

Digital Database Description for USGS OF 00-376

Introduction

This Open-File report is a digital geologic map database. This pamphlet serves to introduce and describe the digital data. There is no paper map included in the Open-File report. The report does include, however, PostScript and PDF plot files containing images of two geologic map sheets with explanation, as well as text files describing the geology of the area and digital database. For those interested in a paper plot of information contained in the database or in obtaining the PostScript plot files, please see the section entitled "For Those Who Don't Use Digital Geologic Map Databases" below.

This digital map database, largely compiled from new mapping by the authors, represents the general distribution of bedrock and surficial deposits of the Roseburg 30 x 60 minute quadrangle along the southeastern margin of the Oregon Coast Range and its tectonic boundary with Mesozoic terranes of the Klamath Mountains. Together with the geologic pamphlet, it provides current information on the geologic structure and stratigraphy of the area covered. The database delineates map units that are identified by general age and lithology following the stratigraphic nomenclature of the U.S. Geological Survey. The scale of the source maps is 1:24,000, but the Quaternary contacts and structural data have been much simplified for the 100,000-scale map and database. The spatial resolution (scale) of the database is 1:100,000 or smaller. The content and character of the database, as well as three methods of obtaining the database, are described below.

For those who don't use digital geologic map databases

For those interested in the geology of the Roseburg, Oregon 30 x 60 minute quadrangle who do not use an ARC/INFO compatible Geographic Information System (GIS), we have provided two sets of plot files containing images of much of the information in the database. There is a set of images in PostScript format and another in Adobe Acrobat PDF format (see the sections "PostScript plot files" and "PDF plot files" below).

Those interested who have computer capability can access the plot file packages in any of the three ways described below (see the section "Obtaining the digital database and plot file packages"). However, it should be noted the plot file packages do require gzip and tar utilities to access the plot files. Therefore additional software, available free on the Internet, may be required to use the plot files (see section "Tar files").

Those without computer capability can obtain plots of the map files through USGS plot-on-demand service for digital geologic maps (see section "Obtaining plots from USGS Open-File Services") or from an outside vendor (see section "Obtaining plots from an outside vendor").

Digital Open-File contents

This Open-File report consists of three digital packages. The first is the **PostScript Plotfile Package**, which consists of PostScript plot files of a geologic map with explanation (Sheets 1-2), as well as a PDF version of the geology pamphlet and this digital database description or readme file. The second is the **PDF Plotfile Package**, and contains the same plotfiles as the first package, but in Portable Document Format (PDF). The third is the **Digital Database Package**, and contains the geologic map database, and the supporting data, including base maps, map explanation, geologic description pamphlet with references, a database description pamphlet, and metadata.

PostScript plot file package

This package contains the images described here in PostScript format (see below for more information on PostScript plot files):

- | | |
|------------|--|
| rb_sh1.ps | A PostScript plottable file containing an image of the geologic map and base maps of the Roseburg 30 x 60 minute quadrangle at a scale of 1:100,000 (Sheet 1). |
| rb_sh2.eps | A PostScript plottable file containing an image of the cross sections, description of map units, references, source of mapping of Roseburg 30 x 60 minute quadrangle at a scale of 1:100,000 |

(Sheet 2).

- rb_geol.pdf A PDF file of a report containing detailed unit descriptions and geological information, sources of data, and references cited, and database description.
- rb_readme.pdf This file as a PDF file.

PDF plotfile package

This package contains the images described here in PDF format (see below for more information on PDF plot files):

- rb_sh1.pdf A PDF containing an image of the geologic map and base map of the Roseburg 30 x 60 minute quadrangle at a scale of 1:100,000, correlation of map units and list of map units (Sheet 1).
- rb_sh2.pdf A PDF containing an image of the cross sections, description of map units, references, source of mapping of Roseburg 30 x 60 minute quadrangle at a scale of 1:100,000 (Sheet 2).
- rb_geol.pdf A PDF of a report containing detailed unit descriptions and geological interpretation, plus figures tables, sources of data, and references cited.
- rb_readme.pdf This file as a PDF file.

Digital database and metadata package

The database and metadata package includes geologic map database files for the the Roseburg 30 x 60 minute quadrangle. The digital maps, or coverages, along with their associated INFO directory have been converted to uncompressed ARC/INFO export files. ARC export files promote ease of data handling, and are usable by some Geographic Information Systems in addition to ARC/INFO (see below for a discussion of working with export files). Raster data are stored in ARC grid format rather than export format to reduce file size. The ARC export files and associated ARC/INFO coverages, grids, and directories, as well as the additional digital material included in the database, are described below:

ARC/INFO export file	Resultant Coverage	Description of Coverage
-----	-----	-----
<i><u>Roseburg quadrangle</u></i>		
rb_geo.e00	rb_geo/	Faults, depositional contacts, and rock units in the quadrangle
rb_stx.e00	rb_stx/	Geologic attitudes as points include ptype, strike, dip fields, dip values as annotation, fold axis as arcs
rb_well.e00	rb_well/	Wells as points
rb_xsec.e00	rb_xsec/	Lines of cross sections for Roseburg geology map
ARC/INFO Grids		Description of Grid
-----		-----
rb_grid		Roseburg color geology grid merged with grid of topographic base

The database package also includes the following files:

ASCII text files, including metadata, PostScript plot files, PDF files of the two pamphlets, Encapsulated PostScript files from Adobe Illustrator 8 used as map collars, ARC Macro Language files for plotting maps, custom ARC lineset and a ARC Macro Language file for conversion of ARC export files into ARC coverages:

rb_geol.pdf	A PDF plot file of a report containing detailed unit descriptions and geological information, sources of data, and references cited
rb_readme.pdf	This file as a PDF file.
rb_meta.txt	A metadata file in ASCII text format
import.aml	ASCII text file in ARC Macro Language to convert ARC export files to ARC coverages in ARC/INFO
rb_sh1o.eps	Encapsulated PostScript Adobe Illustrator 8 file (map collar) for the Roseburg quadrangle
rb_sh2.eps	Encapsulated PostScript Adobe Illustrator 8 file for Roseburg quadrangle (Sheet 2)
roseburg.aml	Plot AML generates uncompressed PostScript of Roseburg quadrangle at 600 dpi (Sheet 1)
geol61.lin	Custom ARC lineset
johanna.txt	Custom ARC textset
landu	Parameter file in roseburg.aml to uncompress and rotate PostScript file 90 degrees
uncom	Parameter file in roseburg.aml to uncompress PostScript file
fnt038	Arc/Info font used with markerset
fnt039	Arc/Info font used with markerset
sp5101_utm10.prj	Arc/Info projection file for Roseburg dataset
rbgeo2bs.rmp	Arc/Info grid remap table for colors (Roseburg)
info	Arc/Info directory
log	Arc/Info log file
alc1.shd	Arc/Info shadeset (custom)
geologyk.mrk	Arc/Info markerset (custom)
oilgas.mrk	Arc/Info markerset (non-custom)
geol61b.lut	Arc/Info line look up table (internal) exported as geol61b.lut.e00
droid.lut	Arc/Info marker look up table (internal) exported as droid.lut.e00
fmarkers.lut	Arc/Info look up table for fold and fault markers (internal) exported as fmarkers.lut.e00
rbpoly.lut	Arc/Info look up table (internal) exported as rbpoly.lut.e00

The following supporting directory is not included in the database package, but is produced in the process of

reconverting the export files into ARC coverages:

info/ INFO directory containing files supporting the databases.

Tar files

The three data packages described above are stored in tar (UNIX tape archive) files. A tar utility is required to extract the database from the tar file. This utility is included in most UNIX systems, and can be obtained free of charge over the Internet from Internet Literacy's Common Internet File Formats Webpage (<http://www.matisse.net/files/formats.html>). Both tar files have been compressed, and may be uncompressed with **gzip**, which is available free of charge over the Internet via links from the USGS Public Domain Software page (<http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/public.html>). For software that enables the user to uncompress and extract the database files on a Windows or Macintosh computer, go to the U.S. Geological Central Region server (<http://greenwood.cr.usgs.gov/maps/software.html>) or WinZip (<http://www.winzip.com>). When the tar file is uncompressed and the data is extracted from the tar file, a directory is produced that contains the data in the package as described above. The specifics of the tar files are listed below:

Name of compressed tar file	Size of compressed tar file (uncompressed)	Directory produced when extracted from tar file	Data package contained
rbofrps.tar.gz	38.8 MB (395 MB)	rbofrps/	PostScript Plotfile Package
rbofrpdf.tar.gz	15 MB (15.9 MB)	rbofrpdf/	Portable Document Format Package
rbofr.tar.gz	27.7 MB (71.5 MB)	rbofr/	Digital Database Package

PostScript plot files

For those interested in the geology of the Roseburg, Oregon 30 x 60 minute quadrangle who don't use an ARC/INFO compatible GIS system we have included a separate data package with three PostScript plot files. The first two each contain a color plot of the geologic map database at 1:100,000 scale (Sheet 1 and 2, rb_sh1.ps, rb_sh2.eps). Because this release is primarily a digital database, the plot files (and plots derived therefrom) have not been edited to conform to U.S. Geological Survey standards. Small units have not been labeled with leaders and in some instances map features or annotation overlap. Sample plots by the authors have proven to be quite legible and useful, however. In addition, two PDF files, one containing the geologic description and discussion, and the second containing the database description (this file) is provided.

The PostScript image of the geologic maps are 50 by 35 inches (Sheet 1), and 35 by 32 inches (Sheet 2), so they require a large plotter to produce paper copies at the intended scale. Both map sheets are rotated 90 degrees for plotting on 36 inch wide paper. Both pamphlets are black and white 8.5 by 11 inch multipage format.

The PostScript plot files for these maps were produced by the PostScript command using the uncompressed option in ARC/INFO version 7.2.1 for Unix. The PDF files for the pamphlets were produced in Microsoft Word using the Export as PDF File. The nine figures for the geology pamphlet were produced in Adobe Illustrator and saved as version 8 Encapsulated PostScript files, as well as the map template (rb_sh1o.eps), which contains a color plot of the map key and map collar, (it was used as Placed EPS in the PostScript file from ARC/INFO) and Sheet 2 (rb_sh2.eps), which is the Description of Map Units, cross-sections, index map, sources of mapping and other graphics.

The final ARC/INFO PostScript file (rb_sh1.ps) contains an Encapsulated PostScript file generated by Adobe Illustrator version 8 (rb_sh1o.eps) and placed into the ARC/INFO graphic metafile by an ARC plotting AML (roseburg.aml). This EPS file includes the marginal graphics and explanation of the map. The final version of Sheet 2 is from Adobe Illustrator 8 directly saved as EPS and not taken into ARC/INFO (rb_sh2.eps).

The roseplot.aml uses the coverages and grids to produce a printable PostScript file of sheet 1 of the Roseburg files. The import.aml imports all the export (.e00) files into ARC/INFO.

PDF plot files

We have also included a second digital package containing PDF versions of the PostScript map sheets and pamphlet described above. Adobe Acrobat PDF (Portable Document Format) files are similar to PostScript plot files in that they contain all the information needed to produce a paper copy of a map or pamphlet and they are platform independent. Their principal advantage is that they require less memory to store and are therefore quicker to download from the Internet. In addition, PDF files allow for printing of portions of a map image on a printer smaller than that required to print the entire map without the purchase of expensive additional software. All PDF files in this report have been created from PostScript plot files using Adobe Acrobat Distiller. In test plots we have found that paper maps created with PDF files contain almost all the detail of maps created with PostScript plot files. We would, however, recommend that those users with the capability to print the large PostScript plot files use them in preference to the PDF files.

To use PDF files, the user must get and install a copy of Adobe Acrobat Reader. This software is available free from the Adobe website (<http://www.adobe.com>). Please follow the instructions given at the website to download and install this software. Once installed, the Acrobat Reader software contains an on-line manual and tutorial.

There are two ways to use Acrobat Reader in conjunction with the Internet. One is to use the PDF reader plug-in with your Internet browser. This allows for interactive viewing of PDF file images within your browser. This is a very handy way to quickly look at PDF files without downloading them to your hard disk. The second way is to download the PDF file to your local hard disk, and then view the file with Acrobat Reader. **We strongly recommend that large map images be handled by downloading to your hard disk, because viewing them within an Internet browser tends to be very slow.**

To print a smaller portion of a PDF map image using Acrobat Reader, it is necessary to cut out the portion desired using Acrobat Reader and the standard cut and paste tools for your platform, and then to paste the portion of the image into a file generated by another software program that can handle images. Most word processors (such as Microsoft Word) will suffice. The new file can then be printed. Image conversion in the cut and paste process, as well as changes in the scale of the map image, may result in loss of image quality. However, test plots have proven adequate.

Digital database format

The databases in this report were compiled in ARC/INFO, a commercial Geographic Information System (Environmental Systems Research Institute, Redlands, California), with version 3.0 of the menu interface ALACARTE (Fitzgibbon and Wentworth, 1991, Fitzgibbon, 1991, Wentworth and Fitzgibbon, 1991). The files are in either GRID (ARC/INFO raster data) format or COVERAGE (ARC/INFO vector data) format. Coverages are stored in uncompressed ARC export format (ARC/INFO version 7.2.1 for Unix). ARC/INFO export files (files with the .e00 extension) can be converted into ARC/INFO coverages in ARC/INFO (see below) and can be read by some other Geographic Information Systems, such as MapInfo via ArcLink and ESRI's ArcView (version 1.0 for Windows 3.1 to 3.11 is available for free from ESRI's web site: <http://www.esri.com>). The digital compilation was done in version 7.2.1 of ARC/INFO for Unix.

Obtaining the Digital Database and Plotfile Packages

The digital data can be obtained in any of three ways:

- a. From the Western Region Geologic Information Web Page.
- b. Anonymous ftp over the Internet
- c. Sending a CD with request

To obtain tar files of database or plot file packages from the USGS web pages:

The U.S. Geological Survey now supports a set of graphical pages on the World Wide Web. Digital

publications (including this one) can be accessed via these pages. The location of the main Web page for the entire USGS is <http://www.usgs.gov>

The Web server for digital publications from the Western Region is <http://geopubs.wr.usgs.gov>

Go to <http://geopubs.wr.usgs.gov/open-file/of00-376> to access this publication. Besides providing easy access to the entire digital database, the Western Region Web page also affords easy access to the PostScript plot files for those who do not use digital databases (see below).

To obtain tar files of database or plot file packages by ftp:

The files in these reports are stored on the U.S. Geological Survey Western Region FTP server. The Internet ftp address of this server is <ftp://geopubs.wr.usgs.gov>

The user should log in with the user name anonymous and then input their e-mail address as the password. This will give the user access to all the publications available via ftp from this server.

The files in this report are stored in the subdirectory: **pub/open-file/of00-376**

To obtain tar files of database or plot file packages on CD:

Database files, PostScript plot files, and related files can be obtained by sending a CD with request and return address to:

Roseburg, Oregon 30 x 60 minute Geologic Map Plotfiles
c/o Database Coordinator
U.S. Geological Survey
345 Middlefield Road, M/S 975
Menlo Park, CA 94025

Do not omit any part of this address!

NOTE: Be sure to include with your request the exact names, as listed above, of the tar files you require. An Open-File Report number is not sufficient, unless you are requesting both the database package and plot file package for the report. The compressed tar file will be returned on the CD.

Obtaining plots from a commercial vendor

Those interested in the geologic maps of the Roseburg, Oregon 30 x 60 minute quadrangle, but who use neither a computer nor the Internet, can still obtain the information. We will provide the PostScript plot files on CD (details below) for use by commercial vendors who can make large-format plots. Send a blank CD with request and return address to:

Roseburg, Oregon 30 x 60 minute Geologic Map Plotfiles
c/o Database Coordinator
U.S. Geological Survey
345 Middlefield Road, M/S 975
Menlo Park, CA 94025

Do not omit any part of this address! The compressed tar file will be returned on the CD.

Make sure your vendor is capable of reading these CDs and PostScript plot files. Important information regarding CD file format is included in the sections "Database Release Format", "Tar Files", and "PostScript Plot Files" above, so be certain to provide a copy of this document to your vendor.

Obtaining plots from USGS Open-File Services

U.S. Geological Survey is providing a plot-on-demand service for map files, such as those described in this report,

through Open-File Services. In order to obtain plots, contact Open-File Services at:

USGS Information Services
Box 25286
Denver Federal Center
Denver, CO 80225-0046

(303) 202-4200
1-800-USA-MAPS
FAX: (303) 202-4695
e-mail: infoservices@usgs.gov

Be sure to include with your request the Open-File Report number and the exact names, as listed in the Database Contents section above, of the plot files you require. An Open-File Report number and its letter alone may not be sufficient, unless you are requesting plots of all the plot files for that report.

Converting ARC export files

ARC export files are converted to ARC coverages using the ARC command IMPORT with the option COVER. To ease conversion and maintain naming conventions, we have included an ASCII text file in ARC Macro Language that will convert all of the export files in the database into coverages and create the associated INFO directory. From the ARC command line type: **Arc: &run import.aml**

ARC export files can also be read by some other Geographic Information Systems. Please consult your GIS documentation to see if you can use ARC export files and the procedure to import them.

Digital compilation

Negative separates (culture, topology, drainage, and open water) of USGS topographic bases and geologic mylar tracings were scanned at 600 and 400 dpi, respectively, and saved as 1-bit TIFF bi-level compression type 1 (uncompressed) with rows per strip = 12000 on an IDEAL rasterizing scanner, then images were converted to ESRI ARC/INFO grids. The topographic base map separates remain as grids, and are merged at the last step with the colored geology polygrids. The raster geology grids were converted to vector coverages with ARC/INFO's gridline routine. Alacarte and some custom menus and amls were used to project, transform, edit, tag and build, lines, polygons, and points in each map. A digital layout or map collar was made with Adobe Illustrator 8 and saved to EPS. The plot aml (roseburg.aml) runs in ARC/INFO and uses the coverages, grids, and EPS to make uncompressed and rotated PostScript files. All maps are in UTM projection, zone 10, units meters, 1:100,000 scale. The digital pamphlets were exported from Microsoft Word as PDF or edited in Acrobat.

Annotation

Within the structural coverage is an annotation showing dip amount associated with each attitude. This annotation layer is called by the plot aml used by ARC/INFO, using a custom ARC textset, johanna.txt. The plot aml converts all coverages into a PostScript file. Annotation is also used to label some of the geology polygons. Smaller polygons, in which the label would not fit, can be identified on plots by the color of the polygon.

Base maps

The U.S. Geological Survey is the source of the base maps. The bases used are 1:100,000 scale topographic maps, which have a 50-foot contour intervals (1979). One base map layer for each of the four separates (culture, topology, drainage, and open water) was prepared from negatives. Topographic base separates for the Roseburg 30 x 60 minute quadrangle were scanned on an IDEAL rasterizing scanner at 600 dpi as 1-bit TIFF images. Scanned TIFF images of the bases were registered and rectified in ARC/INFO and then made into grids. The images were clipped using ARC/INFO grid to conform to the area of the geologic coverages and merged with the geology grid to give an apparent transparent color image of both combined. These base map-geology layers are digital images but no

information other than location is attached to the lines. The base-geology maps are provided for reference only.

Spatial resolution

Uses of this digital geologic map should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of a paper map, the detail and accuracy inherent in map scale are also present in the digital data. The fact that this database was edited at a scale of 1:100,000 means that higher resolution information is not present in the dataset. Plotting at scales larger than 1:100,000 will not yield greater real detail, although it may reveal fine-scale irregularities below the intended resolution of the database. Similarly, where this database is used in combination with other data of higher resolution, the resolution of the combined output will be limited by the lower resolution of these data.

Database specifics

The map databases consist of ARC coverages and supporting INFO files, which are stored in a UTM (Universal Transverse Mercator) projection (Table 1). Digital tics define a 30 x 60 minute grid of latitude and longitude in the coverages corresponding with quadrangle corners.

Table 1 - Map Projection

The maps are stored in UTM projection

```
PROJECTION UTM
UNITS METERS      -on the ground
ZONE 10           -UTM zone
PARAMETERS
END
```

The content of the geologic database can be described in terms of the lines, points, and the areas that compose the map. Descriptions of the database fields use the terms explained in Table 2.

Table 2 - Field Definition Terms

ITEM NAME	name of the database field (item)
WIDTH	maximum number of digits or characters stored
OUTPUT	output width
TYPE	B-binary integer, F-binary floating point number, I-ASCII integer, C-ASCII character string
N. DEC.	number of decimal places maintained for floating point numbers

Lines

The lines (arcs) are recorded as strings of vectors and are described in the arc attribute table (Table 3). They define the boundaries of the map units, folds, faults, and the map boundaries. These distinctions, including the geologic identities of the unit boundaries, are recorded in the LTYPE field according to the line types listed in Table 4.

Table 3 - Content of the Arc Attribute Tables

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	Description
FNODE#	4	5	B		starting node of arc (from node)
TNODE#	4	5	B		ending node of arc (to node)
LPOLY#	4	5	B		polygon to the left of the arc
RPOLY#	4	5	B		polygon to the right of the arc
LENGTH	4	12	F	3	length of arc in meters
<coverage>#	4	5	B		unique internal control number
<coverage>-ID	4	5	B		unique identification number

LTYPE	35	35	C	line type (see Table 4)
SEL	1	1	I	user-defined field used to save a selected set
SYMB	3	3	I	user defined field used to save symbol assignments (such as color)

Table 4 - Line Types Recorded in the LTYPE Field (listed by coverage name. LTYPE ending with "m" or "_" is for a cartographic plotting purposes to cause a symbol to plot at a specific location on that line).

rb_geo

atten. fault, certain
 atten. fault, concealed
 atten. fault, inferred
 atten. fault, inferred, queried
 contact, certain
 contact, concealed
 contact, concealed, queried
 contact, inferred
 contact, inferred, queried
 dike
 fault inferred
 fault, approx. located
 fault, certain
 fault, certainm
 fault, concealed
 fault, concealed, queried
 detachment fault, certain
 detachment fault, inferred
 detachment fault, inferred, queried
 fault, inferred
 fault, inferred, queried
 map boundary, certain
 normal fault, certain
 normal fault, certainm
 normal fault, concealed
 normal fault, concealedm
 normal fault, inferred
 normal fault, inferred, queried
 normal fault, inferred, queriedm
 normal fault, inferredm
 s.s. fault, l.l., certain
 s.s. fault, r.l., certain
 s.s. fault, r.l., concealed
 scratch boundary, certain
 shear zone, certain
 thrust fault, certain
 thrust fault, concealed
 thrust fault, concealed, queried
 thrust fault, inferred
 thrust fault, inferred, queried
 thrust fault, inferred, queried_
 water boundary, certain

rb_stx

f.a., anticline, certain

f.a., anticline, certainm
 f.a., anticline, concealed
 f.a., anticline, concealed, queried
 f.a., anticline, concealedm
 f.a., anticline, inferred
 f.a., anticline, inferred, queried
 f.a., anticline, inferredm
 f.a., anticline, plunge
 f.a., o.t. anticline, certain
 f.a., o.t. anticline, certainm
 f.a., o.t. syncline, certain
 f.a., o.t. syncline, certainm
 f.a., o.t. syncline, inferred
 f.a., syncline, certain
 f.a., syncline, certainm
 f.a., syncline, concealed
 f.a., syncline, concealedm
 f.a., syncline, inferred
 f.a., syncline, inferred, queried
 f.a., syncline, inferredm
 f.a., syncline, plunge

rb_xsec

cross-section line

rb_well

This coverage does not have an arc attribute table

Areas

Map units (polygons) are described in the polygon attribute table (Table 5). The identities of the map units from compilation sources are recorded in the PTYPE field by map label (Table 6). Note that ARC/INFO coverages cannot contain both point and polygon information, so only coverages with polygon information will have a polygon attribute table, and these coverages will not have a point attribute table. More complete descriptions of the various rock units can be found in the geologic pamphlet of this report or Sheet 2.

Table 5 - Content of the Polygon Attribute Tables

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	Description
AREA	4	12	F	3	area of polygon in square meters
PERIMETER	4	12	F	3	length of perimeter in meters
<coverage>#	4	5	B		unique internal control number
<coverage>-ID	4	5	B		unique identification number
PTYPE	35	35	C		unit label (Table 6)
SEL	1	1	I		user defined field used to save a selected set
SYMB	3	3	I		user defined field used to save symbol assignments (such as color)

Table 6 - Map Units

(See Sheet 2 for descriptions of units)

Qf
 Qcl
 Qls
 Qft
 Qoft

Td
Tbcu
Tbcl
Tbf
Taf
Tsf
Tvs
Tc
Tis
Tib
Tia
Tes
Teb
Tebm
Tee
Ttbs
Ttbm
Tth
Tths
Tts
Tttm
Tev
Tw
Twrc
Twc
Twr
Twrm
Twbc
Twst
Tm
Tmsl
Tmsm
Tmss
Tmm
Tmms
Tmcs
Tbsc
Tbr
Tbrm
Trbs
Trs
Trc
Tsrt
Tsr
Tsr
Tidb
KJda
KJdm
KJdd
KJd2
Kdc
KJr
KJrc
KJms

KJhf
 KJag
 KJi
 KJgd
 KJhd
 KJdi
 KJdt
 m
 Jrv
 Jri
 Jrvs
 Jris
 Jrs
 amp
 bs
 cht
 di
 dio
 gs
 gs-di
 kn
 ls
 mv
 sp
 sp+gs
 water

Points

Data gathered at a single locality (points) are described in the point attribute table (Table 7). The identities of the points from compilation sources are recorded in the PTTYPER field by map label (Table 8). Map units are described more fully in the geology pamphlet, and on Sheet 2. Note that ARC/INFO coverages cannot contain both point and polygon information, so only coverages with point information will have a point attribute table, and these coverages will not have a polygon attribute table.

Table 7 – Content of the Point Attribute Tables
Geologic Attitudes

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
AREA	4	12	F	3
PERIMETER	4	12	F	3
<cover>#	4	5	B	
<cover>-ID	4	5	B	
PTTYPER	35	35	C	
DIP	3	3	I	
STRIKE	3	3	I	
SEL	1	1	I	
SYMB	3	3	I	

Well data points

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC
AREA	4	3	F	

PERIMETER	4	3	F	
WELL_UTM#	4	5	B	
WELL_UTM-ID	4	5	B	
NUMB	3	3	I	
WELLNUMB	3	3	I	
LONG1	10	10	N	5
LAT1	10	10	N	5
WELLDEPTH	5	5	I	
WELLNAME	35	35	C	
QUAD1	15	15	C	

Table 8 –Point Types Recorded in the PTTYPER Field (listed by coverage name)
rb_stx

_l_lineation_i_
 air photo attitude
 anticline
 bedding
 bedding w/tops
 crumpled bedding
 crumpled foliation
 fault dip
 fault plane
 fault, ss, ll
 fault, ss, rl
 flat bedding
 flow_2dir
 flow_dir
 fold axis
 fold_axis
 foliation
 foliation and bedding
 igneous foliation
 inclined cleavage
 joint
 joint unmineralized
_l_slick_i_r_
 lava_tube
 lineation
 ot bedding
 ot bedding w/tops
 slick
 small syncline
 vert bedding
 vert bedding w/tops
 vert foliation
 vert foliation and bedding
 vert joint
 vertical bedding
 vertical fault plane
 zfold

rb_well

No PTTYPER Item in database, all points are well locations.

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