

6 EDIT PROGRAM

by Colleen A. Babcock

The Ground-Water Site-Inventory Edit program performs edit validation and logical data checks and prepares the transaction files used in the Ground-Water Update program (Chapter 7) to update the database.

6.1 Introduction

The Edit program performs edit validation and logical data checks on the output files created using the Screen Entry program or the Query Entry program. Edit checks are performed using the GWSI Expanded Edit feature and include: code validation against reference lists, reasonable value checks, proper date fields, and proper numeric values. Data passing edit checks are reformatted into transaction files accepted by the Update procedure.

6.2 Program Operation

The Edit program may be selected from the GWSI Main Menu by selecting Option 3 for interactive processing or Option 13 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 systems.

The program will identify itself, display the database 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 Screen Entry or Query Entry. 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 Edit and passed as input to the Update routines. If the database number does not reflect the database the user wants to access, change the number by using Option 10 (Change GW/QW Database #) on the GWSI Main Menu.

6.3 Files Used by the Ground-Water Edit Program

The input file for the Edit program is the output file generated from Screen or Query Entry programs. This program can use a file name or full pathname. Several temporary files are also created by the Edit 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. The `editgw` program creates several output files, 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. **Note: "xx" indicates the database number (leading zeros included) and "a" indicates the batch code entered when the program was first initiated.**

File Name	Description
site.tran.dbxx.a	Contains Sitefile transaction records that successfully pass the edit routines.
gw.cons.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{ XE "Recharge site" } heading 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

The Edit program performs the following functions:

1. Performs logical checks of the data:
 - Dates:
 - ✓ Compares all dates with the 'Date Well Constructed' (C21) to make sure the entered date is after C21
 - ✓ Future dates are not allowed
 - ✓ Dates prior to January 01, 1900 are not allowed
 - Performs logical checks between similar data types; e.g. Depth of Well (C28) cannot be deeper than Depth of Hole (C27)
 - Validates data using reference lists. Many of the GWSI components have associated reference lists that limit what can be entered. Data validation

for these components check to make sure that the data satisfy ONE of the following conditions:

- ✓ data are within a list of values
 - ✓ data are within a range of values
 - ✓ data conform to a specific format
1. Verifies that a record with the same Site ID does not exist before one is added.
 2. Verifies that a record does exist before a modify or delete transaction is attempted.
 3. Verifies that a record exists in the Sitefile before adding other record types associated with that site.
 4. 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 Running Edit

The Edit program is initiated from the GWSI Main Menu by selecting Option 3 for interactive operation or Option 13 for batch Edit. The program will run with or without errors detected.

6.5.1 Edit Run Without Detecting Errors

If the input data file was prepared using Screen or Query Entry, there is little likelihood of Edit finding and reporting errors. Below is an example of a typical run of Option 3 where no errors are detected; user responses are underlined:

```

*****
* Main Menu for WRD GWSI Database # 01 -- NWIS-4_4_1-4
*****
Code  Program Description          Code  Program Description
-----
 1 : Query Entry                    11 : Generate Field Forms
 2 : Screen Entry                    12 : QW Entry
 3 : Edit GW Data (from 1-2)         13 : Edit GW Data in Batch
 4 : Update GW Data (from 3)         14 : Update GW Data in Batch
 5 : Update Sitefile Only (runs 2,3,4) 16 : Plot Hydrographs
 6 : Retrieval/Tables
 7 : Copy File (from 1-2) to Directory watin

10 : Change GW/QW Database #

92 : Database Check Menu             91 : Utilities Menu
96 : Documentation Menu              93 : List Utilities Menu
                                     97 : Local Menu

98 : Exit to Previous Menu           99 : Exit to UNIX

Enter UNIX Command or Select Program Code: 3

Your current GW database is number 01

***** Loading Edit Tables *****

***** Please Wait *****

NWIS EDIT PROGRAM
RELEASE VERSION NWIS_4_0+20010511

DATABASE NUMBER:      1

INPUT FILE NAME IS d.joeuser.006
ENTER BATCH ID, VALID OPTIONS ARE 0-9, A-Z a

Deleting existing Batch files

Processing data - please be patient

NO ERRORS REPORTED

Press <Enter> for Menu or Enter UNIX Command:

```

Ground-Water Edit Run Without Detected Errors

Note that in the above example, the displayed text indicates “**NO ERRORS REPORTED.**” This means that the Edit program found no errors, and no file containing errors was generated.

If Edit ran without reported errors, the user can proceed to the Update step (Option 4). See documentation on the Update step in [Section 7](#).

6.5.2 Edit Run with Errors Detected

Sometimes, the Edit program does find errors in the input file. This usually occurs if the input file is prepared using a text editor, or an input file prepared by Screen or Query Entry has been modified and errors are introduced. When errors are detected, the text, rather than report “NO ERRORS REPORTED”, will conclude with “END OF INPUT FILE--CHECK errfile.dbxx.n”:

```

NWIS EDIT PROGRAM
RELEASE VERSION NWIS-4_4_0-20040329

DATABASE NUMBER:      1

INPUT FILE NAME IS d.joeuser.007
ENTER BATCH ID, VALID OPTIONS ARE 0-9, A-Z 1

Deleting existing Batch files

Processing data - please be patient

END OF INPUT FILE--CHECK errfile.db01.1

Press <Enter> for Menu or Enter UNIX Command:
    
```

This file will be created in the directory the user was in at the time Edit was run; it needs to be reviewed, the errors corrected in the input file, and Edit re-run to generate the transaction files and to make sure the errors have been fixed as explained in Section 6.6.

6.6 Error Correction

Errors indicated in errfile.dbxx.a should be identified and corrected in the input file. The format of errfile.dbxx.a includes two lines of output for each error, as described below:

First Line:	
Column	Description
1-5	Line number of first line of repeating group where error occurred
6-80	First line of repeating group where error occurred, includes Agency Code, Site ID, and first few components of the record
Second Line:	
Column	Description
1-9	Error message number
6-80	Description of the error

An example of an input file that contains several errors (bold and underlined) is shown below.

```

XXXXX
USGS 474251114385217 R=0* T=A* 5=4656-002000*
USGS 474251114385217 12='New Site near Spart, Mt          '*
USGS 474251114385217 6=30* 41=XX* 7=30* 8=000* 9= 474251* 10= 1143852* 11=S*
USGS 474251114385217 35=M* 36=NAD27* 16= 5000* 18= 1* 17=M* 22=NGVD29*
USGS 474251114385217 20=10010001* 711=20000101* 802=NNNNNNYNNNNNNNNNNNNNNNN*
USGS 474251114385217 804=ANNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN*
USGS 474251114385217 805=YNNYNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN* 806=None* 813=MST*
USGS 474251114385217 814=Y* 32=C* 3=C* 2=W* 21=20000101* 23=O* 24=U*
USGS 474251114385217 714=111SPBK * 27= 500* 28= 500*
USGS 474251114385217 R=58* T=A* 723#001* 60=19990101* 63=W E Digem* 64=S* 65=R*
USGS 474251114385217 66=S* 69=P* 70= 48* 850=Y*
USGS 474251114385217 R=146* T=A* 147#001* 148=18880101* 703=P* 150= 25.6*
USGS 474251114385217 151=9* 152=F* 153= 100* 154= 50* 156=S*
USGS 474251114385217 157= 48* 859=Y*
USGS 474251114385217 R=234* T=A* 235#20000101* 243=** 237= 23.65* 239=S* 276=2*
USGS 474251114385217 244=S* 247=UXGS* 858=Y*
    
```

Input File with Errors

The error file that results from running the example input file through Edit is shown below. This is followed with an analysis of the errors and how to fix them.

```

Error messages for input file d.llenfest.006

Line
No      First line of input for record being processed
1  USGS 474251114385217 R=0* T=A* 5=4656-002000*
*  4041 Country code (C041) Invalid Character Code--ERROR--RECORD REJECTED
1  USGS 474251114385217 R=0* T=A* 5=4656-002000*
*  4007 State code (C007) Invalid Character Code--ERROR--RECORD REJECTED
1  USGS 474251114385217 R=0* T=A* 5=4656-002000*
*  4020 Hydrologic unit code (C020) Invalid Character Code--ERROR--RECORD REJECTED
1  USGS 474251114385217 R=0* T=A* 5=4656-002000*
*  4714 Aquifer code (C714) Invalid Character Code--ERROR---VALUE ACCEPTED
1  USGS 474251114385217 R=0* T=A* 5=4656-002000*
*  94000 SITEFILE record failed Edit must be corrected before update--ERROR---VALUE
REJECTED
10  USGS 474251114385217 R=58* T=A* 723#001* 60=19990101* 63=W E Digem* 64=S* 65=R*
*  15060 Date of construction (C060) Date Precedes Date Constructed--ERROR---VALUE
ACCEPTED
12  USGS 474251114385217 R=146* T=A* 147#001* 148=18880101* 703=P* 150= 25.6*
*  1148 Date discharge{ XE "diversion" } measured (C148) Mandatory Field Missing--ERROR-
--VALUE REJECTED
15  USGS 474251114385217 R=234* T=A* 235#20000101* 243=** 237= 23.65* 239=S* 276=2*
*  77000 No = or # sign in component value pair--ERROR---VALUE REJECTED
15  USGS 474251114385217 R=234* T=A* 235#20000101* 243=** 237= 23.65* 239=S* 276=2*
*  31238 Water-level status (C238) Water Level or Status Required--ERROR---VALUE ACCEPTED
15  USGS 474251114385217 R=234* T=A* 235#20000101* 243=** 237= 23.65* 239=S* 276=2*
*  4247 Source Agency (C247) Invalid Character Code--ERROR--RECORD REJECTED
15  USGS 474251114385217 R=234* T=A* 235#20000101* 243=** 237= 23.65* 239=S* 276=2*
*  94000 GW.LEV record failed Edit must be corrected before update--ERROR---VALUE
REJECTED
    
```

Example of Contents of Error File

Analysis:

1. Country Code (41) was set to **XX**. It caused the errors in line 1 (first five errors) in the Error file. It should be corrected to 'US'.

- . US is not in the list of acceptable entries for country.
 - . States are related to Country; there are no related states to an invalid country, so the validation for the state code failed.
 - . Hydrologic Unit Code (HUC) is related to State. There are no related HUCs for an invalid state, so the validation for the HUC failed.
 - . Aquifer Code is related to state. There are no related Aquifer Codes for an invalid state, so the validation for the Aquifer Code failed.
 - a. For a new site, the site MUST exist in the Sitefile before any other related ground-water data can be entered. There are several ‘fatal’ errors in the Sitefile entry, so the entire record will be rejected until the errors are corrected.
6. Date of Construction (60) was set to 01/01/1999. It caused the error in line 10. The Date of Construction (60) should be later than the Sitefile Date Constructed (21). This is an example of an accepted error, where a warning is issued, but the value is accepted because it is not severe enough to be considered a fatal error. Because the warning was issued, the value should be reviewed and probably corrected to a date later than 01/01/2000. It will be accepted if no further action is taken.
7. Date of Discharge (148) was set to 01/01/1888. It caused the error on line 12. The Discharge Date must be later than the Sitefile Date Constructed and should be corrected to a date later than 01/01/2000.
8. There were a couple of problems in line 15:
- . The type of water level (C243) was set to ‘*’; it should be set to ‘L’. This was rejected because it contains invalid syntax. The whole record was rejected because C243 is mandatory.
 - . The Agency Code was set to ‘UXGS’ and should be set to ‘USGS’. This error would also be a cause for the entire record being rejected.
 - . There is an additional error shown that warns that “**Water-level status (C238) Water Level or Status Required.**” This was probably displayed as a result of the syntax error in C243 because the software has no way of knowing which type of water level to look for. There are rules about when Water Level or Status is required. In this example the Water Level was entered, therefore the error message would not normally be displayed for this condition.

It is important to note that none of these errors would have been allowed through either of the GWSI data input programs (Screen or Query Entry). The errors were intentionally made in the input file for illustrating the example, but could have been made accidentally if the file were created or modified with an editor.

Error descriptions in the second line of the error file are categorized in three ways:

- **ERROR—RECORD REJECTED** – The entire record that contains the erroneous values is rejected because the erroneous value has an error, such as a missing mandatory component.

- **ERROR—VALUE REJECTED** – The indicated component has an illegal value entered which constitutes a fatal error and will be rejected; the error may or may not cause the entire record to be rejected.
- **ERROR—VALUE ACCEPTED** – The indicated component has an illegal value that is not fatal and will be entered in the database. This error should be reviewed, even though it is allowed, to make sure the entered value is intentional.

All input file errors that were detected and displayed in the errfile must be reviewed. It is possible that erroneous values may cause Edit to tag some correct values with an error. The “**REJECTED**” values must be corrected before the value and/or its related record will be updated to the database through Ground-Water Update. Values that were tagged as errors, but “**ACCEPTED**”, should be corrected if the intended value was not entered. Cleaning up the input file may be an iterative process. Edit may need to be run several times until all of the “**REJECTED**” values have been eliminated.

Once the “**REJECTED**” errors have been eliminated and the user is satisfied the “**ACCEPTED**” values are correct, the user may proceed to the Update step, explained in [Section 7](#).

Error message numbers and descriptions are listed in [Section 15](#).