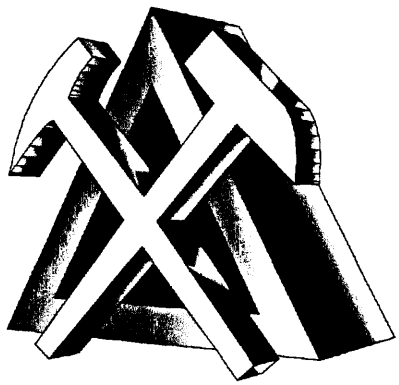
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Cartographic Technical Standards on the Apple Macintosh

By

Joe F. Vigil[1]

Open-File Report 93-188-A



[1]MS 961, 345 Middlefield Road, Menlo Park, CA 94025-3591

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Cartographic Technical Standards on the Apple Macintosh
Branch of Western Technical Reports
Office of Scientific Publications
U.S. Geological Survey

Abstract

The "Cartographic Technical Standards on the Apple Macintosh" (CTS) is a set of stand-alone information programs developed at the Branch of Western Technical Reports. It was designed to provide on-line current cartographic technical information to Macintosh users who use both PostScript™ and QuickDraw™ graphics applications to design page-size and map-size illustrations. The programs were generated to help improve the quality and reduce the cost and production time of the illustrations. The information can be printed by selecting a print menu item.

The user first accesses the cartographic information by double clicking on an appropriate icon that represents the general topic and then selecting the specific information that is to be displayed on the screen from a menu. The cartographic information can also be accessed by placing the CTS Master Menu program in the Apple Menu (System 7 only). By placing an alias of the CTS Master Menu in the Apple Menu, the cartographic information is then made available from within other programs that are used to create illustrations.

The CTS information contains both textual and pictorial data. The textual data contains specific information on fonts, line weights, sizes, and more. The pictorial data (raster format) shows examples of type styles and sizes, type placement, and sample layouts. All measurements are listed in millimeters, inches, and points. System requirements: The programs will run on any Macintosh with at least 4 MB of RAM (8 MB preferred), a 20-MB hard disk, and an operating system version 6.0.5 or higher.

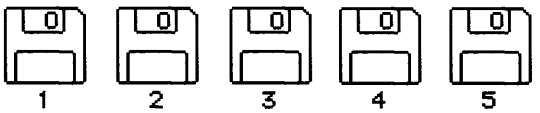
Installation Information

Welcome to the Cartographic Technical Standards (CTS) on the Macintosh Version 1.0

Before you install or use the CTS on the Mac you need to be familiar with the general operations of your Macintosh; reading dialog boxes, making aliases, clicking, selecting, dragging, creating folders, opening, copying files, using menus, scrolling, etc.....
The program that you will use to extract the files from the 5 archive files is called AutoExtractor.

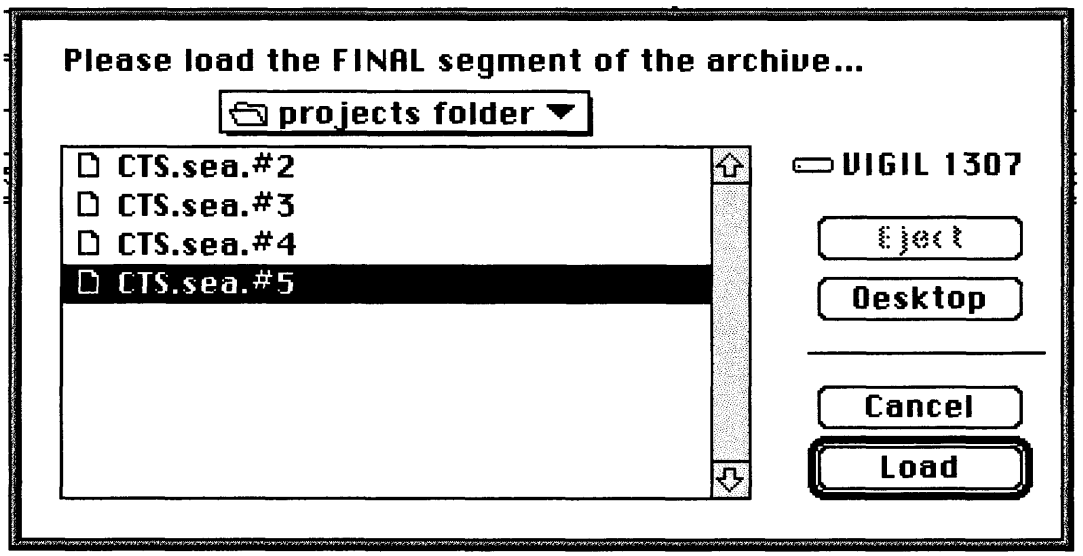
Installation:

Step #1 Copy the contents of the 5 floppy disks onto the hard disk. The order in which you copy the disks is not important. You do not need to create a folder, AutoExtractor will do that for you.



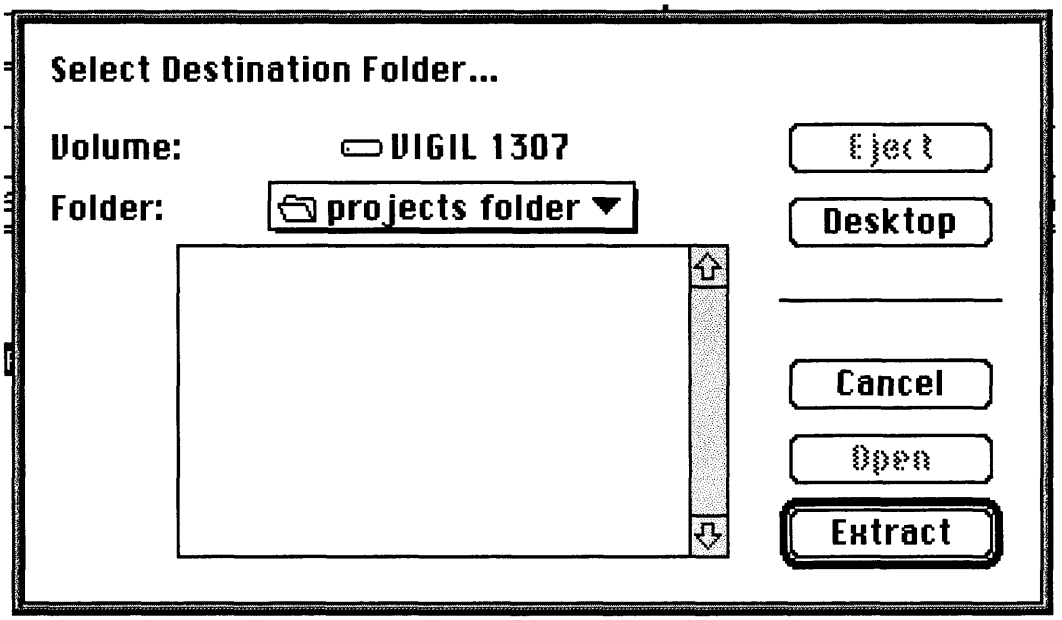
Step #2 Locate the CTS.sea.#1 file on your hard disk and double click on its icon. The file's icon should look like the following.-------> 
CTS.sea.#1

Double clicking on the icon will bring the following dialog window to the screen

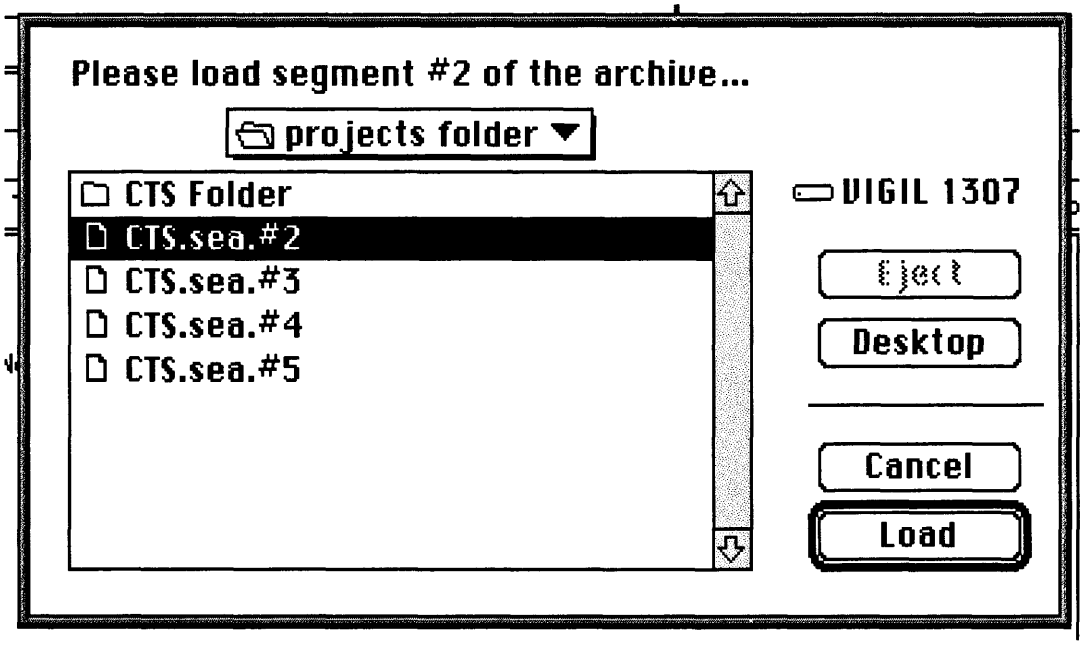


Step #3 Select the last segment CTS.sea.#5 and click on Load button.

Step #4 Select the destination. Where do you want the CTS Folder to reside? Click Extract button when ready.



Step #5 Load segment 2. Select CTS.sea.#2 and click on Load.



Step #6 Repeat step #5 for segments 3 and 4. After segment 4 is loaded the archive program will automatically quit and return you to the Finder.
A folder named CTS Folder will appear on your hard disk (or in the folder you selected) and will contain all the programs, files, and folders that are part of the Cartographic Technical Standards on the Macintosh.


CTS Folder

Step #7 Remove CTS.sea.#1, CTS.sea.#2, CTS.sea.#3,CTS.sea.#4, and CTS.sea.#5 from the hard disk, you don't need them any longer.

Step#8 **OPTIONAL Alias in Menu**
To add an alias to the desk accessories under the Apple in the menu bar, find CTS Master Menu, make an alias, and place alias in the Apple Menu folder in the System folder. You can then launch the CTS by selecting Master Menu from the Apple Menu.

The following Macintosh products were used to generate the Cartographic Technical Standards on the Apple Macintosh.

Hardware:
Apple Macintosh II ci (Apple Computer, Inc.)
32 MB of RAM
AppleColor High-Resolution RGB Monitor
Apple Extended Keyboard II
Apple Standard Mouse
1.4 MB Apple FDHD SuperDrive
Internal: Apple 80 MB Hard Disk
External: MicroNet 1307 MB Hard Disk (MicroNet Technology, Inc.)
NoRad Radiation Shield (NoRad Corp.)

Software:
Adobe Illustrator (Adobe Systems, Inc.)
Adobe PhotoShop (Adobe Systems, Inc.)
Canvas (Deneba Software)
Microsoft Word (Microsoft Corp.)
Serius Programmer (Serius Corp.)

Please note that 32 MB of RAM was used to generate the CTS programs. A Macintosh with 4 MB Ram and 20 MB Hard disk is the minimum recommended to access the programs. Remember, the more RAM installed on the Macintosh, the greater the number of applications that can be running concurrently.

Select "Get Info" from the File Menu to display suggested memory size and current size for each of the CTS programs. Add or reduce the amount as needed.

Note: Any use of trade, product, or firm names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government. Although these programs have been used by the U.S. Geological Survey, no warranty, expressed or implied, is made by the USGS as to the accuracy and functioning of the programs and related program materials, nor shall the fact of distribution constitute any such warranty, and no responsibility is assumed by the USGS in connection therewith.

REGISTRATION CARD

Thanks for trying out this Version 1.0 of the Cartographic Technical Standards on the Macintosh. I hope that you are satisfied with it.

For help and future upgrades please fill out this form and return it to the following address:

Joe F. Vigil
U.S. Geological Survey
Branch of Western Technical Reports
345 Middlefield Road Mail stop 961
Menlo Park, CA 94025-3591
(415) 329-5053

_____

Name

_____

Title

_____

Organization

_____

Address (include mail stop)

_____

City, State, Zip

_____

Telephone

_____

Type of computer (include memory size for RAM and hard disk)

_____

_____

Other computer info that you wish to include

_____

_____

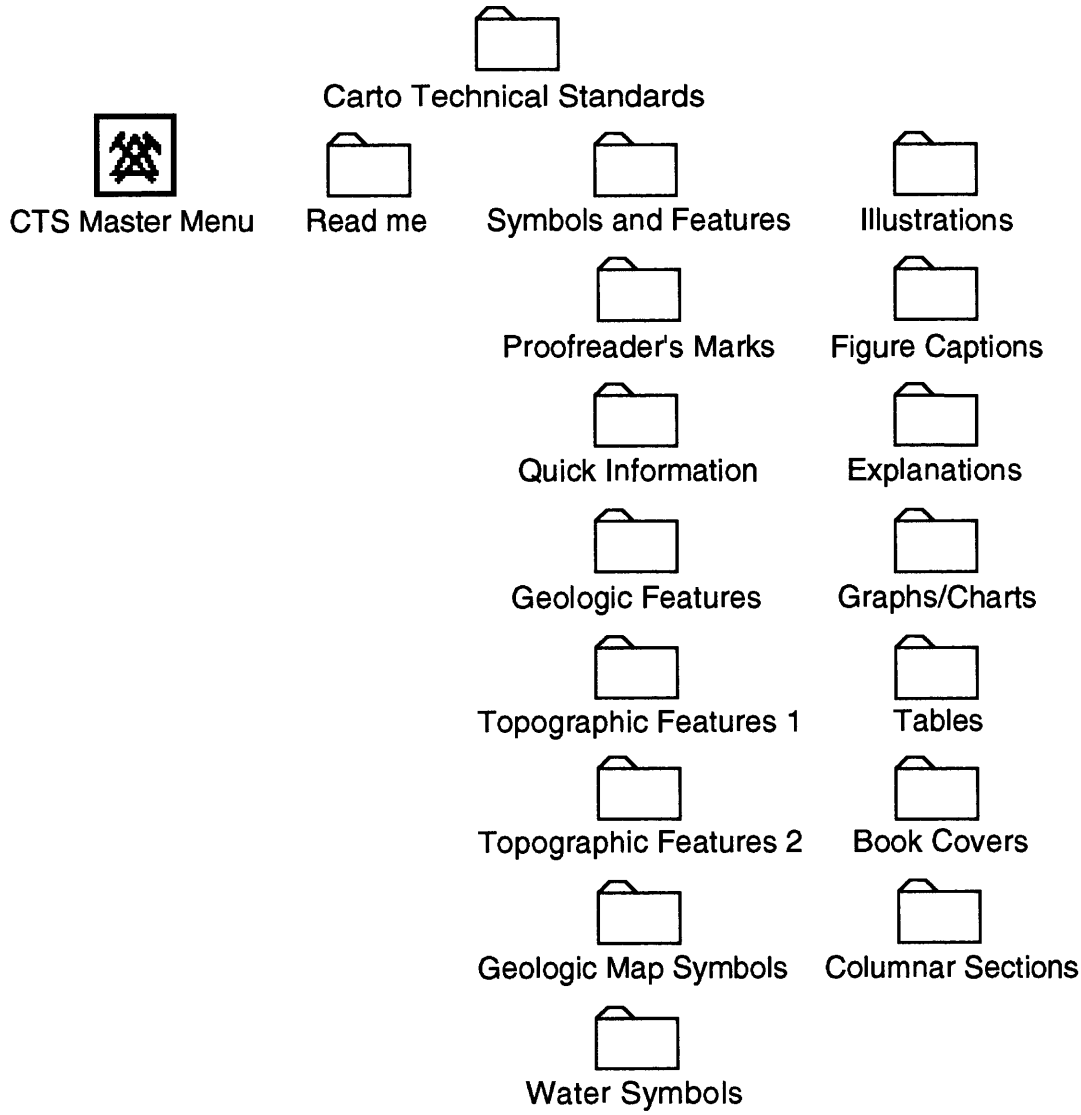
_____

_____

Comments:

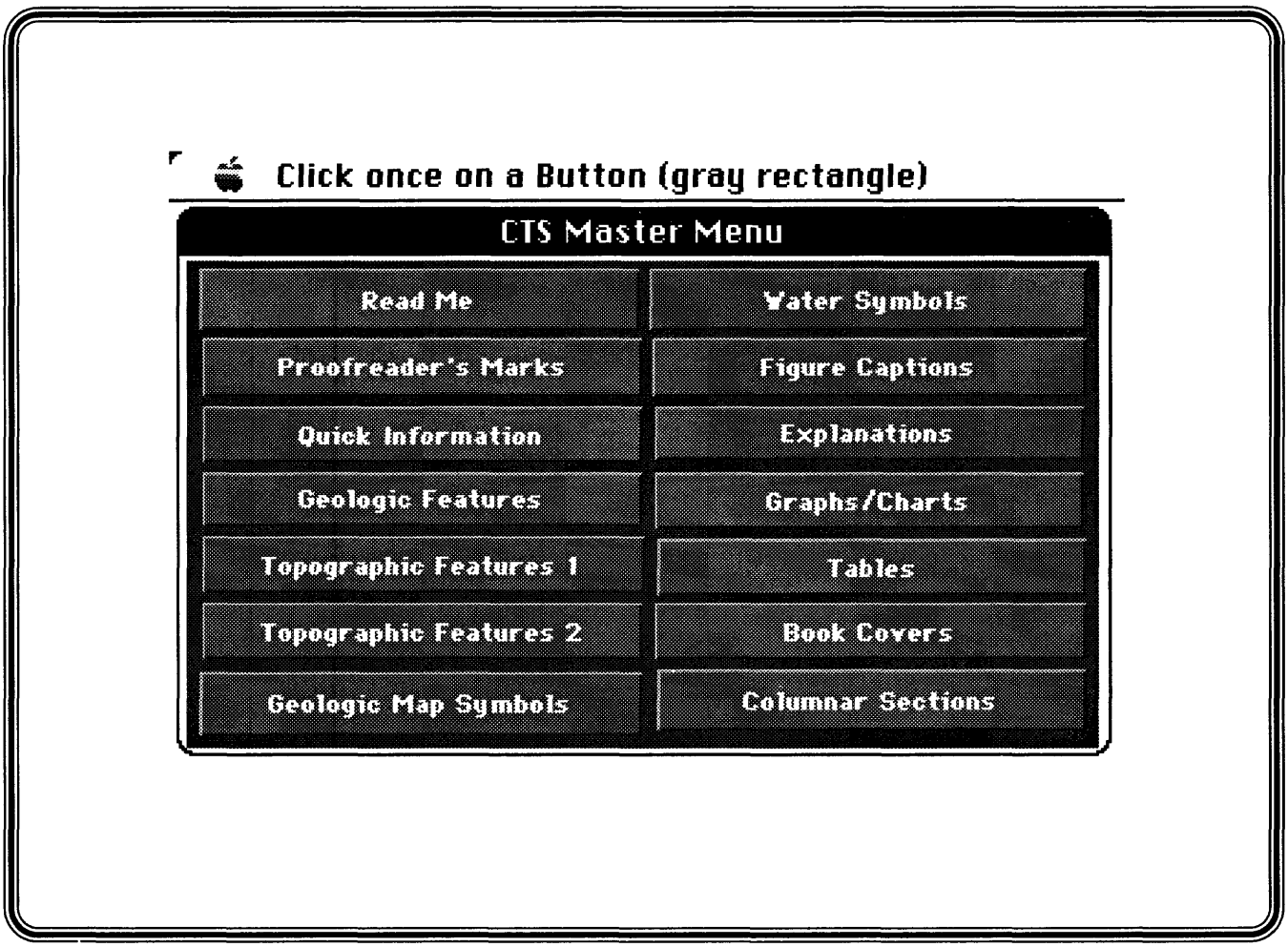
CARTOGRAPHIC TECHNICAL STANDARDS ON THE APPLE MACINTOSH

File Structure



This symbol represents a stand-alone program.

This symbol represents a folder containing the program and the invisible picture files.


Click once on a Button (gray rectangle)
CTS Master Menu
Read Me
Water Symbols
Proofreader's Marks
Figure Captions
Quick Information
Explanations
Geologic Features
Graphs/Charts
Topographic Features 1
Tables
Topographic Features 2
Book Covers
Geologic Map Symbols
Columnar Sections

SYMBOLS AND FEATURES

LIST OF ABBREVIATIONS

" = Inch
in. = Inch
C = Condensed
c&lc = Combination of caps and lower case
caps = Capital(s); upper case
dpi = Dots per inch
I = Italic
(L) = Length
lc = Lower case
Ld = Leading (space between lines of type, in points)
mm = Millimeter(s)
N/A = Not available (or not applicable)
No. (Nos.) = Number(s)
pt(s) = Point(s) (1pt=1/72")
(S) = Space
S = Souvenir
SM = Souvenir Medium
U = Univers
w/o = Without

These guidelines are based on standards that cartographers follow routinely, but they should be used with good judgment and common sense. Spacing, leading, type sizes, and line weights can be increased or decreased depending on the size of features shown, complexity of the illustrations, and overall size of figure.

Two groups of type styles are used on USGS illustrations: (1) the serif group (such as Souvenir, Times Roman, or New Century Schoolbook) and (2) the sans serif group (such as Univers, Helvetica, or Optima). Serifs are the little feet at the ends of strokes of letters; they create a consistent horizontal direction at the ends of strokes. Sans serif type does not have the little feet and does not show the same contrast of thick and thin strokes that is found in serif type.

Souvenir, Times Roman, Helvetica, and Univers fonts were used for these standards, and the font size and leading reflect that. However, you may use other type styles so long as serif styles are used as indicated and the font size and leading are adjusted accordingly.

PROOFREADER'S MARKS

⊙ Insert period	rom. Roman type
∧ Insert comma	caps. Caps—used in margin
: Insert colon	≡ Caps—used in text
; Insert semicolon	C+sc Caps and small caps—used in margin
? Insert question mark	≡ Caps and small caps—used in text
! Insert exclamation mark	l.c. Lowercase—used in margin
=/ Insert hyphen	/ Used in text to show deletion or substitution
∨ Insert apostrophe	⌇ Delete
"∨" Insert quotation marks	⌇ Delete and close up
⊥ N Insert 1-en dash	wf. Wrong font
⊥ M Insert 1-em dash	⌒ Close up
# Insert space	⊐ Move right
ld> Insert ( ) points of space	⊏ Move left
shill Insert shilling	⊓ Move up
V Superior	⊔ Move down
∧ Inferior	‖ Align vertically
(/) Parentheses	= Align horizontally
[/] Brackets	⊐⊏ Center horizontally
□ Indent 1 em	⊔ ⊓ Center vertically
□□ Indent 2 em	eq.# Equalize space—used in margin
¶ Paragraph	✓✓✓ Equalize space—used in text
no ¶ No paragraph	..... Let it stand—used in text
tr Transpose[1]—used in margin	stet. Let it stand—used in margin
∩ Transpose[2]—used in text	⊗ Letter(s) not clear
sp Spell out	runover Carry over to next line
ital Italic—used in margin	runback Carry back to preceding line
—— Italic—used in text	out, see copy Something omitted—see copy
b.f. Boldface—used in margin	?/? Question to author to delete[3]
~~ Boldface—used in text	∧ Caret—General indicator used to mark position of error
S.C. Small caps—used in margin	
≡ Small caps—used in text	

[1] In lieu of the traditional mark "tr" used to indicate letter or number transpositions, the striking out of the incorrect letters or numbers and the placement of the correct matter in the margin of the proof is the preferred method of indicating transposition corrections.

[2] Corrections involving more than two characters should be marked by striking out the entire word or number and placing the correct form in the margin. This mark should be reserved to show tranposition of words.

[3] The form of any query carried should be such that an answer may be given simply by crossing out the complete query if a negative decision is made or the right-hand (question mark) portion to indicate an affirmative answer.

QUICK INFORMATION

Quick information for drafting page-size illustrations and maps
Hypothetical map

QUICK INFORMATION FOR DRAFTING PAGE-SIZE ILLUSTRATIONS AND MAPS
(REFER TO HYPOTHETICAL MAP IN MENU)

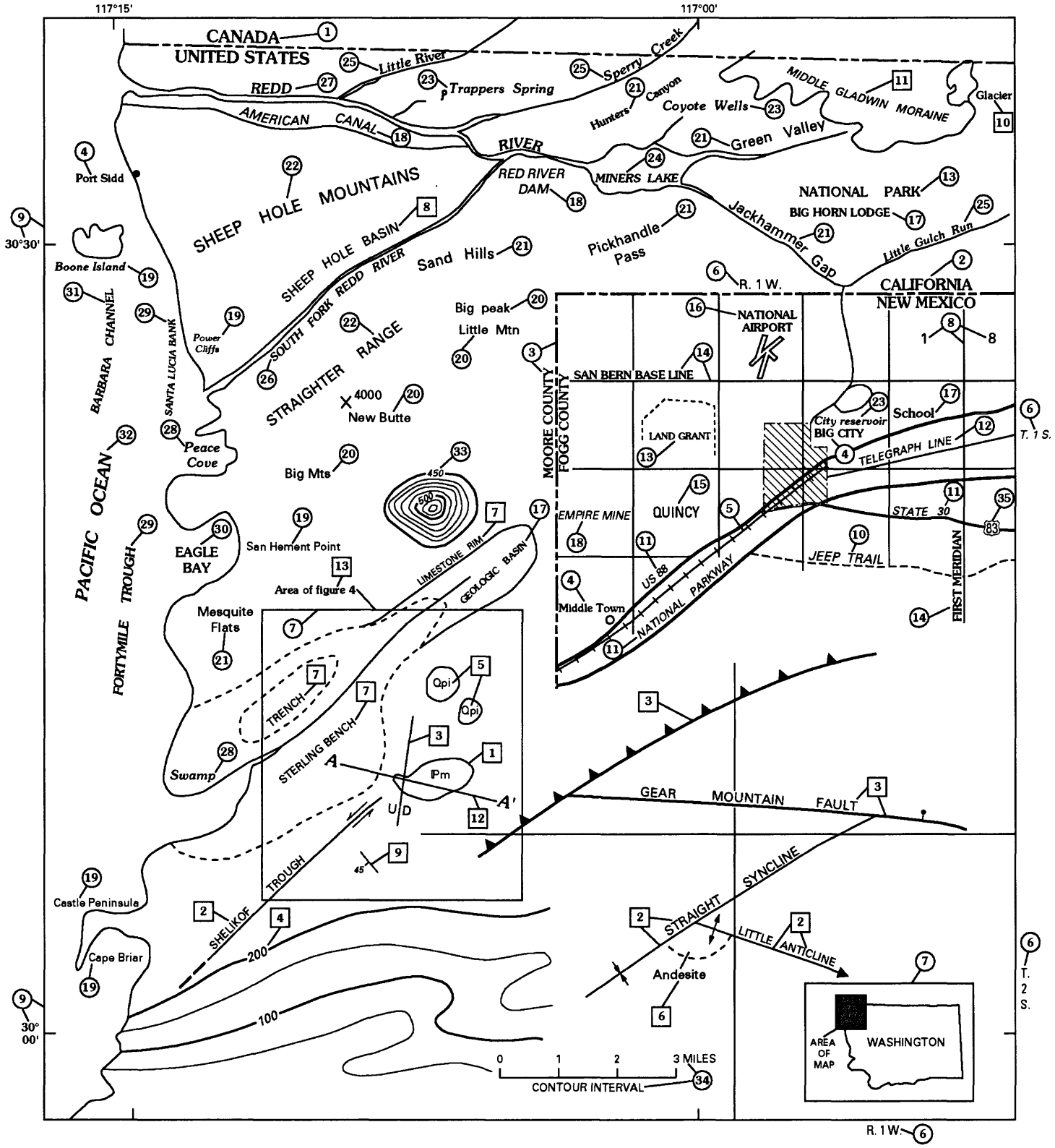
Where map standards differ from page-size standards, map standards are shown in parentheses

TOPOGRAPHIC FEATURES (Nos. circled on template)	**SIZE**	**FONT**	**LINE WT.**
1 National boundary	9pt (8)	SM-caps	.015"
2 State boundary	8pt	SM-caps	.012"
3 County boundary	7pt (8)	SM-caps	.010"
4 Town/city boundary	7pt (6-16)	SM-c&lc	.008"
5 Railroad	6pt (7)	UI-caps	.008"(.006)
6 Township & Range	7 pt	UC-caps	.010"(.012)
7 Index map (area of map/quad. location)	5-7pt (6)	U-caps	.008" (.006)
8 Section line / Nos.	8pt	U	.006"
9 Lat, long ticks&Nos./neatline	7pt (8)	U (ULC)	.008" (.006)
10 Trails	7pt (5-7)	UI-caps	.008"
11 Highway/parkway	6pt	UI-caps	.006-.008"
12 Telegraph line	7pt (6)	UI-caps	.008"
13 Land grant, county, state, & national park	7 pt (7-12)	SM-caps	.008" (.006)
14 Meridian/base line	7pt (6)	SM-caps	.008"
15 Quadrangle name	8pt	UC-caps	N/A
16 Airport (w/o proper name use U)	6pt (7)	SM-caps	.008"(.006)
17 Lodge, school (w/o proper name use U)	7pt (6)	SM-caps	N/A
18 Dam, canal, mine	7pt (6)	UI-caps	.008"
19 Small hypsographic feature: point, peninsula, cape, island, cliff	7 pt	U-c&lc	N/A
20 Spot hypsographic feature: peak, mtn., butte, mts. (Nos. use 6pt UI)	7pt (7-16)	U-c&lc	N/A
21 Large hypsographic feature: flat, pass, gap, hill, canyon, valley	8pt (8-16)	U-c&lc	N/A
22 Largest hypsographic feature: range, mountain, ridge	9pt (9-24)	U-caps	N/A
23 Small hydrographic feature: spring, well	7pt (8)	SMI-c&lc	N/A
24 Lake	7pt (8)	SMI-caps	.008"(.006)
25 Single-line drainage: run, creek, river, stream	7pt (9)	SMI-c&lc	.008"(.006)
26 Minor double-line drainage: river	7pt (9)	SMI-caps	.008"(.006)
27 Major double-line drainage: river	8pt (9)	SMI-caps	.008"(.006)
28 Cove, marsh, swamp	8pt	SMI-c&lc	.008"(.006)
29 Underwater topographic features: trough, bank (embankment)	8pt	SMI-caps	N/A
30 Bay	8pt (8-12)	SMI-caps	N/A
31 Large hydrographic feature: channel	9pt (10-14)	SMI-caps	N/A
32 Largest hydrographic feature: ocean	10pt (14-20)	SMI-caps	N/A
33 Contours:			
Index	7pt (6)	UI	.012"(.010)
Intermediate	N/A	N/A	.008"(.006)
34 Scale	7pt	U-caps(ULC)	.008"(.006)
35 U.S. highway numbers	6pt(7)	UC	N/A
GEOLOGIC FEATURES (Nos. boxed on template)			
1 Contacts	N/A	N/A	008"(.004-.006)
2 Folds: anticline/syncline	7pt (8)	U-caps	.010"
3 Fault, U/D	7 pt (8)	U-caps	.015"
4 Contours: aeromag., gravity, isopach, bathymetry			
Index	7pt	UI	.012"
Intermediate	N/A	N/A	.008"
5 Unit symbols	7pt (8)	U-c&lc	N/A
6 Geologic note/label	7pt (8)	U-c&lc	N/A
7 Small geologic feature: rim, basin, trench, bench	7pt	U-caps	.008"
8 Large geologic feature: basin	7pt (8-10)	U-caps	.008" (.010)
9 Strike and dip: beds, foliation, lineation	6pt (4-6)	UI	.008"(.006-.008)
10 Unnamed formation: glacier	7pt (8)	U-c&lc	.008" (.006)
11 Moraine	7pt	UI-caps	.008"
12 Cross section label/line	9pt (11)	SMI-caps	.008" (.006)
13 "Area of figure" note/outline	7 pt (8)	U-c&lc	.008" (.006)

(On column size figures, use type that is one point size smaller)

(Minimum point size on page-size or column-size figures (with the exception of superior and inferior numbers) will be 5 point. Examples include: strike and dip values, small index map labels, and mining letter symbols or numbers.)

HYPOTHETICAL MAP SHOWING TOPOGRAPHIC AND GEOLOGIC FEATURES



GEOLOGIC FEATURES

Area of figure note
Basin, bench, rim, trench, moraine [small geologic feature]
Basin [large geologic feature]
Contact
Contours, index
Contours, intermediate
Cross section - label and line
Fault, U/D
Folds
Geologic credit note
Glacier
Strike and dip: beds, foliation, lineation
Unit symbols

AREA OF FIGURE - NOTE AND OUTLINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - cap/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers - cap/lc
Line weight: 0.006" = 0.15 mm = 0.153 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

BASIN, BENCH, RIM, TRENCH, MORAINE [SMALL GEOLOGIC FEATURE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

LARGE GEOLOGIC FEATURE: BASIN

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" - 2.47 mm - 7 pt
Font: Univers - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11-0.14" - 2.82-3.53 mm - 8-10 point
Font: Univers- caps
Line weight: 0.010" = 0.25 mm = 0.72 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.3 (300 dpi)
0.6 (1200 dpi)
0.7 (2400 dpi)

CONTACT

PAGE-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)
ADOBE ILLUSTRATOR INFORMATION
ADOBE PAINT STYLE WINDOW
For dots instead of squares use the following information
CAPS: Round
DASHED: 0 (LENGTH), 2 (SPACE) pts
PAGE-SIZE & MAP-SIZE
DASH:
INCHES
APPROXIMATE = 0.14 (L), 0.03 (S) "
INFERRED = 0.07 (L), 0.03 (S) "
CONCEALED = 0.03 (L), 0.03 (S) "
MILLIMETERS
APPROXIMATE = 3.53 (L), 0.71 (S) MM
INFERRED = 1.76 (L), 0.71 (S) MM
CONCEALED = 0.71 (L), 0.71 (S) MM
POINTS
APPROXIMATE = 10 (L), 2 (S) PTS
INFERRED = 4.5 (L), 2 (S) PTS
CONCEALED = 2 (L), 2 (S) PTS

CONTOURS: AEROMAG, GRAVITY, ISOPACH, BATHYMETRY INDEX

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7pt
Font: Univers Italic

Line weight: 0.012" = 0.30 mm = 0.87 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7pt
Font: Univers Italic
Line weight: 0.012" = 0.30 mm = 0.87 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.5 (300 dpi)
0.7 (1200 dpi)
0.85 (2400 dpi)
ADOBE ILLUSTRATOR INFORMATION
ADOBE PAINT STYLE WINDOW
For dots instead of squares use the following information
CAPS: Round
DASHED: 0 (LENGTH), 2 (SPACE) PTS
PAGE-SIZE & MAP-SIZE
DASH:
INCHES
APPROXIMATE = 0.14 (L), 0.03 (S) "
INFERRED = 0.07 (L), 0.03 (S) "
CONCEALED = 0.03 (L), 0.03 (S) "
MILLIMETERS
APPROXIMATE = 3.53 (L), 0.71 (S) MM
INFERRED = 1.76 (L), 0.71 (S) MM
CONCEALED = 0.71 (L), 0.71 (S) MM
POINTS
APPROXIMATE = 10 (L), 2 (S) PTS
INFERRED = 4.5 (L), 2 (S) PTS
CONCEALED = 2 (L), 2 (S) PTS

CONTOURS: AEROMAG, GRAVITY, ISOPACH, BATHYMETRY INTERMEDIATE

PAGE-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
ADOBE ILLUSTRATOR INFORMATION
ADOBE PAINT STYLE WINDOW
For dots instead of squares use the following information
CAPS: Round
DASHED: 0 (LENGTH), 2 (SPACE) PTS
PAGE-SIZE & MAP-SIZE
DASH:
INCHES
APPROXIMATE = 0.14 (L), 0.03 (S) "
INFERRED = 0.07 (L), 0.03 (S) "
CONCEALED = 0.03 (L), 0.03 (S) "
MILLIMETERS
APPROXIMATE = 3.53 (L), 0.71 (S) MM
INFERRED = 1.76 (L), 0.71 (S) MM
CONCEALED = 0.71 (L), 0.71 (S) MM
POINTS
APPROXIMATE = 10 (L), 2 (S) PTS
INFERRED = 4.5 (L), 2 (S) PTS
CONCEALED = 2 (L), 2 (S) PTS

CROSS SECTION - LABEL AND LINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium Italic - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.15" = 3.88 mm = 11 pt
Font: Souvenir Medium Italic - caps
Line weight:0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

FAULT, U/D

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers- caps
Line weight: 0.015" = 0.38 mm = 1.08 pts
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers- caps
Line weight: 0.015" = 0.38 mm = 1.08 pts
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.8 (300 dpi)
0.9 (1200 dpi)
1.1 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.8 (300 dpi)

0.9 (1200 dpi)
1.1 (2400 dpi)

ADOBE ILLUSTRATOR INFORMATION

ADOBE PAINT STYLE WINDOW
For dots instead of squares use the following information
CAPS: Round
DASHED: 0 (LENGTH), 2 (SPACE) PTS

PAGE-SIZE & MAP-SIZE

DASH:
INCHES
APPROXIMATE = 0.14 (L), 0.03 (S) "
INFERRED = 0.07 (L), 0.03 (S) "
CONCEALED = 0.03 (L), 0.03 (S) "
MILLIMETERS
APPROXIMATE = 3.53 (L), 0.71 (S) MM
INFERRED = 1.76 (L), 0.71 (S) MM
CONCEALED = 0.71 (L), 0.71 (S) MM
POINTS
APPROXIMATE = 10 (L), 2 (S) PTS
INFERRED = 4.5 (L), 2 (S) PTS
CONCEALED = 2 (L), 2 (S) PTS
THRUST FAULT
SAWTEETH ON UPPER PLATE MAP AND PAGE-SIZE INFORMATION IS THE SAME AS ABOVE.
NOTE: PAGE SIZE SAWTEETH SHOULD BE SPACED BETWEEN 0.2" (5 MM) (14.23 PTS)
AND 0.5" (13 MM) (36 PTS) APART.
DASHED WHERE APPROXIMATELY LOCATED; SHORT DASHED WHERE INFERRED; DOTTED WHERE CONCEALED; QUERIED WHERE DOUBTFUL.

FOLDS

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers-caps
Line weight:
0.010" = 0.25 mm = 0.72 pt

MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers= caps
Line weight:
0.010" = 0.25 mm = 0.72 pt

POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution

PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.3 (300 dpi)
0.6 (1200 dpi)
0.7 (2400 dpi)\

GEOLOGIC CREDIT NOTE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps/lc

MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers Light Condensed - caps/lc

GLACIER

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers- cap/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt

MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers- cap/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt

POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution

PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

STRIKE AND DIP: BEDS, FOLIATION, LINEATION

PAGE-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic
Line weight: 0.008" = 0.20 mm = 0.58 pt

MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 4-6 pt
Font: Univers Italic
Line weight: 0.006" = 0.15 mm = 0.43 pt

POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution

PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4(2400 dpi)

UNIT SYMBOLS

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps/lc
Leader line weight: 0.007" = 0.18 mm = 0.50 pt

MAP-SIZE ILLUSTRATIONS

Type size:
0.11"(0.10" for crowded map)
2.82 mm(2.47 mm for crowded map)
8 point(7 points for crowded map)
Font: Univers - caps/lc
Leader line weight: 0.007" = 0.18 mm = 0.50 pt

PAGE-SIZE & MAP-SIZE

Weight of stroke:
0.15 (300 dpi)
0.3 (1200 dpi)
0.5 (2400 dpi)

TOPOGRAPHIC FEATURES 1

Airport
Bank (embankment), trough
Bar scale
Bar scales
Bay
Peak, mountain, butte, mountains [spot hypsographic feature]
Dam, canal, mine
Flat, pass, gap, hill, canyon, valley [large hypsographic feature]
Point, peninsula, cape, island, cliff [small hypsographic feature]
Channel
City boundary
Contours, topographic: index,
Contours, topographic: intermediate
Lat, long ticks & nos. / neatline
County boundary
Cove, marsh swamp
Run, creek, river, stream [single-line drainage]
Highway / parkway
Index map-area of map / quad location

AIRPORT

PAGE-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Souvenir Medium- caps
(without proper name use Univers)
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium- caps
(without proper name use Univers)
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

BANK (EMBANKMENT), TROUGH

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" - 2.82 mm - 8 pt
Font: Souvenir Medium Italic- caps
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" - 2.82 mm - 8 pt
Font: Souvenir Medium Italic- caps

BAR SCALE

PAGE-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: N/A
MAP-SIZE ILLUSTRATIONS
Type size:
0.11" (EX: 1:24 000)
0.10" (EX: 1 MILE)
2.82 mm (EX: 1:24 000)
2.47 mm (EX: 1MILE)
8 pt(EX: 1:24 000)
7 pt (EX: 1 MILE)
Font: Univers Light Condensed
Line weight:
0.005" = 0.13 mm = 0.36 pt
0.010" = 0.25 mm = 0.72 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
N/A (300 dpi)
N/A (1200 dpi)
N/A (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 - 0.15 (300dpi)
0.2- 06 (1200 dpi)
0.3 - 0.7 (2400 dpi)

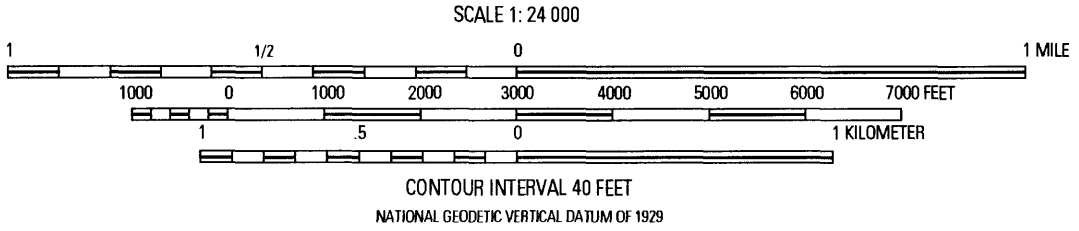
BAY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic- caps
MAP-SIZE ILLUSTRATIONS
Type size:
0.11" - 0.17 "
2.82 mm - 4.23 mm
8 pt- 12 pt
Font: Souvenir Medium Italic- caps

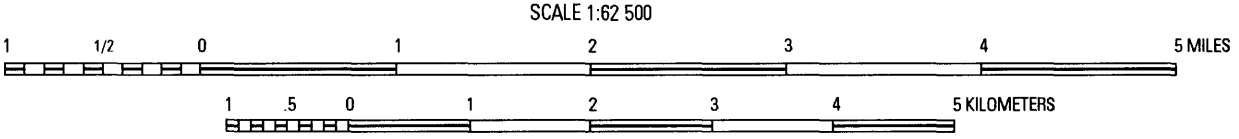
PEAK, MOUNTAIN, BUTTE, MOUNTAINS [SPOT HYPSOGRAPHIC FEATURE]

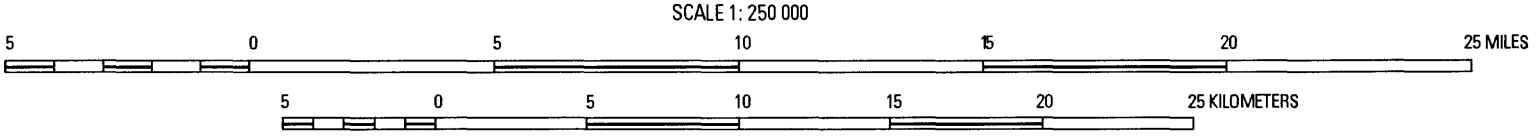
PAGE-SIZE ILLUSTRATIONS
Type size:
0.10"(numbers use 0.08")
2.47 mm (numbers use 2.12 mm)
7 pt (numbers use 6 pt)
Font: For numbers use
Univers Italic- caps/lc
Font:
Univers- caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size:
0.10" - 0.22" (numbers use 0.08")
2.47 mm - 5.64 mm (numbers use 2.12)
7 - 16 pt (numbers use 6 pts)
Font: For numbers use
Univers Italic- caps/lc
Font:
Univers- caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

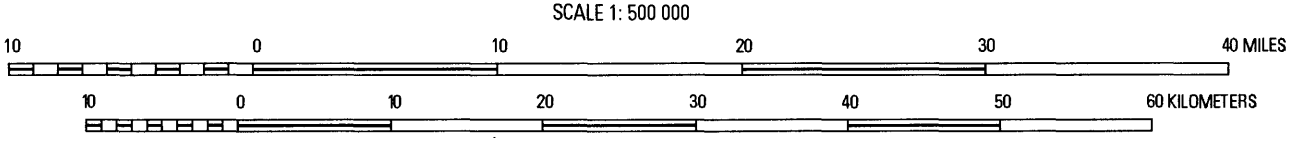
BAR SCALES

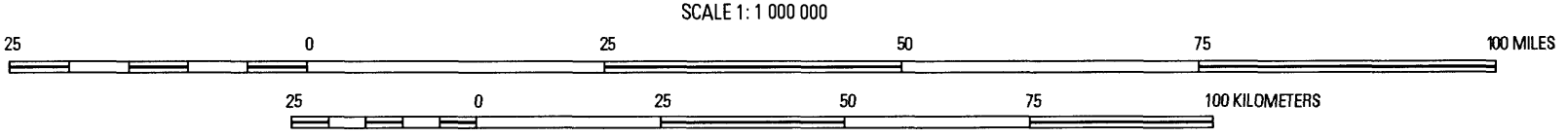


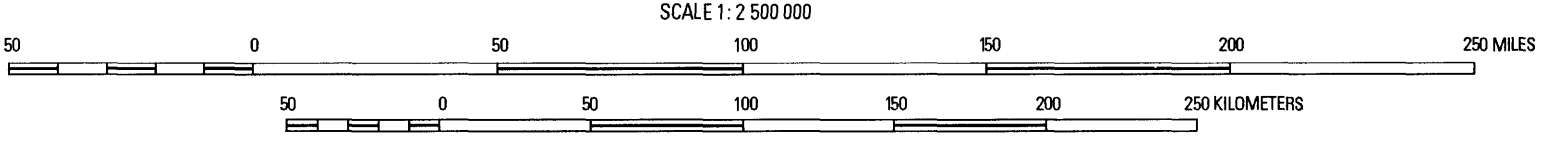
Type is ULC-8 pt for SCALE heading, ULC-7 pt for distance values and ULC-6 pt for half (1/2) distances*.
Line weights: .4 = ▭
.85 = ▬











DAM, CANAL, MINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Italic - caps
Line weight:
0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic - caps
Line weight:
0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

FLAT, PASS, GAP, HILL, CANYON, VALLEY [LARGE HYPSOGRAPHIC FEATURE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size:
0.11" - 0.22"
2.82 mm - 5.64 mm
8 - 16 pt
Font: Univers - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

POINT, PENINSULA, CAPE, ISLAND, CLIFF [SMALL HYPSOGRAPHIC FEATURE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

CHANNEL

PAGE-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium Italic - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size:
0.14" - 0.19"
3.53 - 4.94 mm
10 - 14 pt
Font: Souvenir Medium Italic - caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

CITY BOUNDARY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font:Souvenir Medium - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size:
0.08" - 0.22"
2.12 - 5.64 mm
6 - 16 pt
Font: Souvenir Medium - caps/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

CONTOURS, TOPOGRAPHIC: INDEX

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Italic
Line weight: 0.012" = 0.30 mm = 0.86 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic
Line weight: 0.01" = 0.25 mm = 0.72 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.5 (300 dpi)
0.7 (1200 dpi)
0.85 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.3 (300 dpi)
0.6 (1200 dpi)
0.7 (2400 dpi)

CONTOURS, TOPOGRAPHIC: INTERMEDIATE

PAGE-SIZE ILLUSTRATIONS
Type size: N/A
Font: N/A
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: N/A
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

LAT, LONG TICKS & NOS. / NEATLINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers Light Condensed
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

COUNTY BOUNDARY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium-caps
Line weight: 0.01" = 0.25 mm = 0.72 pt
Dash:
(Long stroke-space-short stroke-space)
0.25-0.03-0.06-0.03"
6.35-0.71-1.41-0.71 mm
18-2-4-2 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium-caps
Line weight: 0.01" = 0.25 mm = 0.72 pt
Dash: (Long stroke-space-short stroke-space)
0.25-0.03-0.06-0.03"
6.35-0.71-1.41-0.71 mm
18-2-4-2 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.3 (300 dpi)
0.6 (1200 dpi)
0.7 (2400 dpi)
Dashed: 18-2-4-2 pts

COVE, MARSH, SWAMP

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic-caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic-caps/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

RUN, CREEK, RIVER, STREAM [SINGLE-LINE DRAINAGE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium Italic-caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium Italic-caps/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

HIGHWAY / PARKWAY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

INDEX MAP-AREA OF MAP / QUAD LOCATION

PAGE-SIZE ILLUSTRATIONS
Type size: 0.07-0.10" = 1.76-2.47 mm = 5-7 pt
Font: Univers = caps
Index map title: Univers Light Condensed - caps (0.10")
Coordinates:Univers Light Condensed - caps (0.08")
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers = caps
Index map title: Univers Light Condensed - caps (0.10")
Coordinates: Univers Light Condensed - caps (0.08")
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

TOPOGRAPHIC FEATURES 2

Lake
Land grant, county, state, national park
Lodge, school
Meridian / base line
Range, mountain, ridge [largest hypsographic feature]
National boundary
Ocean [largest hydrographic feature]
Quadrangle name
Railroad
Range, township
River: major double-line drainage
Rake scale
River: minor double-line drainage
Section / line numbers
Spring, well [small hydrographic feature]
State boundary
Telegraph line
Town boundary
Trails

LAKE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium Italic-caps
***(small lake)-caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic-caps
***(small lake)-caps/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200dpi)
0.4 (2400 dpi)

LAND GRANT, COUNTY, STATE, NATIONAL PARK

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium -caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10-0.17" = 2.47-4.23 mm = 7-12 pt
Font: Souvenir Medium -caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200dpi)
0.4 (2400 dpi)

LODGE, SCHOOL

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium- caps
(without proper-name use Univers)
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Souvenir Medium- caps
(without proper-name use Univers)

MERIDIAN / BASE LINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Souvenir Medium- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

RANGE, MOUNTAIN, RIDGE [LARGEST HYPSOGRAPHIC FEATURE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Univers - caps
Line weight: N/A
MAP-SIZE ILLUSTRATIONS
Type size: 0.13-0.34" = 3.16-8.44 mm = 9-24 pt
Font: Univers - caps
Line weight: N/A

NATIONAL BOUNDARY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium-caps
Line weight: 0.015" = 0.38 mm = 1.1 pts
Dash: (Long stroke-space-short stroke-space-short stroke-space)
0.25-0.03-0.06-0.03-0-06-0.03"
6.35-0.71-1.41-0.71-1.41-0.71 mm
18-2-4-2-4-2 pts
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium-caps
Line weight: 0.015" = 0.38 mm = 1.1 pts
Dash: (Long stroke-space-short stroke-space-short stroke-space)
0.25-0.03-0.06-0.03-0-06-0.03"
6.35-0.71-1.41-0.71-1.41-0.71 mm
18-2-4-2-4-2 pts
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.8 (300dpi)
0.9 (1200 dpi)
1.1 (2400 dpi)

Dashed: 18-2-4-2-4-2 pts

OCEAN: LARGEST HYDROGRAPHIC FEATURE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.14" = 3.53 mm = 10 pt
Font: Souvenir Medium Italic- caps
MAP-SIZE ILLUSTRATIONS
Type size: 0.19-0.28" = 4.92-7.06 mm = 14-20 pt
Font: Souvenir Medium Italic- caps

QUADRANGLE NAME

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers Condensed- caps
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Univers Condensed- caps

RAILROAD

PAGE-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Italic- caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200dpi)
0.4 (2400 dpi)

TOWNSHIP & RANGE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Condensed- caps
Line weight: 0.010" = 0.25 mm = 0.72 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Light Condensed- caps
Line weight: 0.012" = 0.30 mm = 0.86 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.3 (300 dpi)
0.6 (1200 dpi)
0.7 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.5 (300dpi)
0.7 (1200 dpi)
0.85 (2400 dpi)

RIVER: MAJOR DOUBLE-LINE DRAINAGE

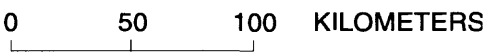
PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium Italic- caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

RAKE SCALE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers - caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200dpi)
0.4 (2400 dpi)

SCALES FOR PAGE-SIZE ILLUSTRATIONS
[ADDITIONAL INFORMATION]

1. Map scales are normally centered at the bottom of the map, 0.10" (2.5 mm) away from the neatline. If there is space inside the map area, scale should be placed inside to conserve space.
2. When centering the scale, include the type in the total length.
3. The unit of measurement is spelled out in all caps.
4. The word "scale" is not used on page-size figures.
5. Map scales will be approximately one-third the width of the map (including type).
6. Length of ticks should be: 0.10" (2.5 mm), 0.05"(1.5 mm) for intermediate ticks, and numbers positioned 0.05" (1.5 mm) above tick.
7. Scale headings should be positioned 0.10" (2.5 mm) away from numbers.
8. If topographic base is used, the contour interval is added 0.10" (2.5 mm) below the scale or in the caption. The base credit information will be added to the caption also.
9. Univers 7 point type is used for general applications and 6 point type is used for small or tight areas.



RIVER: MINOR DOUBLE-LINE DRAINAGE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.13" = 3.18 mm = 9 pt
Font: Souvenir Medium Italic- caps
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

SECTION LINE / NUMBERS

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 8 pt
Font: Univers
Line weight: 0.006" = 0.15 mm = 0.43 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 8 pt
Font: Univers
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

SPRING, WELL
[SMALL HYDROGRAPHIC FEATURE]

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium Italic - caps/lc
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium Italic - caps/lc
Line weight: 0.006" = 0.15 mm = 0.43 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
MAP-SIZE
Weight of stroke:
0.15 (300dpi)
0.2 (1200 dpi)
0.4 (2400 dpi)

STATE BOUNDARY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium-caps
Line weight: 0.012" = 0.30 mm = 0.86 pt
Dash: (Long stroke-space-short stroke-space-short stroke-space)
0.25-0.03-0.06-0.03-0-06-0.03"
6.35-0.71-1.41-0.71-1.41-0.71 mm
18-2-4-2-4-2 pts
MAP-SIZE ILLUSTRATIONS
Type size: 0.11" = 2.82 mm = 8 pt
Font: Souvenir Medium-caps
Line weight: 0.012" = 0.30 mm = 0.86 pt
Dash: (Long stroke-space-short stroke-space-short stroke-space)
0.25-0.03-0.06-0.03-0-06-0.03"
6.35-0.71-1.41-0.71-1.41-0.71 mm
18-2-4-2-4-2 pts
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.5 (300 dpi)
0.7 (1200 dpi)
0.85 (2400 dpi)
Dashed: 18-2-4-2-4-2 pts

TELEGRAPH LINE

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08" = 2.12 mm = 6 pt
Font: Univers Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

TOWN BOUNDARY

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Souvenir Medium - caps/lc
(Major city: caps)
Line weight: 0.008" = 0.20 mm = 0.58 pt
MAP-SIZE ILLUSTRATIONS
Type size: 0.08-0.22" = 2.82-5.64 mm = 6-16 pt
Font: Souvenir Medium - caps/lc
(Major city: caps)
Line weight: 0.008" = 0.20 mm = 0.58 pt
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)

TRAILS

PAGE-SIZE ILLUSTRATIONS
Type size: 0.10" = 2.47 mm = 7 pt
Font: Univers Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
Dash: Long stroke-space
***0.07-0.03"
***1.76-0.71 mm
***4.5-2 pts
MAP-SIZE ILLUSTRATIONS
Type size: 0.07-0.08-0.10"
1.76-2.12-2.47 mm
5-7 pt
Font: Univers Italic- caps
Line weight: 0.008" = 0.20 mm = 0.58 pt
Dash: Long stroke-space
***0.07-0.03"
***1.76-0.71 mm
***4.5-2 pts
POSTSCRIPT LINE WEIGHTS
Low, intermediate, and high resolution
PAGE-SIZE & MAP-SIZE
Weight of stroke:
0.15 (300 dpi)
0.4 (1200 dpi)
0.6 (2400 dpi)
Dashed:
4.5 (length) - 2 (space) pts

GEOLOGIC MAP SYMBOLS

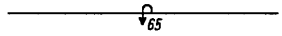
Contacts
Faults
Folds / Anticlines
Folds / Synclines
Planar & linear features
Joints
Symbols for sections
Oil and gas wells

GEOLOGIC MAP SYMBOLS OF THE U.S. GEOLOGICAL SURVEY

Recommended geologic map symbols for publications of the U.S. Geological Survey are given in the following list, which is arranged in order of the usual appearance of the map symbol in an explanation: this order may be altered for emphasis. This list is not comprehensive and variations in the recommended symbols may be made to meet particular geologic situations

CONTACTS

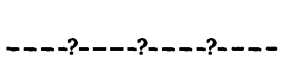
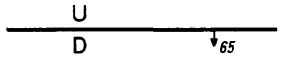
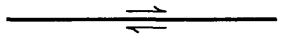
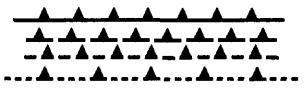
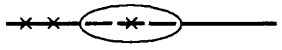
Boundaries between geologic formations or other rock units. Symbols should be conbined to fit available space where practical. Preferred phrasing when several types of contacts are mapped and combined in the explanation: *Long-dashed where approximately located; short-dashed where inferred; dotted where concealed; queried where doubtful.* Contact line symbols signify accuracy of location or character of exposure; only solid-line contacts are used for maps at scales smaller than 1:125,000 (1:250,000; 1:500,000; 1:1,000,000). Generally solid line implies accuracy of placement within 1/50 in. at scale of map. If symbols give engineering accuracy of location of contact, standard used in mapping should be given in italics. Coal and other economically important beds may also be used for contacts. Make all contact line weights .006 in.

Contact		A line weight of .004" may be used if geology is congested
Contact, showing dip		If known, show top side of vertical contact by single arrow and 90
Overturned contact, showing dip		
Approximate contact		Not surely located within 1/50 in. at scale of map
Indefinite contact		Insufficient data to establish contact with certainty
Inferred contact		No data to establish contact but contact must be present
Gradational contact		Continuous change from one lithology or rock type to another. Contact arbitrary
Concealed contact		Must be beneath mapped geologic unit, water, or ice
Contact, located by ground magnetic survey		Contacts determined by instrumentation or by other than conventional surface geologic methods may require special symbols for differentiation
Contact, located by airborne magnetic survey		

FAULTS

Same line conventions used for faults as for contacts; preferred phrasing when several line conventions are used for faults and combined in the explanation: *Long-dashed where approximately located; short-dashed where inferred; dotted where concealed; queried where doubtful.*

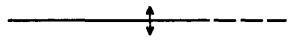
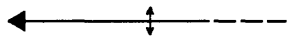
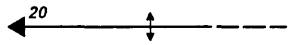
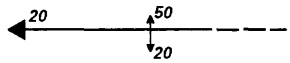
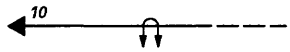
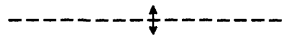
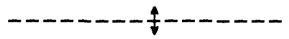
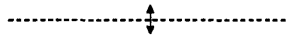
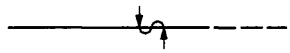
U, upthrown side; D, downthrown side. Generally make fault line weights .015 in.; relative importance of faults may be shown by width of line and suitable explanation. Dip shown where observed or known.

Fault		Weight of line may vary with density of map
Fault, showing dip		
Fault, approximately located		Not surely located within 1/50 in. at scale of map
Inferred fault		Evidence for fault only indirect
Probable or doubtful fault		Use probable or doubtful, not both. Queries spaced three or more dashes apart, indicate uncertainty of existence, not location. Probable is more definite than doubtful
Concealed fault		Must be concealed by overlying mapped deposits or water
Hypothetical fault		Existence from indirect geologic evidence, could be explained by causes other than faulting
Fault, located by ground magnetic survey		
Fault, located by airborne magnetic survey		
Fault or lineament from aerial photographs *Not checked or not identified on ground*		
Lineament		Used on small-scale tectonic maps. Add lineament name where possible. Make line weight .010 in.
Fault *Showing bearing and plunge of grooves, striations, or slickensides*		Plunge measured in vertical plane. Identify type of evidence observed in italic statement
Fault, showing dip U, *upthrown side*; D, *downthrown side*		High angle, used in combination with dip arrow to indicate apparent normal or reverse movement
Fault *Bar and ball on downthrown side*		Generally used where space does not allow U and D symbols without confusion
Fault, showing relative horizontal movement		
Fault *Showing bearing and plunge of apparently downthrown block*		Where displacement is given in feet, vertical numbers should be used
Normal fault *Hachures on apparently downthrown side*		Use on tectonic maps, or, where space does not permit use of U and D
Reverse fault R, *upthrown side*		Angle of dip originally greater than 45° but precise value indeterminate. Hanging wall believed to have moved upward in respect to footwall
Thrust fault T, *upper plate*		Angle of dip originally less than 45° Dip of fault, where known, shown by barbed arrow
Thrust fault *Sawteeth on upper plate*		Symbol emphasizes fault; arrangement of teeth may separate thrust faulting of different ages. May be limited to major thrust faults
Overturned thrust fault *Sawteeth in direction of dip; bar on side of tectonically higher plate*		
Fault (shear or mylonite) zone, showing dip		Show relative movement by U and D or arrows. Make line weights .006 in.
Fault breccia		Extent may be outlined by faults or shown only where observed. Used as overprint for broad areas or fault breccia. Make line weight .006 in.
Fault, intruded by dike		Use on small scale black and white map or for narrow dike. On colored maps show dike in color and fault movement by U and D
Fault, intruded by dike		Use on large scale black and white map for dike of sufficient width to be mapped. Former location of fault shown. Dikes usually shown in color

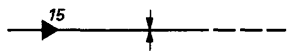
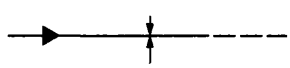
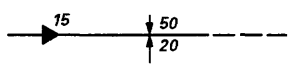
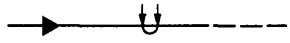
FOLDS

Same line conventions used for folds as for contacts and faults. Preferred phrasing when more than one line convention used for anticline: *Long-dashed where approximately located; short-dashed where inferred; dotted where concealed; queried where doubtful.* Make fold line weights .010 in.

ANTICLINES

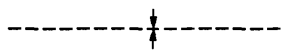
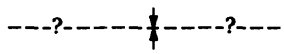
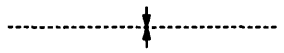
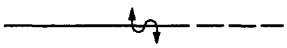
Showing crestline		On detailed geologic maps of overturned folds and in areas of high relief trace of axial surface may be shown; use "Anticline *Showing trace of axial surface*". Line weight of .008 in. may be used if folds are congested
Showing crestline and direction of plunge		
Showing crestline and plunge		
Asymmetric anticline *Showing crestline and plunge. Short arrow indicates steeper limb*		
Asymmetric anticline *Showing dip of limbs and plunge*		
Overturned anticline *Showing direction of dip of limbs and plunge*		
Inferred anticline		Based on indirect geologic evidence; location probably not within 1/25 in. at scale of map
Probable or doubtful anticline		Use probable or doubtful, not both. Queries indicate doubt of existance of anticline from available data; location may also be in doubt. Probable is more definite than doubtful
Concealed anticline		Must be beneath a mapped geologic unit or covered by water. Not shown where extension of known anticline is obvious
Dome		Generally used on small scale tectonic maps only. Make line weights .006 in.
Inverted anticline *Arrows show direction of dip of limbs*		Beds inverted near trough
Antiform *Drawn on foliation, cleavage, or bedding*		Convex-upward structure in metamorphic rocks or in bedded rocks where tops are not known

SYNCLINES

Syncline *Showing troughline*		On detailed geologic maps in areas of high relief trace of axial surface may be shown; use "Syncline *Showing trace of axial surface*" Line weight of .008 in. may be used if folds are congested If, because of topography and the character of the fold, the troughline or trace of axial surface differ appreciably from the real direction of plunge show as 
Syncline *Showing troughline and direction of plunge*		
Syncline *Showing troughline and plunge*		
Asymmetrical syncline *Showing troughline and plunge. Short arrow indicates steeper limb*		
Asymmetrical syncline *Showing dip of limbs and plunge*		
Overturned syncline *Showing direction of dip limbs and plunge*		

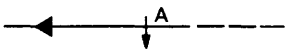
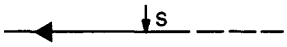
FOLDS

SYNCLINES (CONTINUED)

Inferred syncline		Based on indirect geologic evidence. Location probably not within 1 / 25 in. at scale of map
Probable or doubtful syncline		Use probable or doubtful, not both. Queries indicate doubt of existance. Probable is more definite than doubtful
Concealed syncline		Must be beneath mapped geologic unit or covered by water. Not shown where extension of known syncline is obvious
Basin		
Inverted syncline *Arrows show direction of dip of limbs*		Beds inverted near crest
Synform *Drawn on foliation, cleavage, or bedding*		Convex-downward structure in metamorphic rocks or in bedded rocks where tops are not known

MONOCLINES

May be classified as inferred, probable, doubtful, or concealed by same line conventions used for anticlines and synclines. Make all line weights .010 in.

Monocline *Showing trace and plunge of axis.* *Dashed where approximately located*		
Anticlinal bend *Showing trace and plunge of axis.* *Dashed where approximately located*		Use on large-scale detailed maps where anticlinal and synclinal bends diverge sufficiently to be mapped
Synclinal bend *Showing trace and plunge of axis.* *Dashed where approximately located*		

MINOR FOLD AXES

Make all line weights .006 in.

Minor anticline, showing plunge		
Minor syncline, showing plunge		Plunge measured in vertical plane
Minor fold axis, showing plunge		
Minor fold axis, horizontal		
Minor folds *Showing plunge of axes*		Used where beds are too tightly folded to show axes of individual folds separately. Used to indicate sense of observed folds

PLANAR FEATURES

Planar symbols (strike and dip of beds, foliation or schistosity, and cleavage) can be combined with linear symbols to record data observed at same locality by superimposing symbols at point of observation. Coexisting planar symbols at point of observation. All combinations of planar and linear symbols used on map need not be shown in explanation. A statement "Planar and linear symbols may be combined" placed beneath PLANAR FEATURES AND LINEAR FEATURES in explanation is adequate. Use .006 in. line weight on all symbols. Examples of combined planar and linear features and coexisting planar features shown at appropriate places.

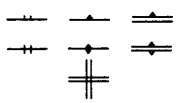
BEDDING

Strike and dip of beds		Strike of vertical beds *Top of beds known*	
Strike and dip of beds *Top of beds known from sedimentary features (Used only in areas of complex structure where overturning also is recognized)*		Component of dip *Dot marks point of observation (Do not use if symbols for lineation in metamorphic rocks on map)*	
Strike and dip of overturned beds		Horizontal beds	
Strike and dip of overturned beds *Top of beds known*		Strike and dip of beds and plunge of slickensides	
Strike of vertical beds		Crumpled, plicated, crenulated, or undulatory beds and average dip	

FOLIATION OR SCHISTOSITY

Strike and dip of foliation		Strike and dip of foliation and parallel bedding	
Strike of vertical foliation *Relationship of foliation (or schistosity) to bedding not shown in outcrop*		Strike of vertical foliation and parallel bedding	
		Strike and dip of foliation and parallel overturned bedding	
Horizontal foliation		Horizontal foliation and bedding	

CLEAVAGE

Strike and dip of cleavage		Inclined Vertical Horizontal	
Strike of vertical cleavage		*(Contrasting symbols can be used to distinguish between different kinds of planar structures (slip cleavage, compositional layering, flow structure). Type of planar structure should be specified in explanation)*	
Horizontal cleavage			

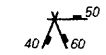
LINEAR FEATURES

May be combined with the above planar symbols as shown:

Bearing and plunge of lineation		Vertical beds, showing horizontal lineation	
Vertical lineation *(Use open symbol in combination with line symbols)*		Horizontal beds, showing trend of horizontal lineation	
Horizontal lineation		Vertical beds, showing plunge of lineation	
Strike and dip of foliation and plunge of lineation		Approximate strike of folded beds showing plunge of fold axes	
Vertical foliation showing horizontal lineation		Attitude of overturned beds and parallel foliation	
Strike and dip of foliation showing horizontal lineation		Attitude of foliation and overturned beds, strikes parallel but dips differ	
Strike and dip of beds and plunge of lineation		Double lineation	
Vertical foliation and vertical lineation		Strike and dip of beds and intersecting slip cleavage *(Symbols joined at point of observation)*	
Strike of vertical foliation showing plunge of lineation		Strike and dip of beds and parallel slip cleavage	

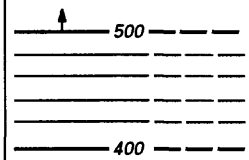
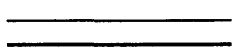
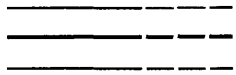
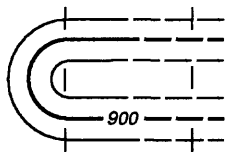
JOINTS

Open symbols may be contrasted with closed symbols to separate unmineralized and mineralized joints

Strike and dip of joints		Strikes and dips of multiple joints *(Dip symbols shifted along strike for legibility, location of observations at point of intersection)*	
Strike of vertical joints			
Horizontal joints			

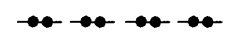
CONTOURS AND ISOPLETHS

Generally printed in red or other contrasting color but may be shown in black where basic geology and base map are simple. Label and make every 5th contour heavier. Use .015 in. for heavy contours and .008 in. for light contours. May be used for many kinds of geologic data

Structure contours *Drawn on top (or base) of (give geologic horizon). Long-dashed where control less accurate; short-dashed where datum is above land surface. Contour interval 20 ft. Arrow indicates direction of dip (Structure contours generally not shown as concealed; may be omitted in areas of no information. Arrows used only where index contours fail to show dip)*		Isoradioactivity contour *Interval 50 counts per second (airborne surveys). Interval in microroentgens per hour (ground surveys)*	
Outcrop point used for structural control		Lines of equal Bouguer anomaly *Dashed in areas of poor control. Contour interval 1 milligal*	
Magnetic contours and flight traverse *Contours show total magnetic intensity relative to an arbitrary datum, dashed where data incomplete. Ticks mark flight traverses (Give contour interval below map with map scale)*		Gravity station and number	
Magnetic contour enclosing area of lower magnetic intensity		Isopachs	
Measured maximum or minimum intensity within closed high or closed low contour		Isograds *(Add key mineral names to map and describe in explanation)*	SILLIMANITE STAUROLITE

VEINS, ORE, WALL-ROCK ALTERATION, AND DIKES

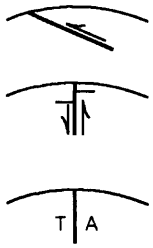
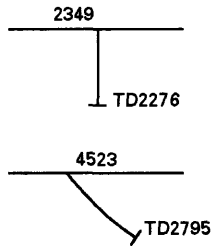
Shown in color, generally red, only where necessary to differentiate types and grade

Vein, showing dip *(Give mineralogy and grade of mineralization in percent metal or oxide, or oz. per ton by notes. Can also be shown in solid color)*		Mineralized stringers or veinlets *(Dots used only to distinguish mineralized from unmineralized joints, faults, or contacts where illustration is black and white)*	
Ore body		Altered wall rock *Showing intensity of alteration by concentration of dots*	
		Dike (May be shown in color without x's when essential to distinguish different rock types)	

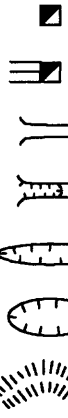
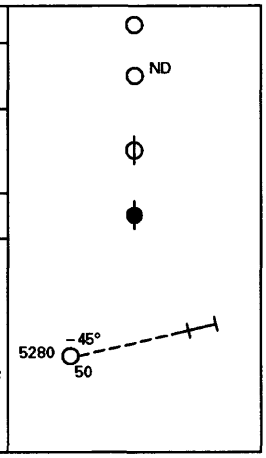
ORE IN SEDIMENTARY ROCKS AND SEDIMENTARY FEATURES CONTROLLING ORE DEPOSITION

Strike of roll *Showing geometric configuration in cross section (Explain configuration by note)*		Fossil log	
Direction of plunge of cross stratification in sandstone *Showing direction of flow of depositing stream (Based on measurements of dips of crossbedding)*		Lineation trend	
		Festoon trend	

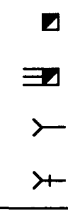
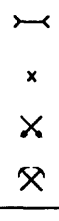
SYMBOLS FOR SECTIONS

Thrust *Arrow shows relative direction of movement*		Drill hole or well on section *Showing surface altitude and total depth in ft. (Angle of deviation from vertical plotted)*	
Fault *Arrow shows relative direction of movement*			
Fault, showing lateral movement *T, toward observer; A, away from observer (May be combined with arrows to show strike slip and dip slip movement)*		Drill hole or well projected to section *Showing surface altitude and total depth in ft.*	

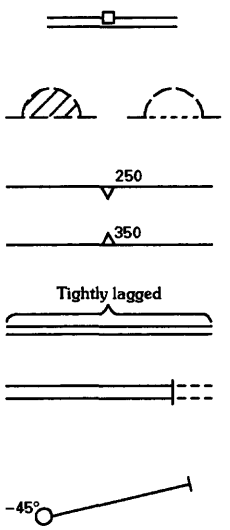
SURFACE OPENINGS AND EXPLORATION
LARGE-SCALE MAPS

Vertical shaft		Drill hole	
Inclined shaft		Drill hole *No geologic data available*	
Portal or adit		Drill hole, low-grade ore *(Give definition of low and high grade in explanation)*	
Portal and open cut		Drill hole, high-grade ore	
Trench		Drill hole, inclined Showing bearing and inclination; surface position and elevation; vertical projection of bedrock surface bottom of hole, and thickness of overburden; and length of hole *(Combine drill hole collar symbols as required with vertical projection to map)*	
Prospect pit or open cut			
Mine dump			

SMALL-SCALE MAPS
Symbols not drawn to scale. Vary size of symbols with density of data

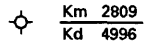
Shaft		Trench	
Inclined shaft		Prospect pit	
Portal of tunnel, adit, or stope		Sand, gravel, clay, or placer pit	
Inaccessible tunnel, adit, or stope		Mine, quarry, glory hole, or open pit	

UNDERGROUND WORKINGS AND EXPLORATION
Symbols drawn to scale on large maps

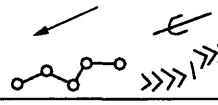
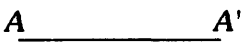
Shaft at surface		Ore chute	
Shaft, above and below level		Stope *(Can also be explained in by note, "Stoped above" or "Stoped below")*	
Bottom of shaft *(Show bottom of sump by note on map of lower level)*		Elevation of roof or back	
Inclined workings, above and below level, *Chevrons point down* *(Spacing of chevrons may indicate steepness; place at regular vertical intervals —5, 10, 20, etc. ft.)*		Elevation of floor or sill	
		Lagging or cribbing along drift	
Winze or head of raise		Caved or otherwise inaccessible workings	
Raise or winze extending through level		Drill hole *(Give indication of hole + or – in degrees in note and show vertical projection of bottom of hole to map)*	
Raise or foot of winze			

OIL AND GAS WELLS

Symbols for wells drilled for oil and gas are made up of seven comparable basic symbols which may be superimposed as necessary to show reported conditions

Drilling well or well location		Show of gas	
Dry hole or abandoned well		Shut-in well	
Gas well		Well *Showing vertical projection of bottom of hole, total depth, and surface altitude*	
Oil well		Dry hole *Showing formation and altitude at surface, formation at bottom of hole, and total depth*	
Show of oil			

MISCELLANEOUS

Glacial striae		Line of section *(Generally omitted from explanation; used only to avoid confusion with other lines)*	
Line of stratigraphic section			

WATER SYMBOLS
(Water Resources Division maps)

Water symbols: Introduction
Contours
Lines
Lines-continued
Water wells
Springs
Gaging stations
Quality of water sites
Weather stations
Miscellaneous
Standard lineweights

INTRODUCTION

WATER RESOURCES DIVISION GEOHYDROLOGIC MAP SYMBOLS

The geohydrologic map symbols are for use on maps and in map explanations of publications of the U.S. Geological Survey. Geohydrologic symbols follow geologic symbols in a map explanation. The symbols are subdivided into four general groups: contours, lines, hydrologic data sites, and miscellaneous.

The symbols and descriptions of contours and lines include all levels of accuracy to be used; that is, solid lines for known locations and dashed lines for approximate locations. All contours and line symbols should be scribed in the specified lineweights and lengths.

The symbol for each group of hydrologic data sites is a distinctive geometric shape: a circle for water wells, a circle with a tail for springs, a triangle for gaging stations, an inverted triangle for quality-of-water sites, and a diamond for weather stations.

Each group of hydrologic data-site symbols is divided into two subgroups, restricted and recommended. The restricted symbols must be used for the stated purpose. The recommended symbols may be used on maps to present data other than those described under the symbol headings. For example, a solid circle may be used to represent wells completed in bedrock and an open circle to represent wells completed in unconsolidated materials. However, if stock wells are shown on the same map , the symbol for stock wells (open circle) is recommended. In that instance, a symbol other than an open circle would be used to represent wells in unconsolidated materials. All miscellaneous symbols are restricted and, therefore, must be used for the stated purpose.

The use of symbols must be consistent on all maps within a report or within a related series of reports. The symbol restrictions apply only to maps. Any geometric shape may be used for symbols on illustrations other than maps. On maps where the plotted symbols are congested and difficult to interpret, insets at enlarged scales permit detailed plotting of the symbols.

CONTOURS

Used only in reference to altitude. Line widths: for index contours use 0.38 mm (0.015"); for intermediate contours use 0.20 mm (0.008"). Use 0.51 mm (0.02") dashes with 0.51 mm (0.02") space between dashes for approximate contours. Listed below are descriptions of commonly used contours in the format to be used for map explanations.

SYMBOL	DESCRIPTION
—— *100* – –	STRUCTURE CONTOUR — Shows altitude of (top or base of, or horizon within) (stratigraphic unit, aquifer, or confining bed). Dashed where approximately located. Contour interval (number) (units). Datum is mean sea level
—— *50* – –	BEDROCK CONTOUR — Shows altitude of bedrock surface. Dashed where approximately located. Contour interval (number) (units). Datum is mean sea level
—— *200* – –	WATER-TABLE CONTOUR — Shows altitude of water table, (date). Dashed where approximately located. Contour interval (number) (units). Datum is mean sea level NOTES: 1. To be used only in reference to unconfined (water-table) conditions. 2. Date can be omitted from description if date given in map title.
—— *500* – –	POTENTIOMETRIC CONTOUR — Shows altitude at which water level would have stood in tightly cased wells, (date). Dashed where approximately located. Contour interval (number) (units). Datum is mean sea level NOTES: 1. To be used in reference to either confined (artesian) or unconfined conditions. 2. To be used when both confined and unconfined conditions are not differentiated on the same map. 3. POTENTIOMETRIC CONTOUR is preferred. WATER-LEVEL CONTOUR is permitted. 4. Date can be omitted from description if date given in map title
—— *1000* – –	WATER-QUALITY-ZONE CONTOUR — Shows altitude of (top or base of, or horizon within) (type of water-quality zone or types of water in an aquifer), (date). Dashed where approximately located. Contour interval (number) (units). Datum is mean sea level NOTE: Date can be omitted from description if date given in map title.

LINES

Used when no reference is made to altitude. Terms prefixed by "ISO" are not recommended. Line widths and dashes have same specifications as for contours. Descriptions of commonly used lines are listed below in the format to be used for map explanations.

SYMBOL	DESCRIPTION
—— 24 — —	LINE OF EQUAL (AVERAGE, MEAN, MEDIAN, ETC.) (ANNUAL, MONTHLY, DAILY, ETC.) PRECIPITATION, (DATE) — Dashed where approximately located. Interval (number) (units) NOTE: Date can be omitted from description if date given in map title
—— 100 — —	LINE OF EQUAL DEPTH TO (GEOLOGIC FORMATION, BEDROCK, AQUIFER, WATER, ETC.), (DATE) — Dashed where approximately located. Interval (number) (units). Datum is land surface NOTES: 1. Date needed only for parameters that vary with time. 2. Date can be omitted from description if date given in map title.
—— 50 — —	LINE OF EQUAL THICKNESS OF (GEOLOGIC FORMATION, AQUIFER, CONFINING BED, SATURATED MATERIAL, ETC.), (DATE) — Dashed where approximately located. Interval (number) (units) NOTES: 1. Date needed only for parameters that vary with time. 2. Date can be omitted from description if date given in map title.
—— 10 — —	LINE OF EQUAL WATER TEMPERATURE, (DATE) — Dashed where approximately located. Interval (number) degrees Celsius NOTES: Date can be omitted from description if date given in map title.
—— 2000 — —	LINE OF EQUAL SPECIFIC CONDUCTANCE, (DATE) — Dashed where approximately located. Interval (number) micromhos per centimeter at 25 degrees Celsius. NOTE: Date can be omitted from description if date given in map title.

LINES-CONTINUED

SYMBOL	DESCRIPTION
—— 500 — —	LINE OF EQUAL (DISSOLVED-SOLIDS CONTENT, HARDNESS, OR CHEMICAL-CONSTITUENT CONTENT), (DATE) — Dashed where approximately located. Interval (number) (milligrams per liter or milli-equivalents per liter) NOTE: 1. Date can be omitted from description if date given in map title.
—— 20 — —	LINE OF EQUAL WATER-LEVEL (CHANGE, RISE, OR DECLINE), (DATE) — Dashed where approximately located. Interval (number) (units) NOTE: 1. Date can be omitted from description if date given in map title.
—— 6 — —	LINE OF EQUAL RUNOFF, (DATE) —Dashed where approximately located. Interval (number) (units) or Interval (number) (flow unit) per (area unit) NOTE: 1. Date can be omitted from description if date given in map title.
—— 10,000 — —	LINE OF EQUAL (TRANSMISSIVITY, HYDRAULIC CONDUCTIVITY, POROSITY, ETC.) — Dashed where approximately located. Interval (number) (units)

WATER WELLS

Basic shape is a circle — ○

RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	SYMBOL WITH BASIC SHAPE	Notes
Flowing artesian well			1. Supplemental information can be shown inside or on the periphery of these symbols. 2. Symbol should be centered over the data site.
Nonflowing artesian well			
Recharge or waste-injection well			
Observation well			
Observation well equipped with a recorder			
Dry well			
Destroyed well			
Test hole			

RECOMMENDED SYMBOLS

DESCRIPTION	SYMBOL	Notes
Well used for domestic-water supply	●	1. Can be used in combination with the above. 2. Supplemental information can be shown on the periphery of these symbols.
Well used for stock-water supply	○	
Well used for irrigation-water supply		
Well used for industrial-water supply		
Well used for public-water supply		
Unused well		

SPRINGS

Basic shape is a circle with a tail — 

The tail should point in direction of flow.

RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	SYMBOL WITH BASIC SHAPE	NOTES
Thermal spring	T		1. Supplemental information can be shown inside or on the periphery of these symbols. 2. Symbol should be centered over the data site.
Mineral spring	M		
Extinct spring			

RECOMMENDED SYMBOLS

DESCRIPTION	SYMBOL	NOTES
Spring used for domestic-water supply		1. Can be used in combination with the above. 2. Supplemental information can be shown on the periphery of these symbols.
Spring used for stock-water supply		
Spring used for irrigation-water supply		
Spring used for industrial-water supply		
Spring used for public-water supply		
Unused spring		

GAGING STATIONS

Basic shape is a triangle — △

RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	SYMBOL WITH BASIC SHAPE	NOTES
Gaging station equipped with a telephone or radio			1. Supplemental information can be shown inside or on the perimeter of these symbols. 2. Symbol should be centered over the data site when used alone. Combined triangles should be centered over the data site when quality-of-water data are obtained at a gaging station. 3. Gaging station symbol should be placed above and adjoin, the quality-of-water triangle when quality-of-water data are obtained at a gaging staion.
Peak-flow measurement station			
Low-flow measurement station			
Stage measurement station			

RECOMMENDED SYMBOLS

DESCRIPTION	SYMBOL	NOTES
Continuous-record gaging station	▲	1. Can be used in combination with the above. 2. Supplemental information can be shown on the perimeter of these symbols.
Partial-record gaging station (floods)		
Measurement site without a gage	△	
Discontinued gaging station		

QUALITY-OF-WATER SITES

Basic shape is an inverted triangle — 

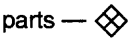
RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	SYMBOL WITH BASIC SHAPE	NOTES
Chemical-measurement site			1. Supplemental information can be shown inside or on the perimeter of these symbols. 2. Symbol should be centered over the data site when used alone. Combined triangles should be centered over the data site when quality-of-water data are obtained at a gaging station. The circle should be centered over the data site when quality-of-water data are obtained at a well or spring. 3. Quality-of-water symbol should be placed beneath, and adjoin, the gaging station triangle or the circle when quality-of-water data are obtained at a gaging station, well, or spring.
Temperature-measurement site			
Biological-measurement site	 (extension of top line to left)		
Sediment-measurement site	 (extension of top line to right)		

RECOMMENDED SYMBOLS

DESCRIPTION	SYMBOL	NOTES
Active site		1. Can be used in combination with the above. 2. Supplemental information can be shown on the perimeter of these symbols.
Active site equipped with a monitor		
Inactive site		

WEATHER STATIONS

Basic shape is a diamond divided into four parts — 

RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	SYMBOL WITH BASIC SHAPE	NOTES
Weather station equipped with a recorder	R		1. Supplemental information can be shown inside or on the periphery of these symbols. 2. Symbol should be centered over the data site.
Weather station equipped with a telephone or radio			

RECOMMENDED SYMBOLS

DESCRIPTION	SYMBOL	NOTES
Complete weather station		1. Can be used in combination with the above. 2. Supplemental information can be shown on the perimeter of these symbols.
Snow-survey course		
Weather stations where the following types of measurements are obtained:		
Precipitation		
Evaporation		
Temperature		
Humidity		
Solar radiation		
Wind velocity		
Discontinued weather station		

MISCELLANEOUS RESTRICTED SYMBOLS

DESCRIPTION	SYMBOL	NOTES
Basin boundary (surface water)		
Subbasin boundary (surface water)		
Ground-water divide		Open symbol where approximately located.
Ground-water barrier (geologic)		
Infiltration gallery		
Direction of ground-water flow		Open or dashed symbol where approximately located.

WATER RESOURCES DIVISION STANDARD LINEWEIGHTS

Standard widths for hydrologic features in publications of the U.S. Geological Survey follow. Contours and lines of equal value for hydrologic features will be either solid or dashed -- solid for known locations and dashed for approximate locations. If all contours or all lines of the same feature on a map are approximately located, lines can be scribed solid and labeled as "approximately located" in the explanation. If known and approximate locations of the same feature occur together on a map, the approximate must be dashed.

HYDROLOGIC FEATURES	LINE WIDTH		
	(mm)	(")	(pts)
1. Drainage-Basin boundary lines	0.51	0.20	1.44
2. Drainage-Subbasin boundary lines	0.30	0.12	0.86
3. Flood-Limit boundary lines	0.30	0.12	0.86
4. Contours and lines of equal value			
A. Index	0.38	0.015	1.08
B. Intermediate	0.20	0.008	0.58

Note: Dashing of contours or lines of equal value:

Approximately located—Dashes 5 mm (0.20" - 14.17 pts) long with a 5 mm (0.20" - 14.17 pts) space between dashes.

ILLUSTRATIONS

FIGURE CAPTIONS

FIGURE CAPTIONS

The type of figure is usually not included in the caption. Exceptions are: aerial photograph, photomicrograph, ternary diagram, index map, or anything else unusual enough that clarification would help the reader.

Captions are in telegraphic style.

If a figure has parts, the caption begins with an overall statement that ties the parts together. Any information that applies to all parts is included here. The parts are labeled alphabetically and listed in the caption as follows: *A*,_____. *B*,_____. *C*,_____.

Try to explain all symbols in the "Explanation" for a figure. If symbols must be explained in a caption, use words rather than the symbols themselves, E.G., "...plus,_____; diamond,_____; dot,_____.

It helps the reader to add the direction of view of a photograph. Add at end of caption: View northwest.

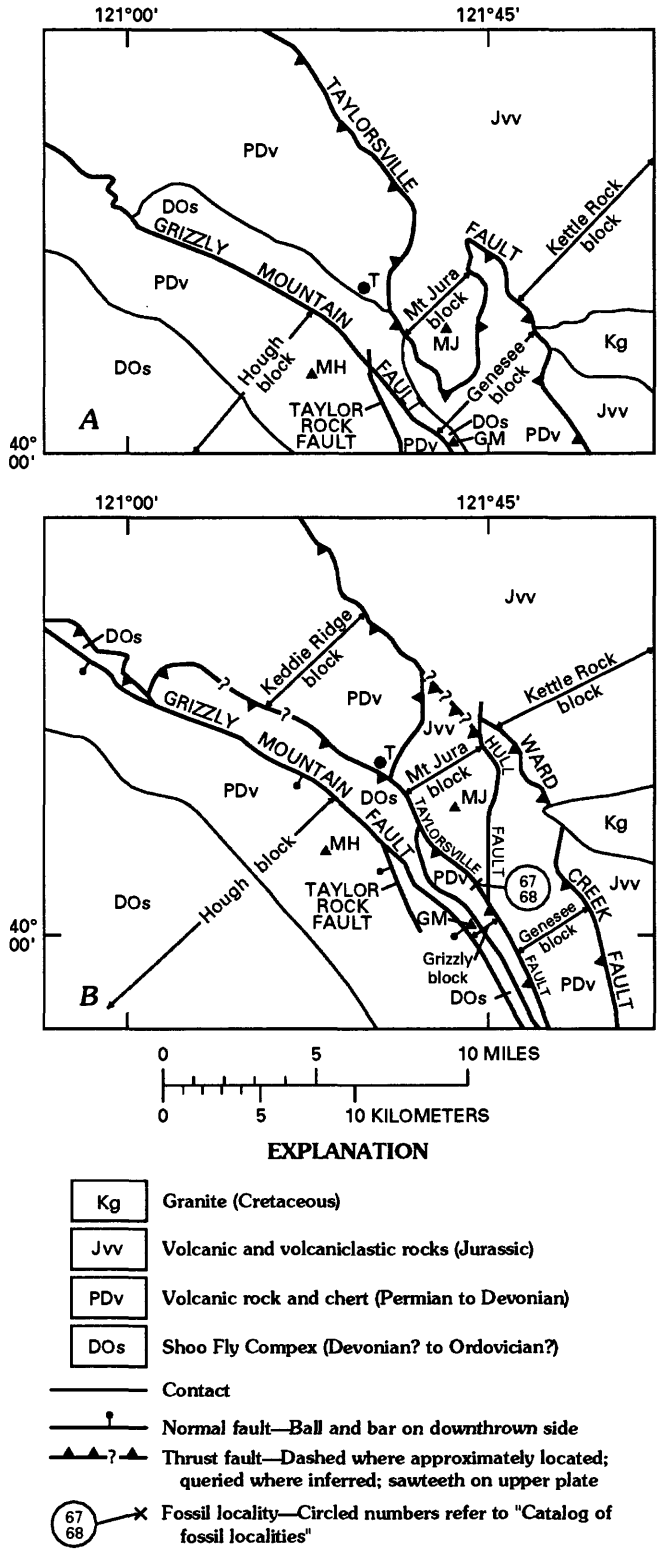


Figure 20. Generalized geologic maps of the Taylorsville area, northern California. GM, Grizzly Mountain; MJ, Mount Jura; MH, Mount Hough; T, Taylorsville. *A*, Tectonic blocks and major faults as mapped by McMath (1958). In this tectonic interpretation, the folded Taylorsville thrust fault separates Paleozoic rocks in the upper plate from Mesozoic rocks in the lower plate. *B*, Tectonic blocks and major faults in imbricate-thrust-slice interpretation of this report.

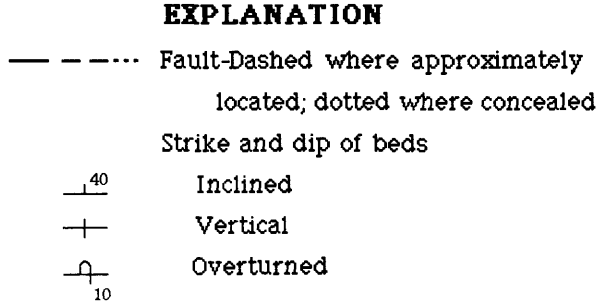
EXPLANATIONS FOR PAGE-SIZE ILLUSTRATIONS

General explanation
Explanation for geologic map units

GENERAL EXPLANATION FOR PAGE-SIZE ILLUSTRATIONS

Add the heading "EXPLANATION" centered in all caps above total width of symbols and type.
Symbols are lined up to the side on the left with the description of each to the right.
Descriptions are caps and lower case; any explanatory material follows a 1-em dash and begins with a capital letter. Subdivisions are indented. There are no periods following descriptions.

Example:



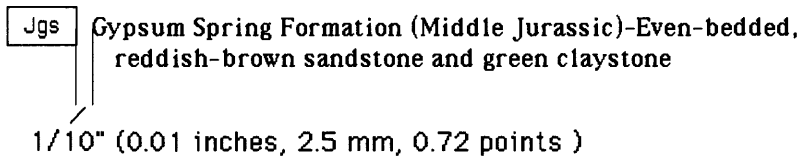
If many figures within the same report share the same explanation, rather than repeating the explanation on each, a sentence can be added to the caption referring to the figure in which the explanation occurs.
Order of symbols is as follows: geologic map units, line symbols, structure symbols, spot symbols—follow order in the list of standard USGS symbols.
Explanation may be divided to fit available space

EXPLANATION FOR GEOLOGIC MAP UNITS ON PAGE-SIZE ILLUSTRATIONS

BASIC FORMAT—The explanation shows boxed letter symbols (which have been approved by Geologic Names Committee) aligned in a single column and corresponding formation or unit names and their descriptions placed in the space adjacent to the boxes. Patterns may be used with letter symbols to emphasize important units from the map. Map symbols are shown beneath the description of map units.

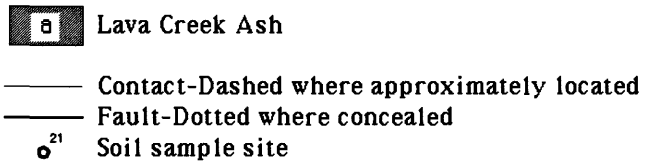
TITLES AND LAYOUT—Generally place the explanation to the right of the map, but if space is a problem, it may be centered below the map. Use the word "EXPLANATION" as a title and center it 0.10" (2.5 mm) above the length of the box and text. Map symbols, which follow the description of map units, are not titled.

TYPE STYLES—Font size will vary according to space allowed, and the font name will vary according to the software package you are using; the title "EXPLANATION" should appear bolder than the descriptive material. Use 8-10 point Souvenir or Souvenir Medium - all caps for the title and 7-9 point Souvenir Light or Souvenir (italic for fossil names) for unit names and descriptions. Use 6-7 point Univers (Univers Regular in Adobe Illustrator) - caps and lowercase for map unit symbols. Use a long dash (1-em) between the unit name and description. Indent the second line of each unit in the description.



BOXES—Make the boxes 0.35" (9 mm) x 0.20" (5 mm) and use an 0.008" (0.20 mm) lineweight. If space is a factor, use a 7 to 4 ratio to readjust the size of the box. Use a 0.015" (1.5 mm) vertical space between boxes that have only one line of type; the space between others will vary with the amount of descriptive type. Place description 0.10" (2.5 mm) from the box. The boxed letter symbols should be centered within the box and aligned horizontally with the base of the description. (The description should not be aligned with the top of the box, even if it is longer than one line).

MAP SYMBOLS—Type should be the same size and style as used for the geologic map units; indent the second line. Show line symbols in appropriate lineweights that correspond to ones used on the map. Position the lines in a straight horizontal alignment to the center of the descriptive text, even if the feature is shown as a curve on the map. The length of the line symbol should not extend more than 0.20" (1.5 mm) from the ends of the box width. Show dashes and dots only if room allows. Center locational symbols; if a symbol has a value, then consider the value to be part of the overall width of the symbol when it is centered under the boxes.



GRAPHS / CHARTS

Graph information
Example of grouped graphs
Correlation chart/ Ternary diagram

GRAPH INFORMATION

Number refers to hypothetical graphs (see example of Grouped Graphs in menu)
[S, Souvenir; U, Univers; I, Italic; caps, all upper case; c&lc,
combination of caps and lower case; N/A, not applicable]

Graph No.	Nomenclature/description	Type size (in points)	Font	Lineweight inches points millimeters
1	Neatline: box is complete	N/A	N/A	.008 0.58 0.20
2	Neatline ticks: inside neatline all around; length is .050" (1.5 mm) & 0.10" (2.5 mm)	N/A	N/A	.008 0.58 0.20
3	Lines from data points	N/A	N/A	0.012 0.86 0.30
4	Scale numbers: placed at left and bottom only, use comma only for number >9999	7	U	N/A
5	Explanatory information: first letter of phrase or term always caps	7	U-c&lc	N/A
6	Caption letter	10-11	SMI-caps	N/A
7	Side and bottom title: spelled out	7-8	U-caps	N/A

Notes:

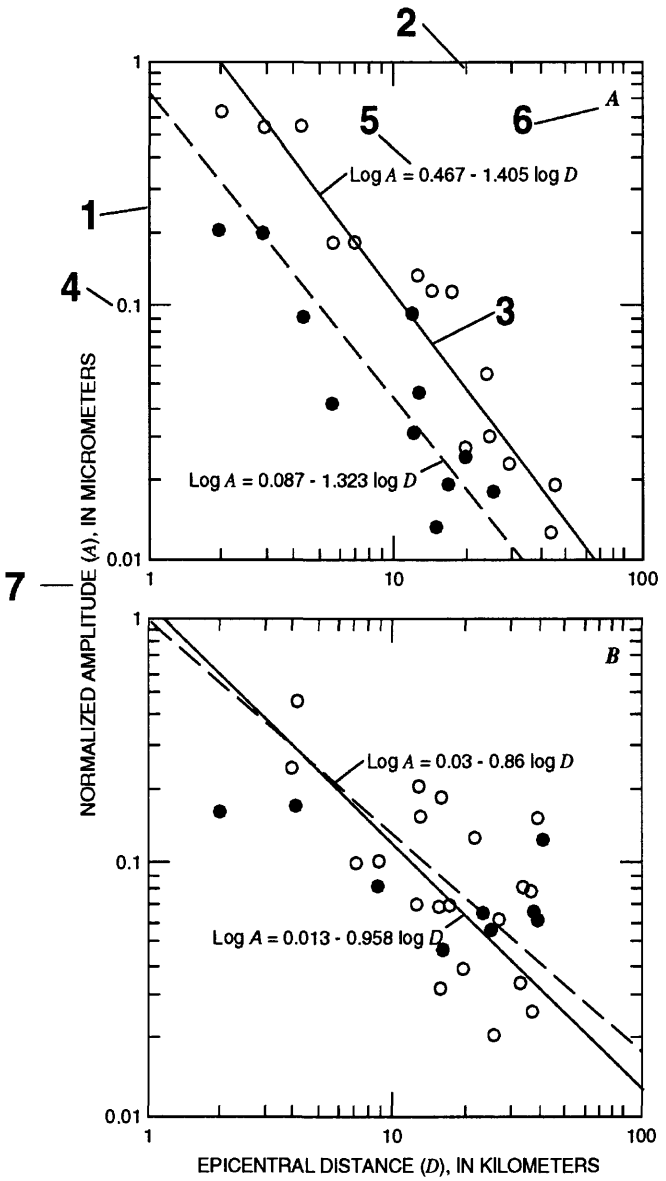
a. Graphs are usually in box form with ticks inside all around to save space.
b. Numbers are to left and bottom.
c. Check numbers for accuracy and check to see that spacing is even between ticks for measuring.
d. Titles at side and bottom are all caps and spelled out (including unit of measurement) for clarity.
e. Graphs can be combined and share side or bottom titles.
f. Extend graph in either direction to next full number beyond last data point.
g. Difference between data points can be explained in caption or in an explanation.

EXAMPLE OF GROUPED GRAPHS WITH LETTER DESIGNATIONS

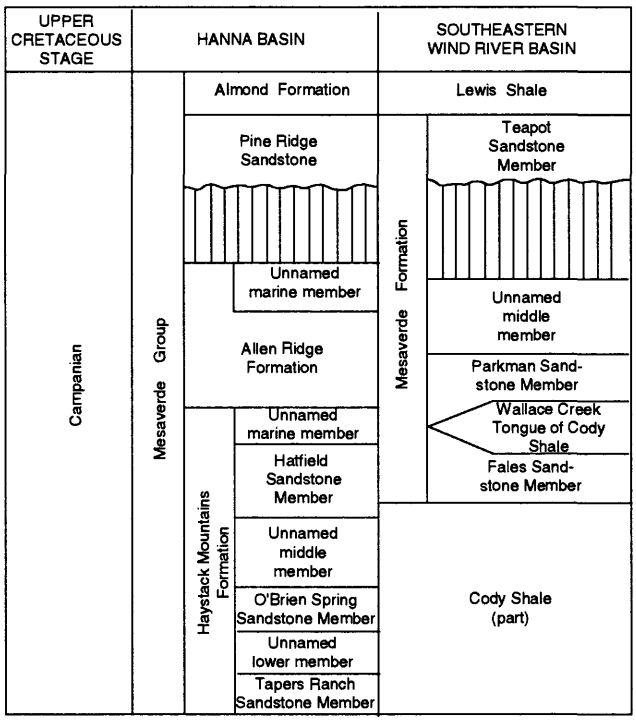
Bold numbers 1-7 refer to graph information in menu

(Note: The symbols A and D appear in the titles only because they are used in the equations on the graphs)

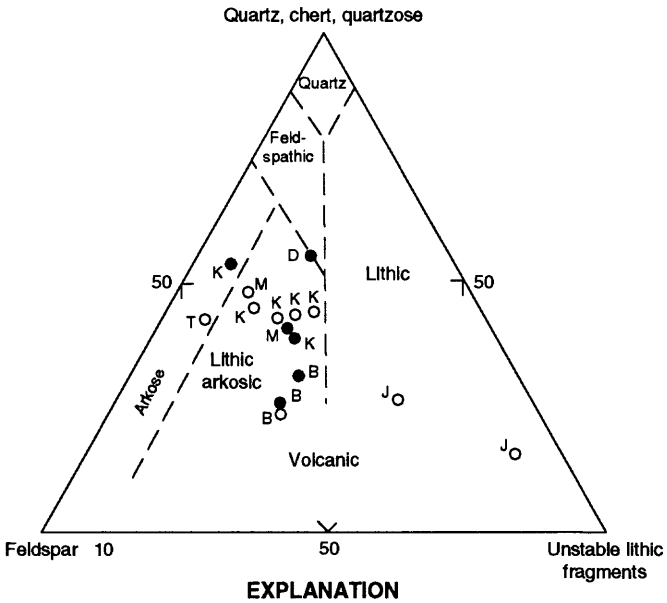
HYPOTHETICAL GRAPHS



EXAMPLE OF A TYPICAL CORRELATION CHART



EXAMPLE OF A TERNARY DIAGRAM



EXPLANATION

B Basda Point Member
D Dtokoah Point Member
K Klachopis Point Member
T Third Beach Member
M Thin-bedded sandstone of the Makah Formation
J Deformed sandstone in Jansen Creek Member
● Arenite
O Wacke

TABLES

Table information
Table example

TABLE INFORMATION

Typeface: Souvenir Light or Times
Format
Set word "Table" initial cap and lc, Souvenir Medium.
Title ends with a period.
All overruns are flush left in title and bracketed headnote.
Format of a continued title caption
An em dash is used between the title and the word "Continued".
The wording of the continued title is the same as the wording of the original title.
Footnote references are repeated in continued titles (but footnotes in titles are discouraged).
Headnotes are repeated under continued titles if they are not overly long, but the word "Continued" is not added to the headnote.
Title - 9 point
Bracketed headnote - 7 point
Body of text - 8 point
Footnotes - 7 point

TABLE EXAMPLE

Table 9. Comparison of trace-element data for obsidian from Big Glass Mountain, Medicine Lake highlands, California.

[All values in parts per million; —, not determined]

	Jack and Carmichael (1969)	Stevenson and others (1971)	Condie and Hayslip (1975)	Sample 42 (this paper)	Sample 43 this (paper)	Various authors, in Flanagan (1976)
Ba -----	850	850	856	855	810	705–826.7
Ce -----	60	—	—	44	45	46.3–60.4
Co -----	15	—	2.6	2.1	1.9	1.76–7.2
Cs -----	—	—	11	10.5	9.7	10.3
Cu -----	10	—	18	—	—	10.2–16.5
La -----	30	—	29	23	24	27.0
Nb ----	5	<30	—	9	9.4	5.44–9.44
Pb -----	25	—	—	22	22	20.9–21.2
Rb -----	155	140	157	156	154	96.3–193
Sc -----	—	—	—	4.5	4.36	4.60–6.3
Sr -----	105	121	95	115	115	100.1–132
Ta -----	—	—	—	1.00	1.03	0.54–0.90
Y ------	20	35	—	23	28	23.8–26.7
Zn -----	25	—	—	30	28	21.5–38.9
Zr------	215	—	192	206	212	205–304

BOOK COVERS

Cover information for Professional Paper
Backstrips for Professional Paper covers
Bulletin cover
Backstrips for Bulletin covers

COVER INFORMATION FOR PROFESSIONAL PAPER

Middle and Upper Ordovician Symmetrical Univalved Mollusks (Monoplacophora and Bellerophontina) of the Cincinnati Arch Region

U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 1066-O

Prepared in cooperation with the Commonwealth of Kentucky, University of Kentucky, and Kentucky Geological Survey

COVER

The instructions that follow are for paper-bound books.

Cover art

Used only on special reports in which the cover is prepared by the Graphics section.

Sink

Sink depends on length and size of title. In general, 11 picas from (to) top trim edge is a good sink (5 picas from top trim edge and 6 picas from top page margin)

Title

Typeface and size
18–48-point Baskerville caps and lowercase, depending on length of title and space available; 5 points of leading between lines.

Positioning

Begin title 7 1/2 picas from binding edge.Leave 18 points of space between the title and the 3-point rule that separates it from the series line.

Arrangement

Instruct typesetter to "Arrange type as shown."

Instruction to printer

Type prints solid (type should not be screened)

Series line

Typeface and size
12-point Baskerville Bold caps. Letter-space and (or) wordspace to fill 39 picas, depending on length of and number of words in series line.

Rule

Set a 3-point rule to separate the title matter from the series line. The length of this rule is 39 picas. Leave 18 points of space between this rule and the series line itself.

Wording

U.S. GEOLOGICAL SURVEY
PROFESSIONAL PAPER [No.]
or [No.]–[Chapter Letter]
A chapter letter is used if the report is a *separately published chapter.*

Cooperation (Coop) note

Typeface and size
12 on 14 point or 14 on 16 point Baskerville Italic. The approximate maximum width is 29 picas.

Positioning
Set flush left. Leave space to right of cooperation note for Departmental seal.

Seal

1 1/4-inch seal

Notes

Information given below is for individual chapter and nonchapter reports which have pockets or binding stubs (brick guards) for map plates or which consist of text only

Backstrips for professional papers that have series number 501 and above read down. Those for series numbers below 501 read up.

Typeface-and size

Paper-bound copies

8- or 10-point Baskerville Bold, depending on the space available. Report number should be set 10-point Baskerville Bold.

Cloth-bound copies

10-point Baskerville Bold. Report number is set 10-point Baskerville Bold and instruct printer to "Turn to read across if space is available.

Vertically reading backstrips

Selection

Vertically reading backstrips are used for any report that will be less than 1 inch thick when bound

Positioning

Paper-bound copies for individual chapter and nonchapter reports

Instruct printer that backstrip "Must read down 1 pica from binding edge on cover 4 of thin report [or on spine of thick report]."

Cloth-bound copies for nonchapter reports

*Instruct printer that backstrip "Must read down on spine. On thin copies build up back so that backstrip will print on spine."

Wording

Author's name(s):

The author's name is set caps and lowercase.

Title of report:

The report title is set all caps. A 1-em dash separates the author's name from the title. A 1-em dash separates the title from the series line.

Wahlman—MIDDLE AND UPPER ORDOVICIAN SYMMETRICAL UNIVALVED MOLLUSKS OF THE CINCINNATI ARCH REGION—U.S. Geological Survey Professional Paper 106–O

Series line:

Paper-bound copies for individual chapter and nonchapter reports

U.S. Geological Survey Professional Paper [No.] or [No.]-[Chapter Letter]

The series line carries the chapter letter if the report is a separately published chapter.

Cloth-bound copies for nonchapter reports

"U.S. Geological Survey" is abbreviated to "USGS" . The rest of the backstrip is the same as for paper-bound copies.

Geologic and Hydrologic Investigations of a Potential Nuclear Waste Disposal site at Yucca Mountain, Southern Nevada

U.S. GEOLOGICAL SURVEY BULLETIN 1790

The instructions that follow are for paper-bound books.

Background screens

Cover 1 (Front cover)

Top half screened: 30 percent color (retain)

Middle bar: 3/4 inch thick and prints solid. Prints on cover 1 only

Bottom half not screened: Art may be substituted in this position

Instruct printer that for title "Type prints solid." (Type should not be screened with cover)

Cover 4 (Back cover)

Top half screened 30 percent color retain

Bottom half not screened: Art may be continued from cover 1. For backstrip, leave a 1/2-inch un-inked band along the binding edge of the back cover of a saddle stitch bulletin only if there is art on cover 4.

Sink

Sink depends on length and size of title, but leave at least 4 picas

Title

Typeface and size

24–48-point Optima Medium caps and lowercase, depending on length of title; 5 points of leading between lines. Maximum width is 41 1/2 picas.

Positioning

Position title in top half of cover 1.

Allow 4 1/2 picas to binding edge.

Arrangement

Instruct typesetter to

"Arrange type as shown."

Series line

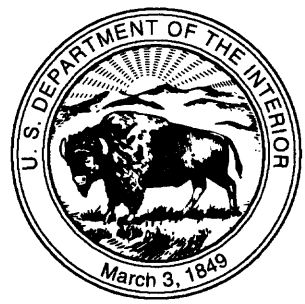
Typeface and size

24-point Optima Medium caps. Prints in middle bar and type drops out (prints reverse). Type should remain flush left aligned with the title type.

Wording

U.S. GEOLOGICAL SURVEY BULLETIN [No.] or [No.]–[Chapter Letter]

A chapter letter is used if the report is a *separately published chapter*.



Cooperation (Coop) note

Typeface and size

10 on 12 point Optima Medium lowercase

Width

Maximum width is about 25 picas.

Positioning

Set 1 inch below bar between seal and binding edge and align with seal.

Seal

1 1/2–inch seal placed 1 inch below the middle bar and 1 1/2 inches from the trim edge.

BACKSTRIPS FOR BULLETIN COVERS

Notes

Information given is for individual chapter and nonchapter reports which have pockets or binding stubs (brick guards) for map plates or which consist of text only

Backstrips for bulletins that have series numbers 1201 and above read down. Those for series numbers below 1201 read up.

Typeface and size

Paper and cloth copies

10 or 12-point Optima Medium depending on space available

Vertically reading backstrips

Selection

Vertically reading backstrips are used for any report that will be less than 1 inch thick when bound

Positioning

Paper-bound copies for individual chapter and nonchapter reports

On saddle-stitched books, the backstrip should be printed on cover 4 in a clear (unscreened) one-half-inch *un-inked* band. Instruct printer that backstrip "Must read down 1 pica from binding edge on cover 4 of this report [*or* on spine of thick report]."

Wording

Author's name(s):

The author's name is set caps and lowercase.

Title of report:

The report title is set all caps. A 1-em dash separates the author's name from the title. A 1-em dash separates the title from the series line.

Series line:

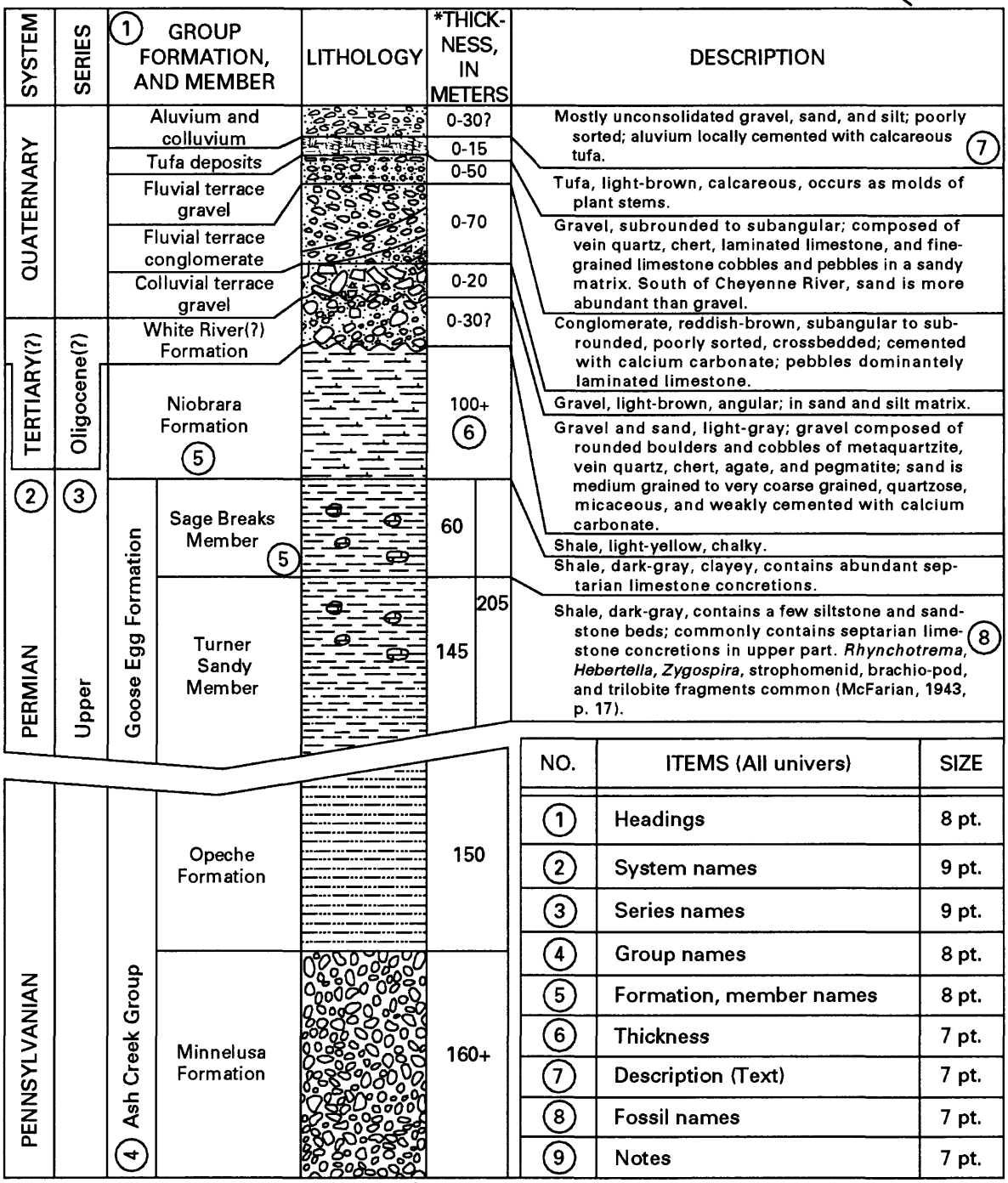
Paper-bound copies for individual chapter and nonchapter reports

U.S. Geological Survey Bulletin [No.] *or* [No.]–[Chapter Letter] The series line carries the chapter letter if the report is a separately published chapter.

COLUMNAR SECTIONS

016 mm (0.06")

SECTION



NO.	ITEMS (All univers)	SIZE
(1)	Headings	8 pt.
(2)	System names	9 pt.
(3)	Series names	9 pt.
(4)	Group names	8 pt.
(5)	Formation, member names	8 pt.
(6)	Thickness	7 pt.
(7)	Description (Text)	7 pt.
(8)	Fossil names	7 pt.
(9)	Notes	7 pt.

*Thickness approximate where no range is given (9)

Note: Point size may be increased or decreased as the need arises

Colophon

Cartographic information provided by the following:
Steve Scott
Laurie Hodgen
George Havach
Jan Detterman
Derrick Hirsch
Leslie Weissleader, BETR
Jeff Troll

Reviewed by:
Steve Scott
Jim Pearl
Laurie Hodgen
Jim Pinkerton
Jan Detterman
Vicki Chmill
Jeff Troll

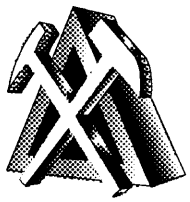
Editor: Julia Thomas

Illustrations by: Steve Scott, Joe F. Vigil, and Glenn Schumacher

Programming: Joe F. Vigil
Program and logo design: Joe F. Vigil

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Open-File Report 93-188-B



Disk
1of 5

Cartographic Technical Standards
on the Apple Macintosh

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U.S. GEOLOGICAL SURVEY

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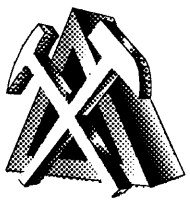

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Cartographic Technical Standards
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