



Preliminary Surficial Geologic Map Database of the Amboy 30x60 Minute Quadrangle, California

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Description of Database

For those who don't use digital geologic map databases

For those interested in the geology of the map area that do not use an ARC/INFO-compatible (www.esri.com) 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 (<http://www.adobe.com/>) 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, 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 **Tar files** section).

Those without computer capability can obtain plots of the map files through 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 **Documentation Package**, which consists of this file and the geologic explanation pamphlet in text, Postscript, and Adobe Portable Document Format (PDF), and FGDC metadata for this report, and a revision list. The second is **Digital Database Package**, which contains the geologic map database itself, and metadata. The third is the **Plotfile Package**, which contains an on-screen viewable or printable image of the geologic map created from the database in PostScript and PDF formats.

Note: filenames used in this report are based on combinations of the Open-File Report number, followed by an underscore, followed by the number of the package, followed by an alphabetic character denoting the part of that package, followed by a ".", and a three digit file extension. For example, for a text file of the first part of the documentation package (package number 1) in Open-File Report OF99-999 (a fictitious report number) would have a file name of of99-999_1a.txt

Documentation Package

The Documentation Package includes descriptions of this report, including instructions on how to get the report, data formats and content. It consists of 3 parts, a text description (this file), FGDC compliant metadata describing the report, and a revision list that lists any revisions made to this report. The documentation package contains the following:

of06-1165_1a.txt	a text file of the report text (this file)
of06-1165_1a.pdf	a PDF file of the report text (this file)
of06-1165_1b.txt	a text file of the geologic description pamphlet
of06-1165_1b.pdf	a PDF file of the geologic description pamphlet
of06-1165_1c.txt	a text file of FGDC compliant metadata for this report
of06-1165_1d.html	a HTML file of FGDC compliant metadata for this report
of06-1165_1e.html	a HTML 'FAQ' file of FGDC compliant metadata for this report

Digital Database Package

The database package includes geologic map database files for the map area. The digital maps, or coverages, along with their associated database directory have been converted to uncompressed ARC/INFO export files for distribution. 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). Additionally, ARC export files are files that contain both the spatial and associated database information, so that it is possible to read and interpret the files and write simple code to convert the files to a format more convenient to the user, should no such code be available off-the-shelf. The ARC export files and associated ARC/INFO coverages, 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
of06-1165_2a.e00	amb-geo	Faults, depositional contacts, and rock units in the quadrangle
of06-1165_2b.dbf	na	DBF table of field observations

The database package (of05-1165_3.zip) also includes the following files:

of06-1165_1b.txt	a text file of FGDC compliant metadata for this Report
import.aml	an ARC/INFO Arc Macro Language file for importing the above coverage

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. With the Workspace set to the directory containing the Arc Export files, 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.

Note: consult the metadata or the **Database Specifics** section of this Report for details of the format and content of the digital database

Plotfile Package

For those interested in the geology of the map area whom don't use an ARC/INFO compatible GIS system, we have included a separate data package of printable maps created from the database. Because this release is primarily a digital database, the plot files (and plots derived from) 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. The map image is 29 by 64 inches and requires a large plotter to produce paper copies at the intended scale.

of06-1165_3a.eps	A PostScript format file containing an image of the geologic map, at a scale of 1:100,000.
of06-1165_3a.pdf	A PDF format file containing an image of the geologic map, at a scale of 1:100,000.

Zip files

The digital database packages described above are stored in a zip file. A zip, or winzip, compression utility is required to extract the database from the zip file. This utility operates under UNIX, Windows, and Macintosh operating systems, and can be obtained free of charge over the Internet from Internet Literacy's Common Internet File Formats Web page (<http://www.matisse.net/files/formats.html>). The zip algorithm may also be uncompressed with decompression programs, available free of charge over the Internet via links from the USGS Public Domain Software page (<http://edc.usgs.gov/geodata/public.html>).

Obtaining the Digital Database and Plotfile Packages

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

- a. From the USGS Web Pages.
- b. Anonymous ftp over the Internet
- c. Sending a CDR with request

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

The U.S. Geological Survey web site is located at: <http://www.usgs.gov/>
Publications of the U.S. Geological Survey can be found at <http://pubs.usgs.gov/>
The direct URL to the web page for this report is:
<http://pubs.usgs.gov/of/2006/1165/>

The primary World Wide Web server for geologic publications of the U.S. Geological Survey in the Western Region is the "Geopubs" server, located at the following URL:

<http://geopubs.wr.usgs.gov>

The direct URL to the web page for this Report is:
<http://geopubs.wr.usgs.gov/open-file/of06-1165/>

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 Publications 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/of06-1165](ftp://pub/open-file/of06-1165)

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

Database files, PostScript plot files, and related files can be obtained by sending a recordable compact disk (CDR) or blank tape with request and return address to:

Amboy 30x60, California Database
c/o Database Coordinator
U.S. Geological Survey
345 Middlefield Road, M/S 973
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 compact disk or tape.

Obtaining plots from a commercial vendor

Many commercial vendors are capable of producing large format plots for a fee. Most commercial vendors will require the plotfiles to be on a CD-ROM or other portable disk format. Users may download the data from the Internet and create their own CD-ROM, or we can provide one (See **To obtain tar files of database or plot file packages on tape or CDROM**). Make sure your vendor is capable of reading compact disks and PostScript plot files, and be certain to provide a copy of this document to your vendor.

Digital Compilation

The map represents new digital mapping and is not compiled from traditional analog sources. Features were digitized 'heads up' on various remote sensing datasets at varying scales. The remote sensing data includes stereo air photography, as well as several scales and bands of remote sensing including Master and Landsat7 datasets.

The following quality control measures were taken: Geologic lines attributed as a 'contact' we checked so as to not separate geologic map units of the same type. No lines attributed as contacts are 'dangles' (i.e. all contacts close a polygon). All geologic polygons are attributed with map unit designators described in this report.

Base Maps

The base map presented on the geologic map images in this report is the 1:100,000 scale U.S. Geological Survey Digital Raster Graphic (DRG) for the map area. DRGs are available from the U.S. Geological Survey, as well as other data providers, and are not distributed with this report. The base map used in the original report may not be the same as that presented in this version.

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

Digital database format

The database in this report was compiled in ARC/INFO, a commercial Geographic Information System (Environmental Systems Research Institute, Redlands, California). The database structure is similar to databases completed with version 3.0 of the menu interface ALACARTE (Fitzgibbon, 1991; Fitzgibbon and Wentworth, 1991; Wentworth and Fitzgibbon, 1991). All GIS work was done in ARC/INFO version 8.2 using ArcMap. The files are in ARC/INFO coverage format, and thus contain vector data. Coverages are distributed in uncompressed ARC export format. ARC/INFO export files (files with the .e00 extension) can be converted into ARC/INFO coverages in ArcGIS (see the **Digital Database Package**) 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 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 7.5 minute grid of latitude and longitude in the coverages.

Table 2 - Map Projection

The maps are stored in UTM projection
PROJECTION UTM
UNITS METERS -on the ground
ZONE 11 -UTM zone
DATUM NAD83

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 3 - 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 (AAT) described in Table 3. They define the boundaries of the map units, 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 4 – Structure of the Arc Attribute Tables

<u>ITEM NAME</u>	<u>WIDTH</u>	<u>OUTPUT</u>	<u>TYPE</u>	<u>N.DEC</u>	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 ID to the left of the arc
RPOLY#	4	5	B		polygon ID 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		geologic line type (see Table 4)

Table 5 – Unique listing of Line Types Recorded in the LTYPE Field of Arc Attribute Table

contact, approximately located
contact, certain
contact, eolian gradational
contact, gradational
fault, approximately located
fault, certain
fault, concealed
fault, concealed, queried
fault, queried
map boundary

Areas

Map units (polygons) are described in the polygon attribute table (PAT) described in Table 5. The identities of the map units from the original map are recorded in the PTYPE field by map label, listed in 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. A complete Description of Map Units is available in the original report, or the digital version of the original report in Appendix 1.

Table 6 - Structure of the Polygon Attribute Tables

<u>ITEM NAME</u>	<u>WIDTH</u>	<u>OUTPUT</u>	<u>TYPE</u>	<u>N.DEC</u>	Description
AREA	4	12	F	3	area of polygon in map units (meters)
PERIMETER	4	12	F	3	length of perimeter in map units (meters)
<coverage>#	4	5	B		unique internal control number
<coverage>-ID	4	5	B		unique identification number
PTYPE	35	35	C		map unit label

Table 7 – Unique listing of Map Units Recorded in the PTYPE field of Polygon Attribute

Table

QToa
 QToa/fpg
 QToa/mp
 QToa?
 Qaa
 Qaa+Qya
 Qaag
 Qaag+Qyag
 Qae/Qmv
 Qae/Qyea
 Qaed+Qyed
 Qaw
 Qaw+Qyw
 Qaw+Qyw+Qye
 Qawg+Qywg
 Qha/QTmv
 Qha/Qmv
 Qha/ca
 Qha/ca+sl
 Qha/fp
 Qha/fp?
 Qha/fpg
 Qha/fv
 Qha/fv+mv
 Qha/fv?
 Qha/mp
 Qha/mp?
 Qha/mr
 Qha/mr+fp
 Qha/mr?
 Qha/mv
 Qha/mv?
 Qha/pc
 Qha/pc?
 Qha/sl
 Qha/sl/fp
 Qha/sl?
 Qhs/ca
 Qhs/fp
 Qhs/fp?
 Qhs/fpg
 Qhs/fv
 Qhs/mp
 Qhs/mr+fp
 Qia
 Qia+Qaa
 Qia+Qoa
 Qia+Qya
 Qia+Qyao
 Qia/Qoa
 Qia/fp
 Qia/fv
 Qia/mp
 Qia/pc
 Qia?
 Qiad
 Qiae
 Qiag

Qiag+Qyae
 Qiag+Qyag
 Qiag/fpg
 Qiag?
 Qiao
 Qiao+Qia
 Qiao+Qoa
 Qiaog
 Qie
 Qie+Qya
 Qimc
 Qimc+Qymc
 Qiw
 Qmc
 Qmc/mv
 Qoa
 Qoa+Qia
 Qoa+Qya
 Qoa/fp
 Qoa/fv
 Qoa/mr
 Qoa/pc
 Qoa?
 Qoa?+Qya
 Qoad
 Qoag
 Qoag/fv
 Qpd-fp
 Qpd-fpg
 Qpd-mr
 Qpi-fp
 Qpi-fp?
 Qpi-fpg
 Qpi-fpg+Qyag
 Qpi-mp?
 Qpi-mr
 Qpi-pc
 Qpv-fp
 Qpv-fpg
 Qpv-fpg+Qiag
 Qpv-mr
 Qya
 Qya+Qaa
 Qya+Qia
 Qya+Qoa
 Qya+Qyao
 Qya+Qye
 Qya+Qyg
 Qya/Qia
 Qya/Qia+Qia
 Qya/Qoa
 Qya/Qoa?
 Qyad
 Qyae
 Qyae+Qaa
 Qyae+Qia
 Qyae+Qiae
 Qyae+Qya

Qyae/Qia
 Qyaf
 Qyag
 Qyag+Qaag
 Qyag+Qia
 Qyag+Qiag
 Qyag+Qyao
 Qyag+Qye
 Qyag/Qia
 Qyag/Qiag
 Qyag/Qoa
 Qyag/Qoag
 Qyao
 Qyao+Qia
 Qyao+Qya
 Qyao/Qia
 Qyay
 Qyay+Qaa
 Qyay+Qyao
 Qye
 Qye+Qae
 Qye+Qha/Qmv
 Qye+Qia
 Qye+Qyao
 Qye/QToa
 Qye/Qiag
 Qye/Qiag+Qya
 Qye/Qmv
 Qye/Qyag
 Qye/Qyao
 Qye/Qyvo
 Qye/fp
 Qye/fv
 Qye/mp
 Qye/mv
 Qyea
 Qyea+Qae
 Qyea/Qia
 Qyea/Qia?
 Qyed
 Qyed+Qaed
 Qyer/fp
 Qyer/mp
 Qyer/mv
 Qyes
 Qyes/Qiea
 Qyes/Qyvo
 Qyg
 Qymc
 Qyp
 Qypf
 Qyv
 Qyv+Qav
 Qyv+Qia
 Qyw
 Qyw+Qaw
 Qyw+Qiw
 Qyw+Qye

Points

Points representing GPS determined locations of field observations are provided for clarity of the quality and nature of field validation. The points are distributed as a DBF-formatted table that can be used in spreadsheet and GIS software packages. In addition to location, observer, and date information, the kind of observation is presented. In most cases the Author's field notes for the map unit being observed is provided. Often the nomenclature used is different from what is mapped at 1:100,000 scale. In general, the nomenclature follows that of this report, as well as that presented in previous mapping in the region at different scales (McDonald, 1994; Yount and others, 1994; Menges and others, 2001; Bedford, 2003). In addition to map unit observations, other qualitative and quantitative information was collected (See "Data Stations" above). In this report we provide a boolean (Y or N) for the presence or absence of this further information, respectively.

Table 8 – Structure of the Point Field observations Table

<u>ITEM NAME</u>	<u>TYPE</u>	<u>N.DEC</u>	<u>Description</u>
UTM_E	N	0	UTM (NAD83 Zone 11N) easting (Y) coordinate
UTM_N	N	0	UTM (NAD83 Zone 11N) northing (X) coordinate
Date	Date		Date of observation
StationID	C		The observer's station identification
Last_Name	C		The last name of the observer
map_unit	C		The observers designation of the deposit map unit
BD_Moist	B		presence or absence of a bulk density/moisture measurement
Chronology	B		Presence or absence of a chronology sample
Lithology	B		Presence or absence of lithologic composition(s) of deposit
PSA	B		Presence or absence of a particle size (texture) sample
Photos	B		Presence or absence of digital photographs
Surface_desc	B		Presence or absence of a surface (clast, lichen, etc) description
Vegetation	B		Presence or absence of vegetation measurements

References Cited

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