



Spatial Digital Database for the Geologic Map of Nevada

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and Robert J. Miller

Open File Report 03-66
Digital database, version 3.0

2003
(map originally published in 1978)

Database approved for publication February 20, 2003

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic Code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government. The digital database is not meant to be used or displayed at any scale larger than 1:500,000.

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Introduction

This report describes and makes available a geologic digital spatial database (*nvgeo*) representing the geologic map of Nevada (Stewart and Carlson, 1978a). The original paper map was printed as a single sheet at a scale of 1:500,000, then reprinted as two sheets in 1991. The database provided by this open-file report supersedes earlier published digital versions (Turner and Bawiec, 1991, Raines and others, 1996). This digital spatial database is one of many being created by the U.S. Geological Survey as an ongoing effort to provide geologic information for use in spatial analysis in a geographic information system (GIS). This database can be queried in many ways to produce a variety of geologic maps. This database is not meant to be used or displayed at any scale larger than 1:500,000 (for example, 1:100,000).

This report also describes the methods used to convert the geologic map data into a digital format, describes the ArcInfo GIS file structures and relationships, and explains how to download the digital files from the U.S. Geological Survey public access World Wide Web site on the Internet. Scanned images of the 1991 reprinting of the Stewart and Carlson (1978a) map are also available for download.

Data Sources, Processing, and Acknowledgements

A digital version of Stewart and Carlson's (1978a) geologic map of Nevada was first prepared by Turner and Bawiec (1991): negatives for the two geologic map sheets were scanned, vectorized, and released in digital format. A second digital version of the Stewart and Carlson (1978a) map was included in Raines and others (1996). That dataset combined the previously separate north and south sheet datasets of Turner and Bawiec (1991) and provided line attributes and other corrections and improvements. Concealed or inferred faults were converted from scanned representations (discontinuous dots and dashes) to properly attributed continuous lines. A table capturing much of the information in the unit descriptions was added. And, a data model was populated with information from the correlation and description of map units from the original paper map.

With this release of a third digital dataset, several enhancements have been made. Faults, previously provided in a separate spatial database, have now been combined with the geologic contacts and map units spatial database. The resultant database was then adjusted to conform to a set of state boundaries derived from 1:100,000 scale Digital Line Graph (DLG) files. This was done as part an effort to produce a mosaic of state geologic map databases for the entire United States.

All processing by the U.S. Geological Survey was done in Arc/Info versions 5, 7, and 8 installed on Unix and Windows workstations.

Manuscript and digital data review by Helen Z. Kayser (contractor) is greatly appreciated.

GIS Documentation

The digital geologic map of Nevada consists of a single spatial database (*nvgeo*) which contains map units and lines. The feature attribute tables include a geologic linework table, NVGEO.AAT, that relates to the NVGEO.CON, NVGEO.ST2 and NVGEO.REF files, and a rock unit table, NVGEO.PAT, that relates to the NVGEO.RU and NVGEO.REF files (see fig. 1). These data files are described below.

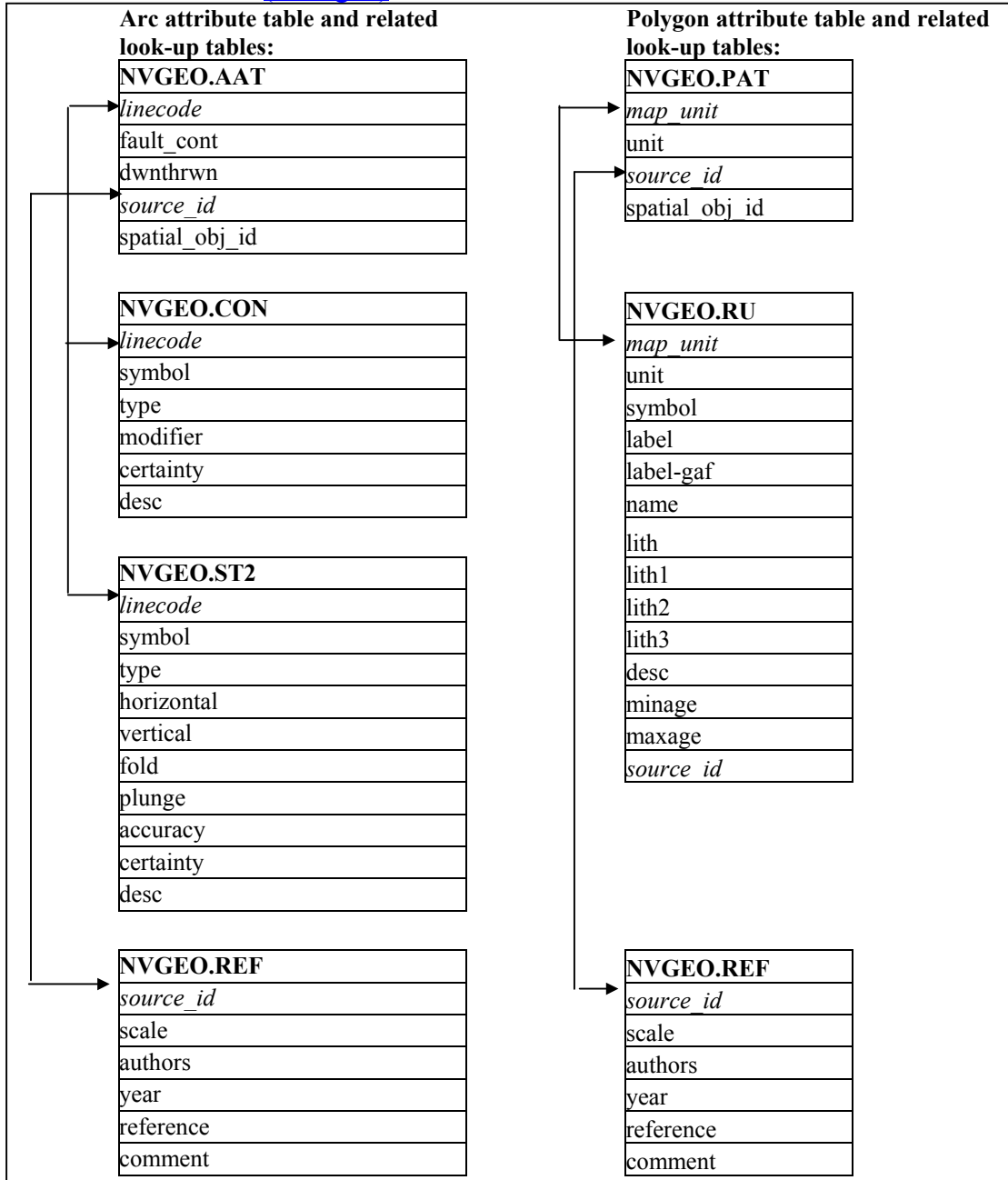


Figure 1: Relationships between feature attribute tables and look-up tables.

Linear Features

Descriptions of the items identifying linear features such as contacts, boundaries (for example, lines of latitude and longitude, state boundaries) and structures in the arc (or line) attribute table, **NVGEO.AAT**, are as follows:

NVGEO.AAT			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
linecode	integer	3	Numeric code used to identify type of linear feature. Linecodes < 100 are used for contacts and boundaries which are described in the NVGEO.CON file. Linecodes > 100 and < 600 represent structural features which are described in the NVGEO.ST2 file.
fault_cont	character	4	Indicates fault constitutes a contact between rock units
dwnthrwn	character	5	Indicates the sense of movement on the fault. The side indicated by the compass direction is downdropped.
source_id	integer	4	Numeric code used to identify the data source for the linear feature. Complete references for the sources are listed in the NVGEO.REF file.
spatial_obj_id	integer	12	Unique numeric identifier for each object in the nvgeo feature attribute tables (nvgeo.aat and nvgeo.pat). (This numeric identifier is NOT duplicated in the nvgeo.pat feature attribute table.)

Attribute descriptions for items in the contact (and boundary) lookup-table, **NVGEO.CON** are as follows:

NVGEO.CON			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
linecode	integer	3	Numeric code (a value < 100) used to identify type of contact or boundary. (This item also occurs in NVGEO.AAT.)
symbol	integer	3	Line symbol number used by Arc/Info to plot lines. Symbol numbers refer to the WP.LIN lineset
type	character	10	Major type of line, for example, contact, state boundaries, lines of latitude and longitude used for neatlines.
modifier	character	20	Line type modifier, for example, approximate, concealed, gradational. No entry implies 'known.'
certainty	character	15	Degree of certainty of contact or boundary, for example, inferred, uncertain. No entry implies 'certain.'
desc	character	100	Written description or explanation of contact or boundary.

Attribute descriptions for items in the structure look-up table, **NVGEO.ST2**, are as follows:

NVGEO.ST2			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
linecode	integer	3	Numeric code (a value > 100 and < 600) used to identify type of structural feature. (This item also occurs in NVGEO.AAT.)
symbol	integer	3	Line symbol number used by Arc/Info to plot arc (line). Symbol numbers refer to the GEOL_SFO.LIN lineset.
type	character	10	Major type of structure, i.e., fault, fracture, fold, other.
horizontal	character	20	Type of horizontal fault movement, for example, left-lateral, right-lateral. No entry implies 'unknown.'
vertical	character	20	Type of vertical fault movement, for example, normal. No entry implies 'unknown.'
fold	character	15	Type of fold, e.g., anticline, syncline.
plunge	character	15	Type of plunge on fold, i.e., horizontal, plunging, plunging in, plunging out.
accuracy	character	15	Line type modifier indicating degree of accuracy, i.e., approximately located, concealed, gradational. No entry implies 'known.'
certainty	character	15	Degree of certainty of contact or boundary, i.e., inferred, uncertain. No entry implies 'certain.'
desc	character	100	Written description or explanation of structural feature.

Areal Features

Descriptions of the items identifying geologic units in the polygon attribute table, **NVGEO.PAT** are as follows:

NVGEO.PAT			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
map_unit	character	10	Rock unit label. Rock unit is described in the NVGEO.RU look-up table. (This item also occurs in NVGEO.RU.)
unit	integer	4	Numeric code used to identify rock unit. (This item also occurs in NVGEO.RU.)
source_id	integer	4	Numeric code used to identify the data source for the rock unit. Complete references for the sources are listed in the NVGEO.REF file.
spatial_obj_id	integer	12	Unique numeric identifier for each object in the <i>nvgeo</i> feature attribute tables (<i>nvgeo.aat</i> and <i>nvgeo.pat</i>). (This numeric identifier is NOT duplicated in the <i>nvgeo.aat</i> feature attribute table.)

Attribute descriptions for items in the lithology (rock unit) look-up table, **NVGEO.RU**, are as follows:

NVGEO.RU			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
map_unit	character	10	Alphanumeric code used to identify rock unit. (This item also occurs in NVGEO.PAT.)
unit	integer	4	Numeric code used to identify rock unit. (This item also occurs in NVGEO.PAT.)
symbol	integer	3	Shadeset symbol number used by Arc/Info to plot a filled/shaded polygon. The symbol numbers used in this file refer to the alc1.shd shadeset.
label	character	10	Rock unit label (abbreviation) for use with standard alphabetic characters.
label-gaf	character	10	Rock unit label (abbreviation) that uses the GeoAgeFullAlpha font, ver. 1.1 (Richard Koch, personal commun., 2001).
lith	character	50	Major type of lithostratigraphic unit, for example, unconsolidated sediments, sedimentary rocks, metasedimentary rocks, intrusive rocks, extrusive rocks, metamorphic rocks, water, ice.
lith1	character	20	primary lithology
lith2	character	18	secondary lithology
lith3	character	32	tertiary lithology
desc	character	250	Formal or informal unit name
minage	character	7	Minimum stratigraphic age of lithologic unit, for example, CRET, TERT, M PROT.
maxage	character	7	Maximum stratigraphic age of lithologic unit
source_id	integer	4	Numeric code used to identify the data source for the rock unit. Complete references for the sources are listed in the NVGEO.REF file.

Source Attributes

Descriptive source or reference information is stored in the **NVGEO.REF** look-up table. Attribute descriptions for items in the **NVGEO.REF** file is as follows:

NVGEO.REF			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
source_id	integer	4	Numeric code used to identify the data source. (This item also occurs in the NVGEO.AAT, and NVGEO.PAT files.)
scale	integer	8	Scale of source map. (This value is the denominator of the proportional fraction that identifies the scale of the map that was digitized or scanned to produce the digital map.)
authors	character	200	Author(s) or compiler(s) of source map entered as last name, first name or initial, and middle initial.
year	integer	4	Source (map) publication date
reference	character	250	Remainder of reference in USGS reference format.
comment	character	100	Notes/comments about the source information/data

Obtaining Digital Data

The complete digital version of the geologic map is available in Arc/Info interchange format with associated data files. These data are maintained in a Lambert coordinate system:

Projection: Lambert Conformal Conic
Units: meters
Datum: NAD27
Spheroid: Clarke1866
Central meridian -117 00 00
Standard parallel 33 00 00
Standard parallel 45 00 00

To obtain copies of the digital data, do one of the following:

- Download from the USGS public access World Wide Web site on the Internet:
URL = <http://pubs.usgs.gov/of/2003/of03-66/>
- **(no anonymous FTP available any more)**

These Internet sites contain the spatial data and metadata for the geologic map of the Nevada as ArcInfo exchange-format files (see listing of files in Appendix A). Formatted metadata (Federal Geographic Data Committee-compliant) is included as Appendix B.

To manipulate this data in a spatial database, you must have a GIS platform that is capable of importing ArcInfo interchange-format files.

Obtaining Paper Maps

Printed copies of the Stewart and Carlson (1978a) Geologic Map of Nevada are available for purchase from the U.S. Geological Survey Earth Science Information Center. Digital JPEG images of their map sheets are also available as **sc1978nv_north.jpg/.jgw** (north half of Nevada), **sc1978nv_south.jpg/.jgw** (south half of Nevada), and **sc1978nv_units.jpg** (correlation of map units). These files may be downloaded from the USGS public access World Wide Web site on the Internet using the URL = <http://pubs.usgs.gov/of/2003/of03-66/>

Paper copies of the geologic map created from the *nvgeo* spatial database are not available from the U.S. Geological Survey. Paper copies of the map may be created by obtaining the digital spatial database (*nvgeo*) and then creating a custom plot file in a GIS.

References Cited

- Raines, G.L., Sawatzky, D.L., and Connors, K.A., 1996, Great Basin geoscience data base: U.S. Geological Survey, Digital Data Series DDS-41, 2 CD-ROMs.
- Stewart, J.H. and Carlson, J.E., 1978a, Geologic map of Nevada: U.S. Geological Survey, scale 1:500,000, 2 sheets.
- Stewart, J.H. and Carlson, J.E., 1978b, Sources of data for geologic map of Nevada: U.S. Geological Survey, Miscellaneous Field Investigation MF-930.
- Turner, R.M. and Bawiec, W.J., 1991, Digital geologic coverage of Nevada: a digital representation of the 1978 geologic map of Nevada: U.S. Geological Survey, Digital Data Series DDS-2, CD-ROM.

Appendix A – List of digital files in the Nevada GIS

--Use the 'importfile.aml' to IMPORT all of the *.e00 files for use in ArcInfo.

Primary ArcInfo exchange-format (*.e00) and metadata (*.met) files for the spatial digital databases:

- nvgeo.e00 – line and poly dataset (contacts, faults, and map units) in Lambert Conformal Conic map projection
- nvgeo.met – metadata

JPEG image (*.jpg/.jgw) and Adobe Acrobat portable document format (*.pdf) files for the Stewart and Carlson map sheets (1978a and 1978b):

- sc1978nv_north.jpg/.jgw – north half of Nevada (georeferenced image)
- sc1978nv_south.jpg/.jgw – south half of Nevada (georeferenced image)
- sc1978nv_sym.pdf – explanation of line symbols
- sc1978nv_units.jpg – correlation of map units

Appendix B - Metadata file (nvgeo.met) for the Nevada GIS

Identification_Information:

Citation:

Citation_Information:

Originator: Stewart, J.H.

Originator: Carlson, J.E.

Originator: Raines, G.L.

Originator: Connors, K.A.

Originator: Moyer, L.A.

Originator: Miller, R.J.

Publication_Date: 2003

Title: Spatial digital database for the geologic map of Nevada

Edition: 3.0

Geospatial_Data_Presentation_Form: vector digital data

Series_Information:

Series_Name: Open-File Report

Issue_Identification: 03-66

Publication_Information:

Publication_Place: Menlo Park, California

Publisher: U.S. Geological Survey

Online_Linkage: <http://pubs.usgs.gov/of/2003/of03-66/>

Description:

Abstract: This report publishes a geologic digital spatial database (NVGEO) for the geologic map of Nevada by Stewart and Carlson (1978a) which was originally printed on a single sheet of paper at a scale of 1:500,000 (and later reprinted on two sheets in 1991). The spatial digital database (GIS) provided in this report supersedes earlier digital editions by Turner and Bawiec (1991) and Raines and others (1996).

Purpose: This digital spatial database is one of many being created by the U.S. Geological Survey as an ongoing effort to provide geologic information for use in spatial analysis in a geographic information system (GIS). This database can be queried in many ways to produce a variety of geologic maps. This database is not meant to be used or displayed at any scale larger than 1:500,000 (for example, 1:100,000).

Supplemental_Information: The digital geologic map of Nevada consists of a single spatial database (NVGEO) which contains map units and lines. The feature attribute tables include a geologic linework table, NVGEO.AAT, that relates to the NVGEO.CON (contacts and boundaries), NVGEO.ST2 (structures), and NVGEO.REF (source reference) files, and a rock unit table, NVGEO.PAT, that relates to the NVGEO.RU (rock unit) and NVGEO.REF (source reference) files.

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2003

Currentness_Reference: publication date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: As needed

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -120.132327

East_Bounding_Coordinate: -113.793386

North_Bounding_Coordinate: 42.032704

South_Bounding_Coordinate: 34.989789

Keywords:

Theme:

Theme_Keyword_Thesaurus: none

Theme_Keyword: geology

Theme_Keyword: geologic map

Theme_Keyword: geospatial database

Theme_Keyword: state map

Place:

Place_Keyword_Thesaurus: none

Place_Keyword: Nevada

Place_Keyword: State of Nevada

Place_Keyword: USA

Temporal:

Temporal_Keyword_Thesaurus: list of geologic ages

Temporal_Keyword: Quaternary

Temporal_Keyword: Tertiary

Temporal_Keyword: Cenozoic

Temporal_Keyword: Mesozoic

Temporal_Keyword: Paleozoic

Temporal_Keyword: Proterozoic

Access_Constraints: none

Use_Constraints:

This digital database is not intended to be used or displayed at any scale larger than 1:500,000.

Any hardcopies utilizing these data sets shall clearly indicate their source. If the user has modified the data in any way they are obligated to describe the types of modifications they have performed on the hardcopy map. User specifically agrees not to misrepresent these data sets, nor to imply that changes they made were approved by the U.S. Geological Survey.

This database has been approved for release and publication by the Director of the USGS. Although this database has been subjected to rigorous review and is substantially complete, the USGS reserves the right to revise the data pursuant to further analysis and review. Furthermore, it is released on condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Robert J. Miller

Contact_Organization: U.S. Geological Survey

Contact_Position: geologist

Contact_Address:

Address_Type: mailing address

Address: 345 Middlefield Road, Mail Stop 941

City: Menlo Park

State_or_Province: California

Postal_Code: 94025-3591

Country: USA

Contact_Voice_Telephone: 650 329-5407

Contact_Electronic_Mail_Address: rjmiller@usgs.gov

Data_Set_Credit:

An initial digital edition of the Stewart and Carlson (1978a) geologic map of Nevada was prepared by Turner and Bawiec (1991).

Raines and others (1996) revised and updated Turner and Bawiec's (1991) first edition.

This third digital edition, prepared by Robert J. Miller with assistance from Steve Ludington and Barry C. Moring, represents further revision of Raines and others' (1996) second edition.

Native_Data_Set_Environment: Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 4; ESRI ArcCatalog 8.3.0.800

Data_Quality_Information:

Logical_Consistency_Report: Polygon and chain-node topology present. Segments making up the outer and inner boundaries of a polygon tie end-to-end to completely enclose the area. Line segments are a set of sequentially numbered coordinate pairs. No duplicate features exist nor duplicate points in a data string. Intersecting lines are separated into individual line segments at the point of intersection. All nodes are represented by a single coordinate pair, which indicates the beginning or end of a line segment.

Completeness_Report: All geologic units were compiled from Stewart and Carlson (1978a) at a scale of 1:500,000.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report: Registration and/or transformation errors for the original digitizing are not available.

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 200- 500 meters

Horizontal_Positional_Accuracy_Explanation: Based on comparison of the topographically sensitive linework (i.e., Quaternary sediments in narrow valleys, etc.) with larger scale topographic basemaps.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator: Stewart, J.H.

Originator: Carlson, J.E.

Publication_Date: 1978

Title: Geologic map of Nevada

Geospatial_Data_Presentation_Form: map

Series_Information:

Series_Name: (not given)

Issue_Identification: Geologic Map of Nevada

Publication_Information:

Publication_Place: Reston, VA

Publisher: U.S. Geological Survey and Nevada Bureau of Mines and Geology

Source_Scale_Denominator: 500000

Type_of_Source_Media: mylar

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 1978

Source_Currentness_Reference: publication date

Source_Citation_Abbreviation: Stewart and Carlson, 1978a
 Source_Contribution: The map provided spatial location information in an analog format.
 Source_Information:
 Source_Citation:
 Citation_Information:
 Originator: Stewart, J.H.
 Originator: Carlson, J.E.
 Publication_Date: 1978
 Title: Sources of data for the geologic map of Nevada
 Geospatial_Data_Presentation_Form: document
 Series_Information:
 Series_Name: Miscellaneous Field Investigations
 Issue_Identification: MF-930
 Publication_Information:
 Publication_Place: Reston, VA
 Publisher: U.S Geological Survey
 Type_of_Source_Media: paper
 Source_Time_Period_of_Content:
 Time_Period_Information:
 Single_Date/Time:
 Calendar_Date: 1978
 Source_Currentness_Reference: publication date
 Source_Citation_Abbreviation: Stewart and Carlson, 1978b
 Source_Contribution: The document provided map unit descriptions.
 Source_Information:
 Source_Citation:
 Citation_Information:
 Originator: Turner, R.M.
 Originator: Bawiec, W.J.
 Publication_Date: 1991
 Title: Geology of Nevada - a digital representation of the 1978 geologic map of Nevada
 Edition: 1.0 (although not specified as such on that publication)
 Geospatial_Data_Presentation_Form: vector digital data
 Series_Information:
 Series_Name: Digital Data Series
 Issue_Identification: DDS-2
 Publication_Information:
 Publication_Place: Denver, Colorado
 Publisher: U.S. Geological Survey
 Source_Scale_Denominator: 500000
 Type_of_Source_Media: CD-ROM
 Source_Time_Period_of_Content:
 Time_Period_Information:
 Single_Date/Time:
 Calendar_Date: 1978
 Source_Currentness_Reference: publication date of Geologic Map of Nevada by Stewart and Carlson (1978a)
 Source_Citation_Abbreviation: Turner and Bawiec, 1991
 Source_Contribution: The first edition was used to prepare a second edition (Raines and others, 1996) of GIS for Stewart and Carlson's (1978a) Geologic map of Nevada.

Source_Information:

Source_Citation:

Citation_Information:

Originator: Raines, G.L.

Originator: Sawatzky, D.L.

Originator: Connors, K.A.

Publication_Date: 1996

Title: Great Basin geoscience data base

Edition: 2.0 (although not specified as such on that publication)

Geospatial_Data_Presentation_Form: vector digital data

Series_Information:

Series_Name: Digital Data Series

Issue_Identification: DDS-41

Publication_Information:

Publication_Place: Washington, D.C.

Publisher: U.S. Geological Survey

Source_Scale_Denominator: 500000

Type_of_Source_Media: CD-ROM

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 1978

Source_Currentness_Reference: publication date of Geologic Map of Nevada by Stewart and Carlson (1978a)

Source_Citation_Abbreviation: Raines and others, 1996

Source_Contribution: The second edition was used to prepare the third edition (Stewart and others, 2003) of GIS for Stewart and Carlson's (1978a) Geologic map of Nevada.

Process_Step:

Process_Description: Geologic map was digitized from mylar publication materials and minimally attributed.

Source_Used_Citation_Abbreviation: Stewart and Carlson, 1978a

Process_Date: Unknown

Source_Produced_Citation_Abbreviation: Turner and Bawiec, 1991

Process_Step:

Process_Description:

Katherine A. Connors joined the north and south halves of the first edition of the GIS (Turner and Bawiec, 1991), edited labels, and deleted multiple labels. She added nonprinting lines (where `nvIntype = 0`) to manage (or take into account) ArcInfo and plotter limitations. And, she selected arcs with same formation on both sides (these should be most of the faults) and calculated `nvIntype = 6`.

Gary L. Raines examined all thrust faults and formation labels on the paper map (Stewart and Carlson, 1978a) and made corrections to the first edition of the GIS (Turner and Bawiec, 1991). He selected and flipped all incorrectly oriented fault arcs, and he added labels for formations to polygons without labels. In all, he edited and corrected over 6,000 fault orientation and formation label errors.

Source_Used_Citation_Abbreviation: Turner and Bawiec, 1991

Source_Used_Citation_Abbreviation: Stewart and Carlson, 1978a

Process_Date: 1992-1996

Source_Produced_Citation_Abbreviation: Raines and others, 1996

Process_Step:

Process_Description:

Robert J. Miller rubbersheeted the boundary (perimeter) of the State of Nevada (in ESRI ArcInfo coverage format) to match a reference dataset of state boundaries derived from 1:100,000-scale digital line graphs (DLG). He replaced the section of the state boundary which follows the Colorado River with a line from 1:100,000-scale DLG hydrographic files. He updated the metadata to Federal Geographic Data Committee (FGDC) compliance.

Steve Ludington designed a table for lithologic information (based on the Digital Geologic Map Data Model, version 4.3 by Johnson and others (1998), and he populated the table with information derived from the description of map units by Stewart and Carlson (1978b) and various other sources.

Robert J. Miller attached Ludington's table of lithologic information to the spatial database (ArcInfo GIS).

Barry Moring systematically proofed the resultant geologic map database (GIS) against a scanned image of the paper geologic map by Stewart and Carlson (1978a): he made numerous corrections to the GIS with regards to polygon labels, arc attributes, and arc locations, in addition to incorporating hydrologic features.

Source_Used_Citation_Abbreviation: Raines and others, 1996

Source_Used_Citation_Abbreviation: Stewart and Carlson, 1978b

Source_Used_Citation_Abbreviation: Stewart and Carlson, 1978a

Process_Date: 2000-2003

Source_Produced_Citation_Abbreviation: Stewart and others, 2003

Process_Step:

Process_Description: Pamela D. Derkey ran mp 2.8.18 (<http://geo-nvdi.er.usgs.gov/validate.php>) on the metadata file, made necessary corrections to the metadata, and imported the metadata into the nvgeo coverage.

Process_Date: 20041229

Process_Step:

Process_Description: Metadata imported.

Process_Date: 20041229

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Vector

Point_and_Vector_Object_Information:**SDTS_Terms_Description:**

SDTS_Point_and_Vector_Object_Type: Complete chain

Point_and_Vector_Object_Count: 73285

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Label point

Point_and_Vector_Object_Count: 21029

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: GT-polygon composed of chains

Point_and_Vector_Object_Count: 21029

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: Point

Point_and_Vector_Object_Count: 45

SDTS_Terms_Description:

SDTS_Point_and_Vector_Object_Type: String

Point_and_Vector_Object_Count: 0

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

Map_Projection:
 Map_Projection_Name: Lambert Conformal Conic
 Lambert_Conformal_Conic:
 Standard_Parallel: 33.000000
 Standard_Parallel: 45.000000
 Longitude_of_Central_Meridian: -117.000000
 Latitude_of_Projection_Origin: 0.000000
 False_Easting: 0.000000
 False_Northing: 0.000000
 Planar_Coordinate_Information:
 Planar_Coordinate_Encoding_Method: coordinate pair
 Coordinate_Representation:
 Abscissa_Resolution: 0.005531
 Ordinate_Resolution: 0.005531
 Planar_Distance_Units: meters
 Geodetic_Model:
 Horizontal_Datum_Name: North American Datum of 1927
 Ellipsoid_Name: Clarke 1866
 Semi-major_Axis: 6378206.400000
 Denominator_of_Flattening_Ratio: 294.978698
 Entity_and_Attribute_Information:
 Detailed_Description:
 Entity_Type:
 Entity_Type_Label: nvgeo.aat
 Entity_Type_Definition: Arc attribute table: linear features (contacts, faults, and folds)
 Entity_Type_Definition_Source: ESRI
 Attribute:
 Attribute_Label: FID
 Attribute_Definition: Internal feature number.
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:
 Unrepresentable_Domain: Sequential unique whole numbers that are automatically generated.
 Attribute:
 Attribute_Label: Shape
 Attribute_Definition: Feature geometry.
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:
 Unrepresentable_Domain: Coordinates defining the features.
 Attribute:
 Attribute_Label: FNODE#
 Attribute_Definition: Internal node number for the beginning of an arc (from-node).
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:
 Unrepresentable_Domain: Whole numbers that are automatically generated.
 Attribute:
 Attribute_Label: TNODE#
 Attribute_Definition: Internal node number for the end of an arc (to-node).
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:

Unrepresentable_Domain: Whole numbers that are automatically generated.

Attribute:
Attribute_Label: LPOLY#
Attribute_Definition: Internal node number for the left polygon.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Whole numbers that are automatically generated.

Attribute:
Attribute_Label: RPOLY#
Attribute_Definition: Internal node number for the right polygon.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Whole numbers that are automatically generated.

Attribute:
Attribute_Label: LENGTH
Attribute_Definition: Length of feature in internal units.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Positive real numbers that are automatically generated.

Attribute:
Attribute_Label: NVGEO#
Attribute_Definition: Internal feature number.
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 1
Range_Domain_Maximum: 73285
Unrepresentable_Domain: Sequential unique whole numbers that are automatically generated.

Attribute:
Attribute_Label: NVGEO-ID
Attribute_Definition: User-defined feature number
Attribute_Definition_Source: ESRI
Attribute_Domain_Values:
Unrepresentable_Domain: Non-sequential unique whole numbers that were generated during the GIS creation and editing process by R.J. Miller and B.C. Moring.

Attribute:
Attribute_Label: LINECODE
Attribute_Definition: Numeric code used to identify type of linear feature.
Attribute_Domain_Values:
Unrepresentable_Domain:
Linecodes > 0 and < 100 are used for contacts and boundaries which are described in the NVGEO.CON file.
Linecodes > 100 and < 600 represent structural features which are described in the NVGEO.ST2 file.

Attribute:
Attribute_Label: FAULT_CONT
Attribute_Definition: Indicates if fault constitutes a contact between rock units.
Attribute_Domain_Values:
Enumerated_Domain:

Enumerated_Domain_Value: yes

Enumerated_Domain_Value_Definition: fault IS a contact between rock units

Enumerated_Domain:

Enumerated_Domain_Value: no

Enumerated_Domain_Value_Definition: fault is NOT a contact between rock units

Attribute:

Attribute_Label: DWNTHRWN

Attribute_Definition: Indicates the sense of movement on the fault.

Attribute_Domain_Values:

Enumerated_Domain:

Enumerated_Domain_Value: E

Enumerated_Domain_Value_Definition: East side of fault is downdropped with respect to the west side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: N

Enumerated_Domain_Value_Definition: North side of fault is downdropped with respect to the south side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: NE

Enumerated_Domain_Value_Definition: Northeast side of fault is downdropped with respect to the southwest side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: NW

Enumerated_Domain_Value_Definition: Northwest side of fault is downdropped with respect to the southeast side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: None

Enumerated_Domain_Value_Definition: no movement was observed

Enumerated_Domain:

Enumerated_Domain_Value: S

Enumerated_Domain_Value_Definition: South side of fault is downdropped with respect to the north side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: SE

Enumerated_Domain_Value_Definition: Southeast side of fault is downdropped with respect to the northwest side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: SW

Enumerated_Domain_Value_Definition: Southwest side of fault is downdropped with respect to the northeast side of the fault.

Enumerated_Domain:

Enumerated_Domain_Value: W

Enumerated_Domain_Value_Definition: West side of fault is downdropped with respect to the east side of the fault.

Unrepresentable_Domain:

The side indicated by the compass direction (E, N, NE, NW, S, SE, SW, or W) is downdropped.

No value and a value of "None" indicate that no movement occurred.

Attribute:

Attribute_Label: SOURCE_ID

Attribute_Definition: Numeric code used to identify the data source for the linear feature.

Attribute_Domain_Values:

- Enumerated_Domain:
 - Enumerated_Domain_Value: 1
 - Enumerated_Domain_Value_Definition: USGS, 1993
- Enumerated_Domain:
 - Enumerated_Domain_Value: 32
 - Enumerated_Domain_Value_Definition: Stewart and Carlson, 1978a
- Unrepresentable_Domain: Complete references for the sources are listed in the NVGEO.REF look-up table.

Attribute:

- Attribute_Label: SPATIAL_OBJ_ID
- Attribute_Definition: Unique numeric identifier for each object in the NVGEO feature attribute tables (NVGEO.AAT and NVGEO.PAT). (This integer is NOT duplicated in the NVGEO.PAT feature attribute table.)
- Attribute_Domain_Values:
 - Unrepresentable_Domain: Value is EITHER -999 OR value ranges from 320200001 to 320273316.
- Detailed_Description:
 - Entity_Type:
 - Entity_Type_Label: nvgeo.pat
 - Entity_Type_Definition: Polygon attribute table: map units
 - Entity_Type_Definition_Source: ESRI
- Attribute:
 - Attribute_Label: FID
 - Attribute_Definition: Internal feature number.
 - Attribute_Definition_Source: ESRI
 - Attribute_Domain_Values:
 - Unrepresentable_Domain: Sequential unique whole numbers that are automatically generated.
- Attribute:
 - Attribute_Label: Shape
 - Attribute_Definition: Feature geometry.
 - Attribute_Definition_Source: ESRI
 - Attribute_Domain_Values:
 - Unrepresentable_Domain: Coordinates defining the features.
- Attribute:
 - Attribute_Label: AREA
 - Attribute_Definition: Area of feature in internal units squared.
 - Attribute_Definition_Source: ESRI
 - Attribute_Domain_Values:
 - Unrepresentable_Domain: Positive real numbers that are automatically generated.
- Attribute:
 - Attribute_Label: PERIMETER
 - Attribute_Definition: Perimeter of feature in internal units.
 - Attribute_Definition_Source: ESRI
 - Attribute_Domain_Values:
 - Unrepresentable_Domain: Positive real numbers that are automatically generated.
- Attribute:
 - Attribute_Label: NVGEO#

Attribute_Definition: Internal feature number.
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 2
 Range_Domain_Maximum: 21030
 Unrepresentable_Domain: Sequential unique whole numbers that are automatically generated.

Attribute:
 Attribute_Label: NVGEO-ID
 Attribute_Definition: User-defined feature number.
 Attribute_Definition_Source: ESRI
 Attribute_Domain_Values:
 Unrepresentable_Domain: Non-sequential unique whole numbers that were generated during the GIS creation and editing process by R.J. Miller and B.C. Moring.

Attribute:
 Attribute_Label: MAP_UNIT
 Attribute_Definition:
 Map unit designation as it appeared on the printed Stewart and Carlson (1978a) map; however, special geologic age symbols have been replaced by ASCII characters:
 TR for Triassic, P for Pennsylvanian, and C for Cambrian.
 Map unit description from Stewart and Carlson (1978a) is also included in this metadata in the Enumerated_Domain_Value_Definition elements.

Attribute_Domain_Values:
 Enumerated_Domain:
 Enumerated_Domain_Value: Qa
 Enumerated_Domain_Value_Definition: ALLUVIAL DEPOSITS - Locally includes beach and sand dune deposits

 Enumerated_Domain:
 Enumerated_Domain_Value: Qp
 Enumerated_Domain_Value_Definition: PLAYA, MARSH, AND ALLUVIAL-FLAT DEPOSITS, LOCALLY ERODED

 Enumerated_Domain:
 Enumerated_Domain_Value: Qls
 Enumerated_Domain_Value_Definition: LANDSLIDE DEPOSITS

 Enumerated_Domain:
 Enumerated_Domain_Value: Qm
 Enumerated_Domain_Value_Definition: MORAINAL DEPOSITS

 Enumerated_Domain:
 Enumerated_Domain_Value: QToa
 Enumerated_Domain_Value_Definition: OLDER ALLUVIAL DEPOSITS

 Enumerated_Domain:
 Enumerated_Domain_Value: QTr
 Enumerated_Domain_Value_Definition: RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS

 Enumerated_Domain:
 Enumerated_Domain_Value: QTa
 Enumerated_Domain_Value_Definition: ANDESITE FLOWS AND BRECCIAS

 Enumerated_Domain:
 Enumerated_Domain_Value: QTb

Enumerated_Domain_Value_Definition: BASALT FLOWS - Locally includes maar deposits

Enumerated_Domain:
Enumerated_Domain_Value: QTs
Enumerated_Domain_Value_Definition: SEDIMENTARY ROCKS - Mostly lake deposits

Enumerated_Domain:
Enumerated_Domain_Value: Ks
Enumerated_Domain_Value_Definition: CONTINENTAL DEPOSITS OF SILTSTONE, SHALE, CONGLOMERATE, AND LIMESTONE - Includes units such as King Lear Formation in Humboldt County, Newark Canyon Formation in Eureka County, Willow Tank Formation and Baseline Sandstone in Clark County

Enumerated_Domain:
Enumerated_Domain_Value: TKs
Enumerated_Domain_Value_Definition: CONTINENTAL SEDIMENTARY ROCKS - Includes units such as Pansy Lee Conglomerate in Humboldt County, part of Cretaceous(?) and Tertiary rocks of Kleinhampl and Ziony (1967) in northern Nye County, and part of older clastic rocks of Tschanz and Pampeyan (1970) in Lincoln County

Enumerated_Domain:
Enumerated_Domain_Value: Ts1
Enumerated_Domain_Value_Definition: SEDIMENTARY ROCKS - Includes Sheep Pass Formation (Eocene) and related units and unnamed tuffaceous sedimentary rocks

Enumerated_Domain:
Enumerated_Domain_Value: Ta1
Enumerated_Domain_Value_Definition: ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION - Flows and breccias

Enumerated_Domain:
Enumerated_Domain_Value: Tr1
Enumerated_Domain_Value_Definition: RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS

Enumerated_Domain:
Enumerated_Domain_Value: Tt1
Enumerated_Domain_Value_Definition: WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS - Locally includes thin units of air-fall tuff and sedimentary rock

Enumerated_Domain:
Enumerated_Domain_Value: Ts2
Enumerated_Domain_Value_Definition: TUFFACEOUS SEDIMENTARY ROCKS - Locally includes minor amounts of tuff

Enumerated_Domain:
Enumerated_Domain_Value: Tob
Enumerated_Domain_Value_Definition: OLDER BASALT ROCKS

Enumerated_Domain:
Enumerated_Domain_Value: Ta2
Enumerated_Domain_Value_Definition: ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION - Flows and breccias

Enumerated_Domain:
Enumerated_Domain_Value: Tr2
Enumerated_Domain_Value_Definition: RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS

Enumerated_Domain:
Enumerated_Domain_Value: Tt2

Enumerated_Domain_Value_Definition: WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS - Locally includes thin units of air-fall tuff and sedimentary rock

Enumerated_Domain:

Enumerated_Domain_Value: TKsu

Enumerated_Domain_Value_Definition: CONTINENTAL SEDIMENTARY ROCKS - Clark County

Enumerated_Domain:

Enumerated_Domain_Value: Ths

Enumerated_Domain_Value_Definition: HORSE SPRING FORMATION - Tuffaceous sedimentary rocks, southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: Ts3

Enumerated_Domain_Value_Definition: TUFFACEOUS SEDIMENTARY ROCKS - Locally includes minor amounts of tuff

Enumerated_Domain:

Enumerated_Domain_Value: Tts

Enumerated_Domain_Value_Definition: ASH-FLOW TUFFS AND TUFFACEOUS SEDIMENTARY ROCKS

Enumerated_Domain:

Enumerated_Domain_Value: Tbg

Enumerated_Domain_Value_Definition: BANBURY FORMATION - Basalt, gravel, and tuffaceous sediments locally. Northeast Humboldt County and northwest Elko County

Enumerated_Domain:

Enumerated_Domain_Value: Tb

Enumerated_Domain_Value_Definition: BASALT FLOWS

Enumerated_Domain:

Enumerated_Domain_Value: Tba

Enumerated_Domain_Value_Definition: ANDESITE AND BASALT FLOWS - Mostly in about 17 to about 6 m.y. age range. In Humboldt County, locally includes rocks as old as 21 m.y. May include rocks younger than 6 m.y. in places

Enumerated_Domain:

Enumerated_Domain_Value: Ta3

Enumerated_Domain_Value_Definition: ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION - Flows and breccias

Enumerated_Domain:

Enumerated_Domain_Value: Tr3

Enumerated_Domain_Value_Definition: RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS

Enumerated_Domain:

Enumerated_Domain_Value: Trt

Enumerated_Domain_Value_Definition: ASH-FLOW TUFFS, RHYOLITIC FLOWS, AND SHALLOW INTRUSIVE ROCKS

Enumerated_Domain:

Enumerated_Domain_Value: Tt3

Enumerated_Domain_Value_Definition: WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS - Locally includes thin units of air-fall tuff and sedimentary rock

Enumerated_Domain:

Enumerated_Domain_Value: Tbr

Enumerated_Domain_Value_Definition: BRECCIA - Volcanic, thrust, and jasperoid breccia and landslide megabreccia

Enumerated_Domain:
 Enumerated_Domain_Value: Ti
 Enumerated_Domain_Value_Definition: INTRUSIVE ROCKS - Aphanitic, porphyritic, and coarsely granular rocks ranging in composition from diorite to granite. Clark County

Enumerated_Domain:
 Enumerated_Domain_Value: Tmi
 Enumerated_Domain_Value_Definition: INTRUSIVE ROCKS OF MAFIC TO INTERMEDIATE COMPOSITION

Enumerated_Domain:
 Enumerated_Domain_Value: Tri
 Enumerated_Domain_Value_Definition: RHYOLITIC INTRUSIVE ROCKS

Enumerated_Domain:
 Enumerated_Domain_Value: TJgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS, CENTRAL AND EASTERN NEVADA - Mostly quartz monzonite and granodiorite. Inconclusively dated or not dated radiometrically

Enumerated_Domain:
 Enumerated_Domain_Value: Tgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS - Mostly quartz monzonite and granodiorite

Enumerated_Domain:
 Enumerated_Domain_Value: MZgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS, WESTERN NEVADA (Mesozoic) - Mostly quartz monzonite and granodiorite. Inconclusively dated or not dated radiometrically

Enumerated_Domain:
 Enumerated_Domain_Value: KJd
 Enumerated_Domain_Value_Definition: DIORITE

Enumerated_Domain:
 Enumerated_Domain_Value: Kgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS - Mostly quartz monzonite and granodiorite

Enumerated_Domain:
 Enumerated_Domain_Value: Jgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS - Mostly quartz monzonite and granodiorite

Enumerated_Domain:
 Enumerated_Domain_Value: TRgr
 Enumerated_Domain_Value_Definition: GRANITIC ROCKS - Quartz monzonite in northern Esmeralda County

Enumerated_Domain:
 Enumerated_Domain_Value: KJim
 Enumerated_Domain_Value_Definition: IGNEOUS AND METAMORPHIC COMPLEX - Pegmatitic granite and other granitic rocks complexly intermixed with metasedimentary rocks. Considered to be Mesozoic igneous complex intruding lower Paleozoic and possibly Precambrian Z sedimentary rocks. Grades into units shown on map as lower Paleozoic. Ruby Mountains and East Humboldt Range, Elko County

Enumerated_Domain:
 Enumerated_Domain_Value: JTRsv

Enumerated_Domain_Value_Definition: SHALE, SANDSTONE, VOLCANOGENIC CLASTIC ROCKS, ANDESITE, RHYOLITE, AND LOCALLY THICK CARBONATE UNITS - Undivided sequence locally containing recognizable equivalents of the Luning and Dunlap Formations

Enumerated_Domain:

Enumerated_Domain_Value: Jd

Enumerated_Domain_Value_Definition: DUNLAP FORMATION (Lower and Middle Jurassic) - Conglomerate, sandstone, greenstone, felsite, and tuff. Locally contemporaneous with folding and thrusting. Mineral County and adjacent parts of Esmeralda and Nye Counties

Enumerated_Domain:

Enumerated_Domain_Value: Jgb

Enumerated_Domain_Value_Definition: GABBROIC COMPLEX (Lower and Middle Jurassic) - Includes gabbro, basalt, and synorogenic quartz sandstone (Boyer Ranch Formation). Churchill and Pershing Counties

Enumerated_Domain:

Enumerated_Domain_Value: Jv

Enumerated_Domain_Value_Definition: VOLCANIC SANDSTONE, FELSIC ASH-FLOW TUFFS, RHYOLITE, AND RHYODACITE FLOWS (Upper? Jurassic) - Pony Trail Group of Cortez Mountains, Eureka County

Enumerated_Domain:

Enumerated_Domain_Value: JTRs

Enumerated_Domain_Value_Definition: SHALE, MUDSTONE, SILTSTONE, SANDSTONE, AND CARBONATE ROCK; SPARSE VOLCANIC ROCK (Upper Triassic and Lower Jurassic) - Includes Auld Lang Syne Group, Nightingale sequence of Bonham (1969), and Gabbs and Sunrise Formations

Enumerated_Domain:

Enumerated_Domain_Value: TRc

Enumerated_Domain_Value_Definition: LIMESTONE, MINOR AMOUNTS OF DOLOMITE, SHALE, AND SANDSTONE; LOCALLY THICK CONGLOMERATE UNITS (Lower, Middle, and Upper Triassic) - Includes Tobin, Dixie Valley, Favret, Augusta Mountain, and Cane Spring Formations and Star Peak Group in central Nevada and Grantsville and Luning Formations in west-central Nevada

Enumerated_Domain:

Enumerated_Domain_Value: TRk

Enumerated_Domain_Value_Definition: KOIPATO GROUP AND RELATED ROCKS (Lower Triassic) - Altered andesitic flows, rhyolitic tuffs and flows, and clastic rocks. Includes rocks mapped by Silberling (1959) as Pablo Formation and originally considered to be Permian in the Shoshone Mountains, Nye County. Includes Tallman Fanglomerate (Permian?) in Humboldt County

Enumerated_Domain:

Enumerated_Domain_Value: TRlgr

Enumerated_Domain_Value_Definition: LEUCOGRANITE AND RHYOLITE PORPHYRY

Enumerated_Domain:

Enumerated_Domain_Value: JTRa

Enumerated_Domain_Value_Definition: AZTEC SANDSTONE (Triassic? and Jurassic) - Friable fine- to medium-grained sandstone with conspicuous large-scale cross strata; considered eolian. Age based on correlation with Navajo Sandstone

Enumerated_Domain:

Enumerated_Domain_Value: TRch

Enumerated_Domain_Value_Definition: CHINLE FORMATION AND ASSOCIATED ROCKS (Upper Triassic) - Continental deposits of variegated bentonitic claystone, siltstone, and clayey sandstone; ledge-forming sandstone; and red siltstone

Enumerated_Domain:

Enumerated_Domain_Value: TRmt

Enumerated_Domain_Value_Definition: MOENKOPI FORMATION, THAYNES FORMATION, AND RELATED ROCKS (Lower Triassic) - Marine deposits of siltstone, limestone, and sparse conglomerate

Enumerated_Domain:

Enumerated_Domain_Value: JPu

Enumerated_Domain_Value_Definition: VOLCANOGENIC SEDIMENTARY ROCKS, TUFF, ANDESITIC AND FELSITIC FLOWS, AND CARBONATE ROCKS - Age uncertain.

Mineral, Esmeralda, and northwest Nye Counties

Enumerated_Domain:

Enumerated_Domain_Value: TRPs

Enumerated_Domain_Value_Definition: SILTY LIMESTONE, MINOR AMOUNTS OF SHALE, AND SOME GREENSTONE - Unnamed sequence in Adobe Range, northern Elko County

Enumerated_Domain:

Enumerated_Domain_Value: TRPvs

Enumerated_Domain_Value_Definition: VOLCANIC FLOWS AND FLOW BRECCIAS, CHIEFLY OF ANDESITIC COMPOSITION, TUFFS, SPARSE SANDSTONE AND GRAYWACKE - Includes Happy Creek Volcanic Series and related rocks in Humboldt County and similar rocks in Washoe and Pershing Counties; includes andesite breccias and volcanogenic sedimentary rocks in Mineral County

Enumerated_Domain:

Enumerated_Domain_Value: PMh

Enumerated_Domain_Value_Definition: HAVALLAH SEQUENCE OF SILBERLING AND ROBERTS (1962) - Chert argillite, shale, greenstone, and minor amounts of siltstone, sandstone, conglomerate, and limestone. Includes Schoonover Formation of Fagan (1962) and Reservation Hill Formation in Elko County, Farrel Canyon Formation in southwestern Humboldt County, Havallah and Pumpnickel Formations in Pershing, Lander, and parts of Humboldt Counties, and rocks originally considered a part of the Pablo and Excelsior Formations in northern Nye, northern Esmeralda, and southern Mineral Counties. Assignment of some rocks to the Havallah sequence in the East Range, Pershing County, is highly uncertain. Includes rocks ranging in age from Late Mississippian to Early Permian

Enumerated_Domain:

Enumerated_Domain_Value: Msv

Enumerated_Domain_Value_Definition: SILICEOUS AND VOLCANIC ROCKS - In Humboldt County, consists of altered pillow lavas, coarse volcanic breccias, clastic limestone, and minor amounts of sandstone, shale, siliceous shale, and chert of the Goughs Canyon Formation (Lower and Upper Mississippian). In the East Range, Pershing County, consists of quartzite, conglomerate, slate, limestone, chert, and greenstone of the Inskip Formation (Mississippian?)

Enumerated_Domain:

Enumerated_Domain_Value: MI

Enumerated_Domain_Value_Definition: MASSIVE LIMESTONE - In the San Antonio Mountains, western Nye County

Enumerated_Domain:

Enumerated_Domain_Value: TRPd

Enumerated_Domain_Value_Definition: CONGLOMERATE, SANDSTONE, SHALE, AND DOLOMITE OF DIABLO FORMATION BELOW AND SHALE, SANDSTONE, AND CONGLOMERATE OF CANDELARIA FORMATION ABOVE (Lower or Upper Permian to Lower Triassic) - Mineral, Esmeralda, and northwestern Nye Counties

Enumerated_Domain:

Enumerated_Domain_Value: PPa

Enumerated_Domain_Value_Definition: ANTLER SEQUENCE OF SILBERLING AND ROBERTS (1962) (Middle Pennsylvanian to Early or Late Permian) (Guadalupian) - Conglomerate, sandy to conglomeratic limestone, limestone, sandstone, and calcareous shale. Thin detrital and carbonate sequence within main part of Antler orogenic belt. Includes units such as Sunflower Formation of Bushnell (1967) in Elko County, Battle Formation, Antler Peak Limestone, and Edna Mountain Formation in Lander and western Eureka counties, and Wildcat Peak Formation in northern Nye County

Enumerated_Domain:

Enumerated_Domain_Value: MDmc

Enumerated_Domain_Value_Definition: CONGLOMERATE, LIMESTONE, META-ANDESITE, PHYLLITE, AND SHALE - Includes Grossman, Banner, Nelson, and Mountain City Formation. Northern Elko County

Enumerated_Domain:

Enumerated_Domain_Value: PPcd

Enumerated_Domain_Value_Definition: SANDY AND SILTY LIMESTONE, CONGLOMERATE, AND SILTSTONE (Upper Pennsylvanian to Upper Permian) - Includes units such as Strathearn Formation of Dott (1955) and Buckskin Mountain, Beacon Flat, and Carlin Canyon Formations of Fails (1960) in Elko County and Carbon Ridge and Garden Valley Formations in Eureka County

Enumerated_Domain:

Enumerated_Domain_Value: Pcd

Enumerated_Domain_Value_Definition: LIMESTONE, CHERTY LIMESTONE, SANDY LIMESTONE, AND CHERT-PEBBLE CONGLOMERATE (Lower and Middle Pennsylvanian) - Includes units such as Moleen and Tomera Formations of Dott (1955)

Enumerated_Domain:

Enumerated_Domain_Value: MDs

Enumerated_Domain_Value_Definition: SHALE, SILTSTONE, SANDSTONE, CHERT-PEBBLE CONGLOMERATE, AND LIMESTONE - Includes units such as Pilot Shale, Joana Limestone, Chainman Shale, and Diamond Peak Formation in northern and eastern Nevada and Narrow Canyon Limestone, Mercury Limestone, and Eleana Formation in southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: Pc

Enumerated_Domain_Value_Definition: CHERTY LIMESTONE AND SPARSE DOLOMITE, SHALE, AND SANDSTONE (Lower and Upper Permian) - Includes units such as Park City Group and equivalent rocks in northern Nevada and Toroweap Formation and Kaibab Limestone in southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: PMc

Enumerated_Domain_Value_Definition: LIMESTONE, DOLOMITE, AND SHALE (Upper Paleozoic) - Includes Van Duzer Limestone of Decker (1962)

Enumerated_Domain:

Enumerated_Domain_Value: Psc

Enumerated_Domain_Value_Definition: SILTSTONE, SANDSTONE, LIMESTONE, AND DOLOMITE (COMMONLY SILTY OR SANDY), AND GYPSUM (Lower Permian) -

Includes units such as Rib Hill Sandstone and Pequop Formation of Steele (1959) in Elko County, Rib Hill Sandstone and Arcturus Formation in White Pine County, Queantowep Sandstone of McNair (1951), Hermit Shale, and Coconino Sandstone in Clark and southern Lincoln Counties

Enumerated_Domain:

Enumerated_Domain_Value: PPc

Enumerated_Domain_Value_Definition: LIMESTONE AND SPARSE DOLOMITE, SILTSTONE, AND SANDSTONE (Lower Pennsylvanian to Lower Permian) - Includes units such as undivided Riepe Spring Limestone of Steele (1960) and Ely Limestone or their equivalent in Elko, White Pine, and northern Lincoln Counties and most of the Bird Spring Formation and Callville Limestone in Clark and southern Lincoln Counties. Includes some stratigraphically higher Permian rocks in Leppy Peak, easternmost Elko County

Enumerated_Domain:

Enumerated_Domain_Value: Pc

Enumerated_Domain_Value_Definition: LIMESTONE - Includes Ely Limestone (mostly Lower and Middle Pennsylvanian)

Enumerated_Domain:

Enumerated_Domain_Value: Mc

Enumerated_Domain_Value_Definition: LIMESTONE AND MINOR AMOUNTS OF DOLOMITE AND SHALE - Includes units such as Rogers Spring and Monte Cristo Limestones

Enumerated_Domain:

Enumerated_Domain_Value: PZsp

Enumerated_Domain_Value_Definition: SERPENTINITE (Paleozoic) - Mineral, northwestern Nye, and eastern Humboldt counties

Enumerated_Domain:

Enumerated_Domain_Value: DCsv

Enumerated_Domain_Value_Definition: CHERT, SHALE, ARGILLITE, SILTSTONE, QUARTZITE, AND GREENSTONE - Undivided siliceous assemblage. Mostly Ordovician

Enumerated_Domain:

Enumerated_Domain_Value: Dsl

Enumerated_Domain_Value_Definition: SLAVEN CHERT - Chert and sparse limy sandstone, siltstone, and limestone. Lander County

Enumerated_Domain:

Enumerated_Domain_Value: Ds

Enumerated_Domain_Value_Definition: SHALE, SILICEOUS SILTSTONE, CHERT, AND MINOR AMOUNTS OF LIMESTONE - Includes Cockalorum Wash Formation of northern Nye County and Woodruff Formation and unnamed rocks in Elko County

Enumerated_Domain:

Enumerated_Domain_Value: Se

Enumerated_Domain_Value_Definition: ELDER SANDSTONE - Feldspathic sandstone, siltstone, shale, and chert. Lander County

Enumerated_Domain:

Enumerated_Domain_Value: Ss

Enumerated_Domain_Value_Definition: SHALE AND CHERT - Includes Fourmile Canyon Formation in Eureka County and Noh Formation of Riva (1970) and unnamed rocks in Elko County

Enumerated_Domain:

Enumerated_Domain_Value: Osv

Enumerated_Domain_Value_Definition: SILICEOUS AND VOLCANIC ROCKS - Chert, shale, quartzite, greenstone, and minor amounts of limestone. Includes units such as Valmy

Formation of north-central Nevada and some rocks mapped as Palmetto Formation in northern part of Esmeralda County and adjacent parts of Mineral and Nye Counties. Locally includes rocks of Silurian and Devonian age

Enumerated_Domain:

Enumerated_Domain_Value: Os

Enumerated_Domain_Value_Definition: SHALE, CHERT, AND MINOR AMOUNTS OF QUARTZITE, GREENSTONE, AND LIMESTONE - Includes units such as Vinini Formation of north-central Nevada, Palmetto Formation in southern and central parts of Esmeralda County, and Comus Formation in Humboldt County. Locally includes rocks of Silurian and Devonian age

Enumerated_Domain:

Enumerated_Domain_Value: Ch

Enumerated_Domain_Value_Definition: HARMONY FORMATION (Upper Cambrian) - Feldspathic and arkosic sandstone and minor amounts of shale, limestone, and chert

Enumerated_Domain:

Enumerated_Domain_Value: Csc

Enumerated_Domain_Value_Definition: SCOTT CANYON FORMATION (Lower or Middle Cambrian) - Chert, shale, greenstone, and sparse limestone and quartzite. Southeast Humboldt County and northwest Lander County

Enumerated_Domain:

Enumerated_Domain_Value: Dt

Enumerated_Domain_Value_Definition: ARGILLACEOUS LIMESTONE, CHERT, AND SHALE - Elko and Eureka Counties

Enumerated_Domain:

Enumerated_Domain_Value: St

Enumerated_Domain_Value_Definition: PLATY LIMESTONE AND LIMY SILTSTONE, CHERT AT BASE - Includes units such as Roberts Mountains Formation, and Storff Formation and Chellis Limestone of Decker (1962). Locally includes rocks of Early Devonian age at top

Enumerated_Domain:

Enumerated_Domain_Value: Ot

Enumerated_Domain_Value_Definition: SHALE, CHERT, AND LIMESTONE - Includes Aura Formation of Decker (1962) in northwest Elko County and Perkins Canyon Formation of Kay and Crawford (1964) in northern Nye County

Enumerated_Domain:

Enumerated_Domain_Value: OCt

Enumerated_Domain_Value_Definition: PHYLLITE, SHALE, AND LIMESTONE - Locally includes chert and quartzite. Includes Tennessee Mountain Formation of Bushnell (1967) in western Elko County, Broad Canyon sequence of Means (1962) in La

Enumerated_Domain:

Enumerated_Domain_Value: Ct

Enumerated_Domain_Value_Definition: SHALE AND THIN-BEDDED OR LAMINATED LIMESTONE; ALSO THINLY INTERBEDDED LIMESTONE AND CHERT - Includes units such as Preble and Emigrant Formations

Enumerated_Domain:

Enumerated_Domain_Value: CZs

Enumerated_Domain_Value_Definition: PHYLLITIC SILTSTONE, QUARTZITE, AND LESSER AMOUNTS OF LIMESTONE AND DOLOMITE - Includes Reed Dolomite; Deep Spring, Campito, Poleta, Harkless, and Saline Valley Formations; and Mule Spring Limestone

Enumerated_Domain:

Enumerated_Domain_Value: Zw

Enumerated_Domain_Value_Definition: WYMAN FORMATION - Phyllite and phyllitic siltstone and minor amounts of limestone, dolomite, and sandstone

Enumerated_Domain:

Enumerated_Domain_Value: Dc

Enumerated_Domain_Value_Definition: DOLOMITE, LIMESTONE, AND MINOR AMOUNTS OF SANDSTONE AND QUARTZITE - Includes units such as Sevy and Simonson Dolomites, Guilmette and Nevada Formations, and Devils Gate Limestone

Enumerated_Domain:

Enumerated_Domain_Value: DCc

Enumerated_Domain_Value_Definition: DOLOMITE AND LIMESTONE (Lower Paleozoic)

Enumerated_Domain:

Enumerated_Domain_Value: Sc

Enumerated_Domain_Value_Definition: DOLOMITE - Includes units such as Laketown and Lone Mountain Dolomites. Locally includes rocks of Early Devonian age at top

Enumerated_Domain:

Enumerated_Domain_Value: SOc

Enumerated_Domain_Value_Definition: DOLOMITE - Includes uppermost part of Ordovician System (Ely Springs Dolomite and equivalent rocks) and all of Silurian System

Enumerated_Domain:

Enumerated_Domain_Value: Oc

Enumerated_Domain_Value_Definition: LIMESTONE, DOLOMITE, SHALE, AND QUARTZITE - Includes units such as Pogonip Group, Eureka Quartzite, and Ely Springs Dolomite. Where Ely Springs Dolomite or equivalent rocks are included in SOc unit, this unit includes only the Pogonip Group and Eureka Quartzite or their equivalents

Enumerated_Domain:

Enumerated_Domain_Value: OCc

Enumerated_Domain_Value_Definition: DOLOMITE AND LIMESTONE - Undivided Cambrian and Ordovician rocks in part of Clark County; mostly Cambrian

Enumerated_Domain:

Enumerated_Domain_Value: Cc

Enumerated_Domain_Value_Definition: LIMESTONE AND DOLOMITE, LOCALLY THICK SEQUENCES OF SHALE AND SILTSTONE - Includes units such as Pioche Shale, Eldorado Dolomite, Geddes Limestone, Secret Canyon Shale, Hamburg Dolomite, Dunderberg Shale, and Windfall Formation of northern Nevada and Carrara, Bonanza King, and Nopah Formations of southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: CZq

Enumerated_Domain_Value_Definition: QUARTZITE AND MINOR AMOUNTS OF CONGLOMERATE, PHYLLITIC SILTSTONE, LIMESTONE, AND DOLOMITE - Includes Prospect Mountain Quartzite, Osgood Mountain Quartzite, and Gold Hill Formation in northern Nevada and Stirling Quartzite, Wood Canyon Formation, and Zabriskie Quartzite in southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: Ccs

Enumerated_Domain_Value_Definition: SANDSTONE AND QUARTZITE - Includes Tapeats Sandstone and related rocks. Rests on Precambrian metamorphic rocks

Enumerated_Domain:

Enumerated_Domain_Value: Zqs

Enumerated_Domain_Value_Definition: QUARTZITE, PHYLLITIC SILTSTONE, CONGLOMERATE, LIMESTONE, AND DOLOMITE - Includes McCoy Creek Group (excluding Stella Lake Quartzite) of Misch and Hazzard (1962) in east-central Nevada and Johnnie Formation in southern Nevada

Enumerated_Domain:

Enumerated_Domain_Value: Ygr

Enumerated_Domain_Value_Definition: GRANITIC ROCKS - Porphyritic rapakivi granite; 1,450 +/- 25 m.y. (L.T. Silver, oral commun., 1973)

Enumerated_Domain:

Enumerated_Domain_Value: Xm

Enumerated_Domain_Value_Definition: METAMORPHIC ROCKS - Gneiss and schist and lesser amounts of gneissic granite, pyroxenite, hornblendite, migmatite, pegmatite, and marble. Includes highly folded granite lenses 1,740 +/- 25 m.y. old (L.T. Silver, oral commun., 1973). In southern Nye County, may be Precambrian Z rocks metamorphosed during the Mesozoic

Enumerated_Domain:

Enumerated_Domain_Value: OW

Enumerated_Domain_Value_Definition: open water

Attribute:

Attribute_Label: UNIT

Attribute_Definition: Numeric code used to identify rock unit.

Attribute_Domain_Values:

Unrepresentable_Domain: Attributes and attribute definitions are given in the NVGEO.RU look-up table.

Attribute:

Attribute_Label: SOURCE_ID

Attribute_Definition: Numeric code used to identify the data source for the rock unit.

Attribute_Domain_Values:

Unrepresentable_Domain: Complete references for the sources are listed in the NVGEO.REF file.

Attribute:

Attribute_Label: SPATIAL_OBJ_ID

Attribute_Definition: Unique numeric identifier for each object in the NVGEO feature attribute tables (NVGEO.AAT and NVGEO.PAT). (This integer is NOT duplicated in the NVGEO.AAT feature attribute table.)

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 320100001

Range_Domain_Maximum: 320121065

Distribution_Information:

Distributor:

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Format_Name: ARCE - ArcInfo export format

Transfer_Size: 18.707

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Network_Resource_Name: <http://pubs.usgs.gov/of/20032/of03-66/>

Fees: free

Metadata_Reference_Information:

Metadata_Date: 20041229

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Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Access_Constraints: none
Metadata_Use_Constraints: none
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile