PRELIMINARY GEOLOGIC MAP OF THE WINCHESTER 7.5' QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA

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Prepared in cooperation with
CALIFORNIA GEOLOGICAL SURVEY

Open-File Report OF 03-188

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U.S. DEPARTMENT OF INTERIOR
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INTRODUCTION

General

Open-File Report 03-188 contains a digital geologic map database of the Winchester 7.5' quadrangle, Riverside County, California that includes:

1. ARC/INFO (Environmental Systems Research Institute, http://www.esri.com) version 7.2.1 coverages of the various elements of the geologic map.
2. A Postscript file (win_map.ps) to plot the geologic map on a black topographic base, and containing a Correlation of Map Units diagram (CMU), a Description of Map Units (DMU), and an index map.
3. An Adobe Illustrator 9.0 file (win_grey.ai) to plot the geologic map on a grey topographic base, and containing a Correlation of Map Units diagram (CMU), a Description of Map Units (DMU), and an index map.
4. Portable Document Format (.pdf) files of:
    a. This Readme; includes in Appendix I, data contained in win_met.txt
    b. The same graphics as plotted in 2 and 3 above. Test plots have not produced precise 1:24,000-scale map sheets. Adobe Acrobat page size setting influences map scale.

The Correlation of Map Units and Description of Map Units is in the editorial format of USGS Geologic Investigations Series (I-series) maps but has not been edited to comply with I-map standards. Within the

geologic map data package, map units are identified by standard geologic map criteria such as formation-name, age, and lithology. Where known, grain size is indicated on the map by a subscripted letter or letters following the unit symbols as follows: lg, large boulders; b, boulder; g, gravel; a, arenaceous; s, silt; c, clay; e.g. Qyf_a is a predominantly young alluvial fan deposit that is arenaceous. Multiple letters are used for more specific identification or for mixed units, e.g., Qfy_{sa} is a silty sand. In some cases, mixed units are indicated by a compound symbol; e.g., Qyf_{2sc}.

Even though this is an Open-File Report and includes the standard USGS Open-File disclaimer, the report closely adheres to the stratigraphic nomenclature of the U.S. Geological Survey. Descriptions of units can be obtained by viewing or plotting the .pdf file (3b above) or plotting the postscript file (2 above).

This Readme file describes the digital data, such as types and general contents of files making up the database, and includes information on how to extract and plot the map and accompanying graphic file. Metadata information can be accessed at http://geo-nsdi.er.usgs.gov/metadata/open-file/03-188 and is included in Appendix I of this Readme.

HOW TO OBTAIN PAPER PLOTS

For those having access to large-format plotters such as HP650C, HP755C, and HP2500C, plots may be made directly from the included plot file.

DATABASE CONTENTS

The files constituting the geologic map database of this Open-File Report are listed below along with the interchange files from which they were extracted.

Data Package

All files listed below are in a compressed tar file named win.tar.gz (2.6 Mb); see section below titled, SOFTWARE UTILITES.

ARC/INFO interchange files	Winchester coverages	Contains
win_geo.e00	win_geo	Contacts, faults, geologic unit labels
win_ano.e00	win_ano	Annotation subclasses: GEO (for plotting unit labels) WATER (for plotting water features) CANYONS (for plotting canyon names) CITIES (for plotting city names) Leaders
win_str.e00	win_str	Attitudes and their dip values. Dip values plotted as annotation.

The directory, info/, is produced in the process of importing interchange files to ARC coverages in ARC/INFO. The win (Winchester) info/ directory contains:

Feature Attribute Tables

Polygon attribute table	win_geo.pat
Arc attribute table	win_geo.aat
	win_ano.aat

Point attribute table	win_str.pat
Annotation attribute table	win_ano.tatgeo
	win_ano.tatwater
	win_ano.tatcanyons
	win_ano.tatcities

Raster file	Resultant image	Contains
win.tif	Winchester base map	Topographic base from 500 dpi scan of USGS Winchester 7.5' quadrangle, 1953

Plot Package

PostScript plot files of the geologic map and explanation; please see section below titled, SOFTWARE UTILITIES for additional information.

Compressed file	Resultant image	Contains
win_map.ps.gz	win_map.ps	PostScript plot file of geologic map on a black topographic base and CMU/DMU
win_grey.ai.gz	win_grey.ai	Adobe Illustrator 9.0 plot file of geologic map on a grey topographic base and CMU/DMU

The Postscript file is compressed using winzip.

The uncompressed Postscript file win_map.ps and the uncompressed Adobe Illustrator 9.0 win_grey.ai will each plot a 1:24,000 scale, full color geologic map of the Winchester quadrangle on the topographic base. The Postscript file win_ map.ps will plot the geologic map on a black topographic base. The Adobe Illustrator 9.0 file win_grey.ai will plot the geologic map on a grey topographic base. A detailed CMU and DMU are included on the sheet. The sheet is in the editorial format of the U.S. Geological Survey's Geologic Investigations (I) map series, and is approximately 55 X 36 inches in size. The map sheet has been successfully plotted on Hewlett-Packard large-format plotters, models HP650C, HP755C, and HP2500C.

Symbols Package

Files in the plot package have been prepared to produce optimum plots using the shade, line, and marker sets listed below; these symbol sets and supporting fonts are included in a compressed tar file named symbols.tar.gz (0.04 Mb); see section below titled SOFTWARE UTILITIES.

geoSCAMP2.lin	Lineset
geoSCAMP2.mrk	Markerset for points
alc1.shd	Colors
geology2.shd	Pattern fills
fnt026	Font required for geoSCAMP2.lin
fnt037	Font required for geoSCAMP2.mrk
fnt035	Font required for geology2.shd

Special geologic characters used in unit designations are from the Geoage font group and may be obtained at the following web site:

Server:	onyx.wr.usgs.gov

UserID:	anonymous
Password:	Your e-mail address
Directory:	pub/wpg/supplies/geoage_1.1 pub/wpg/supplies/geoage_1.2

Other files

README.pdf	This document
win_map.pdf	Pdf plot file of geologic map on a black topographic base and CMU/DMU
win_grey.pdf	Pdf plot file of geologic map on a grey topographic base and CMU/DMU

SOFTWARE UTILITIES

Files which have .gz file extension were compressed using gzip. Gzip utilities are available free of charge via the Internet at the gzip home page, http://www.gzip.org. Files with a .zip file extension were compressed using WinZip, available at http://www.winzip.com.

The data package and symbols package are additionally bundled into a single tar (tape archive) file. The individual files must be extracted using a tar utility, available free of charge via the Internet through links on the Common Internet File Formats page, http://www.matisse.net/files/format.html. One such utility is WinZip, available at http://www.winzip.com.

HOW TO OBTAIN THE DIGITAL FILES

The export files, and subsequently the data and plot files, constituting the geologic map database of this Open-File Map may be obtained in two ways, both over the Internet.

1. The files can be obtained via the Web from Western Region Geologic Information Server. Go to the web page at http://geopubs.wr.usgs.gov/open-file/03-188 and follow the directions to download the files.
2. The files can also be obtained by anonymous ftp over the Internet from wrgis.wr.usgs.gov. The files are located in the directory /pub/open-file/. Be sure to use binary transfer mode or ASCII mode for individual .e00 (ARC interchange file format) files.

HOW TO EXTRACT THE GEOLOGIC MAP DATABASE FROM THE TAR FILE

Digital database

After downloading the files, they must be uncompressed using a gzip utility such as gzip itself or WinZip. The data files must then be extracted using a tar utility or Winzip.

This process will create a directory, win/, that will contain the ARC/INFO interchange files and supporting files. The directory should contain the following files:

win/
- win _geo.e00
- win_str.e00
- win_ano.e00
- win.tif

The symbols.tar.gz file is imported using the same methods as for the win.tar.gz file. It will create a directory, symbols/ that will contain the following files:

geoSCAMP2.lin
geoSCAMP2.mrk
alc1.shd
geology2.shd
fnt026
fnt037
fnt035

The following are not included in the database tar file, and are downloaded separately.

win_map.ps.gz
win_grey.ai.gz
README.pdf
win_map.pdf
win_grey.pdf

Postscript plot file

Make a 12.2 MB uncompressed file, win_map.ps (plot of complete map), by typing gzip -d win_map.ps.gz (or use gzip utility of choice).

Adobe Illustrator plot file

Make a 10.4 MB uncompressed file, win_grey.ai (plot of complete map), by typing gzip -d win_grey.ai.gz (or use gzip utility of choice).

Portable Document Format (.pdf) files

PDF files are not stored as gzip files. They are accessed using Adobe Acrobat Reader software, available free from the Adobe website http://www.adobe.com. Follow instructions at the website to download and install the software. Acrobat Reader contains an on-line manual and tutorial.

HOW TO CONVERT THE ARC/INFO INTERCHANGE (EXPORT) FILES

The ARC interchange (.e00) files are converted to ARC coverages using the ARC command IMPORT.

ARC interchange files can also be read by some other Geographic Information Systems, including ArcView (ESRI) and MapInfo (http://www.mapinfo.com), (Environmental Systems Research Institute, Inc., 1998). Please consult your GIS documentation to see if you can use ARC interchange files and the procedure to import them.

DIGITAL GEOLOGIC MAP SPECIFICATIONS

Digital compilation

The geologic map information was hand digitized from a base-stable original (ink on a greenline) of the geologic map at 1:24,000 scale. Digital tics were placed by hand at latitude/longitude intersections. The lines, points, and polygons were edited using standard ARC/INFO commands, and in some places, interactively by hand using graphical user interface ALACARTE (Fitzgibbon, 1991, Fitzgibbon and Wentworth, 1991, Wentworth and Fitzgibbon, 1991). Digitization and editing artifacts significant enough to display at a scale of 1:24,000 were corrected.

Base map

The base map image (win.tif) was prepared by scanning a scale-stable clear film of the U.S. Geological Survey, 1:24,000 Winchester 7.5' quadrangle (1953) topographic map. Scanning was done using an Anatech Eagle 4080 monochrome 800 dpi scanner; at a resolution of 500 dpi. The raster scan was converted to a monochromatic image in ARC/INFO, and registered and rectified to the Winchester 7.5' quadrangle. No elements of the base layer are attributed. The base map is provided for reference only.

Spatial resolution

Use of this digital geologic map database 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 1:24,000 means that higher resolution information is not generally present in the dataset. Plotting at scales larger than 1:24,000 will not yield greater *real* detail, although it may reveal fine-scale irregularities above the intended resolution of the database. Similarly, although higher resolution data is incorporated at a few places, the resolution of the combined output will be limited by the lower resolution data.

Map accuracy standards

Until uniform National geologic map standards are developed and adopted, lines and points on SCAMP 1:24,000 scale geologic maps that are located to within 15 meters, relative to accurately located features on the base map, are considered to meet map accuracy standards. Dashed lines, indicated in the database as approximately located or inferred, are generally located within 30 meters, relative to accurately located features on the base map.

Faults and landslides

This database is sufficiently detailed to identify and characterize many actual and potential geologic hazards represented by faults and landslides, but it is not sufficiently detailed for site-specific determinations. Faults shown do not take the place of fault rupture hazard zones designated by the California State Geologist (see Hart, 1998).

Database specifics

General--The map database consists of ARC/INFO format coverages which are stored in polyconic projection (Table 1), and a series of data tables. Digital tics define a 2.5 minute grid of latitude and longitude in the geologic coverages corresponding to the 2.5 minute tic grid on the topographic base map.

Table 1 --- Map Projection

Projection	Polyconic
Datum	NAD27
Zunits	No
Units	Meters
Spheroid	Clark 1866
X shift	0.000000000
Y shift	0.000000000
Parameters	-117 3 45.000 longitude of central meridian
	33 37 30.00 latitude of projections origin
	0.00000 false easting (meters)
	0.00000 false northing (meters)

The content of the geologic database can be described in terms of feature classes that include lines, points, and areas that compose the map. See the metadata text file (Appendix I) for detailed descriptions.

Lines – Lines are recorded as strings of arcs and are described in an arc attribute (.aat) table. Complete lists of the line types (LTYPE) used in the quadrangle are available in Appendix I. They represent contacts and faults, which define the boundaries of map units and map boundaries.

Polygons --- Geologic map units (polygons) are described in the polygon attribute (.pat) table (details in Appendix I). For traditional descriptions of the map units, see the Portable Document Format file win_map.pdf or the Postscript map plot, win_map.ps. A list of all map units in the database is given in Appendix I.

Points – Point information (attitudes of planar and linear features) is recorded as coordinate and related information. Complete lists of the point types (PTTYPE) used in the point coverage are available in Appendix I.

REFERENCES

Environmental Systems Research Institute, Inc, 1991, ARC/INFO command references 6.0: Proprietary software manual

Fitzgibbon, T.T., 1991, ALACARTE installation and system manual (version 1.0): U.S. Geological Survey, Open-File Report 91-587B

Fitzgibbon, T.T., and Wentworth, C.M., 1991, ALACARTE user interface – AML code and demonstration Maps (version 1.0): U.S. Geological Survey, Open-File Report 91-587A

Wentworth, C.M., and Fitzgibbon, T.T., 1991, ALACARTE user manual (version 1.0): U.S. Geological Survey Open-File Report 91-587C

APPENDIX I (original metadata text)

Identification_Information:

Citation:
Citation_Information:
Originator: Douglas M. Morton
Publication_Date: 2003
Title: Preliminary Geologic Map of the Winchester 7.5' Quadrangle, Riverside County, California
Edition: Version 1.0
Geospatial_Data_Presentation_Form: vector digital data
Series_Information:
Series_Name: U.S. Geological Survey Open-File Report
Issue_Identification: USGS OFR 03-188
Publication_Information:
Publication_Place: Menlo Park, California
Publisher: U.S. Geological Survey
Online_Linkage: Online_Linkage URL:http://geopubs.wr.usgs.gov/open-file/of03-188

Description:

Abstract:

The Winchester quadrangle is located in the northern part of the Peninsular Ranges Province within the central part of the Perris block, a relatively stable, rectangular in plan view, area located between the Elsinore and San Jacinto fault zones (see location map).

The quadrangle is underlain by Cretaceous and older basement rocks. Cretaceous plutonic rocks are part of the composite Peninsular Ranges batholith, which indicates wide variety of granitic rocks, ranging from granite to gabbro. Parts of three major plutonic complexes are within the quadrangle, the Lakeview Mountains pluton, the Domenigoni Valley pluton and the Paloma Valley ring complex.

In the northern part of the quadrangle is the southern part of the Lakeview Mountains pluton, a large composite body, most of which lies in the quadrangle to the north.

In the center part of the quadrangle is the eastern part of the Domenigoni Valley pluton, which consists of massive biotite-hornblende granodiorite and tonalite; some tonalite in the southern part of the pluton has a relatively pronounced foliation produced by oriented biotite and hornblende. Common to abundant equant-shaped, mafic inclusions occur through out the pluton except in the outermost part where inclusions are absent. The pluton was passively emplaced by piecemeal stoping of a variety of older rocks and the eastern contact is well exposed in the quadrangle.

Associated with the Domenigoni Valley pluton is a swarm of latite dikes; the majority of these dikes occur in the Winchester quadrangle, but they extend into the Romoland quadrangle to the west. The latite dikes intrude both the pluton and adjacent metamorphic rocks, most are foliated, and most have a well developed lineation defined by oriented biotite and/or hornblende crystals. Dikes intruding the pluton were emplaced in northwest striking joints; and dikes intruding the metamorphic rocks were emplaced along foliation planes.

In the eastern part of the quadrangle a Cretaceous age suture juxtaposes low-metamorphic grade Mesozoic rocks against high-metamorphic grade gneissic-textured Mesozoic rocks. Juxtaposition occurred when the high-metamorphic grade rocks were at upper amphibolite grade temperatures, and produced a steep thermal gradient in the low-metamorphic grade Mesozoic rocks. Age of suturing and attendant metamorphism, based on metamorphic mineral ages, is about 100 Ma (L. Snee, personal communication, 2002). The suture zone appears to vary in thickness, and includes within it a number of metadunite bodies and related rocks.

Prebatholithic rocks of Mesozoic age include a wide variety of sedimentary rocks of greenschist or lower metamorphic grade, in the western and central part of the quadrangle, and upper amphibolite grade near the eastern edge of the quadrangle. The metamorphic grade increases from greenschist to upper amphibolite grade over a distance of less than two miles; andalusite and sillimanite isograds are closely spaced near the suture. Metamorphism was Buchan type of relatively high temperature and relatively low pressure (Schwarcz, 1969).

Common lithologies of the low metamorphic grade suite include phyllite, lithic greywacke, impure quartzite, meta-arkose, and interlayered quartzite and phyllite. Most of the layering and foliation in the metamorphic rocks is the result of intense structural transposition. Relic bedding appears to be restricted to very local occurrences in hinges of slip folds. The upper amphibolite grade, gneissic-textured Mesozoic rocks consist of sillimanite-biotite gneiss, black amphibolite, and impure quartzite. Anatectic gneiss containing igneous textured segregations of quartz and feldspar is commonly inter leaved with biotite gneiss.

Purpose: The data set for the Winchester 7.5' quadrangle was prepared under the U.S. Geological Survey Southern California Areal Mapping Project (SCAMP) as part of an ongoing effort to develop a regional geologic framework of southern California, and to utilize a Geographic Information System (GIS) format to create regional digital geologic databases. These regional databases are being developed as contributions to the National Geologic Map Database of the National Cooperative Geologic Mapping Program of the USGS.

Supplemental_Information: none

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2003

Currentness_Reference: New data

Status:

Progress: Complete
Maintenance_and_Update_Frequency: As Needed

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -117.12509053
East_Bounding_Coordinate: -116.99990947
North_Bounding_Coordinate: 33.74999995
South_Bounding_Coordinate: 33.62498421

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: geologic map
Theme_Keyword: geology
Theme_Keyword: bedrock geology
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: California
Place_Keyword: Riverside County
Place_Keyword: Winchester 7.5' quadrangle

Stratum:
Stratum_Keyword_Thesaurus: None
Stratum_Keyword: Cretaceous gabbro, tonalite and granodiorite
Stratum_Keyword: Mesozoic and Paleozoic(?) metamorphics
Temporal:
Temporal_Keyword_Thesaurus: None
Temporal_Keyword: Mesozoic
Temporal_Keyword: Cretaceous
Access_Constraints: none
Use_Constraints:
The Winchester 7.5' geologic-map database should be used to evaluate and understand the geologic character of the Winchester 7.5' quadrangle as a whole. The data should not be used for purposes of site-specific land-use planning or site-specific geologic evaluations. The database is sufficiently detailed to identify and characterize many actual and potential geologic hazards represented by faults and landslides and posed by ground subsidence and earthquake-generated ground shaking. However, it is not sufficiently detailed for site-specific determinations or evaluations of these features. Faults shown do not take the place of fault-rupture hazard zones designated by the California State Geologist (see Hart, 1988).

Use of this digital geologic-map database 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 compiled and edited at a scale of 1:24,000 means that higher resolution information may not have been uniformly retained in the dataset. Plotting at scales larger than 1:24,000 will not yield greater real detail, although it may reveal fine-scale irregularities below the intended resolution of the database. Similarly, although higher resolution data is incorporated in most of the map, the resolution of the combined output will be limited by the lower resolution data.

Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Douglas M. Morton
Contact_Organization: U.S. Geological Survey, Western Region, Earth Surface Processes Team
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Country: United States of America
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Contact_Electronic_Mail_Address: scamp@usgs.gov

Data_Set_Credit: Geologic mapping and digital preparation of this report were sponsored jointly by (1) the National Cooperative Geologic Mapping Program of the U.S. Geological Survey, (2) the California Geological Survey, and (3) the Southern California Areal Mapping Project (SCAMP).
Native_Data_Set_Environment:
SunOS, 5.8, sun4m UNIX
ARC/INFO version 7.2.1

Cross_Reference:
Citation_Information:
Originator: Morton, D.M.
Publication_Date: 1999
Title: Preliminary digital geologic map of the Santa Ana 30'x60' quadrangle, southern California, version 1.0.
Geospatial_Data_Presentation_Form: vector digital data
Series_Information:
Series_Name: U.S. Geological Survey Open-File Report
Issue_Identification: USGS OF 99-172
Publication_Information:
Publication_Place: California
Publisher: U.S. Geological Survey
Online_Linkage: http://geopubs.wr.usgs.gov/open-file/of99-172

Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report:
Geologic-map units in the Winchester quadrangle database were described using standard field methods. Consistent with these methods, the database author has assigned standard geologic attributes to geologic lines, points, and polygons identified in the database.
Nation-wide geologic-map accuracy standards have not been developed and adopted by the U.S. Geological Survey and other earth-science entities. Until such standards are adopted, the SCAMP project has developed internal map-accuracy standards for 1:24,000-scale geologic maps produced by the project.
Geologic lines and points on 1:24,000 scale geologic maps are judged to meet SCAMP's internal map-accuracy standards if they are located to within +/-15 meters, relative to topographic or cultural features on the base map.
On any derivative geologic-map plot, line data that are judged to meet the SCAMP internal map-accuracy standard are denoted by solid lines; line data that may not meet the SCAMP internal map-accuracy standard are denoted by dashed or dotted lines. There is no cartographic device for denoting the map-accuracy for geologic-point data (e.g., symbols representing bedding, foliation, lineations, etc.).

Logical_Consistency_Report: Polygon and chain-node topology present. The areal extent of the map is represented digitally by an appropriately projected (polyconic projection), mathematically generated box. Consequently, polygons intersecting the lines that comprise the map boundary are closed by that boundary. Polygons internal to the map boundary are completely enclosed by line segments which are themselves a set of sequentially numbered coordinate pairs. Point data are represented by coordinate pairs.

Completeness_Report: The geologic map database of the Winchester 7.5' quadrangle contains new data that have been subjected to rigorous review and are a substantially complete representation of the current state of knowledge concerning the geology of the quadrangle.
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report: The maximum transformation RMS error acceptable for a 7.5' quadrangle transformation and data input is 0.003 (1.8 meters). Horizontal positional accuracy was checked by visual comparison of hard-copy plots with base-stable source data.
Lineage:
Process_Step:
Process_Description: Field mapping and aerial photograph interpretation; iterative process (D.M. Morton).
Process_Date: 1991; 1995-99; 2001

Process_Step:
Process_Description: Digitization of geologic linework and point data from a scale-stable cartographic base of quadrangle. ARC/INFO database established; cleanup of artifacts; polygon, arc, and point attribute tables established. Digitizing and editing artifacts significant enough to display at a scale of 1:24,000 were corrected (K.R. Bovard and G.W. Patt).
Process_Date: 1999-2001

Process_Step:
Process_Description: Description of map units and correlation of map units (K.R. Bovard).
Process_Date: 2002
Process_Step:
Process_Description: First draft of metadata created by K.R. Bovard using FGDCMETA.AML ver. 1.2 05/14/98 on ARC/INFO data set /scamp31/kbovard/winchester/win_geo
Process_Date: 20020903
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: Point
Point_and_Vector_Object_Count: 265
SDTS_Point_and_Vector_Object_Type: String
Point_and_Vector_Object_Count: 1107
SDTS_Point_and_Vector_Object_Type: GT-polygon composed of chains
Point_and_Vector_Object_Count: 266

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Map_Projection:
Map_Projection_Name: Polyconic
Polyconic:
Latitude_of_Projection_Origin: 33.625
Longitude_of_Central_Meridian: -117.0625
False_Easting: 0.00000
False_Northing: 0.00000
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Coordinate_Representation:
Abscissa_Resolution: 1.000399708747
Ordinate_Resolution: 1.000399708747
Planar_Distance_Units: Meters
Geodetic_Model:

Horizontal_Datum_Name: North American Datum of 1927
Ellipsoid_Name: Clarke 1866
Semi-major_Axis: 6378206.4
Denominator_of_Flattening_Ratio: 294.98

Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Version 1.0 of the Winchester 7.5' quadrangle comprises three ARC/INFO coverages, of which two contain geologic data, and one contains cartographic features: win_geo (geology), win_str (structural data), and win_ano (annotation and leaders).

Geologic data represented by line entities and the polygons they delineate are contained in the coverage WIN_GEO. For display purposes, the annotation coverage contains four annotation subclasses: anno.geo contains unit labels, anno.water contains water feature labels, anno.canyons contains canyon names, and anno.cities contains city names.

Geological point data includes site-specific information describing the types and the orientation of foliation, joints and lineations. Annotation is respective dip and plunge values associated with individual point data.

WIN_GEO.PAT:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
1	AREA	4	12	F	3	
5	PERIMETER	4	12	F	3	
9	WIN_GEO#	4	5	B	-	
13	WIN_GEO-ID	4	5	C	-	
17	LABL	35	35	C	-	
52	SHD	3	3	I	-	
55	PLABL	35	35	C	-	
90	SHDFIL	3	3	I	-	

WIN_GEO.AAT:

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
1	FNODE#	4	5	B	-	
5	TNODE#	4	5	B	-	
9	LPOLY#	4	5	B	-	
13	RPOLY#	4	5	B	-	
17	LENGTH	4	12	F	3	
21	WIN_GEO#	4	5	B	-	
25	WIN_GEO-ID	4	5	B	-	
29	LTYPE	35	35	C	-	
64	L-SYMB	3	3	I	-	

Entity_and_Attribute_Detail_Citation: none

Detailed_Description:
Entity_Type:
Entity_Type_Label: win_geo.pat
Entity_Type_Definition: Geologic units (LABL) and their corresponding names (NAME) identified in the Winchester 7.5' quadrangle
Attribute:
Attribute_Label: LABL
Attribute_Definition: geologic map unit label, in plain text

Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: Qaf
Enumerated_Domain_Value_Definition: artificial fill
Enumerated_Domain:
Enumerated_Domain_Value: Qyf
Enumerated_Domain_Value_Definition: young alluvial fan deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qya
Enumerated_Domain_Value_Definition: young alluvial channel deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qyv
Enumerated_Domain_Value_Definition: young alluvial valley deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qyls
Enumerated_Domain_Value_Definition: young landslide
Enumerated_Domain:
Enumerated_Domain_Value: Qof
Enumerated_Domain_Value_Definition: old alluvial fan deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qoa
Enumerated_Domain_Value_Definition: old alluvial channel deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qov
Enumerated_Domain_Value_Definition: Old alluvial valley deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qvof
Enumerated_Domain_Value_Definition: very old alluvial fan deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qvoa
Enumerated_Domain_Value_Definition: very old alluvial channel deposits
Enumerated_Domain:
Enumerated_Domain_Value: Khqd
Enumerated_Domain_Value_Definition: hypersthene quartz diorite
Enumerated_Domain:
Enumerated_Domain_Value: Ktcg
Enumerated_Domain_Value_Definition: Monzogranite of Tres Cerritos
Enumerated_Domain:
Enumerated_Domain_Value: Klmt
Enumerated_Domain_Value_Definition: tonalite
Enumerated_Domain:
Enumerated_Domain_Value: Kgab
Enumerated_Domain_Value_Definition: heterogeneous mixture of olivine, pyroxene, and hornblende
Enumerated_Domain:
Enumerated_Domain_Value: Kgao
Enumerated_Domain_Value_Definition: olivine gabbro
Enumerated_Domain:
Enumerated_Domain_Value: Kgah
Enumerated_Domain_Value_Definition: hornblende rich gabbro
Enumerated_Domain:
Enumerated_Domain_Value: Kgat
Enumerated_Domain_Value_Definition: troctolite
Enumerated_Domain:
Enumerated_Domain_Value: Kgaa
Enumerated_Domain_Value_Definition: anorthositic gabbro

Enumerated_Domain:
Enumerated_Domain_Value: Kgam
Enumerated_Domain_Value_Definition: metagabbro
Enumerated_Domain:
Enumerated_Domain_Value: Kdvg
Enumerated_Domain_Value_Definition: granodiorite
Enumerated_Domain:
Enumerated_Domain_Value: Kpvt
Enumerated_Domain_Value_Definition: tonalite
Enumerated_Domain:
Enumerated_Domain_Value: Kgd
Enumerated_Domain_Value_Definition: granodiorite undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Kgb
Enumerated_Domain_Value_Definition: gabbro
Enumerated_Domain:
Enumerated_Domain_Value: Khg
Enumerated_Domain_Value_Definition: heterogeneous granitic rocks
Enumerated_Domain:
Enumerated_Domain_Value: Mzu
Enumerated_Domain_Value_Definition: metasedimentary rocks undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Mzg
Enumerated_Domain_Value_Definition: graywacke
Enumerated_Domain:
Enumerated_Domain_Value: Mzq
Enumerated_Domain_Value_Definition: quartz-rich rocks
Enumerated_Domain:
Enumerated_Domain_Value: Mzqg
Enumerated_Domain_Value_Definition: intermixed quartzite and graywacke
Enumerated_Domain:
Enumerated_Domain_Value: Mzgp
Enumerated_Domain_Value_Definition: Intermixed graywacke and phyllite
Enumerated_Domain:
Enumerated_Domain_Value: Mzgs
Enumerated_Domain_Value_Definition: intermixed graywacke and schist
Enumerated_Domain:
Enumerated_Domain_Value: Mzp
Enumerated_Domain_Value_Definition: phylite
Enumerated_Domain:
Enumerated_Domain_Value: Mzs
Enumerated_Domain_Value_Definition: schist
Enumerated_Domain:
Enumerated_Domain_Value: Mzi
Enumerated_Domain_Value_Definition: interlayered phyllite
Enumerated_Domain:
Enumerated_Domain_Value: Mzds
Enumerated_Domain_Value_Definition: Metadunite and serpentinite
Enumerated_Domain:
Enumerated_Domain_Value: Mzsm
Enumerated_Domain_Value_Definition: magnesite-bearing serpentine
Enumerated_Domain:
Enumerated_Domain_Value: Mzdx
Enumerated_Domain_Value_Definition: amphibole and pyroxene-bearing rocks associated with metadunite-serpentinite
Enumerated_Domain:

Enumerated_Domain_Value: Mzdc
Enumerated_Domain_Value_Definition: marble associated with metadunite
Enumerated_Domain:
Enumerated_Domain_Value: KgMz
Enumerated_Domain_Value_Definition: intermixed mesozoic schist and cretaceous granitic rocks
Enumerated_Domain:
Enumerated_Domain_Value: Mzsgn
Enumerated_Domain_Value_Definition: low metamorphic grade and upper amphibolite grade rocks
Enumerated_Domain:
Enumerated_Domain_Value: Mzgn
Enumerated_Domain_Value_Definition: biotite gneiss and schist
Enumerated_Domain:
Enumerated_Domain_Value: Mza
Enumerated_Domain_Value_Definition: amphibolite
Attribute:
Attribute_Label: PLABL
Attribute_Definition: Geological map unit label used to generate plot labels with relevant stratigraphic symbols. The geologic units with LABL designating Mesozoic (Mz) have keystroke substitute characters, }, that call their corresponding symbols from the Geoage Font Group. Geologic map unit labels will plot on derivative map plots with appropriate stratigraphic symbols if PLABL is used as the source for unit labels.
Attribute:
Attribute_Label: SHD
Attribute_Definition: polygon color (as integer value) from shadeset alc1.shd
Attribute:
Attribute_Label: SHDFIL
Attribute_Definition: polygon fill pattern (as integer value) from shadeset geology2.shd
Attribute:
Attribute_Label: NAME
Attribute_Definition: Geologic name of map unit (see list under LABL attribute)
Detailed_Description:
Entity_Type:
Entity_Type_Label: win_geo.aat
Entity_Type_Definition: Geologic features such as contacts and faults that bound rock-unit polygons
Attribute:
Attribute_Label: LTYPE
Attribute_Definition: Description of types of lines on the geologic map (contact, fault, dike).
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: contact, certain
Enumerated_Domain_Value: contact, approx. located
Enumerated_Domain_Value: fault, approx. located
Enumerated_Domain_Value: fault, certain
Enumerated_Domain_Value: fault, concealed
Enumerated_Domain_Value: map boundary
Enumerated_Domain_Value: scratch boundary
Enumerated_Domain_Value: suture
Enumerated_Domain_Value: Kgbd, gabbroic dikes
Enumerated_Domain_Value: Kld, quartz latite dikes
Enumerated_Domain_Value: Kp, granitic pegmatite dikes
Enumerated_Domain_Value: Mzmn, black manganese-bearing siliceous rock
Detailed_Description:
Entity_Type:
Entity_Type_Label: win_str.pat
Entity_Type_Definition: Geological point data includes site-specific information describing the types and the orientation of foliation, joints, and lineations. One annotation subclass is included in the geologic

points coverage, WIN_STR which displays the respective dip and plunge values associated with individual point data.
Attribute:
Attribute_Label: PTTYPE
Attribute_Definition: describes type of point data (foliation, joints, lineations)
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: igneous foliation
Enumerated_Domain_Value: vertical igneous foliation
Enumerated_Domain_Value: metamorphic foliation
Enumerated_Domain_Value: vertical metamorphic foliation
Enumerated_Domain_Value: igneous joint
Enumerated_Domain_Value: vertical igneous joint
Enumerated_Domain_Value: metamorphic joint
Enumerated_Domain_Value: igneous lineation
Enumerated_Domain_Value: metamorphic lineation
Enumerated_Domain_Value: minor metamorphic fold axis
Attribute:
Attribute_Label: PT-SYMB
Attribute_Definition: Coded integer value that relates point to cartographic point symbol in markerset geoscamp2.mrk
Attribute:
Attribute_Label: STRIKE
Attribute_Definition: Azimuthal strike of planar feature
Attribute:
Attribute_Label: DIP
Attribute_Definition: Dip of planar feature
Detailed_Description:
Entity_Type:
Entity_Type_Label: win_ano.aat
Entity_Type_Definition: Annotation leaders
Attribute:
Attribute_Label: L-SYMB
Attribute_Definition: Coded integer value (1) that relates arcs to cartographic line symbol in lineset
Distribution_Information:
Distributor:
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Contact_Organization_Primary:
Contact_Organization: U.S. Geological Survey Information Services
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  Metadata_Date: 20020903
  Metadata_Review_Date: 20030225
  Metadata_Contact:
    Contact_Information:
      Contact_Organization_Primary:
        Contact_Organization: U.S. Geological Survey
        Contact_Person: Kelly R. Bovard
      Contact_Position: Geologist
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        Country: USA
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      Contact_Electronic_Mail_Address: kbovard@usgs.gov
  Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
  Metadata_Standard_Version: FGDC-STD-001-1998
  Metadata_Access_Constraints: none
  Metadata_Use_Constraints: none