins. Thus, the temporary field can be used much as a site file field for output or sorting; not for detail tests.

### 8.3 Gross Selection of Sites

Gross selection of sites to be retrieved is a first-cut retrieval based on one (and only one) of 11 key fields in the Site File. The Site File is a merged version of the WATSTORE Station Header File and the System 2000 GWSI repeating group zero. Gross selection will limit the number of sites that will be considered in the next step. The proper choice of the gross selection criteria is most important because, to the program, the data base consists only of those sites that meet the gross selection criteria.

You must choose one of the following fields to be used for gross selection of GWSI sites:

- (1) Agency and/or site ID--up to 1,000 values or ranges. There are four options available for this selection:
  - S - Specify sites, one-by-one  
(may use partial site ID)
  - R - Specify range of site IDs (or partial IDs)
  - G - Specify range of site IDs based on "latitude" (columns 1-6) and "longitude" (columns 7-13) portions of the site ID
  - A - Specify that all sites are to be retrieved.As an option, you may select this field and provide an external file that contains the agency code (columns 1-5) and the site ID (columns 6-20) of the sites to be retrieved. The entire agency-site ID must be included. If including only a partial site ID, append an asterisk (\*) to the partial ID.
- (2) State-county code--up to 1,000 values.
- (3) Primary aquifer code--up to 1,000 values. This is component C714 in the Site File and not component C93 in the geohydrologic file.
- (4) Hydrologic unit number--up to 1,000 values.
- (5) Water-use code--up to 1,000 values.
- (6) Project number--up to 1,000 values.
- (7) Drainage basin number--up to 1,000 values.
- (8) Use-of-site code--up to 1,000 values.

- (9) Station name (local well number)--up to 1,000 values or partial values. As an option, select this field and provide an external file that contains the names (or partial names) of the sites to be retrieved (columns 1-24).
- (10) Latitude--up to 1,000 ranges.
- (11) Longitude--up to 1,000 ranges.

You will be given an opportunity later to further qualify or limit the number of sites that will be selected by the gross test. Consistent data input and judicious use of the gross selection criteria can drastically reduce retrieval time. For example, if all sites have a properly coded project number and only sites for projects PROJ001 and PROJ008 are of interest, the size of the data base is immediately reduced to include data for those two projects only.

#### **8.4 Latitude-Longitude Polygon**

The sites that pass the gross-selection criteria can be tested to see if they fall within a latitude-longitude polygon. The polygon is defined by up to 1000 latitude-longitude points. The points may begin on any vertex, but must be entered in a counter-clockwise order. The points may be entered from the terminal or from an existing file. In addition, the program has the capability to generate a polygon approximating a circle of a given radius (miles) about a point. The points may be saved in a file for future use.

After entering the polygon vertices, you are prompted as to whether or not any changes are needed to the selected polygon. The options are to "M" modify, "A" add, or "D" delete any one entry. A list of the vertices appears on the screen, and any vertex may be selected for the change. You may change only one vertex at a time. When the change has been made, the program prompts for the next change to the polygon. If no further changes are needed, enter an "N"; the program then continues on to the next step.



## 8.5 Detailed Selection of Sites

You may specify up to 20 detailed tests to further restrict selection of sites. These tests are performed after a site has passed the gross selection criteria and has passed the polygon criteria. A record surviving the gross and polygon tests but failing the detailed tests will not be included in the output. Any field in the Site File or any of the associated GWSI files may be selected for testing. Fields need not be included in the output to be used for detailed testing. A test consists of a component number, an operator, and a value. Available operators are:

EQ Equals	NE Not Equal
GT Greater than	LT Less than
GE Greater than or Equal to	LE Less than or Equal to
IN In range of	EX Outside range
For character strings only	
CN Contains	NC Does not contain

Values are numbers or character strings as appropriate. Test character strings are limited to 20 characters. To test date fields, enter the value as yyyyymmdd. To test for a blank or missing field, use two dashes (--) for the value. The only operators applicable to missing fields are "EQ" or "NE".

If more than one test is made, the tests must be connected with OR or AND. For example, the following would ensure that well depth (C28) is not missing and is less than 100 feet:

C28 NE -- AND C28 LT 100

Note that "AND" connectors are evaluated before "OR" connectors. For example, the following test

C28 LT 100 OR C28 GT 500 AND C16 GT 4000

is equivalent to:

C28 LT 100 OR (C28 GT 500 AND C16 GT 4000)

and passes records with:

- (1) Depth of well less than 100 feet, or
- (2) Depth of well greater than 500 feet and altitude greater than 4000 feet.

To make the following test:

(C28 LT 100 OR C28 GT 500) AND C16 GT 4000

you have to use:

C28 LT 100 AND C16 GT 4000 OR C28 GT 500 AND C16 GT 4000.

The WHILE connector is available for use in testing fields from related files. The WHILE connector is similar to AND except that WHILE requires the tests be passed in the same occurrence of the related file. For example, the test:

C237 GT 100 AND C235 GT 1984

is passed if any occurrence of C237 is greater than 100, and if any occurrence of C235 is greater than 1984. However, the test:

C237 GT 100 WHILE C235 GT 1984

is passed only if the conditions are met in the same occurrence of the related file, i.e., if the depth is greater than 100 feet in a measurement made after 1984. Note that the fields in tests connected with WHILE must be in a single related file, while the tests connected with AND may include fields from the Site File or any related files.

If a detailed test is made on a field in one of the associated GWSI files (in which fields may occur a number of times for each site), you may specify whether the test must be passed for all occurrences of the field for a particular site or if one occurrence is sufficient.

The program prompts for the component number, the operator, and the test value. If the component for the site can occur more than once, it also prompts for the number of occurrences required.

## 8.6 Types of Output and Related Files

Four types of output formats are available. You must select one of the following types of output:

- (1) "Standard" table, with columns appearing horizontally across the page while sites/records are listed vertically down the page. Up to 20 pages (132 columns each) of fields may be specified. You may specify that certain fields appear on each page whenever more than one page is required to list all the fields requested. You can also specify a page break when a field changes value (e.g., a new county). For users who are familiar with System 2000 natural language, this form is similar to the LIST command. You may specify that statistical computations be performed for any of the fields selected. The statistical options currently available are:
  - C Count of nonempty occurrences
  - T Sum of values
  - H High (maximum) value
  - L Low (minimum) value
  - M Mean value
  - S Standard deviation of values
- (2) "Dump-format" table, in which the selected fields for a single site appear vertically down the page along with the component number and a field description. This format is advantageous for presenting the data for a site in a compact form. All occurrences for the related files, such as water levels, will be retrieved and output. For users who are familiar with System 2000 natural language, this form is similar to the PRINT command. This form is useful for dumping all data for a site, but the amount of output will be large.

You may specify that the dump include either all fields or selected fields. Note that all fields (over 300 components) may generate a large amount of output. If you specify that the dump include all fields, you have an opportunity to exclude one or more fields. You may even use the "!" option of field specification to exclude all fields of a given related file. For example, if you respond !C237 to exclude this field, all fields in the water-levels related file are excluded.

- (3) "Subfile" format, in which user-selected fields appear in a machine-readable form in a file without column headings or spaces between fields. This format is useful as input to other programs for plotting, statistical analysis, etc. A table listing the fields in the subfile, together with field locations and lengths, is produced.
- (4) "Special" tables for presenting water-level data. There are four types of water-level tables that can be produced. The four types are:
  - (a) Daily water levels by water year.
  - (b) Five-day water levels by water year.
  - (c) Intermittent water levels by water year.
  - (d) Intermittent water levels for multiple years.

You must specify the fields you wish to include on the output report. If you specify more fields than will fit on one page of a standard table, a multiple-page report (up to 20 pages) is created automatically. You may specify that certain fields appear on each page of a multi-page report. For example, you may wish to print site ID's on each page. You may limit the width of any page by forcing a field to begin a new page. The location where fields will appear on the output is displayed as the field code is requested. The page and column location is displayed as "(Pg:xx,Col:xxx)".

You may specify that all of the fields of a related file be selected or output by prefixing any one field of the related file with !. For example, if you respond !C237 (water level) to a prompt to enter a field to be output, all of the fields in the water levels related file are included in the output.

If you output a field from any of the related GWSI files, you are provided an opportunity to specify the extent of the output from the related file. If you wish to limit the output, you are prompted to specify tests similar to those of the detail tests used in site selection.

### Related Files:

Anything not found in the Site File is found in a related GWSI file. Items in the Site File are listed in the Coding Manual on pages 2-3 and 2-4.

NOTE: Components in the Site File can occur only one time for the site [e.g., (C12)--local well number]. Components in the related GWSI file can occur multiple times for the site [e.g., (C79)--diameter of casing].

When the format for a table has been established, you can restrict the output of related files. You are prompted for such restrictions only if a component from a related file has been selected for output.

For restricting output from related files, the "@" operator is also available in addition to EQ, NE, GT, LT, GE, LE, and, for character strings only, CN and NC. You may use the "@" to restrict selection of records to particular occurrences of a related file record for each site. The following "@" operators are available:

- @F select the first n records for a site
- @L select the last n records for a site
- @N select every nth record for a site

If you choose one of these operators you are prompted to enter "n".

## 8.7 Output Options

There are a number of options for the output tables or files. Some of these options are prompted for and others have supplied defaults. In either case, a table of the applicable options is displayed. You may change one or more of the options, which are defined as follows:

- (1) File name. The name of the output file can be changed.
- (2) Title. The title (up to 80 characters) may be changed. This option does not apply to subfiles.
- (3) Spool destination. A printer other than the system default printer may be specified.
- (4) Spool forms. Forms other than the default system forms may be specified.
- (5) Page length. The default page length is 58 lines, but this may be changed to any value between 10 and 160 lines to allow printing on various forms and devices.
- (6) Rounding of numeric fields. You may specify whether or not to round numeric values. The default for this parameter is obtained from the file GW.TABLE.PARMS, which is set according to a District's discretion. If rounding is desired, the rounding specifications are obtained from the data dictionary. See items (8) and (9) below.
- (7) Rounding exceptions. You may specify one or more fields as exceptions to whatever rounding was requested in option (6) above. If you specify rounding, you may also specify that one or more (up to 20) fields not be rounded. Similarly, if you specify no rounding, you may also specify exceptions.
- (8) Rounding for C16. Normally, site altitude (C16) is rounded according to the value of altitude accuracy (C18). You have the option of using the rounding specifications from the data dictionary for this component.
- (9) Rounding for C237. Normally, water levels (C237) are rounded according to the value of water-level accuracy (C276). This option uses the rounding specifications from the data dictionary for this component.

- (10) Force uppercase. You may force character field output in uppercase.
- (11) Right-justify numeric fields. Normally, numeric fields are printed with decimal points aligned. This option provides for right-justification of numeric fields.
- (12) Printing empty fields. Normally, empty fields are not printed in dump format. This option provides for forcing output of empty fields, and only applies to the dump format tables.
- (13) Years to process. This option applies to water-levels tables only, and provides for specifying the period to be tabled.
- (14) Start, end months. This option applies to water levels only and provides for specifying a partial year to be tabled. It also allows tabling of year types other than water year (the default) where the starting month is October and the ending month is September.
- (15) Number water-level groups per line. This option applies only to intermittent water levels. If page sizes narrower than 132 characters are required, this option provides for displaying fewer than the default number of groups.
- (16) Water-levels subtitle. This option allows the default subtitle, WATER LEVELS IN FEET BELOW LAND SURFACE, to be changed.
- (17) Print period-of-record summary. Normally, a period-of-record summary is not included on water-levels tables. This option provides for printing a summary for the entire period of record, even though only a partial period is being tabled.
- (18) Print record available line. Normally, a line indicating the period of record available is not printed. This option provides for printing such a line, and applies only to water levels.

- (19) Status types to include. Normally, summaries of water levels include all status types. This option provides for including only specific status types in summaries. For example, you may wish to include only static water-level measurements in summaries.
- (20) Field to table in water levels. Normally, water levels are tables of the values of component C237 (water level). This option provides for tabling some other field, such as elevation of water (a temporary field calculated from site altitude and water level).
- (21) Page break field. You may specify a field for which a page eject occurs whenever the value of the field changes. This option applies to type 1 and water-levels tables (except for daily tables).
- (22) Page break on site change. Normally, dump format tables are printed with one blank line separating sites. This option provides for forcing a page eject whenever the site changes. This option applies only to dump format tables.
- (23) Alternate headings. Normally, component C270 (observation well headings) is for describing sites for water-levels tables. This option provides for specifying combinations of literal text and component values used as site descriptions.
- (24) Limit related file output. Normally, all data available in the related files are tabled for each site selected. This option provides for limiting the tabling of related file output according to the values of the fields being tabled.
- (25) Permute related file output. Provides for tabling all possible combinations of fields when data are being tabled from more than one related file.
- (26) Sorting. Normally, tables and subfiles are output in the order that the data are available in the Site File and the related files. This option provides for sorting the output for up to 20 different fields, and in an ascending or a descending direction.



## 8.8 Processing Parameters

When all specifications are complete, the program asks for the processing parameters. There are three options for processing:

- (1) Interactive. Control remains with the terminal.
- (2) Phantom. Control of this retrieval reverts to a phantom. The phantom begins processing immediately with control of the terminal released to the user.
- (3) Batch. A file is generated to be run later as a batch job.

The first processing option would be used for reasonably short retrievals. The second option would be used if the retrieval would take longer and the user needs the terminal, perhaps to begin another retrieval. The third option is most useful for systems that are overloaded and when the retrieval is not needed immediately. A batch job has the least impact on other users and could even be run during the middle of the night.

There are three additional options that are allowed at this time:

- (1) Control file generation.
- (2) Generation of a list of sites that passed all tests.
- (3) Selection of data base number.

The control file contains all of the specifications from this program execution. The control file could serve as a record of the retrieval specifications. It also can be used as a starting place for a later program execution. During the later program execution, any of the specifications can be changed. The control file is nice to have in case the retrieval/table is close to, but not exactly, what the user wanted. The user can then use the control file and only modify some specifications. A series of control files can be generated for typical retrievals that are done in the District. These control files then become "canned programs" that each user can modify to generate "tailored programs."

The file containing the list of sites in a subsequent retrieval can be used for gross selection. The user can later use a PRIMOS-level editor to add or delete sites from this file to get absolute control over those sites that are selected.

You may specify the data base(s) to be processed by appending a string of data base numbers preceded by "@". For example, including @2 would indicate that data base number 2 is to be processed, while including @2,4 would indicate that data bases 2 and 4 are to be processed and @2-4,6 would indicate that data bases 2, 3, 4, and 6 are to be processed. The default is @1.

The default for processing parameters is "I@1", which indicates interactive processing of data base 1. If, for example, you wished to process data base 2 as a phantom job and create a file of the sites selected you might respond "PS@2".

## 8.9 Files

The program may use or generate a number of files during execution. Each permanent file generated has a default file name. This default file name may be changed and the new file name becomes the default for the duration of the program execution.

The program also needs a number of temporary files. These are created in the current directory and are deleted when they are no longer needed. You must have sufficient space in the current directory to accommodate these files. If the program is interrupted, these files may remain, although they are usually deleted unless a severe problem has occurred.

The control file (default name GW.CTRL) contains all of the program specifications and may be used to run a subsequent retrieval.

The polygon file (default name GW.POLY) defines the vertices of the latitude-longitude polygon. This may be an existing file or it may be created by the program.

The output file (default name GW.TABLE for tables or GW.SUBF for machine-readable subfile) is generated by the program. The file may be spooled from the program or printed later. The subfile generally will be used by another program.

A subfile format list (default name GW.SUBF.LIST) can be generated if the subfile format is used. This file lists the location of each field in the file, along with its component number and description.

A list of sites (default name GW.SITES) may be used during the gross selection. This list, which has the agency code in columns 1-5 and the site ID in columns 6-20 (alternatively, with the station name in columns 1-24), may be of any length. This list (default name GW.SITES if an input list is not used and GW.SITES.NEW if an input list is used) may be generated by the program by asking for creation of a list of selected sites when the processing parameters are specified.

If the processing is done as a phantom or as a batch job, an input file (default name GW.CPL) and an output file (default name GW.COMO) are created. The input file controls the phantom or batch job while the output file records the results.

## 8.10 Getting Started

You are more than ready to use the program by the time you reach this point. Before you try to make a final table, start experimenting with the program by making a few simple retrievals and tables. You will then become more familiar with the full power of the program. The first few times, ask for full explanations. Later, make use of the "?" response to questions to get more details. You cannot damage any of the data files by using this program, nor can you cause any other harm. The only thing that you can do is create some files and use some computer time. You can always delete the files, if they are not useful, using the PRIMOS command "DELETE filename". You can always hit the "break key" (or CNTL P) to get out of the program.

You will need to have access to the programs, the data files, and associated files. This is generally done by being made a member of a GWSI access group. In some Districts, all users will have access to this program, while in other Districts access may be more limited. Contact your District GWSI administrator to get access to this program.

To use this program, attach to a directory where you have "write" and "delete" access. Your initial attach point (the directory that you are in when you login) will work fine. You need to have some workspace in this directory; a few dozen PRIMOS records are plenty for almost all retrievals. If the disk is full or you have reached the space quota in the directory, the program cannot work.

You can reach this program from either the NWIS (National Water Information System) menu or the GWSI menu. The method may be District dependent. For a first try, enter the command GWSI at the PRIMOS level. If that fails, enter NWIS. If neither works, contact your District GWSI administrator to find out how to reach this program on your system. If you enter NWIS, first get to the GWSI menu by entering Code 4 (GW (GROUNDWATER) DATA SYSTEM). Once in the GWSI menu, select Code 6 (GW RETRIEVAL/TABLES). The program will take a few seconds to load and will display the date of the last revision. If this date is different from the date on this documentation, the program operation may vary slightly in places. You can always get full details by entering a "?" in response to a prompt.

You will learn the program by using it. Don't be afraid of it; you cannot do any harm. AS A LAST RESORT, contact your District GWSI expert when you need help. Good Luck!

**8.11 List of Components (by number)**

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C001	Site ID (station number), p. 2-10	1.2
C002	Type of site, p. 2-26	1.36
	C - Collector or Ranney type well	
	D - Drain (dug: intercept water table/potentiometric surface; to lower water level or serve as water supply)	
	E - Excavation	
	H - Sinkhole	
	I - Interconnected wells (interconnected via an underground lateral)	
	M - Multiple wells (pumped through a single header)	
	O - Outcrop	
	P - Pond (dug: intercept water table/potentiometric surface; serve as water supply)	
	S - Spring (used only on spring schedule)	
	T - Tunnel, shaft, or mine from which ground water is obtained	
	W - Well (single well other than collector or Ranney type)	
	X - Test hole, not completed as a well	
C003	Record classification, p. 2-25	1.34
	C - Data have been field checked by the reporting agency.	
	L - Location not accurate.	
	M - Minimal data.	
	U - Data have not been field checked by the reporting agency, but the reporting agency considers the data reliable.	
C004	Source agency code, p. 2-9	1.1
C005	Project number, p. 2-35	1.49
C006	District code, p. 2-13	1.7
C007	State code, p. 2-13	1.8
C008	County code, p. 2-13	1.9
C009	Latitude, p. 2-12	1.4
C010	Longitude, p. 2-12	1.5

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C011	Lat-long accuracy code, p. 2-12	1.6
	S - The measurement is accurate to $\pm 1$ second.	
	F - The measurement is accurate to $\pm 5$ seconds.	
	T - The measurement is accurate to $\pm 10$ seconds.	
	M - The measurement is accurate to $\pm 1$ minute.	
C012	Local well number, p. 2-11	1.3
C013	Land-net location, p. 2-13	1.10
C014	Name of location map, p. 2-14	1.11
C015	Scale of location map, p. 2-14	1.12
C016	Altitude of land surface, p. 2-14	1.13
C017	Method altitude determined, p. 2-14	1.14
	A - Altimeter	
	L - Level or other surveying method	
	M - Interpolated from topographic map	
	- Blank field implies that the method is unknown.	
C018	Altitude accuracy, p. 2-15	1.15
	nn - Possible error in feet.	
C019	Topographic setting, p. 2-16	1.18
	A - Alluvial fan	
	B - Playa	
	C - Stream channel	
	D - Local depression	
	E - Dunes	
	F - Flat surface	
	G - Flood plain	
	H - Hilltop	
	K - Sinkhole	
	L - Lake, swamp, or marsh	
	M - Mangrove swamp	
	O - Offshore (estuary)	
	P - Pediment	
	S - Hillside (slope)	
	T - Alluvial or marine terrace	
	U - Undulating	
	V - Valley flat (valleys of all sizes)	
	W - Upland draw	

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C020	Hydrologic unit code, p. 2-15	1.16
C021	Date well constructed, p. 2-26	1.37
C023	Primary use of site, p. 2-27	1.38
	A - Anode C - Standby emergency supply D - Drain E - Geothermal G - Seismic H - Heat reservoir M - Mine O - Observation	P - Oil or gas well R - Recharge S - Repressurize T - Test U - Unused W - Withdrawal of water X - Waste disposal Z - Destroyed
C024	Primary use of water, p. 2-30	1.41
	A - Air conditioning B - Bottling C - Commercial D - Dewater E - Power F - Fire H - Domestic	I - Irrigation J - Industrial (cooling) K - Mining M - Medicinal N - Industrial P - Public supply Q - Aquaculture
		R - Recreation S - Stock T - Institutional U - Unused Y - Desalination Z - Other
C025	Secondary use of water (see list w/C024), p. 2-33	1.42
C026	Tertiary use of water (see list w/C024), p. 2-33	1.43
C027	Hole depth (depth drilled), p. 2-34	1.46
C028	Depth of well (finished depth), p. 2-34	1.47
C029	Source of depth data, p. 2-35	1.48
	A - Reported by another government agency. B - From driller's log or report. G - Private geologist-consultant or university associate. L - Depth interpreted from geophysical logs by personnel of source agency. M - Memory (owner, operator, driller). O - Reported by the owner of the well. R - Reported by other than owner, driller, or another government agency. S - Measured by personnel of reporting agency. Z - Other.	
C030	Water level, p. 2-35	1.50
C031	Date water level measured, p. 2-36	1.51
C033	Source of water-level data (see list w/C029), p.2-37	1.54

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C034	Method water level measured, p. 2-36	1.52
	<ul style="list-style-type: none"> <li>A - Airline measurement</li> <li>B - Analog or graphic recorder</li> <li>C - Calibrated airline measurement</li> <li>E - Estimated</li> <li>G - Pressure-gage measurement</li> <li>H - Calibrated pressure-gage measurement</li> <li>L - Interpreted from geophysical logs</li> <li>M - Manometer measurement</li> <li>N - Nonrecording gage</li> <li>R - Reported, method not known</li> <li>S - Steel-tape measurement</li> <li>T - Electric-tape measurement</li> <li>V - Calibrated electric-tape measurement</li> <li>Z - Other</li> </ul>	
C037	Site status at water-level measurement, p. 2-37	1.53
	<ul style="list-style-type: none"> <li>D - The site was dry (no water level is recorded).</li> <li>E - The site was flowing recently.</li> <li>F - The site was flowing, but the head could not be measured (no water level is recorded).</li> <li>G - A nearby site that taps the same aquifer was flowing.</li> <li>H - A nearby site that taps the same aquifer had been flowing recently.</li> <li>I - Injector site (recharges water being injected into the aquifer).</li> <li>J - Injector site monitor (a nearby site that taps the same aquifer is injecting recharge water).</li> <li>N - The measurement was discontinued.</li> <li>O - An obstruction was encountered in the well above the water surface (no water level is recorded).</li> <li>P - The site was being pumped.</li> <li>R - The site had been pumped recently.</li> <li>S - A nearby site that taps the same aquifer was being pumped.</li> <li>T - A nearby site that taps the same aquifer had been pumped recently.</li> <li>V - A foreign substance was present on the surface of the water.</li> <li>W - The well was destroyed.</li> <li>X - The water level was affected by stage in nearby surface-water site.</li> <li>Z - Other conditions that would affect the measured water level.</li> </ul>	



<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C038	Date lift data collected, p. 2-44	2.6.1.2
C040	Date site record last updated, p. 2-23	1.26
C043	Type of lift, p. 2-42	2.6.1.1
	A - Air lift	R - Rotary pump
	B - Bucket	S - Submergible pump
	C - Centrifugal pump	T - Turbine pump
	J - Jet pump	U - Unknown
	P - Piston pump	Z - Other
C044	Depth to intake, p. 2-44	2.6.1.3
C045	Type of power, p. 2-44	2.6.1.4
	D - Diesel engine	L - LP-gas engine
	E - Electric motor	N - Natural-gas engine
	G - Gasoline engine	W - Windmill
	H - Hand	Z - Other
C046	Horsepower rating, p. 2-44	2.6.1.5
C048	Manufacturer of lift device, p. 2-45	2.6.1.6
C049	Serial number of lift device, p. 2-45	2.6.1.7
C050	Name of power company, p. 2-45	2.6.1.8
C051	Power company account number, p. 2-45	2.6.1.9
C052	Power meter number, p. 2-45	2.6.1.10
C053	Pump rating, p. 2-45	2.6.1.11
C054	Company that maintains lift device, p. 2-46	2.6.1.13
C056	Type of standby power, p. 2-46	2.6.1.15
C057	Horsepower of standby power source (see list w/C045), p. 2-46	2.6.1.16
C059	Parent sequence number for HOLE subrecord of CONS file, p. 2-53	2.6.3.1
C060	Date of construction, p. 2-47	2.6.2.1
C063	Name of contractor, p. 2-48	2.6.2.2
C064	Source of construction data (see list w/C029), p. 2-48	2.6.2.3
C065	Method of construction, p. 2-48	2.6.2.4
	A - Air-rotary	P - Air percussion
	B - Bored or augered	R - Reverse rotary
	C - Cable-tool	T - Trenching
	D - Dug	V - Driven
	H - Hydraulic rotary	W - Drive and wash
	J - Jetted	Z - Other

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C066	Type of finish, p. 2-50	2.6.2.5
	C - Porous concrete F - Gravel pack w/perforations G - Gravel pack w/screen H - Horizontal gallery O - Open end P - Perforated or slotted	S - Screen T - Sand point W - Walled X - Open hole Z - Other
C067	Type of surface seal, p. 2-51	2.6.2.6
	B - Bentonite C - Clay or cuttings G - Cement grout	N - None Z - Other
C068	Depth to bottom of seal, p. 2-52	2.6.2.7
C069	Method of development, p. 2-52	2.6.2.8
	A - Pumped w/air lift B - Bailed C - "Blown" or surged	N - None P - Pumped
C070	Hours of development, p. 2-52	2.6.2.9
C071	Special treatment during development, p. 2-52	2.6.2.10
	C - Chemical (acid, and so forth) D - Dry ice E - Explosives F - Deflocculent	H - Hydrofracturing M - Mechanical abrasion Z - Other
C073	Depth to top of this hole interval, p. 2-53	2.6.3.2
C074	Depth to bottom of this hole interval, p. 2-54	2.6.3.3
C075	Diameter of this hole interval, p. 2-54	2.6.3.4
C077	Depth to top of this casing string, p. 2-55	2.6.4.2
C078	Depth to bottom of this casing string, p. 2-55	2.6.4.3
C079	Diameter of this casing string, p. 2-55	2.6.4.4

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C080	Casing material, p. 2-56	2.6.4.5
	B - Brick C - Concrete D - Copper G - Galvanized iron I - Wrought iron M - Other metal P - PVC, fiberglass, other plastic	R - Rock or stone S - Steel T - Tile U - Coated steel W - Wood Z - Other material
C081	Wall thickness of this casing, p. 2-56	2.6.4.6
C083	Depth to top of this open interval, p. 2-58	2.6.5.2
C084	Depth to bottom of this open interval, p. 2-58	2.6.5.3
C085	Type of openings in this interval, p. 2-59	2.6.5.6
	F - Fractured rock L - Louvered or shutter- type screen M - Mesh screen P - Perforated, porous, or slotted casing R - Wire-wound screen	S - Screen, type not known T - Sand point W - Walled or shored X - Open hole Z - Other
C086	Material in this interval, p. 2-58	2.6.5.5
	B - Brass or bronze C - Concrete G - Galvanized iron I - Wrought iron M - Other metal	P - PVC, fiberglass, or other plastic R - Stainless steel S - Steel T - Tile Z - Other
C087	Diameter of this open interval, p. 2-58	2.6.5.4
C088	Width of openings, p. 2-59	2.6.5.8
C089	Length of openings, p. 2-59	2.6.5.7
C091	Depth to top of geohydrologic interval, p. 109	6.7.1.1
C092	Depth to bottom of geohydrologic interval, p. 109	6.7.1.2
C093	Aquifer code (see Appendix F in the WATSTORE User's Guide), p. 2-109	6.7.1.3
C095	Aquifer date -geohydrologic, p. 113	6.7.2.1

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C096	Lithology code, p. 2-109	6.7.1.4
Alluvium	ALVM Lignite	LGNT
Anhydrite	ANDR Limestone	LMSN
Anorthosite	ANRS Limestone and Dolomite	LMDM
Arkose	ARKS Loam	LOAM
Basalt	BSLT Loess	LOSS
Bentonite	BNTN Marble	MRBL
Boulders	BLDR Marl	MARL
Boulders and Sand	BLSD Marlstone	MRLS
Boulders, silt, clay	BLSC Metamorphis (undifferentiated)	MMPC
Breccia	BRCC Muck	MUCK
Calcite	CLCT Mud	MUD
Caliche (hard pan)	CLCH Mudstone	MDSN
Chalk	CHLK Other	OTHR
Chert	CHRT Outwash	OTSH
Clay	CLAY Overburden	ODBN
Clay, some sand	CLSD Peat	PEAT
Claystone	CLSN Quartzite	QRTZ
Coal	COAL Residium	RSDM
Cobbles	COBB Rhyolite	RYLT
Cobbles and sand	COSD Rock	ROCK
Cobbles, silt, clay	COSC Rubble	RBBL
Colluvium	CLVM Sand	SAND
Conglomerate	CGLM Sand and clay	SDCL
Coquina	CQUN Sand and gravel	SDGL
Diabase	DIBS Sand and silt	SDST
Diorite	DORT Sand, gravel, clay	SGVC
Dolomite	DLMT Sand, some clay	SNCL
Drift	DRFT Sandstone	SNDS
Evaporite	EVPR Sandstone and shale	SDSL
Gabbro	GBBR Sapolite	SPRL
Glacial (undifferentiated)	GLCL Schist	SCST
Gneiss	GNSS Sedimentary (undifferentiated)	SDMN
Granite	GRNT Serpentine	SRPN
Granite, gneiss	GRGN Shale	SHLE
Gravel	GRVL Silt	SILT
Gravel and clay	GRCL Silt and clay	STCL
Gravel, cemented	GRCM Siltstone	SLSN
Gravel, sand, silt	GRDS Slate	SLTE
Gravel, silt, clay	GRSC Soil	SOIL
Graywacke	GRCK Syenite	SYNT
Greenstone	GNST Till	TILL
Gypsum	GPSM Travertine	TRVR
Hard pan	HRDP Tuff	TUFF
Igneous (undifferentiated)	IGNS Volcanic (undifferentiated)	VLCC

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C097	Description of material, p. 2-112	6.7.1.7
C099	Parent sequence number -hydraulic, p. 2-118	8.5
C100	Hydraulic unit id (see Appendix F in the WATSTORE User's Guide, p. 2-120	8.7.1.1
C101	Test interval -top, p. 2-120	8.7.1.2
C102	Test interval -bottom, p. 2-120	8.7.1.3
C103	Hydraulic unit type, p. 120	8.7.1.4
A - Aquifer		
C - Confining layer		
C104	Hydraulic remarks, p. 2-120	8.7.1.5
C106	Sequence number for COEF subrecord of HYDR file, p. 2-118	8.4
C107	Transmissivity, p. 2-122	8.7.2.1
C108	Horizontal conductivity, p. 2-122	8.7.2.2
C109	Vertical conductivity, p. 2-122	8.7.2.3
C110	Storage coefficient, p. 2-122	8.7.2.4
C111	Leakance, p. 2-122	8.7.2.5
C112	Diffusivity, p. 2-123	8.7.2.6
C113	Specific storage, p. 2-123	8.7.2.7
C115	Begin year of data collection, p. 2-94	5.6.7.2
C116	End year of data collection, p. 2-94	5.6.7.3
C117	Source agency for network data p. 2-95	5.6.7.5
C118	Frequency of data collection, p. 2-95	5.6.7.6
A - Annually		
B - Bimonthly (every 2 months)		
C - Continuously (recorder)		
D - Daily		
F - Semimonthly (twice a month)		
I - Intermittently		
M - Monthly		
O - One time only		
Q - Quarterly		
S - Semiannually		
W - Weekly		
Z - Other		
2 - Biannually		
3 - Every 3 years		
4 - Every 4 years		
5 - Every 5 years		
X - Every 10 years		

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C120	Type of analyses - QW network, p. 2-95	5.6.7.4
A - Physical properties	I - Common ions/trace elements	
B - Common ions	J - Sanitary analysis and common ions	
C - Trace elements	K - Pesticides and nutrients	
D - Pesticides	L - Trace elements, pesticides, and nutrients	
E - Nutrients	M - All or most of the above	
F - Sanitary analysis (organisms)	N - Common ions, trace elements and radioactive	
G - Pesticides and common ions	P - Common, trace, and physical	
H - Nutrients and common ions	Z - Other	
C126	Aquifer static level, p. 2-114	6.7.2.2
C132	Aquifer contribution (percent), p. 2-114	6.7.2.3
C133	Method of data collection, p. 2-96	5.6.7.7
	C - Calculated from power-consumption records	
	E - Estimated	
	M - Metered	
	U - Unknown	
	Z - Other	
C147	Record sequence number, p. 2-76	4.3
C148	Date discharge measured, p. 2-76	4.4
C150	Discharge, p. 2-77	4.7
C151	Source of discharge data (see list w/C029), p. 2-77	4.8
C152	Method discharge measured, p. 2-77	4.9
	A - Accoustic meter (transient-time meter)	
	B - Bailer	
	C - Current meter	
	D - Doppler meter	
	E - Estimated	
	F - Flume	
	M - Totaling meter	
	O - Orifice	
	P - Pitot-tube meter, includes Cox meter, Collins meter, and the like.	
	R - Reported, method not known	
	T - Trajectory method (free-fall method)	
	U - Venturi meter	
	V - Volumetric measurement: bucket or barrel and stopwatch	
	W - Weir	
	Z - Other	

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C153	Production level, p. 2-78	4.10
C154	Static water level, p. 2-78	4.11
C155	Source of water-level data (see list w/C029), p. 2-78	4.12
C156	Method water level measured (see list w/C034), p. 2-78	4.13
C157	Duration of discharge before producing level, p. 2-78	4.14
C159	Date of ownership, p. 2-83	5.6.1.1
C161	Owner, p. 2-83	5.6.1.2
C165	Record number for repairs subrecord, p. 2-40	2.4
C166	Nature of repairs, p. 2-60	2.6.6.1
	B - Blocked off                      O - Slotted or perforated	
	C - Cleaned                            P - Plugged back	
	D - Deepened                          S - Screen replaced	
	I - Pump intake lowered      Z - Other	
C167	Date of repairs, p. 2-61	2.6.6.2
C169	Name of contractor who made repairs, p. 2-61	2.6.6.3
C170	Percent change in performance after repairs, p. 2-61	2.6.6.4
C172	Name of spring, p. 2-62	2.6.7.1
C173	Type of spring, p. 2-63	2.6.7.2
	A - Artesian                            K - Artesian and seepage	
	B - Perched and contact              or filtration	
	C - Contact                            L - Fracture and depression	
	D - Depression                        P - Perched	
	E - Perched and                        O - Perched and fracture	
	depression                            R - Perched and seepage	
	F - Fracture                            or filtration	
	G - Geyser                              S - Seepage or filtration	
	H - Perched and tubular              T - Tubular--cave	
	J - Artesian and                        Z - Other	
	depression	
C174	Permanence of spring, p. 2-65	2.6.7.3
	E - Periodic, ebb and                  P - Perennial	
	flow                                      R - Response to	
	G - Geyser                              precipitation	
	I - Intermittent                        S - Seasonal	
		Z - Other
C175	Sphere of discharge, p. 2-65	2.6.7.4
	A - Subaerial                          W - Subaqueous	

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C176	Improvements, p. 2-66	2.6.7.5
	B - Boxed or small covered basin C - Concrete basin G - Gallery H - Spring house L - Lined N - None P - Pond R - Pipe (not for conduction of water from spring) T - Trough Z - Other	
C177	Number of spring openings, p. 2-66	2.6.7.6
C178	Flow variability, p. 2-66	2.6.7.7
	$V = 100 \times [(a-b)/c]$ where: V = Variability, in percent a = Maximum discharge b = Minimum discharge c = Average discharge	
C179	Accuracy of flow variability, p. 2-67	2.6.7.8
	A - Calculated from less than 1 year of continuous discharge record. B - Calculated from 1 to 5 years of continuous discharge record. C - Calculated from more than 5 years of continuous discharge record. D - Calculated from intermittent measurements made over a period of more than 1 year. E - Calculated from less than 1 year of record, or estimated. Z - Determined by other method.	
C181	Other data type, p. 2-85	5.6.3.1
C182	Other data location, p. 2-86	5.6.3.2
	C - Cooperator's office D - District office (USGS only) R - Reporting agency office Z - Other	
C184	Remark-date, p. 2-104	5.6.11.1
C185	Remarks -misc, p. 2-104	5.6.11.2
C187	Date of visit, p. 2-87	5.6.4.1
C188	Person who made visit, p. 2-87	5.6.4.2



<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C190	Other identifier, p. 2-84	5.6.2.1
C191	Assignor of other identifier, p. 2-84	5.6.2.2
C193	Date of water-quality measurement, p. 2-88	5.6.5.1
C195	Aquifer sampled (see Appendix F in the WATSTORE User's Guide), p. 2-89	5.6.5.2
C196	Water-quality parameter code, p. 2-89	5.6.5.3
C197	Value of water-quality parameter, p. 2-90	5.6.5.4
C199	Type of log, p. 2-92	5.6.6.1
	A - Drilling time	M - Microlog
	B - Casing collar	N - Neutron
	C - Caliper	O - Microlateral log
	D - Drillers	P - Photographic
	E - Electric	Q - Radioactive-tracer
	F - Fluid-conductivity	S - Sonic
	G - Geologists or sample	T - Temperature
	H - Magnetic	U - Gamma-gamma
	I - Induction	V - Fluid velocity
	J - Gamma ray	X - Core
	L - Lateral log	Z - Other
C200	Depth to top of logged interval, p. 2-92	5.6.6.2
C201	Depth to bottom of logged interval, p. 2-92	5.6.6.3
C202	Source of log data (see list w/C029), p. 2-92	5.6.6.4
C204	Number of wells/laterals in a group, p. 2-97	5.6.8.1
C205	Depth of deepest well in group, p. 2-98	5.6.8.2
C206	Depth of shallowest well in group, p. 2-98	5.6.8.3
C207	Method wells in group constructed, p. 2-98	5.6.8.4
	D - Drilled	W - Drive-wash
	J - Jetted	Z - Other
	V - Driven	
C209	Length of pond, tunnel, or drain, p. 2-98	5.6.8.6
C210	Width of pond, tunnel, or drain, p. 2-98	5.6.8.7
C211	Depth of pond, tunnel, or drain, p. 2-99	5.6.8.8
C213	Cooperator's id -misc, p. 2-102	5.6.10.1
C214	Registration number, p. 2-102	5.6.10.2
C215	Inspection status -misc, p. 2-103	5.6.10.3
C216	Reason unapproved -misc, p. 2-103	5.6.10.4
C217	Date inspected -misc, p. 2-103	5.6.10.5
C218	Cooperator's remarks, p. 2-103	5.6.10.6
C220	Number of wells/laterals in a group, p. 2-97	5.6.8.1
C221	Depth of lateral in collector well, p. 2-99	5.6.8.11

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C222	Length of lateral in collector well, p. 2-99	5.6.8.12
C223	Diameter of lateral in collector well, p. 2-99	5.6.8.13
C224	Mesh of screen in lateral, p. 2-100	5.6.8.14
C235	Water-level measurement date, p. 2-71	3.3
C236	Date accuracy code -water level, p. 2-74	3.10
	M - to nearest month	
	Y - to nearest year	
	D - to nearest day	
C237	Water level, p. 2-71	3.5
C238	Water-level status (see list w/C037), p. 2-71	3.6
C239	Water-level method (see list w/C034), p. 2-73	3.7
C240	Water-level reference code, p. 2-73	3.8
	M - Water level shown is a daily maximum.	
	N - Water level shown is a daily minimum.	
	A - Water level is 12 noon reading.	
	P - Water level is 12 midnight reading.	
C251	Value-1 -misc, p. 2-100	5.6.9.1
C252	Value-2 -misc, p. 2-101	5.6.9.2
C253	Value-3 -misc, p. 2-101	5.6.9.3
C254	Record number for lift subrecord, p. 2-40	2.4
C255	Additional lift (above land surface), p. 2-46	2.6.1.12
C256	Parent sequence number f/AQFR subrecord, p. 2-107	6.5
C257	Primary network, p. 2-96	5.6.7.9
	1 - National	3 - Project
	2 - District	4 - Cooperator
C261	Format of other data, p. 2-86	5.6.3.3
	F - Files (raw data)	P - Published
	M - Machine readable	Z - Other
C262	Diameter of well group, p. 2-98	5.6.8.5
C263	Bearing (azimuth) of pond, tunnel, drain, p. 2-99	5.6.8.9
C264	Dip of tunnel, p. 2-99	5.6.8.10
C268	Rated pump capacity, p. 2-46	2.6.1.14
C270	Well heading line -observation, p. 2-116	7.5
C271	Barometric efficiency, p. 2-123	8.7.2.8
C272	Specific capacity -disch, p. 2-79	4.15

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C276	Accuracy code, p. 2-74	3.9
	0 - Water-level accuracy to nearest foot	
	1 - Water-level accuracy to nearest tenth of a foot	
	2 - Water-level accuracy to nearest one-hundredth of a foot	
C278	Certificate number, p. 2-125	9.5
C279	Water use, legal diversion, cfs, p. 2-126	9.9
C280	Application Number, p. 2-125	9.7
C281	Water-use permit number, p. 2-125	9.8
C282	Priority date, p. 2-125	9.6
C285	Legal irrigation seasons begins, p. 2-126	9.12
C286	Legal irrigation season ends, p. 2-126	9.13
C288	Water use, irrigated acreage, p. 2-126	9.10
C298	Water use, legal allowance, p. 2-126	9.11
C301	Secondary use of site (see list w/C023), p. 2-29	1.39
C302	Tertiary use of site (see list w/C023), p. 2-29	1.40
C303	Date site record created, p. 2-23	1.25
C304	Contributing unit, p. 2-112	6.7.1.5
C305	Hydraulic source agency, p. 2-121	8.7.1.6
C306	Porosity, p. 2-123	8.7.2.9
C307	Agency that analyzes samples, p. 2-96	5.6.7.8
C309	Water-level drawdown, p. 2-79	4.16
C311	Sequence no. f/RMKS subrecord of MISC file, p.2-81	5.4
C312	Sequence no. f/OTDT subrecord of MISC file, p.2-81	5.4
C313	Sequence no. f/MSVL subrecord of MISC file, p.2-81	5.4
C314	Value-4 -miscellaneous, p. 101	5.6.9.4
C315	Sequence number -observation, p. 115	7.3
C321	Begin date for use of this measuring point, p.2-68	2.6.8.1
C322	End date for use of this measuring point, p.2-68	2.6.8.2
C323	Height of this measuring point, p. 2-69	2.6.8.3
C324	Description of this measuring point, p. 2-69	2.6.8.4
C702	Last update -discharge, p. 2-76	4.5
C703	Discharge type, p. 2-76	4.6
	P - Pumped discharge	
	F - Flow discharge	
C706	Network data type -miscellaneous, p. 2-94	5.6.7.1
	QW - Water-quality network station	
	WL - Water-levels network station	
	WD - Pumpage or withdrawals network station	

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C707	Last update -obs, p. 2-116	7.4
C708	Network secondary -misc (see list w/C257), p. 2-96	5.6.7.10
C709	Measurement time -wl, p. 2-71	3.4
C711	Date site established/inventoried, p. 2-22	1.24
C712	Data availability in other GW files, p. 2-25	1.35
	Y, in a position - Yes, file exists.	
	Blank - No, file does not exist.	
	Position 1 - Construction (GW.CONNS) data for site.	
	2 - Miscellaneous (GW.MISC) data for site.	
	3 - Discharge (GW.DISC) data for site.	
	4 - Geohydrologic (GW.GEOH) data for site.	
	5 - Hydraulic (GW.HYDR) data for site.	
	6 - Water-level (GW.LEV) data for site.	
	7 - Observation-heading (GW.OBS) data for site.	
	8 - State water-use (GW.STWU) data for site.	
C713	Aquifer type code, p. 2-33	1.44
	U - Unconfined single aquifer	
	N - Unconfined multiple aquifers	
	C - Confined single aquifer	
	M - Confined multiple aquifers	
	X - Mixed (confined and unconfined) multiple aquifers	
C714	Aquifer code (see Appendix F in the WATSTORE User's Guide,) p. 2-34	1.45
C715	Water-use record number, p. 2-125	9.3
C716	Water-use date of last update, p. 2-125	9.4
C718	Sequence no. f/QWNR subrecord of MISC file, p. 2-81	5.4
C721	Sequence no. f/GEOH subrecord of GEOH file, p. 2-107	6.4
C723	Record number for construction subrecord, p. 2-40	2.4
C724	Record number for hole subrecord, p. 2-40	2.4
C725	Record number for casing subrecord, p. 2-40	2.4
C726	Record number for openings subrecord, p. 2-40	2.4
C727	Record number for spring subrecord, p. 2-40	2.4
C728	Record number f/measuring point subrecord, p. 2-40	2.4
C729	Sequence no. f/SPEC subrecord of MISC file, p. 2-81	5.4
C730	Sequence no. f/NETW subrecord of MISC file, p. 2-81	5.4
C734	Sequence no. f/COOP subrecord of MISC file, p. 2-81	5.4
C736	Sequence no. f/OTID subrecord of MISC file, p. 2-81	5.4
C737	Sequence no. f/VIST subrecord of MISC file, p. 2-81	5.4
C738	Sequence no. f/QUAL subrecord of MISC file, p. 2-81	5.4

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C739	Sequence no. f/LOGS subrecord of MISC file, p. 2-81	5.4
C742	Sequence no. f/AQFR subrecord of GEOH file, p. 2-107	6.4
C744	Record type f/HYDR subrecord of HYDR file, p. 2-118	8.3
C745	Last update f/HYDR subrecord of HYDR file, p. 2-119	8.6
C746	Record type f/COEF subrecord of HYDR file, p. 2-119	8.6
C747	Last update f/COEF subrecord of HYDR file, p. 2-119	8.6
C748	Record type f/GEOH subrecord of GEOH file, p. 2-107	6.3
C749	Last update f/GEOH subrecord of GEOH file, p. 2-108	6.6
C750	Record type f/AQFR subrecord of GEOH file, p. 2-107	6.3
C751	Last update f/AQFR subrecord of GEOH file, p. 2-108	6.6
C752	Record type f/LIFT subrecord of CONS file, p. 2-40	2.3
C753	Last update f/LIFT subrecord of CONS file, p. 2-41	2.5
C754	Record type f/CONS subrecord of CONS file, p. 2-40	2.3
C755	Last update f/CONS subrecord of CONS file, p. 2-41	2.5
C756	Record type f/HOLE subrecord of CONS file, p. 2-40	2.3
C757	Last update f/HOLE subrecord of CONS file, p. 2-41	2.5
C758	Record type f/CSNG subrecord of CONS file, p. 2-40	2.3
C759	Last update f/CSNG subrecord of CONS file, p. 2-41	2.5
C760	Record type f/OPEN subrecord of CONS file, p. 2-40	2.3
C761	Last update f/OPEN subrecord of CONS file, p. 2-41	2.5
C762	Record type f/REPR subrecord of CONS file, p. 2-40	2.3
C763	Last update f/REPR subrecord of CONS file, p. 2-41	2.5
C764	Record type f/SPNG subrecord of CONS file, p. 2-40	2.3
C765	Last update f/SPNG subrecord of CONS file, p. 2-41	2.5
C766	Record type f/MPNT subrecord of CONS file, p. 2-40	2.3
C767	Last update f/MPNT subrecord of CONS file, p. 2-41	2.5
C768	Record type f/OWNR subrecord of MISC file, p. 2-81	5.3
C769	Last update f/OWNR subrecord of MISC file, p. 2-82	5.5
C770	Record type f/OTID subrecord of MISC file, p. 2-81	5.3
C771	Last update f/OTID subrecord of MISC file, p. 2-82	5.5
C772	Record type f/OTDT subrecord of MISC file, p. 2-81	5.3
C773	Last update f/OTDT subrecord of MISC file, p. 2-82	5.5
C774	Record type f/VIST subrecord of MISC file, p. 2-81	5.3
C775	Last update f/VIST subrecord of MISC file, p. 2-82	5.5
C776	Record type f/QUAL subrecord of MISC file, p. 2-81	5.3
C777	Last update f/QUAL subrecord of MISC file, p. 2-82	5.5
C778	Record type f/LOGS subrecord of MISC file, p. 2-81	5.3
C779	Last update f/LOGS subrecord of MISC file, p. 2-82	5.5
C780	Record type f/NETW subrecord of MISC file, p. 2-81	5.3
C781	Last update f/NETW subrecord of MISC file, p. 2-82	5.5
C782	Record type f/SPEC subrecord of MISC file, p. 2-81	5.3
C783	Last update f/SPEC subrecord of MISC file, p. 2-82	5.5
C784	Record type f/MSVL subrecord of MISC file, p. 2-81	5.3

<u>Component Number</u>	<u>Description and Coding Manual Page No.</u>	<u>Coding Manual Article</u>
C785	Last update f/MSVL subrecord of MISC file, p. 2-82	5.5
C786	Record type f/COOP subrecord of MISC file, p. 2-81	5.3
C787	Last update f/COOP subrecord of MISC file, p. 2-82	5.5
C788	Record type f/RMKS subrecord of MISC file, p. 2-81	5.3
C789	Last update f/RMKS subrecord of MISC file, p. 2-82	5.5
C790	Sequence no. f/HYDR subrecord of HYDR file, p. 2-118	8.4
C801	Drainage basin code (not presently functional), p. 2-16	1.17
C802	Station type codes, p. 2-20	1.19
<p>Y, in a position - Yes, this is the site type.  Blank - No, this is not the site type.</p> <p>Position 1 - Stream  2 - Lake or reservoir  3 - Estuary  4 - Coastal other than estuary  5 - Spring  6 - Ground water other than spring  7 - Meteorological</p>		
C803	Agency use of site code, p. 2-21	1.20
<p>A - Active data-collection site  I - Inactive or discontinued data-collection site  O - Inventory data site only</p>		

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C804	Flags type of data collected (30), p. 2-21	1.21
	<ul style="list-style-type: none"> <li>A - Active data-collection site</li> <li>I - Inactive or discontinued data-collection</li> <li>O - Inventory data</li> <li>Blank - Data type not applicable</li> </ul>	
	Position <ul style="list-style-type: none"> <li>1 - Stage or water levels--continuous</li> <li>2 - Stage or water levels--intermittent</li> <li>3 - Water quality--continuous</li> <li>4 - Water quality--intermittent</li> <li>5 - Precipitation--continuous</li> <li>6 - Precipitation--intermittent</li> <li>7 - Evaporation--continuous</li> <li>8 - Evaporation--intermittent</li> <li>9 - Wind velocity</li> <li>10 - Tide--continuous</li> <li>11 - Tide--intermittent</li> <li>12 - Sediment concentration</li> <li>13 - Sediment particle size</li> <li>14 - Peak flows</li> <li>15 - Low flows</li> <li>16 - State water use</li> </ul>	
C805	Flags instruments at site, p. 2-22	1.22
	Y, in a position - Yes, this instrument is at site. Blank - No, this instrument is not at site.	
	Position <ul style="list-style-type: none"> <li>1 - Digital recorder</li> <li>2 - Graphic recorder</li> <li>3 - Telemetry--land line</li> <li>4 - Telemetry--radio</li> <li>5 - Telemetry--satellite relay</li> <li>6 - AHDAS</li> <li>7 - Crest-stage gage</li> <li>8 - Tide gage</li> <li>9 - Deflection meter</li> <li>10 - Bubble gage</li> <li>11 - Stilling well</li> <li>12 - CR-type recorder</li> <li>13 - Weighing rain gage</li> <li>14 - Tipping-bucket rain gage</li> </ul>	

<u>Component Number</u>	<u>Description and Coding Manual Page Number</u>	<u>Coding Manual Article</u>
C806	Station remarks field, p. 2-22	1.23
C807	Base discharge, p. 2-23	1.27
C808	Drainage area, p. 2-23	1.28
C809	Contributing drainage area, p. 2-24	1.29
C810	Crest stage upstream elevation, p. 2-24	1.30
C811	Crest stage downstream elevation, p. 2-24	1.31
C812	Gage height of zero flow, p. 2-24	1.32
C813	Mean Greenwich time offset, p. 2-24	1.33
C814	Local standard time flag, p. 2-38	1.55
C815	Station locator sequence number, p. 2-38	1.56
C900	Station name, p. 2-11	1.3
C901	Parent sequence number for CSNG subrecord of CONS file, p. 2-55	2.6.4.1
C902	Parent sequence number for OPEN subrecord of CONS file, p. 2-57	2.6.5.1



8.12 List of Components (by key word)

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C051	Power-company ACCOUNT number	CONS	LIFT
C011	Lat-long ACCURACY code	SITE	--
C018	Altitude ACCURACY	SITE	--
C179	ACCURACY of flow variability	CONS	SPNG
C236	Date ACCURACY code -wl	WLEV	--
C276	ACCURACY code	WLEV	--
C288	Water use, irrigated ACREAGE	WUSE	--
C255	ADDITIONAL lift (above land surface)	CONS	LIFT
C004	Source AGENCY code	SITE	--
C117	Source AGENCY for network data	MISC	NETW
C305	Hydraulic source AGENCY	HYDR	HYDR
C307	AGENCY that analyzes samples	MISC	NETW
C803	AGENCY use of site code	SITE	--
C298	Water use, legal ALLOWANCE	WUSE	--
C016	ALTITUDE of land surface	SITE	--
C017	Method ALTITUDE determined	SITE	--
C018	ALTITUDE accuracy	SITE	--
C120	Type of ANALYSES - QW network	MISC	NETW
C307	Agency that ANALYZES samples	MISC	NETW
C280	APPLICATION Number	WUSE	--
C751	Last update for AQFR rec of GEOH file	LOGS	AQFR
C093	AQUIFER code	LOGS	GEOH
C095	AQUIFER date -geo	LOGS	AQFR
C126	AQUIFER-static-level	LOGS	AQFR
C132	AQUIFER contribution	LOGS	AQFR
C195	AQUIFER sampled-quality	MISC	QUAL
C713	AQUIFER-type code	SITE	--
C714	AQUIFER code	SITE	--
C808	Drainage AREA	SITE	--
C809	Contributing drainage AREA	SITE	--
C191	ASSIGNOR of other identifier	MISC	OTID
C712	Data AVAIL in other Ground Water files	SITE	--
C263	Bearing (AZIM) of pond, tunnel, or drain	MISC	SPEC
C271	BAROMETRIC efficiency	HYDR	COEF
C807	BASE Discharge	SITE	--
C801	Drainage BASIN Code	SITE	--
C263	BEARING (azim) of pond, tunnel, or drain	MISC	SPEC
C115	BEGIN year of data collection	MISC	NETW
C321	BEGIN date for use of this measuring pt	CONS	MPNT
C285	Legal irrigation seasons BEGINS-wtr use	WUSE	--
C074	Depth to BOTTOM of this interval	CONS	HOLE
C078	Depth to BOTTOM of this casing string	CONS	CSNG
C084	Depth to BOTTOM of this open interval	CONS	OPEN

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C092	Depth to BOTTOM of interval	LOGS	GEOH
C102	Test interval -BOTTOM	HYDR	HYDR
C201	Depth to BOTTOM of logged interval	MISC	LOGS
C268	Rated CAPACITY of the lift device	CONS	LIFT
C272	Specific CAPACITY -discharge	DISC	--
C077	Depth to top of this CASING string	CONS	CSNG
C078	Depth to bottom of this CASING string	CONS	CSNG
C079	Diameter of this CASING string	CONS	CSNG
C080	CASING material	CONS	CSNG
C081	Wall thickness of this CASING	CONS	CSNG
C278	CERTIFICATE number	WUSE	--
C170	Pct CHANGE in performance after repairs	CONS	REPR
C003	Record CLASSIFICATION	SITE	--
C747	Last update for COEF rec of HYDR file	HYDR	COEF
C053	Power-consumption COEFFICIENT	CONS	LIFT
T110	Storage COEFFICIENT	HYDR	COEF
C804	Flags-type of data COLLECTED (30)	SITE	--
C115	Begin year of data COLLECTION	MISC	NETW
C116	End year of data COLLECTION	MISC	NETW
C118	Frequency of data COLLECTION	MISC	NETW
C133	Method of data COLLECTION	MISC	NETW
C221	Depth of lateral in COLLECTOR well	MISC	SPEC
C222	Length of lateral in COLLECTOR well	MISC	SPEC
C223	Diameter of lateral in COLLECTOR well	MISC	SPEC
C050	Name of power COMPANY	CONS	LIFT
C051	Power-COMPANY account number	CONS	LIFT
C054	COMPANY that maintains lift device	CONS	LIFT
C108	Horizontal CONDUCTIVITY	HYDR	COEF
C109	Vertical CONDUCTIVITY	HYDR	COEF
C755	Last update for CONS rec of CONS file	CONS	CONS
C021	Date well CONSTRUCTED	SITE	--
C207	Method wells in group CONSTRUCTED	MISC	SPEC
C060	Date of CONSTRUCTION	CONS	CONS
C065	Method of CONSTRUCTION	CONS	CONS
ON64	Source of CONSTRUCTION data	CONS	CONS
C053	Power-CONSUMPTION coefficient	CONS	LIFT
C063	Name of CONTRACTOR	CONS	CONS
C169	Name of CONTRACTOR who made repairs	CONS	REPR
C214	CONTRACTORS -misc	MISC	COOP
C132	Aquifer CONTRIBUTION	LOGS	AQFR
C304	CONTRIBUTING unit	LOGS	GEOH
C809	CONTRIBUTING drainage area	SITE	--
C787	Last update for COOP rec of MISC file	MISC	COOP
C213	COOPERATORS id -misc	MISC	COOP
C218	COOPERATORS remarks	MISC	COOP
C008	COUNTY code	SITE	--
C303	Date site record CREATED	SITE	--

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C810	CREST-STAGE upstream elevation	SITE	--
C811	CREST-STAGE downstream elevation	SITE	--
C759	Last update for CSNG rec of CONS file	CONS	CSNG
C021	DATE well constructed	SITE	--
C031	DATE water level measured	SITE	--
C038	DATE lift data collected	CONS	LIFT
C040	DATE site record last updated	SITE	--
C060	DATE of construction	CONS	CONS
C095	Aquifer DATE -geo	LOGS	AQFR
C148	DATE discharge measured	DISC	--
C159	DATE of ownership	MISC	OWNR
C167	DATE of repairs	CONS	REPR
C184	Remark-DATE	MISC	RMKS
C187	DATE of visit	MISC	VIST
C193	DATE of water-quality measurement	MISC	QUAL
C217	DATE inspected -misc	MISC	COOP
C235	Water-level measurement DATE	WLEV	--
C236	DATE accuracy code -wl	WLEV	--
C282	Priority DATE-water use	WUSE	--
C303	DATE site record created	SITE	--
C321	Begin DATE for use of this measuring pt	CONS	MPNT
C322	End DATE for use of this measuring point	CONS	MPNT
C711	DATE site established/inventoried	SITE	--
C716	Water use DATE of last update	WUSE	--
C205	Depth of DEEPEST well in group	MISC	SPEC
C027	Hole DEPTH	SITE	--
C028	DEPTH of well	SITE	--
C029	Source of DEPTH data	SITE	--
C044	DEPTH to intake	CONS	LIFT
C068	DEPTH to bottom of seal	CONS	CONS
C073	DEPTH to top of this interval	CONS	HOLE
C074	DEPTH to bottom of this interval	CONS	HOLE
C077	DEPTH to top of this casing string	CONS	CSNG
C078	DEPTH to bottom of this casing string	CONS	CSNG
C083	DEPTH to top of this open interval	CONS	OPEN
C084	DEPTH to bottom of this open interval	CONS	OPEN
C091	DEPTH to top of interval	LOGS	GEOH
C092	DEPTH to bottom of interval	LOGS	GEOH
C200	DEPTH to top of logged interval	MISC	LOGS
C201	DEPTH to bottom of logged interval	MISC	LOGS
C205	DEPTH of deepest well in group	MISC	SPEC
C206	DEPTH of shallowest well in group	MISC	SPEC
C211	DEPTH of pond, tunnel, or drain	MISC	SPEC
C221	DEPTH of lateral in collector well	MISC	SPEC
C097	DESCRIPTION of material	LOGS	GEOH
C324	DESCRIPTION of this measuring point	CONS	MPNT
C069	Method of DEVELOPMENT	CONS	CONS

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C070	Hours of DEVELOPMENT	CONS	CONS
C071	Special treatment during DEVELOPMENT	CONS	CONS
C075	DIAMETER of this interval	CONS	HOLE
C079	DIAMETER of this casing string	CONS	CSNG
C087	DIAMETER of this open interval	CONS	OPEN
C223	DIAMETER of lateral in collector well	MISC	SPEC
C262	DIAMETER of well group	MISC	SPEC
C112	DIFFUSIVITY	HYDR	COEF
C264	DIP of tunnel	MISC	SPEC
C148	Date DISCHARGE measured	DISC	--
C150	DISCHARGE	DISC	--
C151	Source of DISCHARGE data	DISC	--
C152	Method DISCHARGE measured	DISC	--
C157	Duration DISCHG before producing level	DISC	--
C175	Sphere of DISCHARGE	CONS	SPNG
C272	Specific capacity -DISCHARGE	DISC	--
C702	Last update -DISCHARGE	DISC	--
C703	DISCHARGE type	DISC	--
C807	Base DISCHARGE	SITE	--
C006	DISTRICT code	SITE	--
C279	Water use, legal DIVERSION, cfs	WUSE	--
C811	Crest-stage DOWNSTREAM elevation	SITE	--
C801	DRAINAGE Basin Code	SITE	--
C808	DRAINAGE Area	SITE	--
C809	Contributing DRAINAGE area	SITE	--
C309	Water-level DRAWDOWN	DISC	--
C157	DURATION dischg before producing level	DISC	--
C271	Barometric EFFICIENCY	HYDR	COEF
C810	Crest-stage upstream ELEVATION	SITE	--
C811	Crest-stage downstream ELEVATION	SITE	--
C116	END year of data collection	MISC	NETW
C322	END date for use of this measuring point	CONS	MPNT
C286	Legal irrigation season ENDS-wtr use	WUSE	--
C711	Date site ESTABLISHED/inventoried	SITE	--
C712	Data avail in other Ground Water FILES	SITE	--
C066	Type of FINISH	CONS	CONS
C814	Local standard time FLAG	SITE	--
C804	FLAGS-type of data collected (30)	SITE	--
C805	FLAGS-instruments at site	SITE	--
C178	FLOW variability	CONS	SPNG
C179	Accuracy of FLOW variability	CONS	SPNG
C261	FORMAT of other data	MISC	OTDT
C118	FREQUENCY of data collection	MISC	NETW
C812	GAGE-HEIGHT of zero flow	SITE	--
C749	Last update for GEOH rec of GEOH file	LOGS	GEOH
C813	Mean GREENWICH time offset	SITE	--
C204	Number of wells/laterals in a GROUP	MISC	SPEC

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C205	Depth of deepest well in GROUP	MISC	SPEC
C206	Depth of shallowest well in GROUP	MISC	SPEC
C207	Method wells in GROUP constructed	MISC	SPEC
C220	Number of wells/laterals in a GROUP	MISC	SPEC
C262	Diameter of well GROUP	MISC	SPEC
C270	Well HEADING line -obs	OBHD	--
C323	HEIGHT of this measuring point	CONS	MPNT
C027	HOLE depth	SITE	--
C757	Last update for HOLE rec of CONS file	CONS	HOLE
C108	HORIZONTAL conductivity	HYDR	COEF
C046	HORSEPOWER rating	CONS	LIFT
C057	HORSEPOWER of standby power source	CONS	LIFT
C070	HOURS of development	CONS	CONS
C745	Last update for HYDR rec of HYDR file	HYDR	HYDR
C100	HYDRAULIC unit id	HYDR	HYDR
C103	HYDRAULIC unit type	HYDR	HYDR
C104	HYDRAULIC remarks	HYDR	HYDR
C305	HYDRAULIC source agency	HYDR	HYDR
C020	HYDROLOGIC unit code	SITE	--
C001	Site ID (station number)	SITE	--
C100	Hydraulic unit ID	HYDR	HYDR
C213	Cooperators ID -misc	MISC	COOP
C176	IMPROVEMENTS	CONS	SPNG
C217	Date INSPECTED -misc	MISC	COOP
C215	INSPECTION status -misc	MISC	COOP
C805	Flags-INSTRUMENTS at site	SITE	--
C044	Depth to INTAKE	CONS	LIFT
C073	Depth to top of this INTERVAL	CONS	HOLE
C074	Depth to bottom of this INTERVAL	CONS	HOLE
C075	Diameter of this INTERVAL	CONS	HOLE
C083	Depth to top of this open INTERVAL	CONS	OPEN
C084	Depth to bottom of this open INTERVAL	CONS	OPEN
C085	Type of openings in this INTERVAL	CONS	OPEN
C086	Material in this INTERVAL	CONS	OPEN
C087	Diameter of this open INTERVAL	CONS	OPEN
C091	Depth to top of INTERVAL	LOGS	GEOH
C092	Depth to bottom of INTERVAL	LOGS	GEOH
C101	Test INTERVAL -top	HYDR	HYDR
C102	Test INTERVAL -bottom	HYDR	HYDR
C200	Depth to top of logged INTERVAL	MISC	LOGS
C201	Depth to bottom of logged INTERVAL	MISC	LOGS
C711	Date site established/INVENTORIED	SITE	--
C288	Water use, IRRIGATED acreage	WUSE	--
C285	Legal IRRIGATION seasons begins-wtr use	WUSE	--
C286	Legal IRRIGATION season ends-wtr use	WUSE	--
C016	Altitude of LAND surface	SITE	--
C013	LAND-NET location	SITE	--

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C702	LAST update -discharge	DISC	--
C707	LAST update -obs	OBHD	--
C716	Water use date of LAST update	WUSE	--
C745	LAST update for HYDR rec of HYDR file	HYDR	HYDR
C747	LAST update for COEF rec of HYDR file	HYDR	COEF
C749	LAST update for GEOH rec of GEOH file	LOGS	GEOH
C751	LAST update for AQFR rec of GEOH file	LOGS	AQFR
C753	LAST update for LIFT rec of CONS file	CONS	LIFT
C755	LAST update for CONS rec of CONS file	CONS	CONS
C757	LAST update for HOLE rec of CONS file	CONS	HOLE
C759	LAST update for CSNG rec of CONS file	CONS	CSNG
C761	LAST update for OPEN rec of CONS file	CONS	OPEN
C763	LAST update for REPR rec of CONS file	CONS	REPR
C765	LAST update for SPNG rec of CONS file	CONS	SPNG
C767	LAST update for MPNT rec of CONS file	CONS	MPNT
C769	LAST update for OWNR rec of MISC file	MISC	OWNR
C771	LAST update for OTID rec of MISC file	MISC	OTID
C773	LAST update for OTDT rec of MISC file	MISC	OTDT
C775	LAST update for VIST rec of MISC file	MISC	VIST
C777	LAST update for QUAL rec of MISC file	MISC	QUAL
C779	LAST update for LOGS rec of MISC file	MISC	LOGS
C781	LAST update for NETW rec of MISC file	MISC	NETW
C783	LAST update for SPEC rec of MISC file	MISC	SPEC
C785	LAST update for MSVL rec of MISC file	MISC	MSVL
C787	LAST update for COOP rec of MISC file	MISC	COOP
C789	LAST update for RMKS rec of MISC file	MISC	RMKS
C011	LAT-LONG accuracy code	SITE	--
C221	Depth of LATERAL in collector well	MISC	SPEC
C222	Length of LATERAL in collector well	MISC	SPEC
C223	Diameter of LATERAL in collector well	MISC	SPEC
C224	Mesh of screen in LATERAL	MISC	SPEC
C009	LATITUDE	SITE	--
C111	LEAKANCE	HYDR	COEF
C089	LENGTH of openings	CONS	OPEN
C209	LENGTH of pond, tunnel, or drain	MISC	SPEC
C222	LENGTH of lateral in collector well	MISC	SPEC
C030	Water LEVEL	SITE	--
C031	Date water LEVEL measured	SITE	--
C033	Source of water-LEVEL data	SITE	--
C034	Method water LEVEL measured	SITE	--
C037	Site status at water LEVEL measurement	SITE	--
C126	Aquifer-static-LEVEL	LOGS	AQFR
C153	Production LEVEL	DISC	--
C154	Static water LEVEL	DISC	--
C155	Source of water-LEVEL data	DISC	--
C156	Method water LEVEL measured	DISC	--
C157	Duration dischg before producing LEVEL	DISC	--

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C235	Water-LEVEL measurement date	WLEV	--
C236	Date accuracy code -water level	WLEV	--
C237	Water LEVEL	WLEV	--
C238	Water-LEVEL status	WLEV	--
C239	Water-LEVEL method	WLEV	--
C240	Water-LEVEL reference code	WLEV	--
C309	Water-LEVEL drawdown	DISC	--
C038	Date LIFT data collected	CONS	LIFT
C043	Type of LIFT	CONS	LIFT
C048	Manufacturer of LIFT device	CONS	LIFT
C049	Serial number of LIFT device	CONS	LIFT
C054	Company that maintains LIFT device	CONS	LIFT
C255	Additional LIFT (above land surface)	CONS	LIFT
C268	Rated capacity of the LIFT device	CONS	LIFT
C753	Last update for LIFT rec of CONS file	CONS	LIFT
C096	LITHOLOGY code	LOGS	GEOH
C012	LOCAL well number	SITE	--
C814	LOCAL standard time flag	SITE	--
C013	Land-net LOCATION	SITE	--
C014	Name of LOCATION map	SITE	--
C015	Scale of LOCATION map	SITE	--
C815	Station LOCATOR sequence number	SITE	--
C199	Type of LOG	MISC	LOGS
C202	Source of LOG data	MISC	LOGS
C200	Depth to top of LOGGED interval	MISC	LOGS
C201	Depth to bottom of LOGGED interval	MISC	LOGS
C779	Last update for LOGS rec of MISC file	MISC	LOGS
C010	LONGITUDE	SITE	--
C054	Company that MAINTAINS lift device	CONS	LIFT
C048	MANUFACTURER of lift device	CONS	LIFT
C014	Name of location MAP	SITE	--
C015	Scale of location MAP	SITE	--
C080	Casing MATERIAL	CONS	CSNG
C086	MATERIAL in this interval	CONS	OPEN
C097	Description of MATERIAL	LOGS	GEOH
C037	Site status at water level MEASUREMENT	SITE	--
C235	Water-level MEASUREMENT date	WLEV	--
C709	MEASUREMENT time -water level	WLEV	--
C321	Begin date for use of this MEASURING pt	CONS	MPNT
C322	End date for use of this MEASURING point	CONS	MPNT
C323	Height of this MEASURING point	CONS	MPNT
C324	Description of this MEASURING point	CONS	MPNT
C224	MESH of screen in lateral	MISC	SPEC
C052	Power-METER number	CONS	LIFT
C017	METHOD altitude determined	SITE	--
C034	METHOD water level measured	SITE	--
C065	METHOD of construction	CONS	CONS

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C069	METHOD of development	CONS	CONS
C133	METHOD of data collection	MISC	NETW
C152	METHOD discharge measured	DISC	--
C156	METHOD water level measured	DISC	--
C207	METHOD wells in group constructed	MISC	SPEC
C239	Water-level METHOD	WLEV	--
C185	Remarks -MISC	MISC	RMKS
C213	Cooperators id -MISC	MISC	COOP
C214	Contractors -MISC	MISC	COOP
C215	Inspection status -MISC	MISC	COOP
C216	Reason unapproved -MISC	MISC	COOP
C217	Date inspected -MISC	MISC	COOP
C251	Value-1 -MISC	MISC	MSVL
C252	Value-2 -MISC	MISC	MSVL
C253	Value-3 -MISC	MISC	MSVL
C314	Value-4 -MISC	MISC	MSVL
C708	Network secondary -MISC	MISC	NETW
C706	Network data type -MISCELLANEOUS	MISC	NETW
C767	Last update for MPNT rec of CONS file	CONS	MPNT
C785	Last update for MSVL rec of MISC file	MISC	MSVL
C014	NAME of location map	SITE	--
C050	NAME of power company	CONS	LIFT
C063	NAME of contractor	CONS	CONS
C169	NAME of contractor who made repairs	CONS	REPR
C172	NAME of spring	CONS	SPNG
C900	Station NAME	SITE	--
C781	Last update for NETW rec of MISC file	MISC	NETW
C117	Source agency for NETWORK data	MISC	NETW
C120	Type of analyses - QW NETWORK	MISC	NETW
C257	Primary NETWORK	MISC	NETW
C706	NETWORK data type -miscellaneous	MISC	NETW
C708	NETWORK secondary -misc	MISC	NETW
C204	NUMBER of wells/laterals in a group	MISC	SPEC
C220	NUMBER of wells/laterals in a group	MISC	SPEC
C278	Certificate NUMBER	WUSE	--
C280	Application NUMBER	WUSE	--
C715	Water-use recording NUMBER	WUSE	--
C815	Station locator sequence NUMBER	SITE	--
C270	Well heading line -OBS	OBHD	--
C707	Last update -OBS	OBHD	--
C813	Mean Greenwich time OFFSET	SITE	--
C083	Depth to top of this OPEN interval	CONS	OPEN
C084	Depth to bottom of this OPEN interval	CONS	OPEN
C087	Diameter of this OPEN interval	CONS	OPEN
C761	Last update for OPEN rec of CONS file	CONS	OPEN
C085	Type of OPENINGS in this interval	CONS	OPEN
C088	Width of OPENINGS	CONS	OPEN



<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C089	Length of OPENINGS	CONS	OPEN
C773	Last update for OTDT rec of MISC file	MISC	OTDT
C181	OTHER data type	MISC	OTDT
C182	OTHER data location	MISC	OTDT
C190	OTHER identifier	MISC	OTID
C191	Assignor of OTHER identifier	MISC	OTID
C261	Format of OTHER data	MISC	OTDT
C712	Data avail in OTHER Ground Water files	SITE	--
C771	Last update for OTID rec of MISC file	MISC	OTID
C161	OWNER	MISC	OWNR
C159	Date of OWNERSHIP	MISC	OWNR
C769	Last update for OWNR rec of MISC file	MISC	OWNR
C196	Water-quality PARAMETER code	MISC	QUAL
C197	Value of water-quality PARAMETER	MISC	QUAL
C901	PARENT seq num for CSNG rec of CONS file	CONS	CSNG
C059	PARENT seq num for HOLE rec of CONS file	CONS	HOLE
C902	PARENT seq num for OPEN rec of CONS file	CONS	OPEN
C099	PARENT sequence number - hydr	HYDR	HYDR
C256	PARENT sequence number for AQFR rec	LOGS	AQFR
C170	Pct change in PERFORMANCE after repairs	CONS	REPR
C174	PERMANENCE of spring	CONS	SPNG
C281	Water use PERMIT number	WUSE	--
C188	PERSON who made visit	MISC	VIST
C306	POROSITY	HYDR	COEF
C045	Type of POWER	CONS	LIFT
C050	Name of POWER company	CONS	LIFT
C051	POWER-company account number	CONS	LIFT
C052	POWER-meter number	CONS	LIFT
C053	POWER-consumption coefficient	CONS	LIFT
C056	Type of standby POWER	CONS	LIFT
C057	Horsepower of standby POWER source	CONS	LIFT
C023	PRIMARY use of site	SITE	--
C024	PRIMARY use of water	SITE	--
C257	PRIMARY network	MISC	NETW
C282	PRIORITY date-water use	WUSE	--
C153	PRODUCTION level	DISC	--
C005	PROJECT number	SITE	--
C777	Last update for QUAL rec of MISC file	MISC	QUAL
C193	Date of water-QUALITY measurement	MISC	QUAL
C195	Aquifer sampled-QUALITY	MISC	QUAL
C196	Water-QUALITY parameter code	MISC	QUAL
C197	Value of water-QUALITY parameter	MISC	QUAL
C120	Type of analyses - QW network	MISC	NETW
C268	RATED capacity of the lift device	CONS	LIFT
C046	Horsepower RATING	CONS	LIFT
C216	REASON unapproved -misc	MISC	COOP
C165	RECORD number for repairs subrecord	CONS	REPR

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C254	RECORD number for lift subrecord	CONS	LIFT
C723	RECORD number for construction subrecord	CONS	CONS
C724	RECORD number for hole subrecord	CONS	HOLE
C725	RECORD number for casing subrecord	CONS	CSNG
C726	RECORD number for openings subrecord	CONS	OPEN
C727	RECORD number for spring subrecord	CONS	SPNG
C728	RECORD number for meas. point subrecord	CONS	MPNT
C744	RECORD type for HYDR rec of HYDR file	HYDR	HYDR
C746	RECORD type for COEF rec of HYDR file	HYDR	COEF
C748	RECORD type for GEOH rec of GEOH file	LOGS	GEOH
C750	RECORD type for AQFR rec of GEOH file	LOGS	AQFR
C752	RECORD type for LIFT rec of CONS file	CONS	LIFT
C754	RECORD type for CONS rec of CONS file	CONS	CONS
C756	RECORD type for HOLE rec of CONS file	CONS	HOLE
C758	RECORD type for CSNG rec of CONS file	CONS	CSNG
C760	RECORD type for OPEN rec of CONS file	CONS	OPEN
C762	RECORD type for REPR rec of CONS file	CONS	REPR
C764	RECORD type for SPNG rec of CONS file	CONS	SPNG
C766	RECORD type for MPNT rec of CONS file	CONS	MPNT
C768	RECORD type for OWNR rec of MISC file	MISC	OWNR
C770	RECORD type for OTID rec of MISC file	MISC	OTID
C772	RECORD type for OTDT rec of MISC file	MISC	OTDT
C774	RECORD type for VIST rec of MISC file	MISC	VIST
C776	RECORD type for QUAL rec of MISC file	MISC	QUAL
C778	RECORD type for LOGS rec of MISC file	MISC	LOGS
C780	RECORD type for NETW rec of MISC file	MISC	NETW
C782	RECORD type for SPEC rec of MISC file	MISC	SPEC
C784	RECORD type for MSVL rec of MISC file	MISC	MSVL
C786	RECORD type for COOP rec of MISC file	MISC	COOP
C788	RECORD type for RMKS rec of CONS file	MISC	RMKS
C715	Water use RECORDING number	WUSE	--
C240	Water-level REFERENCE code	WLEV	--
C184	REMARK-date	MISC	RMKS
C806	Station REMARK fields	SITE	--
C104	Hydraulic REMARKS	HYDR	HYDR
C185	REMARKS -misc	MISC	RMKS
C218	Cooperators REMARKS	MISC	COOP
C166	Nature of REPAIRS	CONS	REPR
C167	Date of REPAIRS	CONS	REPR
C169	Name of contractor who made REPAIRS	CONS	REPR
C170	Pct change in performance after REPAIRS	CONS	REPR
C763	Last update for REPR rec of CONS file	CONS	REPR
C789	Last update for RMKS rec of MISC file	MISC	RMKS
C307	Agency that analyzes SAMPLES	MISC	NETW
C015	SCALE of location map	SITE	--
C224	Mesh of SCREEN in lateral	MISC	SPEC
C067	Type of surface SEAL	CONS	CONS

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
J068	Depth to bottom of SEAL	CONS	CONS
C025	SECONDARY use of water	SITE	--
C301	SECONDARY use of site	SITE	--
C708	Network SECONDARY -misc	MISC	NETW
C106	SEQ number for COEF rec of HYDR file	HYDR	COEF
C311	SEQ number for RMKS rec of MISC file	MISC	RMKS
C312	SEQ number for OTDT rec of MISC file	MISC	OTDT
C313	SEQ number for MSVL rec of MISC file	MISC	MSVL
C718	SEQ number for OWNR rec of MISC file	MISC	OWNR
C721	SEQ number for GEOH rec of GEOH file	LOGS	GEOH
C729	SEQ number for SPEC rec of MISC file	MISC	SPEC
C730	SEQ number for SPEC rec of MISC file	MISC	NETW
C734	SEQ number for COOP rec of MISC file	MISC	COOP
C736	SEQ number for OTID rec of MISC file	MISC	OTID
C737	SEQ number for VIST rec of MISC file	MISC	VIST
C738	SEQ number for QUAL rec of MISC file	MISC	QUAL
C739	SEQ number for LOGS rec of MISC file	MISC	LOGS
C742	SEQ number for AQFR rec of GEOH file	LOGS	AQFR
C742	SEQ number for AQFR rec of GEOH file	LOGS	AQFR
C743	SEQ number for COEF rec of HYDR file	HYDR	COEF
C790	SEQ number for HYDR rec of HYDR file	HYDR	HYDR
C147	Record SEQUENCE number	DISC	--
C315	SEQUENCE number -obs	OBHD	--
C815	Station locator SEQUENCE number	SITE	--
C049	SERIAL number of lift device	CONS	LIFT
C206	Depth of SHALLOWEST well in group	MISC	SPEC
C001	SITE id (station number)	SITE	--
C040	Date SITE record last updated	SITE	--
C004	SOURCE agency code	SITE	--
C029	SOURCE of depth data	SITE	--
C033	SOURCE of water-level data	SITE	--
C064	SOURCE of construction data	CONS	CONS
C117	SOURCE agency for network data	MISC	NETW
C151	SOURCE of discharge data	DISC	--
C155	SOURCE of water-level data	DISC	--
C202	SOURCE of log data	MISC	LOGS
C305	Hydraulic SOURCE agency	HYDR	HYDR
C783	Last update for SPEC rec of MISC file	MISC	SPEC
C071	SPECIAL treatment during development	CONS	CONS
C113	SPECIFIC storage	HYDR	COEF
C272	SPECIFIC capacity -discharge	DISC	--
C175	SPHERE of discharge	CONS	SPNG
C765	Last update for SPNG rec of CONS file	CONS	SPNG
C172	Name of SPRING	CONS	SPNG
C173	Type of SPRING	CONS	SPNG
C174	Permanence of SPRING	CONS	SPNG
C177	Number of SPRING openings	CONS	SPNG

Component Number	Description	File	Subfile
C814	Local STANDARD time flag	SITE	--
C056	Type of STANDBY power	CONS	LIFT
C057	Horsepower of STANDBY power source	CONS	LIFT
C007	STATE code	SITE	--
C126	Aquifer-STATIC-level	LOGS	AQFR
C154	STATIC water level	DISC	--
C001	Site ID (STATION number)	SITE	--
C802	STATION-type codes	SITE	--
C815	STATION locator sequence number	SITE	--
C900	STATION name	SITE	--
C037	Site STATUS at water level measurement	SITE	--
C215	Inspection STATUS -misc	MISC	COOP
C238	Water-level STATUS	WLEV	--
C110	STORAGE coefficient	HYDR	COEF
C113	Specific STORAGE	HYDR	COEF
C016	Altitude of land SURFACE	SITE	--
C067	Type of SURFACE seal	CONS	CONS
C026	TERTIARY use of water	SITE	--
C302	TERTIARY use of site	SITE	--
C101	TEST interval -top	HYDR	HYDR
C102	TEST interval -bottom	HYDR	HYDR
C081	Wall THICKNESS of this casing	CONS	CSNG
C709	Measurement TIME -water level	WLEV	--
C813	Mean Greenwich TIME offset	SITE	--
C814	Local standard TIME flag	SITE	--
C073	Depth to TOP of this interval	CONS	HOLE
C077	Depth to TOP of this casing string	CONS	CSNG
C083	Depth to TOP of this open interval	CONS	OPEN
C091	Depth to TOP of interval	LOGS	GEOH
C101	Test interval -TOP	HYDR	HYDR
C200	Depth to TOP of logged interval	MISC	LOGS
C019	TOPOGRAPHIC setting	SITE	--
C107	TRANSMISSIVITY	HYDR	COEF
C071	Special TREATMENT during development	CONS	CONS
C264	Dip of TUNNEL	MISC	SPEC
C002	TYPE of site	SITE	--
C043	TYPE of lift	CONS	LIFT
C045	TYPE of power	CONS	LIFT
C056	TYPE of standby power	CONS	LIFT
C066	TYPE of finish	CONS	CONS
C067	TYPE of surface seal	CONS	CONS
C085	TYPE of openings in this interval	CONS	OPEN
C103	Hydraulic unit TYPE	HYDR	HYDR
C120	TYPE of analyses - QW network	MISC	NETW
C173	TYPE of spring	CONS	SPNG
C199	TYPE of log	MISC	LOGS
C703	Discharge TYPE	DISC	--

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C706	Network data TYPE -miscellaneous	MISC	NETW
C713	Aquifer-TYPE code	SITE	--
C802	Station-TYPE codes	SITE	--
C804	Flags-TYPE of data collected (30)	SITE	--
C216	Reason UNAPPROVED -misc	MISC	COOP
C020	Hydrologic UNIT code	SITE	--
C100	Hydraulic UNIT id	HYDR	HYDR
C103	Hydraulic UNIT type	HYDR	HYDR
C304	Contributing UNIT	LOGS	GEOH
C702	Last UPDATE -discharge	DISC	--
C707	Last UPDATE -obs	OBHD	--
C716	Water use date of last UPDATE	WUSE	--
C745	Last UPDATE for HYDR rec of HYDR file	HYDR	HYDR
C747	Last UPDATE for COEF rec of HYDR file	HYDR	COEF
C749	Last UPDATE for GEOH rec of GEOH file	LOGS	GEOH
C751	Last UPDATE for AQFR rec of GEOH file	LOGS	AQFR
C753	Last UPDATE for LIFT rec of CONS file	CONS	LIFT
C755	Last UPDATE for CONS rec of CONS file	CONS	CONS
C757	Last UPDATE for HOLE rec of CONS file	CONS	HOLE
C759	Last UPDATE for CSNG rec of CONS file	CONS	CSNG
C761	Last UPDATE for OPEN rec of CONS file	CONS	OPEN
C763	Last UPDATE for REPR rec of CONS file	CONS	REPR
C765	Last UPDATE for SPNG rec of CONS file	CONS	SPNG
C767	Last UPDATE for MPNT rec of CONS file	CONS	MPNT
C769	Last UPDATE for OWNRR rec of MISC file	MISC	OWNRR
C771	Last UPDATE for OTID rec of MISC file	MISC	OTID
C773	Last UPDATE for OTDT rec of MISC file	MISC	OTDT
C775	Last UPDATE for VIST rec of MISC file	MISC	VIST
C777	Last UPDATE for QUAL rec of MISC file	MISC	QUAL
C779	Last UPDATE for LOGS rec of MISC file	MISC	LOGS
C781	Last UPDATE for NETW rec of MISC file	MISC	NETW
C783	Last UPDATE for SPEC rec of MISC file	MISC	SPEC
C785	Last UPDATE for MSVL rec of MISC file	MISC	MSVL
C787	Last UPDATE for COOP rec of MISC file	MISC	COOP
C789	Last UPDATE for RMKS rec of MISC file	MISC	RMKS
C040	Date site record last UPDATED	SITE	--
C810	Crest-stage UPSTREAM elevation	SITE	--
C023	Primary USE of site	SITE	--
C024	Primary USE of water	SITE	--
C025	Secondary USE of water	SITE	--
C026	Tertiary USE of water	SITE	--
C279	Water USE, legal diversion, cfs	WUSE	--
C281	Water USE permit number	WUSE	--
C288	Water USE, irrigated acreage	WUSE	--
C298	Water USE, legal allowance	WUSE	--
C301	Secondary USE of site	SITE	--
C302	Tertiary USE of site	SITE	--

<u>Component Number</u>	<u>Description</u>	<u>File</u>	<u>Subfile</u>
C715	Water USE recording number	WUSE	--
C803	Agency USE of site code	SITE	--
C197	VALUE of water-quality parameter	MISC	QUAL
C251	VALUE-1 -misc	MISC	MSVL
C252	VALUE-2 -misc	MISC	MSVL
C253	VALUE-3 -misc	MISC	MSVL
C314	VALUE-4 -misc	MISC	MSVL
C178	Flow VARIABILITY	CONS	SPNG
C179	Accuracy of flow VARIABILITY	CONS	SPNG
C109	VERTICAL conductivity	HYDR	COEF
C187	Date of VISIT	MISC	VIST
C188	Person who made VISIT	MISC	VIST
C775	Last update for VIST rec of MISC file	MISC	VIST
C081	WALL thickness of this casing	CONS	CSNG
C024	Primary use of WATER	SITE	--
C025	Secondary use of WATER	SITE	--
C026	Tertiary use of WATER	SITE	--
C030	WATER level	SITE	--
C031	Date WATER level measured	SITE	--
C033	Source of WATER-level data	SITE	--
C034	Method WATER level measured	SITE	--
C037	Site status at WATER level measurement	SITE	--
C154	Static WATER level	DISC	--
C155	Source of WATER-level data	DISC	--
C156	Method WATER level measured	DISC	--
C193	Date of WATER-quality measurement	MISC	QUAL
C196	WATER-quality parameter code	MISC	QUAL
C197	Value of WATER-quality parameter	MISC	QUAL
C235	WATER-level measurement date	WLEV	--
C236	Date accuracy code -water level	WLEV	--
C237	WATER level	WLEV	--
C238	WATER-level status	WLEV	--
C239	WATER-level method	WLEV	--
C240	WATER-level reference code	WLEV	--
C279	WATER use, legal diversion, cfs	WUSE	--
C281	WATER use permit number	WUSE	--
C288	WATER use, irrigated acreage	WUSE	--
C298	WATER use, legal allowance	WUSE	--
C309	WATER-level drawdown	DISC	--
C715	WATER use recording number	WUSE	--
C716	WATER USE date of last update	WUSE	--
C012	Local WELL number	SITE	--
C088	WIDTH of openings	CONS	OPEN
C210	WIDTH of pond, tunnel, or drain	MISC	SPEC
C115	Begin YEAR of data collection	MISC	NETW
C116	End YEAR of data collection	MISC	NETW
C812	Gage-height of ZERO FLOW	SITE	--

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Chapter 4. Ground-Water Site Inventory System

Section 9. Ground-Water Hydrograph Program

Written by  
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January 1990

## 9. GROUND-WATER HYDROGRAPH PROGRAM

The Ground-Water Hydrograph program produces high-quality hydrographs using data stored in the Prime version of GWSI. A number of graphics devices are supported, or a device-independent DISSPLA meta file can be produced.

### 9.1 Introduction

The Ground-Water Hydrograph program requires a list of sites for which hydrographs will be produced. This list may contain from 1 to 50 sites and may be generated using the GWSI Retrieval/Tabling program, or may be created using an editor. When generating the file from the Retrieval/Tabling program, ask for a list of sites while entering the processing parameters. When using the editor to create that file, use the following format:

```
USGS 383838104282801
USGS 363636107121201
.
.
.
USGS 350202105444402
```

USGS or other agency codes start in column 1 and the site ID starts in column 6.

### 9.2 Program Operation

The program opens with five possible options:

```
C - Continue with hydrograph program
D - DISSPLA postprocessing
E - Example of file containing site ID's
L - List directory
Q - Quit
```

"C" is selected the first time you use the program if you have a list of sites ready. "Q" is used if you do not have the file. "L" is used if you have the file, but forgot its name. "D" is used if a DISSPLA meta file (explained later) was created in a previous run of the program. With full processing (C), the program will ask for the name of the file that contains the list of sites. After the program verifies that the file exists, it will ask for the beginning and ending dates of the retrieval of



water levels. 01/01/1900 is the default for the beginning date, and today's date is the default for the ending date. You may change the beginning and ending retrieval dates, but you cannot specify an ending date later than today's date. Once you are content with the beginning and ending retrieval dates, the program will retrieve the appropriate water levels for those sites previously specified.

After the data are retrieved, the beginning and ending default dates for the hydrograph will be displayed. The beginning default date will be January 1 of the earliest year retrieved and the ending default date will be December 31 of the latest year retrieved. You may change these dates. Specifying beginning and ending dates that start on the first and last day of the month respectively will produce better looking hydrographs.

The minimum of the water-level axis will not be more than 5 feet below the deepest water level; the maximum will not be more than 5 feet above the shallowest water level. If the hydrographs contain more than 3 years of data, the increment on the time axis will be 1 year; for shorter periods, it will be 1 month. The labels for the time axis are centered below the increment. If an altitude of land surface (component C16) exists, a second vertical axis will be drawn on the right side of the hydrograph. The second vertical axis will be in feet above NGVD. The hydrograph will be drawn in three colors. They are black (for hard copy) or white (for terminal), green, and red.

The procedure will create a DISSPLA meta file. A meta file is device-independent code that can later be turned into device-dependent plot code. After the meta file is created, a list of possible plotting devices will be displayed. Select one of the possible devices (by number). The device you choose will be postprocessed by DISSPLA. When DISSPLA asks you to ENTER POST-PROCESSOR DIRECTIVES, respond with a carriage return. You could also save the meta file for later postprocessing. If you save the meta file, you can use this program later to postprocess the meta file.

If a device you need is not listed in this program, see your District graphics specialist. That person can probably add the particular device to the program.

The program will ask if you want to spool a table of the water levels that were used to make the hydrograph. If you do, it will allow you to specify a particular printer. You can save the water-level table in a file.

### 9.3 Summary

A review of the hydrograph procedure is as follows:

1. Choose the HYDROGRAPH option from the GWSI Main Menu.
2. Enter the name of the file containing the sites for retrieval.
3. Enter beginning and ending retrieval dates.
4. Enter beginning and ending hydrograph dates.
5. Program retrieves water-level data from GWSI.
6. Program creates a meta file.
7. Postprocess the meta file.
8. Print the water-level table.
9. Save or delete the meta file.
10. Save or delete the water-level table.
11. Return to GWSI Main Menu.

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Section 10. Ground-Water Local Translation Program

Written by  
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January 1990

## 10 GROUND-WATER LOCAL TRANSLATION PROGRAM

The Local Translation (LTRANS) program is an interactive program to translate a local number into agency code and station identification number.

### 10.1 Introduction

In many instances, the personnel at a site are more familiar with their local identifier (C12 or SNAME) for a site than the station identification number. The translation process uses the NWIS Site File either to look for a certain local number, or to match a standard PRIMOS wildcard template. In both cases, when there is more than one site that matches, all of the duplicates are translated. Input and output files are user-specified for maximum flexibility. There is an option to temporarily disable translated output so that translations (particularly when using wildcards) can be tested without generating a lot of undesired output. There is also an option to enter an agency code and station identification number, or just a station identification number using the current default agency code (initially "USGS").

### 10.2 Program Installation

This program is normally installed as part of a master installation procedure executed by your system administrator. However, the system administrator can install only the LTRANS program by attaching to WATSTORE>GW>INSTALL and executing the INSTALL.LTRANS.CPL program.

### 10.3 Program Operation

The LTRANS program may be executed by selecting Option 95 from the GWSI Main Menu, which takes you to the Utilities submenu (as shown below), and then requesting Option 1.

DOCUMENTATION AVAILABLE FOR  
UTILITIES SUBMENU  
January 1990

MENU OPTION -----	PROGRAM DESCRIPTION -----	RELATED DOCUMENTATION -----
1	TRANSLATE STATION NAME INTO AGENCY AND SITE ID	LTRANS.USER
2	INVENTORY STATION IN SITE, GW, AND QW FILES	GWINVT.USER
3	QUERY SUPPORT FILES	SUPPORT.USER
4	SYSTEM 2000 GWSI FORMAT CONVERSION	GWORCONV.USER
5	DATA DICTIONARY LIST	
6	CHANGE DEFAULT DATA-BASE NUMBER	
7	LIST SITE RECORDS	
98	EXIT TO MAIN MENU	
99	EXIT TO PRIMOS	

After selecting Option 1, the program will identify itself and begin prompting for input and output files and configuration options. Then each local number entered by the user is translated (if possible) to the equivalent agency code and station identification number. This is best explained by a sample run of the program as shown in figure 15.

## SAMPLE RUN

PROGRAM LTRANS REVISION 90.1.

THIS PROGRAM TRANSLATES LOCAL ID INTO AGENCY AND STATION ID USING THE SITE FILE. LOCAL ID INPUT IS UPPER AND LOWERCASE SENSITIVE.

FOR LOCAL ID'S TO TRANSLATE,

ENTER INPUT FILE (Terminal=\*)? \*

UNLESS OTHERWISE STATED, DEFAULT END-OF-FILE FROM KEYBOARD IS "CONTROL-C".

FOR AGENCY AND STATION ID'S,

ENTER OUTPUT FILE (Terminal=\*)? \*

INCLUDE LOCAL ID IN OUTPUT FILE (Y;N) [?]? ?

IF NO, EACH LINE IN THE OUTPUT FILE WILL CONTAIN THE AGENCY CODE AND STATION ID. SOME APPLICATION PROGRAMS ACCEPT THIS FORMAT FOR INPUT. IF YES, EACH OUTPUT LINE WILL CONTAIN THE AGENCY CODE, STATION ID, AND LOCAL ID. THIS MAY NOT BE COMPATIBLE FOR INPUT TO APPLICATION PROGRAMS, BUT ALLOWS THE CREATION OF CROSS REFERENCE LISTS.

INCLUDE LOCAL ID IN OUTPUT FILE (Y;N) [?]? Y

ENABLE WILDCARDS (Y;N) [?]? ?

IF NO, THE STANDARD PRIMOS WILDCARD CHARACTERS (@, +, AND ^) HAVE NO SPECIAL MEANING. IF YES, WHEN AT LEAST ONE WILDCARD CHARACTER IS ENCOUNTERED IN A LOCAL ID, A FULL SITEFILE RETRIEVAL PASS MAY BE MADE (VERY SLOW), AND ALL SITES WHOSE LOCAL ID MATCH THE WILDCARD ARE OUTPUT. EMBEDDED BLANKS ARE SIGNIFICANT, BUT TRAILING BLANKS ARE NOT. AVOID USING A WILDCARD CHARACTER IN COLUMN 1 (EXCEPT ^ THAT MUST BE IN COLUMN 1). THIS PRODUCES THE MOST TIME-CONSUMING RETRIEVAL.

ENABLE WILDCARDS (Y;N) [?]? Y

WRITING TO THE DISK OUTPUT FILE CAN BE TOGGLED ON AND OFF BY ENTERING A ~ IN COLUMN 1 FOR THE LOCAL ID. OUTPUT IS INITIALLY ENABLED. THIS ALLOWS YOU TO PRACTICE A RETRIEVAL WITHOUT GENERATING UNDESIRE OUTPUT.

YOU CAN RETRIEVE BY AGENCY CODE ("USGS" IS INITIAL DEFAULT) AND STATION ID BY ENTERING THE DESIRED INFORMATION PRECEDED BY A ~. ORDER AND SPACING ARE IMPORTANT IF AN AGENCY CODE IS ENTERED.

ENTER LOCAL ID? K 30

Figure 15.--Local translation

```

(K      30) TRANSLATES TO
(K      30                                     )
USGS 404149073571201 K      30
ENTER LOCAL ID? ~
OUTPUT TO DISK FILE IS DISABLED.
ENTER LOCAL ID? K      300.0

(K      300.0) HAS SELECTED
(K      30                                     . 2 )
USGS 404147073571408 K      30                                     . 2

(K      300.0) HAS SELECTED
(K      30                                     . 2 )
USGS 404147073571401 K      30                                     . 2
      2 SITES MATCHED.
OUTPUT TO DISK FILE IS DISABLED.


ENTER LOCAL ID? ~
OUTPUT TO DISK FILE IS ENABLED.
ENTER LOCAL ID? ~404147073571401

(USGS 404147073571401) TRANSLATES TO
(K      30                                     . 2 )
USGS 404147073571401 K      30                                     . 2
ENTER LOCAL ID? ~USGS 404147073571408

(USGS 404147073571408) TRANSLATES TO
(K      30                                     . 2 )
USGS 404147073571408 K      30                                     . 2
ENTER LOCAL ID? (Control-C was pressed here)
      TOTAL ELAPSED WALL TIME IS:   0 HR   1 MI  50.31515 SEC
      TOTAL ELAPSED CPU  TIME IS:   0 HR   0 MI   1.87494 SEC
**** STOP

```

Figure 15.--Local translation (continued)

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Chapter 4. Ground-Water Site Inventory System

Section 11. System 2000 GWSI Convert Program

Written by  
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January 1990



## 11 SYSTEM 2000 GWSI CONVERT PROGRAM

The System 2000 GWSI Convert (ORCONV) program is the procedure used to convert GWSI 80-character records formatted for input to S2K to format required for input to the NWIS/GWSI edit procedure.

### 11.1 Introduction

The ORCONV program was written to convert existing GWSI S2K data for entry into GWSI. The program may be executed by selecting Option 95 from the GWSI Main Menu, which then takes you into the Utilities submenu (as shown below), and then selecting Option 4.

#### DOCUMENTATION AVAILABLE FOR UTILITIES SUBMENU January 1990

MENU OPTION -----	PROGRAM DESCRIPTION -----	RELATED DOCUMENTATION -----
1	TRANSLATE STATION NAME INTO AGENCY AND SITE ID	LTRANS.USER
2	INVENTORY STATION IN SITE, GW, AND QW FILES	GWINVT.USER
3	QUERY SUPPORT FILES	SUPPORT.USER
4	SYSTEM 2000 GWSI FORMAT CONVERSION	GWORCONV.USER
5	DATA DICTIONARY LIST	
6	CHANGE DEFAULT DATA BASE NUMBER	
7	LIST SITE RECORDS	
98	EXIT TO MAIN MENU	
99	EXIT TO PRIMOS	

## 11.2 Program Installation

The ORCONV program is normally installed as a part of a master installation procedure executed by your System Administrator. However, the System Administrator can install only the ORCONV program by attaching to the directory WATSTORE>GW>INSTALL and executing the program INSTALL.ORCONV.CPL.

## 11.3 Program Operation

After selecting Option 4, the program asks for a user-supplied input file, and two user-supplied output files. The program reads data from the input file and separates it so that all transactions of A (Add) go into one output file, and all other data is written into the second output file. The program is able to convert new data by simply incrementing and adding missing control fields, but does not resolve modifications or deletions to existing data control fields. These have to be carefully resolved manually.

The program will ask for an agency use code (C803) that must be added to each site, and for an agency code that must appear at the beginning of the file for use by the edit program. The program automatically generates and adds certain control fields for the construction, geohydrology, water-use, and miscellaneous repeating groups.

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Chapter 4. Ground-Water Site Inventory System

Section 12. Ground-Water and Water-Quality Inventory

Written by  
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January 1990

12-1

page 12-3 follows

## 12 GROUND-WATER AND WATER-QUALITY INVENTORY

The Ground-Water and Water-Quality Inventory program retrieves sites by agency and site ID from a user-specified input file and reports, to a user-specified output file, the number of records for that site in the Site File, the eight ground-water files, and the Water-Quality File. All files are checked even if the site does not exist in the Site File.

This program may be executed by selecting Option 95 from the GWSI Main Menu, which takes you into the Utilities submenu, and then selecting Option 2. A sample run of the Ground-Water Inventory program is shown in figure 16.

### OPTION 95 - INVENTORY STATION IN SITE, GW, AND QW FILES

```
[MPLUSCLUP Rev. 20.2.4 Copyright (c) 1987, Prime Computer, Inc.]
[Serial #C99S0316000004XX (UNITED STATES GEOLOGICAL SURVEY)]
```

No cleanup was required.

FOR SITES (AGENCY AND SITE ID) TO INVENTORY,

ENTER INPUT FILE (Terminal=\*)? \*

UNLESS OTHERWISE STATED, DEFAULT END-OF-FILE FROM KEYBOARD IS "CONTROL-C".

ENTER AGENCY(5) AND SITE ID(8-15)? USGS 413355070345001

FOR SITE=(USGS 413355070345001),

1	SITEFILE	source agency and site ID record(s)	INVENTORIED.
1	GW.CON	source agency and site ID record(s)	INVENTORIED.
14	GW.LEV	source agency and site ID record(s)	INVENTORIED.
1	GW.STWU	source agency and site ID record(s)	INVENTORIED.
1	GW.DISC	source agency and site ID record(s)	INVENTORIED.
6	GW.MISC	source agency and site ID record(s)	INVENTORIED.
1	GW.GEOH	source agency and site ID record(s)	INVENTORIED.
1	GW.OBS	source agency and site ID record(s)	INVENTORIED.
1	GW.HYDR	source agency and site ID record(s)	INVENTORIED.
0	QW record(s)		INVENTORIED.

ENTER AGENCY(5) AND SITE ID(8-15)? (Control-C was entered here)

TOTAL ELAPSED WALL TIME IS: 0 HR 4 MI 8.98788 SEC

TOTAL ELAPSED CPU TIME IS: 0 HR 0 MI 8.77626 SEC

\*\*\*\* STOP

Figure 16.--Ground-Water Inventory

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Chapter 4. Ground-Water Site Inventory System

Section 13. Query Support Files

Written by  
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January 1990

### 13 QUERY SUPPORT FILES

The SUPPORT.CPL program may be executed by selecting Option 95 from the GWSI Main Menu, which takes you to the Utilities submenu (as shown below), and then requesting Option 3.

DOCUMENTATION AVAILABLE FOR  
UTILITIES SUBMENU  
January 1990

MENU OPTION -----	PROGRAM DESCRIPTION -----	RELATED DOCUMENTATION -----
1	TRANSLATE STATION NAME INTO AGENCY AND SITE ID	LTRANS.USER
2	INVENTORY STATION IN SITE, GW, AND QW FILES	GWINVT.USER
3	QUERY SUPPORT FILES	SUPPORT.USER
4	SYSTEM 2000 GWSI FORMAT CONVERSION	GWORCONV.USER
5	DATA DICTIONARY LIST	
6	CHANGE DEFAULT DATA BASE NUMBER	
7	LIST SITE RECORDS	
98	EXIT TO MAIN MENU	
99	EXIT TO PRIMOS	

After selecting Option 3, this program will identify itself by displaying another submenu for various common support file options, as shown below.

CHECK SUPPORT FILES OPTIONS

- 1 -- LIST SITE RECORDS
- 2 -- CHECK PARAMETER CODE DICTIONARY
- 3 -- LIST PARAMETER CODE DICTIONARY
- 4 -- CHECK GEOLOGIC UNIT CODE FILE
- 5 -- CHECK FIPS CODE FILE
- 6 -- LIST STATE/COUNTY DATA
- 7 -- DUMP PARAMETER CODE DICTIONARY WITH PRECISION CODES
- 98 -- EXIT TO MAIN MENU
- 99 -- EXIT TO PRIMOS

Please enter a number from the above list:

**13.1    Option 1--List Site Records**  
(WATSTORE>QW\_PM>RUN>SHOWSITE)

This routine produces a listing, to the terminal or to a file, of the contents of selected Site File records. You are asked if station numbers will be entered from the terminal; if the answer is 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  
Station number -- 15 characters

The program then asks for the name of a file to hold the output. The output file includes carriage-control characters, and should be SPOOLED with the -FTN option.

### 13.2 Option 2--Check Parameter Code Dictionary (WATSTORE>QW\_PM>RUN>CKPCD)

This routine retrieves records from the Parameter Code Dictionary and displays the parameter codes and descriptive names at the terminal. Three types of retrievals are available:

- (1) Retrieve data for one parameter code.
- (2) Retrieve data for a range of parameter codes.
- (3) Retrieve data for a parameter name.

For the last retrieval type, parameters that have a "long name" beginning with the character string that is entered are retrieved and displayed. This retrieval can be useful for getting a list of all allowable parameters for different forms of an element; for example, NITROGEN. To exit a retrieval by parameter name subroutine, the entire word QUIT must be entered.

### 13.3 Option 3--List Parameter Code Dictionary (WATSTORE>QW\_PM>RUN>PCDLIST)

This routine 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/printing time). Once again, the time to create the output is lengthy.

The output file is PCDLIST and a warning message about its length is included in the program-ending message.

If you want to retrieve the Parameter Code Dictionary with precision codes, see section 13.7, Option 7.



### 13.4 Option 4--Check Geologic Unit Code File (WATSTORE>QW\_PM>RUN>CKGEO)

This routine 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 provide the entire geologic unit code (i.e., 111ALVM) and, if that code exists, get back the formation name (Holocene alluvium), or provide a partial geologic unit code (from 1 to 8 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 119xxxxx and 130xxxxx. A blank geologic unit code terminates the program.

### 13.5 Option 5--Check Federal Information Processing Standards (FIPS) Code File (WATSTORE>QW\_PM>RUN>CKFIPS)

This routine allows you to browse in the FIPS-Code File (FIPSFIL) and to 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 options are as follows:

- (1) EXIT
- (2) Get a State code.
- (3) Get a State name.
- (4) Get a county name.

### 13.6 Option 6--List State/County Data (WATSTORE>QW\_PM>RUN>CKSTCTY)

This routine also interacts with the FIPS-Code File (see sec. 13.5), and allows you to retrieve a tabular listing of State names, State abbreviations, State codes, minimum and maximum latitudes, minimum and maximum longitudes, and minimum and maximum altitudes; 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 (long and time-consuming). The output can be sent to the terminal or to a file.

**13.7    Option 7--List Parameter Code Dictionary with**  
**Precision Codes**  
**(WATSTORE>QW\_PM>RUN>PCDDUMP)**

This program retrieves and lists (dumps) selected columns of the entire Parameter Code Dictionary.

There are two output options, the long name or the short name. The long name includes the parameter code, the short name, and the full long name (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.

The program first asks if you want the long-name or the short-name output, and warns that the output can be very large. This program takes a few minutes to execute and creates an output file called PCDDUMP. This file is 300 to 400 PRIMOS records, depending on the option selected.

NWIS 90.1

VOLUME 2. USER'S MANUAL

Chapter 4. Ground-Water Site Inventory System

Section 14. Error Messages

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14-1

*page 14-3 follows*

**14 ERROR MESSAGES**

Following is a list of the error messages which occur during the edit and update procedures.

- 1 Depth to top of logged interval (C200) greater than hole depth (C27)--WARNING
- 2 Depth to bottom of logged interval (C201) greater than hole depth (C27)--WARNING
- 3 Aquifer static water level (C126) lower than hole depth (C27)--WARNING
- 4 Discharge producing water level (C153, C141) lower than well depth--WARNING
- 5 Discharge static water level (C154, C142) lower than well depth--WARNING
- 6 Cooperator date inspected (C217) cannot be a future date or earlier than SCONDT--WARNING
- 7 Remark date (C184) cannot be a future date or earlier than SCONDT--WARNING
- 8 Lift date (C38) cannot be a future date or earlier than SCONDT--WARNING
- 9 Depth of intake (C44) greater than well depth (C28)--WARNING
- 10 Date of construction cannot be a future date or earlier than SCONDT--WARNING
- 11 Depth of bottom of seal (C68) greater than depth of well (C28)--WARNING
- 12 Geohydrologic top (C200) greater than bottom (C201)--WARNING
- 13 Depth of bottom interval (C74) greater than depth of well (C28)--WARNING
- 14 Depth to top of interval (C91) greater than hole depth (C27)--WARNING
- 15 Depth to bottom of casing (C78) interval is greater than depth of well (C28)--WARNING
- 16 Depth to bottom of geohydrologic interval (C92) greater than hole depth (C27)--WARNING
- 17 Depth to bottom of open interval (C84) greater than depth of well (C28)--WARNING
- 18 Date of repairs (C167) cannot be a future date or earlier than SCONDT--WARNING
- 19 Begin date of measuring point (C321) invalid--WARNING
- 20 End date of measuring point (C322) invalid--WARNING
- 21 End date (C322) is earlier than begin date (C321) of measuring point--WARNING
- 22 Primary network code invalid (C257)--WARNING
- 23 C36 is not a valid component in Prime GWSI
- 24 C35 is not a valid component in Prime GWSI
- 25 Date of ownership (C159) is missing--WARNING

26 Water-level reference code (C240) invalid --WARNING  
28 State water-use priority date (C282) precedes date of  
construction (C21)--WARNING  
29 Test interval--top--(C101) greater than hole depth (C27)--  
WARNING  
30 Test interval--bottom--(C102) greater than hole depth (C27)-  
-WARNING  
31 Special treatment during development (C71) invalid--WARNING  
32 QW network type of analysis (C120) invalid--WARNING  
33 Network source agency code (C117, C124, C130) invalid--  
WARNING  
34 Sphere of discharge for spring record (C175) invalid--  
WARNING  
35 Code for accuracy of flow variability for spring record  
(C179) invalid--WARNING  
36 Altitude is either missing or outside range of State (C16)--  
WARNING  
37 Greenwich mean time offset must be in range -12/12 (C813) --  
VALUE REJECTED  
38 Local standard time flag must be a Y or N (C814)--VALUE  
REJECTED  
39 Network-Quality analyzing agency code (C307) invalid--  
WARNING  
41 Aquifer-Contribution (C132) cannot be greater than  
100 percent--WARNING  
42 Date of first construction (C21) greater than end year of  
data collection (C116)--FATAL  
44 Owner's name (C161) is too long, first name and/or middle  
initial ignored.  
45 Type of power (C45, C56) invalid--WARNING  
46 Project number invalid (C5)--WARNING  
47 Aquifer type code (C713) invalid--WARNING  
48 Land net location (C13) invalid--WARNING  
49 Topo map (C14) invalid--WARNING  
50 Date field invalid--WARNING  
51 Latitude (C9) 10 seconds different from site ID--WARNING --  
VALUE ACCEPTED  
52 Longitude (C10) 10 seconds different from site ID--WARNING--  
VALUE ACCEPTED  
53 Topo map scale (C15) invalid--WARNING  
54 Altitude method of measurement (C17) invalid--WARNING  
55 Latitude-longitude accuracy code (C11) invalid--WARNING  
56 Altitude accuracy (C18) invalid--WARNING  
57 Water-level time (C709) invalid--WARNING  
58 Topo setting (C19) invalid--WARNING  
59 Site-use code (C23, C301, C302) invalid--WARNING  
60 Water-use code (C24, C25, C26) invalid--WARNING

61 Method of water-level measurement (C239, C156) invalid-  
WARNING  
62 Water-level site status (C238, C37) invalid--WARNING  
63 Source of data (C33, C29, C151, C155, C202) invalid--WARNING  
64 Basin code (C801) invalid--WARNING  
65 Method of construction (C65) invalid--WARNING  
66 Type of finish (C66) invalid--WARNING  
67 Type of seal (C67) invalid--WARNING  
68 Site remark field (C806) invalid--WARNING  
69 Method of development (C69) invalid--WARNING  
70 Network frequency of collection (C118) invalid--WARNING  
71 Network method of collection (C133) invalid--WARNING  
72 Method of discharge measurement (C152) invalid--WARNING  
73 Type of spring (C173) invalid--WARNING  
74 Permanence of spring (C174) invalid--WARNING  
75 Improvement (C176) invalid--WARNING  
76 Other data locations (C182) invalid--WARNING  
77 Format of other data (C261) invalid--WARNING  
78 Method well group constructed (C207) invalid--WARNING  
79 Water-level date (C31) must be valued if water level exists-  
--VALUE REJECTED  
80 Casing material (C80) invalid--WARNING  
81 Aquifer code (C714, C195) invalid--WARNING  
82 Text field (C12 or C185) invalid, extra apostrophe--WARNING  
83 Type of data collected (C804) invalid--WARNING  
84 Water-level date (C31) earlier than well-construction date  
(C21)--WARNING  
85 Type of instruments (C805) invalid--WARNING  
86 Type of material (C86) invalid--WARNING  
87 Station name/Local well number (C12) not unique--WARNING--  
VALUE ACCEPTED  
90 Latitude (C9) out of range of county (C8)--WARNING--VALUE  
ACCEPTED  
91 Longitude (C10) out of range of county (C8)--WARNING--VALUE  
ACCEPTED  
96 Lithology (C96) invalid--WARNING  
97 Contributing unit (C304) invalid, value set to (U)known--  
WARNING  
98 Contributing unit (C304) is missing, value set to (U)known-  
-WARNING  
99 Numeric field invalid--WARNING  
100 R number is not in the interim GWSI data system--FATAL  
101 Site has been deleted, no other processing allowed--FATAL  
102 Station type (C802) is a mandatory item--FATAL  
103 Agency use code (C803) is a mandatory item--FATAL  
104 Ground-water site type (C2) is a mandatory item--FATAL  
105 Discharge date (C148) is a mandatory item--FATAL  
106 District code (C6) is a mandatory item--FATAL

107 State code (C7) is a mandatory item--FATAL  
108 County code (C8) is a mandatory item--FATAL  
109 Latitude (C9) is a mandatory item--FATAL  
110 Type of lift (C43) is a mandatory item--FATAL  
111 Data reliability code (C3) invalid--FATAL  
112 Station name or local well number (C12) is a mandatory  
item--FATAL  
113 Data reliability code (C3) is a mandatory item--FATAL  
114 Lat-long sequence number (C815) is a mandatory item--FATAL  
118 Hydrologic unit code (C20) is a mandatory item, invalid--  
FATAL  
119 Latitude (C9) is a mandatory item, invalid--FATAL  
120 Longitude (C10) is a mandatory item, invalid--FATAL  
121 Station name or local well number (C12) is a mandatory item,  
invalid--FATAL  
124 District code (C6) is a mandatory item, invalid--FATAL  
125 State code (C7) is a mandatory item, invalid--FATAL  
126 County code (C8) is a mandatory item, invalid--FATAL  
127 Agency-use code (C803) is a mandatory item, invalid--FATAL  
128 Station type (C802) is a mandatory item, invalid--FATAL  
130 County code invalid for State code entered (C7/C8)--FATAL  
131 State code (C7) invalid--FATAL  
133 Latitude of site (C9) outside of range for State--FATAL  
134 Longitude of site (C10) outside of range for State--FATAL  
135 Geohydrologic unit code (C93) is either missing or  
invalid--FATAL  
136 Date of first construction (C21) greater than begin year  
of data collection (C115)--FATAL  
137 Lat-long sequence number (C815) must be unique--FATAL  
138 Lat-long sequence number (C815) invalid--FATAL  
139 Locator not unique, used next available sequence number  
(C815)  
140 Latitude, longitude, and sequence number match existing  
site--FATAL  
151 District code (C6) invalid--FATAL  
152 Agency code (C4) invalid--FATAL  
153 Batch agency code invalid, processing halted--FATAL  
164 Site type (C2) invalid--FATAL  
165 Network begin year (C115) later than end year (C116)--  
FATAL--RECORD REJECTED  
182 Water level (C30) deeper than well depth (C28)--FATAL  
183 Well depth (C28) deeper than hole depth (C27)--FATAL  
185 Type of openings (C85) invalid--FATAL  
186 Hydraulic source agency code (C305) invalid--FATAL  
187 Hydraulic parent sequence number (C99) is a mandatory item,  
invalid--FATAL  
188 Network sequence number (C730) is a mandatory item, invalid--  
FATAL

189 Network begin year (C115) is a mandatory item, invalid--  
FATAL  
190 Type of Discharge (C703) (flowing/pumping) invalid--FATAL  
191 Discharge sequence number (C147) is a mandatory item,  
invalid--FATAL  
193 Owner's sequence number (C718) is a mandatory item, invalid--  
FATAL  
194 Owner's name (C161) is a mandatory item, invalid--FATAL  
195 Repair sequence number (C165) is a mandatory item, invalid--  
FATAL  
196 Nature of repairs (C166) is a mandatory item, invalid--  
FATAL  
197 Spring record sequence number (C727) is a mandatory item,  
invalid--FATAL  
198 Other data record sequence number (C312) is a mandatory  
item, invalid--FATAL  
199 Other data type (C181) is a mandatory item, invalid--FATAL  
200 Remark sequence number (C311) is a mandatory item, invalid--  
FATAL  
201 Data type (C804) is a mandatory item, invalid, must be set  
to "N"--FATAL  
203 Nature of repair (C166) invalid--FATAL  
204 Type of log (C199) invalid--FATAL  
205 Top of log (C200) is deeper than bottom of log (C201)  
--FATAL  
210 Record sequence number is a mandatory item, invalid--FATAL  
211 Type of lift (C43) is a mandatory item, invalid--FATAL  
212 Parent sequence number (C59) is a mandatory item, invalid--  
FATAL  
213 Hole top of interval (C73) is a mandatory item, invalid  
--FATAL  
214 Casing top of interval (C77) is a mandatory item, invalid  
--FATAL  
215 Opening top of interval (C83) is a mandatory item, invalid  
--FATAL  
216 Opening type of interval (C85) is a mandatory item, invalid--  
FATAL  
217 Geohydrologic sequence number (C721) is a mandatory item,  
invalid, FATAL  
218 Aquifer code (C93) is a mandatory item, invalid--FATAL  
219 Geohydrologic parent sequence number (C256) is a mandatory  
item, invalid--FATAL  
220 Aquifer date (C95) is a mandatory item, invalid--FATAL  
221 Coefficient sequence number (C106) is a mandatory item,  
invalid--FATAL  
222 Hydraulic unit ID (C100) is a mandatory item, invalid--FATAL  
223 Hydraulic unit type (C103) invalid--FATAL  
224 Record type for GW.CONNS in error--FATAL



225 Record type for GW.MISC in error--FATAL  
227 Parent record does not exist--FATAL  
228 Casing diameter (C79) is a mandatory item, invalid--FATAL  
231 Depth to bottom of casing string (C78) greater than depth of well (C28)--FATAL  
240 Cooperator data sequence number (C734) is a mandatory item, invalid--FATAL  
249 Begin date of measuring point (C321) greater than today's date--FATAL  
250 Date (C38, C60, or C167) cannot be a future date earlier than SCONDT--FATAL  
251 End date of measuring point (C322) greater than today's date--FATAL  
252 Error in internal read--FATAL  
253 Site-visit record sequence number (C737) is a mandatory item, invalid--FATAL  
254 Site-visit data (C187) is a mandatory item, invalid--FATAL  
255 Other ID sequence number (C736) is a mandatory item, invalid--FATAL  
256 Other ID (C190) is a mandatory item, invalid--FATAL  
257 Other ID assigner (C191) is a mandatory item, invalid--FATAL  
258 Field water-quality sequence number (C738) is a mandatory item, invalid--FATAL  
259 Field water-quality date (C193) is a mandatory item, invalid--FATAL  
260 Field water-quality parameter code (C196) is a mandatory item, invalid--FATAL  
261 Field water-quality value (C197) is a mandatory item, invalid--FATAL  
262 Log record sequence number (C739) is a mandatory item, invalid--FATAL  
263 Type of log (C199) is a mandatory item, invalid--FATAL  
264 Special-cases sequence number (C729) is a mandatory item, invalid--FATAL  
265 Number of wells in group (C204) is a mandatory item, invalid--FATAL  
266 Number of laterals in group (C220) is a mandatory item, invalid--FATAL  
267 Water-level date (C235) cannot be future or prior to SCONDT--FATAL--RECORD REJECTED  
268 Water-level time (C709) invalid--WARNING--VALUE REJECTED  
269 Miscellaneous-values sequence number (C313) is a mandatory item, invalid--FATAL  
270 Water-level depth (C237) lower than well depth (C28)--FATAL  
272 Water-level date (C235) is earlier than SCONDT date well constructed--FATAL  
273 OBS-heading sequence number (C315) is a mandatory item invalid--FATAL

274 State water-use sequence number (C715) is a mandatory item,  
invalid--FATAL

275 Measuring-point sequence number (C728) is a mandatory item,  
invalid--FATAL

281 Discharge date measured (C148) greater than today's date--  
FATAL

290 Record type for GW.GEOH file in error--FATAL

291 Aquifer date (C95) greater than today or before SCONDT--  
FATAL

292 Date of ownership (C159) cannot be a future date or earlier  
than SCONDT--FATAL

293 Date of site visit (C187) cannot be a future date or earlier  
than SCONDT--FATAL

294 Aquifer date of static water level (C95) is a mandatory  
item--FATAL

295 QW measurement date (C193) cannot be a future date or  
earlier than SCONDT--FATAL

300 Record type for GW.HYDR file in error--FATAL

312 Depth of top interval (C73) greater than depth of well  
(C28)--FATAL

314 Depth to top of casing string (C77) greater than depth of  
well (C28)--FATAL

316 Depth to top of open interval (C83) greater than depth of  
well (C28)--FATAL

317 Field water-quality parameter code (C196) invalid--FATAL

318 Hydrologic unit code (C20) invalid--FATAL--RECORD REJECTED

396 Record sequence number for GW.CONNS invalid or missing--FATAL

397 Record sequence number for GW.GEOH invalid or missing--FATAL

398 Record sequence number for GW.MISC invalid or missing--FATAL

399 Water level and/or date not valued, C30, C31, C33, C34,  
and C37--VALUES REJECTED

400 Agency code (C4) is a mandatory item (from Sub-PRTREC)--  
FATAL

401 Key ID (C1) is a mandatory item (from Sub-PRTREC)--FATAL

402 Water-level measurement date (C235) is a mandatory item--  
FATAL

403 Water level is mandatory except when status equals D, O, F,  
N, P, or W (C237)--FATAL

404 Observation well heading sequence number (C315) is a  
mandatory item --FATAL

405 Discharge value (C150) is a mandatory item, invalid--FATAL

406 Discharge record sequence number (C147) is a mandatory item--  
FATAL

407 State water-use record sequence number (C715) is a mandatory  
item--FATAL

408 Hydraulic data record type "HYDR" (C744) is a mandatory  
item--FATAL

409 Hydraulic data sequence number (C790) is a mandatory item --  
FATAL

410 Hydraulic data unit type (C103) is a mandatory item--FATAL

411 Hydraulic data record type "COEF" (C746) is a mandatory  
item--FATAL

412 Coefficient data sequence number (C106) is a mandatory item--  
FATAL

413 Hydraulic data parent sequence number (C99) is a manda- tory  
item--FATAL

414 Geohydrologic record type (GEOH/C748, AQFR/C750) is a  
mandatory item--FATAL

415 Geohydrologic record sequence number (C721) is a mandatory  
item--FATAL

416 Geohydrologic unit code (C93) is missing or invalid--FATAL

418 Geohydrologic aquifer date (C95) is a mandatory item--FATAL

419 Aquifer parent sequence number (C256) is a mandatory item --  
FATAL

420 Date of ownership (C159) is a mandatory item--FATAL

421 Owner's name (C161) is a mandatory item--FATAL

422 Other identifier (C190) is a mandatory item--FATAL

423 Other-identifier assigner (C191) is a mandatory item--FATAL

424 Other data type available (C181) is a mandatory item--FATAL

425 Date of site visit (C187) is a mandatory item--FATAL

426 Field water-quality date (C193) is a mandatory item--FATAL

427 Field water-quality parameter code (C196) is a mandatory  
item--FATAL

428 Field water-quality value (C197) is a mandatory item--FATAL

429 Type of log (C199) is a mandatory item--FATAL

430 Miscellaneous network data type (C706) is a mandatory item -  
FATAL

431 Miscellaneous network begin year (C115) is a mandatory item--  
FATAL

432 Miscellaneous values record type is a mandatory item--FATAL

433 Miscellaneous values record sequence number is a manda-tory  
item--FATAL

434 Owner's record type is a mandatory item--FATAL

435 Owner's sequence number is a mandatory item--FATAL

436 Lift record type is a mandatory item--FATAL

437 Lift sequence number is a mandatory item--FATAL

439 Construction record type is a mandatory item--FATAL

440 Construction record sequence number is a mandatory item--  
FATAL

441 Construction parent sequence number is a mandatory item--  
FATAL

442 Depth to top of hole interval (C73) is a mandatory item--  
FATAL

443 Depth to top of casing interval (C77) is a mandatory item --  
FATAL

444 Depth to top of openings interval (C83) is a mandatory item--  
-FATAL

445 Type of lift (C43) is a mandatory item--FATAL

446 Parent sequence number (C59) is a mandatory item--FATAL

447 Type of opening (C85) is a mandatory item--FATAL

448 Nature of repair (C166) is a mandatory item--FATAL

449 Hole record type is a mandatory item--FATAL

450 Hole sequence number is a mandatory item--FATAL

451 Casings record type is a mandatory item--FATAL

452 Casings sequence number is a mandatory item--FATAL

453 Openings record type is a mandatory item--FATAL

454 Openings sequence number is a mandatory item--FATAL

455 Geohydrologic--aquifer record type is a mandatory item--  
FATAL

456 Geohydrologic--aquifer sequence number is a mandatory item -  
-FATAL

457 Network record type is a mandatory item--FATAL

458 Network sequence number is a mandatory item--FATAL

459 Minor repairs record type is a mandatory item--FATAL

460 Minor repairs sequence number is a mandatory item--FATAL

461 Spring record type is a mandatory item--FATAL

462 Spring sequence number is a mandatory item--FATAL

464 Other-data-available record type is a mandatory item--FATAL

465 Other-data-available sequence number is a mandatory item--  
FATAL

466 Remarks record type is a mandatory item--FATAL

467 Remarks sequence number is a mandatory item--FATAL

468 Site-visit record type is a mandatory item--FATAL

469 Site-visit sequence number is a mandatory item--FATAL

470 Other-identifiers record type is a mandatory item--FATAL

471 Other-identifiers sequence number is a mandatory item--FATAL

472 Field water-quality record type is a mandatory item--FATAL

473 Field water-quality sequence number is a mandatory item--  
FATAL

474 Log record type is a mandatory item--FATAL

475 Log sequence number is a mandatory item--FATAL

476 Special-cases record type is a mandatory item--FATAL

477 Special-cases sequence number is a mandatory item--FATAL

478 Measuring-point record type is a mandatory item--FATAL

479 Measuring-point sequence number is a mandatory item--FATAL

480 Discharge value (C150) is a mandatory field--FATAL

500 Spring data not allowed for record types other than spring -  
-FATAL

501 Manufacturer of lift (C48) invalid--WARNING

502 Serial number of lift device (C49) invalid--WARNING

503 Power company name (C50) invalid--WARNING

504 Power company account number (C51) invalid--WARNING

505 Power meter number (C52) invalid--WARNING

506 Power consumption coefficient (C53) invalid--WARNING  
507 Additional lift (C255) invalid--WARNING  
508 Name of company maintaining lift device (C54) invalid--  
WARNING  
509 Rated capacity of lift device (C268) invalid--WARNING  
510 Type of standby power (C56) invalid--WARNING  
511 Horsepower of standby power source (C57) invalid--WARNING  
512 Contractor name (C63) invalid--WARNING  
513 Hours of Development (C70) invalid--WARNING  
514 Top hole interval (C73) deeper than bottom (C74)--FATAL  
515 Diameter of Hole (C75) invalid--WARNING  
516 Top Casing interval (C77) deeper than bottom (C78)--FATAL  
517 Wall thickness of casing (C81) invalid--WARNING  
518 Top Opening interval (C83) deeper than bottom (C84)--FATAL  
519 Diameter of Opening (C87) invalid--WARNING  
520 Length of Openings (C89) invalid--WARNING  
521 Width of Openings (C88) invalid--WARNING  
522 Name of Contractor (C169) invalid--WARNING  
523 Percent change in performance (C170) invalid--WARNING  
524 Name of spring (C172) invalid--WARNING  
525 Number of spring openings (C177) invalid--WARNING  
526 Flow variability (C178) invalid--WARNING  
527 Measuring point begin date (C321) cannot be earlier than  
SCONDT--WARNING  
528 Measuring point end date (C322) invalid--WARNING  
530 Measuring point height (C323) invalid--WARNING  
531 Measuring point description (C324) invalid--WARNING  
535 Person who made site visit (C188) invalid--WARNING  
536 Depth top of log (C200) deeper than bottom of log (C201)  
invalid--WARNING  
537 Network data type (C706) invalid--WARNING  
538 Secondary network code (C708, C726, C727) invalid--WARNING  
539 Water level accuracy code (C276) invalid--WARNING  
540 Number of wells (C204) or number of laterals (C220) invalid--  
WARNING  
541 Depth of deepest well in group (C205) invalid--WARNING--  
VALUE REJECTED  
542 Depth shallowest well in group (C206) invalid--WARNING  
543 Diameter of well group (C262) invalid--WARNING  
544 Length of pond, tunnel, or drain (C209) invalid--WARNING  
545 Width of pond, tunnel, or drain (C210) invalid--WARNING  
546 Depth of pond, tunnel, or drain (C211) invalid--WARNING  
547 Bearing of pond, tunnel, or drain (C263) invalid--WARNING  
548 Dip in tunnel (C262) invalid--WARNING  
549 Depth of lateral in collector well (C221) invalid--WARNING  
550 Length of lateral in collector well (C222) invalid--WARNING  
551 Diameter of lateral in collector well (C223) invalid--  
WARNING

552 Mesh of screen in lateral (C224) invalid--WARNING  
553 Miscellaneous value 1 (C251) invalid--WARNING  
554 Miscellaneous value 2 (C252) invalid--WARNING  
555 Miscellaneous value 3 (C253) invalid--WARNING  
556 Miscellaneous value 4 (C314) invalid--WARNING  
557 Cooperator's ID (C213) invalid--WARNING  
558 Contractor's registration number (C214) invalid--WARNING  
559 Inspection status (C215) invalid--WARNING  
560 Reason unapproved (C216) invalid--WARNING  
562 Cooperator's remark (C218) invalid--WARNING  
563 Diameter of casing (C79) invalid--WARNING  
564 Remark field (C185) invalid--WARNING  
601 State water-use application number (C280) invalid--WARNING  
602 State water-use permit number (C281) invalid--WARNING  
603 State water-use legal diversion, cfs (C279) invalid--WARNING  
604 State water-use irrigated acreage (C288) invalid--WARNING  
605 State water-use legal allowance (C298) invalid--WARNING  
606 State water-use legal irrigation season begin date (C285)  
invalid--WARNING  
607 State water-use legal irrigation season end date (C286)  
invalid--WARNING  
608 State water-use certificate number (C278) invalid--WARNING  
610 HYDR unit ID (C100) is a mandatory item--FATAL  
611 HYDR remarks (C104) invalid--WARNING  
612 Hydraulic source agency (C305) is invalid--WARNING  
613 COEF Transmissivity (C107) invalid--WARNING  
614 COEF horizontal conductivity (C108) invalid--WARNING  
615 COEF vertical conductivity (C109) invalid--WARNING  
616 COEF storage coefficient (C110) invalid--WARNING  
617 COEF leakance (C111) invalid--WARNING  
618 COEF diffusivity (C112) invalid--WARNING  
619 COEF specific storage (C113) invalid--WARNING  
620 HYDR barometer efficiency (C271) invalid--WARNING  
621 HYDR porosity (C306) invalid--WARNING  
622 Base discharge (C807) invalid--WARNING  
623 Drainage area (C808) invalid--WARNING  
624 Contributing drainage area (C809) invalid--WARNING  
625 Crest-stage upstream elevation (C810) invalid--WARNING  
626 Crest-stage downstream elevation (C811) invalid--WARNING  
627 Gage height of zero flow (C812) invalid--WARNING  
628 Date well established (C711) earlier than SCONDT (C21)  
invalid--WARNING  
629 Date site established (C711) cannot be future or prior to  
SCONDT--WARNING--VALUE REJECTED  
630 Hole depth (C27) invalid--WARNING  
631 Inventory water level (C30) invalid--WARNING  
632 Horsepower rating (C46) invalid--WARNING

633 Duration of discharge before producing level (C157) invalid--  
-WARNING  
634 Specific capacity (C272) invalid--WARNING  
635 Discharge drawdown (C309) invalid--WARNING  
636 Depth to water (C237) invalid--WARNING  
637 Duplicate use-of-site code for C23, C301, and C302--WARNING  
638 Duplicate use-of-water code for C24, C25, and C26--WARNING  
639 Hydrologic unit code (C20) has been deleted--WARNING  
640 Date constructed (C21) invalid--WARNING  
801 No R value found--FATAL  
802 R value pair invalid, no = sign--FATAL  
803 Site is a mandatory item, invalid using this program--  
FATAL  
804 No ending delimiter to R value pair--FATAL  
805 R value nonnumeric--FATAL  
808 R value invalid--FATAL  
809 T value missing--FATAL  
810 T value pair invalid, no = sign--FATAL  
811 Transaction code invalid--FATAL  
812 No ending delimiter to T value pair--FATAL  
813 No = or # sign in component value pair--FATAL  
814 Component number nonnumeric--FATAL  
815 Control component number invalid--FATAL  
816 Component number invalid--FATAL  
817 Value too long, missing delimiter--FATAL  
830 Agency use code (C803) invalid--FATAL  
831 Lost in assigning component value--FATAL  
832 Maximum field length exceeded--FATAL  
833 R number is not in interim GWSI system--FATAL  
840 No match on component numbers--FATAL  
850 Future date not allowed--FATAL  
900 Site delete is not allowed, contact data-base administrator  
-FATAL  
901 Site already exists, cannot be added--FATAL  
902 Midas file problem, contact data-base administrator--FATAL  
903 Site does not exist, cannot be modified--FATAL  
904 Site does not exist, no other transactions allowed--FATAL  
905 Water levels are allowed for wells only--FATAL  
910 Record does not exist, is a mandatory item, invalid--FATAL  
911 Record already exists, cannot be added--FATAL  
912 Record does not exist, cannot be modified--FATAL  
913 Unique discharge record not found, delete or modify  
rejected--FATAL  
950 ADDOBS-Observation heading record not added--FATAL  
951 Construction parent record does not exist, record not  
processed--FATAL  
952 Geohydrologic parent record does not exist, record not  
processed--FATAL

953     Hydraulics parent record does not exist, record not  
          processed--FATAL

1002    Unsuccessful, add to SITEFILE--FATAL

1003    Unsuccessful, modify to SITEFILE--FATAL

1004    Unsuccessful, add to GW.CONS--FATAL

1005    Unsuccessful, modify to GW.CONS--FATAL

1006    Unsuccessful, add to GW.DISC--FATAL

1007    Unsuccessful, modify to GW.DISC--FATAL

1008    Unsuccessful, add to GW.MISC--FATAL

1009    Unsuccessful, modify to GW.MISC--FATAL

1010    Unsuccessful, add to GW.LEV--FATAL

1011    Unsuccessful, modify to GW.LEV--FATAL

1012    Unsuccessful, add to GW.GEOH--FATAL

1013    Unsuccessful, modify to GW.GEOH--FATAL

1014    Unsuccessful, add to GW.STWU--FATAL

1015    Unsuccessful, modify to GW.STWU--FATAL

1016    Unsuccessful, add to GW.HYDR--FATAL

1017    Unsuccessful, modify to GW.HYDR--FATAL

1018    Unsuccessful, add to GW.OBS--FATAL

1019    Unsuccessful, modify to GW.OBS--FATAL

1020    Unsuccessful, delete from GW.CONS

1021    Unsuccessful, delete from GW.DISC

1022    Unsuccessful, delete from GW.MISC

1023    Unsuccessful, delete from GW.LEV

1024    Unsuccessful, delete from GW.GEOH

1025    Unsuccessful, delete from GW.STWU

1026    Unsuccessful, delete from GW.HYDR

1027    Unsuccessful, delete from GW.OBS

1101    FIPSFILE does not exist or needs to be MPACKed--FATAL

1102    AQFILE does not exist or needs to be MPACKed--FATAL

1103    Construction file (GW.CONS) failed to open--FATAL

1104    Discharge file (GW.DISC) failed to open--FATAL

1105    Miscellaneous file (GW.MISC) failed to open--FATAL

1106    Geohydrologic file (GW.GEOH) failed to open--FATAL

1107    Water-level file (GW.LEV) failed to open--FATAL

1108    State water-use file (GW.STWU) failed to open--FATAL

1109    Hydraulics file (GW.HYDR) failed to open--FATAL

1110    Observation well headings (GW.OBS) failed to open--FATAL

1151    GW.CONS record failed, edit must be corrected before update--  
          FATAL

1152    GW.GEOH record failed, edit must be corrected before update--  
          FATAL

1153    GW.HYDR record failed, edit must be corrected before update--  
          FATAL

1154    GW.DISC record failed, edit must be corrected before update--  
          FATAL

1155    GW.MISC record failed edit, must be corrected before update--  
          FATAL



1156 GW.LEV record failed edit, must be corrected before update--  
FATAL  
1157 GW.OBS record failed edit, must be corrected before update--  
FATAL  
1158 GW.STWU record failed edit, must be corrected before update--  
-FATAL  
1200 Site record failed edit, must be corrected before update--  
FATAL