Washington State Department of Natural Resources
Division of Geology and Earth Resources

Feature Classes, Codes, and Symbols for Geologic Maps in ArcGIS

by
GIS Staff

INTRODUCTION

The material below describes the feature classes needed to portray geology at all scales in ArcGIS as compiled by the Washington Division of Geology and Earth Resources. The FEATURE CLASSES section below names the feature classes used and describes the types of codes included in each. The FIELDS AND CODES section describes the data fields in each feature class and the symbols, codes, and code definitions used to attribute geologic features.

GEOGRAPHIC DATA PROPERTIES

The Washington State Department of Natural Resources' (DNR) geographic data have the following properties:

Projection: Lambert Conformal Conic
Coordinate system: WA State plane
Zone: South (FIPS 4602)
Datum: NAD83 HARN
Units: Feet
Spheroid: Geodetic Reference System (GRS80)
Format: Esri file geodatabase, feature data set, and feature classes, ArcInfo v. 10.0

All feature classes should display the following Horizontal coordinate system information in ArcCatalog under the Metadata and Spatial tabs:

Projected coordinate system name: NAD_1983_HARN_StatePlane_Washington_South_FIPS_4602_Feet

Geographic coordinate system name: GCS_North_American_1983_HARN

FEATURE CLASSES

Geologic information for a map area is contained in as many as ten Esri feature classes. These feature classes and the types of data included in each are listed below. All geologic maps require Contacts and Faults and Geologic Unit Polygons. Other feature classes are added when the type(s) of features they contain are present in the mapped area.

Geologic Unit Polygons
Contains polygons and labels that identify the geologic unit that makes up each polygon.

Miscellaneous Polygons
Contains polygons for features other than geologic units, such as alteration zones, outcrops, geomorphic features, mineral resources, etc.

Contacts and Faults
Contains lines representing contacts, faults, shorelines, map boundaries, present-day glacial ice boundaries, low-tide shorelines, and additional arcs used in geologic cross sections.

Folds
Contains fold axes and descriptive data.

Linear Features
Contains lines representing geologic units that, due to map scale, are too thin to be represented as polygons. Also includes isograds, glacial moraines, eskers, lineaments, paleosols, limits of continental glaciations, limits of alpine glaciations, landslide scarps, landslide direction arrows, terraces, cross section lines, streams, intermittent streams, quadrangle boundaries, contours, geophysical data collection lines, and strand lines (former shorelines).

Attitude Measurements
Contains attitude measurement points (for example: strike and dip of bedding, strike and dip of foliation, and bearing and plunge of lineation) and descriptive data.

Geologic Dates
Contains age information obtained through several dating methods.

Dikes
Contains individual igneous dikes and descriptive data.

Point Features
Contains point locations and descriptive data for geologic polygons that are deemed important, but due to map scale, are too small to show as polygons. Also includes locations of geochemical samples, water wells, mylonitic shear zones, significant or critical sites, electron microprobe sites, earthquake hypocenters, locations of photographs, schematic diagrams, or stratigraphic columns, and hydrocarbon exploration dry holes.

Vents
Contains the locations of volcanic vents and eruptive centers and descriptive data.

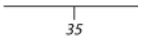
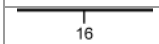
USGS REF NO.

USGS ref no. refers to the symbol in: Federal Geographic Data Committee [prepared for the Federal Geographic Data Committee by the U.S. Geological Survey], 2006, FGDC Digital Cartographic Standard for Geologic Map Symbolization: Reston, VA., Federal Geographic Data Committee Document Number FGDC-STD-013-2006, 290 p., 2 plates.

1. Attitude Measurements (point feature class)

ATTUD_CD codes, grouped by attitude type

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
		BEDDING	
	6	Horizontal bedding	6.1
	1	Inclined bedding - Showing strike and dip	6.2
	3	Vertical bedding - Showing strike	6.3
	2	Overturned bedding - Showing strike and dip	6.4
		APPROXIMATE BEDDING	
	93	Approximate horizontal bedding	6.39
	8	Approximate orientation of inclined bedding - Showing approximate strike and dip	6.33
	98	Approximate orientation of inclined bedding, where top direction of beds is known from local features - Showing approximate strike and dip	6.36
	92	Vertical or near vertical bedding - Showing approximate strike	6.34
	97	Approximate orientation of overturned bedding - Showing approximate strike and dip	6.35
		BEDDING - Top direction known	
	13	Inclined bedding, where top direction of beds is known from local features - Showing strike and dip	6.13
	15	Vertical bedding, where top direction of beds is known from local features - Showing strike. Ball shows top direction	6.14
	14	Overturned bedding, where top direction of beds is known from local features - Showing strike and dip	6.15
		BEDDING – Unconsolidated deposits	
	71	Inclined bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	72	Inclined foreset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	74	Inclined topset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	75	Inclined bottomset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
		BEDDING - Phacoids	

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	28	Inclined bedding in phacoids in shear zone - Showing strike and dip	WADGER
	31	Inclined bedding in phacoids in shear zone, where top direction of beds is known from local features - Showing strike and dip	WADGER
	41	Vertical bedding in phacoids in shear zone - Showing strike	WADGER
		BEDDING - Crenulations	
	21	Inclined crenulated, warped, undulatory, or contorted bedding - Showing approximate strike and dip	6.25
	34	Vertical or near-vertical crenulated, warped, undulatory, or contorted bedding - Showing approximate strike	6.26
		BEDDING – Flow layering	
	84	Inclined flow banding, lamination, layering, or foliation in igneous rock - Showing strike and dip	8.2.3
	86	Vertical flow banding, lamination, layering, or foliation in igneous rock - Showing strike	8.2.4
		DIP OF CONTACTS AND DIKES	
	83	Inclined contact - Showing dip value and direction	Repurposed 1.4.1
	82	Inclined dike - Showing dip value and direction	WADGER
		FAULTS	
	53	Small, minor inclined fault - Showing strike and dip	2.15.1
	54	Small, minor vertical or near-vertical fault - Showing strike	2.15.2
	81	Inclined fault - Showing dip value and direction	2.11.8
	85	Shear - Showing strike and dip	WADGER
	69	Slickenside - Showing strike and dip	WADGER
	67	Inclined slickenline, groove, or striation on fault surface - Showing bearing and plunge	9.17
	77	Vertical slickenside - Showing strike	Repurposed 9.23
	88	Shear - Showing strike	WADGER
		FOLIATION	
	10	Horizontal metamorphic or tectonic foliation	8.3.1
	7	Inclined metamorphic or tectonic foliation - Showing strike and dip	8.3.2
	9	Vertical metamorphic or tectonic foliation - Showing strike	8.3.3
	27	Inclined metamorphic or tectonic foliation parallel to bedding - Showing strike and dip	8.3.8
	20	Vertical metamorphic or tectonic foliation parallel to bedding - Showing strike	8.3.9
	94	Horizontal mylonitic foliation	8.3.55
	80	Inclined mylonitic foliation - Showing strike and dip	8.3.56
	95	Vertical or near-vertical mylonitic foliation - Showing strike	8.3.57

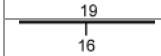
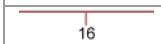
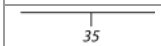
SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	59	Inclined first-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	78	Vertical or near-vertical first-generation metamorphic or tectonic foliation - Showing strike	WADGER
	60	Inclined second-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	61	Inclined third-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	29	Inclined crinkled or deformed metamorphic or tectonic foliation - Showing approximate strike and dip	8.3.14
	39	Vertical or near-vertical crinkled or deformed metamorphic or tectonic foliation - Showing approximate strike	8.3.15
	35	Inclined crinkled or deformed metamorphic or tectonic foliation parallel to bedding - Showing approximate strike and dip	WADGER
		JOINTS	
	96	Small, minor horizontal joint	4.3.1
	16	Small, minor inclined joint - Showing strike and dip	4.3.2
	25	Small, minor vertical or near-vertical joint - Showing strike	4.3.3
		VEINS	
	73	Small, minor inclined vein, veinlet, or mineralized stringer - Showing strike and dip	19.1.12
		CLEAVAGE	
	91	Horizontal cleavage (generic or type unspecified)	7.1
	19	Inclined cleavage (generic or type unspecified) - Showing strike and dip	7.2
	66	Inclined first-generation cleavage - Showing strike and dip	WADGER
	90	Vertical cleavage (generic or type unspecified) - Showing strike	7.3
		LINEATIONS	
	11	Horizontal aligned-mineral lineation - Showing bearing	9.39
	12	Inclined aligned-mineral lineation - Showing bearing and plunge	9.37
	18	Vertical aligned-mineral lineation	Repurposed 9.7
	56	Inclined first-generation aligned-mineral lineation - Showing bearing and plunge	WADGER
	57	Inclined second-generation aligned-mineral lineation - Showing bearing and plunge	Repurposed 9.9
	58	Inclined third-generation aligned-mineral lineation - Showing bearing and plunge	WADGER
	68	Inclined aligned stretched-object lineation - Showing bearing and plunge	9.49
	70	Inclined sole mark, tool mark, scour mark, flute mark, groove, or channel in sedimentary materials - Showing bearing and plunge	9.13
	76	Younger glacial striation or groove - Showing measured bearing and direction of flow.	13.30
	101	Older glacial striation or groove - Showing measured bearing and direction of flow.	13.32

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
		MINOR FOLDS	
	22	Inclined fold hinge of small, minor anticline - Showing bearing and plunge	9.105
	23	Inclined fold hinge of small, minor syncline - Showing bearing and plunge	9.113
	55	Inclined fold hinge of generic (type or orientation unspecified) small, minor fold - showing bearing and plunge	9.97
	62	Inclined generic small, minor fold axial surface - Showing strike and dip	WADGER
	40	Inclined fold hinge of generic small, minor first-generation fold - Showing bearing and plunge	WADGER
	63	Inclined first-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	43	Inclined fold hinge of generic small, minor second-generation fold - Showing bearing and plunge	WADGER
	47	Inclined M-shaped minor fold hinge - Showing bearing and plunge	WADGER
	49	Inclined asymmetric (Z-shaped, clockwise sense of shear) minor fold hinge - Showing bearing and plunge	9.129
	51	Inclined asymmetric (S-shaped, counterclockwise sense of shear) minor fold hinge - Showing bearing and plunge	9.125
	64	Inclined second-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	45	Inclined fold hinge of generic small, minor third-generation fold - Showing bearing and plunge	WADGER
	65	Inclined third-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	99	Small, minor dome	5.11.2
	100	Small, minor basin	5.11.3
	89	2.5 minute tick marks	WADGER

ATTUD_CD codes, sorted by ATTUD_CD

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	1	Inclined bedding - Showing strike and dip	6.2
	2	Overturned bedding - Showing strike and dip	6.4
	3	Vertical bedding - Showing strike	6.3
	6	Horizontal bedding	6.1
	7	Inclined metamorphic or tectonic foliation - Showing strike and dip	8.3.2
	8	Approximate orientation of inclined bedding - Showing approximate strike and dip	6.33
	9	Vertical metamorphic or tectonic foliation - Showing strike	8.3.3
	10	Horizontal metamorphic or tectonic foliation	8.3.1
	11	Horizontal aligned-mineral lineation - Showing bearing	9.39
	12	Inclined aligned-mineral lineation - Showing bearing and plunge	9.37

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	13	Inclined bedding, where top direction of beds is known from local features - Showing strike and dip	6.13
	14	Overturned bedding, where top direction of beds is known from local features - Showing strike and dip	6.15
	15	Vertical bedding, where top direction of beds is known from local features - Showing strike. Ball shows top direction	6.14
	16	Small, minor inclined joint - Showing strike and dip	4.3.2
	18	Vertical aligned-mineral lineation	Repurposed 9.7
	19	Inclined cleavage (generic or type unspecified) - Showing strike and dip	7.2
	20	Vertical metamorphic or tectonic foliation parallel to bedding - Showing strike	8.3.9
	21	Inclined crenulated, warped, undulatory, or contorted bedding - Showing approximate strike and dip	6.25
	22	Inclined fold hinge of small, minor anticline - Showing bearing and plunge	9.105
	23	Inclined fold hinge of small, minor syncline - Showing bearing and plunge	9.113
	25	Small, minor vertical or near-vertical joint - Showing strike	4.3.3
	27	Inclined metamorphic or tectonic foliation parallel to bedding - Showing strike and dip	8.3.8
	28	Inclined bedding in phacoids in shear zone - Showing strike and dip	WADGER
	29	Inclined crinkled or deformed metamorphic or tectonic foliation - Showing approximate strike and dip	8.3.14
	31	Inclined bedding in phacoids in shear zone, where top direction of beds is known from local features - Showing strike and dip	WADGER
	34	Vertical or near-vertical crenulated, warped, undulatory, or contorted bedding - Showing approximate strike	6.26
	35	Inclined crinkled or deformed metamorphic or tectonic foliation parallel to bedding - Showing approximate strike and dip	WADGER
	39	Vertical or near-vertical crinkled or deformed metamorphic or tectonic foliation - Showing approximate strike	8.3.15
	40	Inclined fold hinge of generic small, minor first-generation fold - Showing bearing and plunge	WADGER
	41	Vertical bedding in phacoids in shear zone - Showing strike	WADGER
	43	Inclined fold hinge of generic small, minor second-generation fold - Showing bearing and plunge	WADGER
	45	Inclined fold hinge of generic small, minor third-generation fold - Showing bearing and plunge	WADGER
	47	Inclined M-shaped minor fold hinge - Showing bearing and plunge	WADGER
	49	Inclined asymmetric (Z-shaped, clockwise sense of shear) minor fold hinge - Showing bearing and plunge	9.129
	51	Inclined asymmetric (S-shaped, counterclockwise sense of shear) minor fold hinge - Showing bearing and plunge	9.125
	53	Small, minor inclined fault - Showing strike and dip	2.15.1
	54	Small, minor vertical or near-vertical fault - Showing strike	2.15.2
	55	Inclined fold hinge of generic (type or orientation unspecified) small, minor fold - Showing bearing and plunge	9.97
	56	Inclined first-generation aligned-mineral lineation - Showing bearing and plunge	WADGER
	57	Inclined second-generation aligned-mineral lineation - Showing bearing and plunge	Repurposed 9.9

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	58	Inclined third-generation aligned-mineral lineation - Showing bearing and plunge	WADGER
	59	Inclined first-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	60	Inclined second-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	61	Inclined third-generation metamorphic or tectonic foliation - Showing strike and dip	WADGER
	62	Inclined generic small, minor fold axial surface - Showing strike and dip	WADGER
	63	Inclined first-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	64	Inclined second-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	65	Inclined third-generation generic small, minor fold axial surface - Showing strike and dip	WADGER
	66	Inclined first-generation cleavage - Showing strike and dip	WADGER
	67	Inclined slickenline, groove, or striation on fault surface - Showing bearing and plunge	9.17
	68	Inclined aligned stretched-object lineation - Showing bearing and plunge	9.49
	69	Slickenside - Showing strike and dip	WADGER
	70	Inclined sole mark, tool mark, scour mark, flute mark, groove, or channel in sedimentary materials - Showing bearing and plunge	9.13
	71	Inclined bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	72	Inclined foreset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	73	Small, minor inclined vein, veinlet, or mineralized stringer - Showing strike and dip	19.1.12
	74	Inclined topset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	75	Inclined bottomset bedding in unconsolidated sedimentary deposits or unconsolidated fragmental deposits of volcanic origin - Showing strike and dip	WADGER
	76	Younger glacial striation or groove - Showing measured bearing and direction of flow.	13.30
	77	Vertical slickenside - Showing strike	Repurposed 9.23
	78	Vertical or near-vertical first-generation metamorphic or tectonic foliation - Showing strike	WADGER
	80	Inclined mylonitic foliation - Showing strike and dip	8.3.56
	81	Inclined fault - Showing dip value and direction	2.11.8
	82	Inclined dike - Showing dip value and direction	WADGER
	83	Inclined contact - Showing dip value and direction	Repurposed 1.4.1
	84	Inclined flow banding, lamination, layering, or foliation in igneous rock - Showing strike and dip	8.2.3
	85	Shear - Showing strike and dip	WADGER
	86	Vertical flow banding, lamination, layering, or foliation in igneous rock - Showing strike	8.2.4
	88	Shear - Showing strike	WADGER

SYMBOL	ATTUD_CD (Attitude Code)	DESCRIPTION	USGS ref no.
	89	2.5 minute tick marks	WADGER
	90	Vertical cleavage (generic or type unspecified) - Showing strike	7.3
	91	Horizontal cleavage (generic or type unspecified)	7.1
	92	Vertical or near vertical bedding - Showing approximate strike	6.34
	93	Approximate horizontal bedding	6.39
	94	Horizontal mylonitic foliation	8.3.55
	95	Vertical or near-vertical mylonitic foliation - Showing strike	8.3.57
	96	Small, minor horizontal joint	4.3.1
84	97	Approximate orientation of overturned bedding – showing approximate strike and dip	6.35
27	98	Approximate orientation of inclined bedding, where top direction of beds is known from local features- showing approximate strike and dip	6.36
	99	Small, minor dome	5.11.2
	100	Small, minor basin	5.11.3
75	101	Older glacial striation or groove - Showing measured bearing and direction of flow.	13.32

2. Geologic Dates (point feature class)

DT_MET_CD codes

SYMBOL	DT_MET_CD (Detection Method Code)	DESCRIPTION	USGS ref no.
	1	Geochron sample, radiometric	WADGER
	2	Geochron sample, fossil	10.1.1
	3	Geochron sample, zircon fission-track	WADGER
	4	Geochron sample, K-Ar, potassium-argon	WADGER
	5	Geochron sample, U-Pb, uranium-lead	WADGER
	6	Geochron sample, 14C , carbon-14	WADGER
	7	Geochron sample thermal luminescence	WADGER
	8	Geochron sample, amino acid	WADGER
	9	Geochron sample, Ar-Ar, argon-argon	WADGER
	10	Geochron sample, Rb-Sr, rubidium-strontium	WADGER
	11	Geochron sample, optically stimulated luminescence	WADGER
	12	Geochron sample, tephra	WADGER
	13	2.5-minute tick marks	WADGER
	14	Geochron sample, Infrared stimulated luminescence	WADGER

3. Dikes (line feature class)

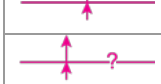
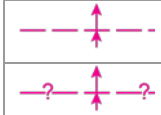
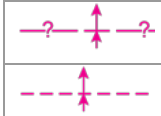
DIKE_CD codes

SYMBOL	DIKE_CD (Dike Code)	DESCRIPTION	USGS ref no.
	1	Dike - Identity and existence certain, location accurate	1.3.1
	5	Dike - Identity or existence questionable, location accurate	WADGER
	3	Dike - Identity and existence certain, location approximate	1.3.2
	7	Dike - Identity or existence questionable, location approximate	WADGER
	10	Dike - Identity or existence certain, location inferred	WADGER
	8	Dike - Identity or existence questionable, location inferred	WADGER
	2	Dike - Identity and existence certain, location concealed	WADGER
	6	Dike - Identity or existence questionable, location concealed	WADGER
	4	Sill - Identity and existence certain, location accurate	Repurposed 1.3.9
	9	Map boundary	31.8
	11	Dike - Identity and existence certain, location accurate	1.3.3
	12	Dike - Identity and existence certain, location accurate	1.3.5
	13	Dike - Identity and existence certain, location accurate	1.3.7
	14	Dike - Identity or existence questionable, location accurate	WADGER
	15	Dike - Identity or existence questionable, location accurate	WADGER
	16	Dike - Identity or existence questionable, location accurate	WADGER
	17	Dike - Identity and existence certain, location approximate	1.3.4
	18	Dike - Identity and existence certain, location approximate	1.3.6
	19	Dike - Identity and existence certain, location approximate	1.3.8
	20	Dike - Identity or existence questionable, location approximate	WADGER
	21	Dike - Identity or existence questionable, location approximate	WADGER
	22	Dike - Identity or existence questionable, location approximate	WADGER
	23	Dike - Identity or existence certain, location inferred	WADGER
	24	Dike - Identity or existence certain, location inferred	WADGER
	25	Dike - Identity or existence certain, location inferred	WADGER
	26	Dike - Identity or existence questionable, location inferred	WADGER
	27	Dike - Identity or existence questionable, location inferred	WADGER
	28	Dike - Identity or existence questionable, location inferred	WADGER
	29	Dike - Identity and existence certain, location concealed	WADGER
	30	Dike - Identity and existence certain, location concealed	WADGER
	31	Dike - Identity and existence certain, location concealed	WADGER
	32	Dike - Identity or existence questionable, location concealed	WADGER
	33	Dike - Identity or existence questionable, location concealed	WADGER
	34	Dike - Identity or existence questionable, location concealed	WADGER

4. Folds (line feature class)

FOLD_CD codes, grouped by fold type

SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
		FOLD PLUNGE ARROWHEAD	
	None	Fold plunge arrowhead; see usage above in DIR_FLG field description; When coded "Y", points to direction of plunge.	5.10.5
		ANTICLINES	
	1	Anticline - Identity and existence certain, location accurate	5.1.1
	4	Anticline - Identity or existence questionable, location accurate	5.1.2
	2	Anticline - Identity and existence certain, location approximate	5.1.3
	5	Anticline - Identity or existence questionable, location approximate	5.1.4
	37	Anticline - Identity and existence certain, location inferred	5.1.5
	43	Anticline - Identity or existence questionable, location inferred	5.1.6
	3	Anticline - Identity and existence certain, location concealed	5.1.7
	6	Anticline - Identity or existence questionable, location concealed	5.1.8
		OVERTURNED ANTICLINES	
	7	Overturned anticline - Identity and existence certain, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.17
	10	Overturned anticline - Identity or existence questionable, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.18
	8	Overturned anticline - Identity and existence certain, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.19
	11	Overturned anticline - Identity or existence questionable, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.20
	38	Overturned anticline - Identity and existence certain, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.21
	44	Overturned anticline - Identity or existence questionable, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.22
	9	Overturned anticline - Identity and existence certain, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.23
	12	Overturned anticline - Identity or existence questionable, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.24
		SYNCLINES	
	13	Syncline - Identity and existence certain, location accurate	5.5.1
	16	Syncline - Identity or existence questionable, location accurate	5.5.2
	14	Syncline - Identity and existence certain, location approximate	5.5.3
	17	Syncline - Identity or existence questionable, location approximate	5.5.4

SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
	39	Syncline - Identity and existence certain, location inferred	5.5.5
	45	Syncline - Identity or existence questionable, location inferred	5.5.6
	15	Syncline - Identity and existence certain, location concealed	5.5.7
	18	Syncline - Identity or existence questionable, location concealed	5.5.8
		OVERTURNED SYNCLINES	
	19	Overturned syncline - Identity and existence certain, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.17
	22	Overturned syncline - Identity or existence questionable, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.18
	20	Overturned syncline - Identity and existence certain, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.19
	23	Overturned syncline - Identity or existence questionable, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.20
	40	Overturned syncline - Identity and existence certain, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.21
	46	Overturned syncline - Identity or existence questionable, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.22
	21	Overturned syncline - Identity and existence certain, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.23
	24	Overturned syncline - Identity or existence questionable, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.24
		MONOCLINES, SYNCLINAL BEND	
	25	Monocline, synclinal bend - Identity and existence certain, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.33
	28	Monocline, synclinal bend - Identity or existence questionable, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.34
	26	Monocline, synclinal bend - Identity and existence certain, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.35
	29	Monocline, synclinal bend - Identity or existence questionable, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.36
	41	Monocline, synclinal bend - Identity and existence certain, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.37
	47	Monocline, synclinal bend - Identity or existence questionable, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.38
	27	Monocline, synclinal bend - Identity and existence certain, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.39
	30	Monocline, synclinal bend - Identity or existence questionable, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.40
		MONOCLINES, ANTICLINAL BEND	
	31	Monocline, anticlinal bend - Identity and existence certain, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.17
	34	Monocline, anticlinal bend - Identity or existence questionable, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.18
	32	Monocline, anticlinal bend - Identity and existence certain, location approximate.	5.9.19

SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
		Arrows show direction of dip; shorter arrow on steeper limb	
	35	Monocline, anticlinal bend - Identity or existence questionable, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.20
	42	Monocline, anticlinal bend - Identity and existence certain, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.21
	48	Monocline, anticlinal bend - Identity or existence questionable, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.22
	33	Monocline, anticlinal bend - Identity and existence certain, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.23
	36	Monocline, anticlinal bend - Identity or existence questionable, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.24
	49	Map boundary	31.8

FOLD_CD codes, sorted by FOLD_CD

SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
		FOLD PLUNGE ARROWHEAD	
	None	Fold plunge arrowhead; When coded "Y" points to direction of plunge.	5.10.5
	1	Anticline - Identity and existence certain, location accurate	5.1.1
	2	Anticline - Identity and existence certain, location approximate	5.1.3
	3	Anticline - Identity and existence certain, location concealed	5.1.7
	4	Anticline - Identity or existence questionable, location accurate	5.1.2
	5	Anticline - Identity or existence questionable, location approximate	5.1.4
	6	Anticline - Identity or existence questionable, location concealed	5.1.8
	7	Overturned anticline - Identity and existence certain, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.17
	8	Overturned anticline - Identity and existence certain, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.19
	9	Overturned anticline - Identity and existence certain, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.23
	10	Overturned anticline - Identity or existence questionable, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.18
	11	Overturned anticline - Identity or existence questionable, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.20
	12	Overturned anticline - Identity or existence questionable, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.24
	13	Syncline - Identity and existence certain, location accurate	5.5.1
	14	Syncline - Identity and existence certain, location approximate	5.5.3
	15	Syncline - Identity and existence certain, location concealed	5.5.7
	16	Syncline - Identity or existence questionable, location accurate	5.5.2

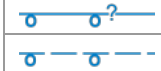
SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
	17	Syncline - Identity or existence questionable, location approximate	5.5.4
	18	Syncline - Identity or existence questionable, location concealed	5.5.8
	19	Overturned syncline - Identity and existence certain, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.17
	20	Overturned syncline - Identity and existence certain, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.19
	21	Overturned syncline - Identity and existence certain, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.23
	22	Overturned syncline - Identity or existence questionable, location accurate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.18
	23	Overturned syncline - Identity or existence questionable, location approximate. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.20
	24	Overturned syncline - Identity or existence questionable, location concealed. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.24
	25	Monocline, synclinal bend - Identity and existence certain, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.33
	26	Monocline, synclinal bend - Identity and existence certain, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.35
	27	Monocline, synclinal bend - Identity and existence certain, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.39
	28	Monocline, synclinal bend - Identity or existence questionable, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.34
	29	Monocline, synclinal bend - Identity or existence questionable, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.36
	30	Monocline, synclinal bend - Identity or existence questionable, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.40
	31	Monocline, anticlinal bend - Identity and existence certain, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.17
	32	Monocline, anticlinal bend - Identity and existence certain, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.19
	33	Monocline, anticlinal bend - Identity and existence certain, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.23
	34	Monocline, anticlinal bend - Identity or existence questionable, location accurate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.18
	35	Monocline, anticlinal bend - Identity or existence questionable, location approximate. Arrows show direction of dip; shorter arrow on steeper limb	5.9.20
	36	Monocline, anticlinal bend - Identity or existence questionable, location concealed. Arrows show direction of dip; shorter arrow on steeper limb	5.9.24
	37	Anticline - Identity and existence certain, location inferred	5.1.5
	38	Overturned anticline - Identity and existence certain, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.21
	39	Syncline - Identity and existence certain, location inferred	5.5.5
	40	Overturned syncline - Identity and existence certain, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.21
	41	Monocline, synclinal bend - Identity and existence certain, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.37
	42	Monocline, anticlinal bend - Identity and existence certain, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.21

SYMBOL	FOLD_CD (Fold Code)	DESCRIPTION	USGS ref no.
	43	Anticline - Identity or existence questionable, location inferred	5.1.6
	44	Overturned anticline - Identity or existence questionable, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.3.22
	45	Syncline - Identity or existence questionable, location inferred	5.5.6
	46	Overturned syncline - Identity or existence questionable, location inferred. Beds on one limb are overturned; arrows show dip direction of limbs	5.7.22
	47	Monocline, synclinal bend - Identity or existence questionable, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.38
	48	Monocline, anticlinal bend - Identity or existence questionable, location inferred. Arrows show direction of dip; shorter arrow on steeper limb	5.9.22
	49	Map boundary	31.8

5. Linear Features (line feature class)

ARC_TY_CD codes, grouped by feature type

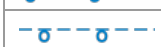
SYMBOL	ARC_TY_CD (Line Type Code)	DESCRIPTION	USGS ref no.
		LINEAR GEOLOGIC UNITS OR FEATURES	
	1	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location accurate	WADGER
	20	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity or existence questionable, location accurate	WADGER
	41	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location approximate	WADGER
	42	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence questionable, location approximate	WADGER
	18	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location inferred	WADGER
	19	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity or existence questionable, location inferred	WADGER
	3	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location concealed	WADGER
	43	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence questionable, location concealed	WADGER
		ICE LIMITS	
	2	Continental ice limit, late Wisconsinan - Identity and existence certain, location accurate	WADGER
	27	Continental ice limit, late Wisconsinan - Identity or existence questionable, location accurate	WADGER

SYMBOL	ARC_TY_CD (Line Type Code)	DESCRIPTION	USGS ref no.
	24	Continental ice limit, late Wisconsinan - Identity and existence certain, location approximate	WADGER
	28	Continental ice limit, late Wisconsinan - Identity or existence questionable, location approximate	WADGER
	25	Continental ice limit, late Wisconsinan - Identity and existence certain, location inferred	WADGER
	26	Continental ice limit, late Wisconsinan - Identity or existence questionable, location inferred	WADGER
	38	Continental ice limit, late Wisconsinan - Identity and existence certain, location concealed	WADGER
	39	Continental ice limit, late Wisconsinan - Identity and existence questionable, location concealed	WADGER
	4	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location accurate	WADGER
	29	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location accurate	WADGER
	21	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location approximate	WADGER
	30	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location approximate	WADGER
	22	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location inferred	WADGER
	23	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location inferred	WADGER
	44	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location concealed	WADGER
	45	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location concealed	WADGER
	31	Alpine ice limit - Identity and existence certain, location accurate	WADGER
	32	Alpine ice limit - Identity or existence questionable, location accurate	WADGER
	33	Alpine ice limit - Identity and existence certain, location approximate	WADGER
	34	Alpine ice limit - Identity or existence questionable, location approximate	WADGER
	35	Alpine ice limit - Identity and existence certain, location inferred	WADGER
	36	Alpine ice limit - Identity or existence questionable, location inferred	WADGER
	37	Alpine ice limit - Identity or existence questionable, location concealed	WADGER
	40	Alpine ice limit - Identity or existence certain, location concealed	WADGER
	5	Direction of downslope movement of landslide	17.10
		MISCELLANEOUS	
	6	Fluvial Terrace - Identity and existence certain, location accurate. Hachures point down slope	12.1
	17	Fault Scarp - Identity and existence certain, location accurate	Repurposed 2.12.1
	7	Landslide scarp - Identity and existence certain, location accurate. Hachures on downslope side	17.12
	13	Potential (incipient) landslide scarp - Identity and existence certain, location accurate	WADGER
	14	Potential (incipient) landslide scarp - Identity and existence certain, location concealed	WADGER

SYMBOL	ARC_TY_CD (Line Type Code)	DESCRIPTION	USGS ref no.
	12	Former shoreline or marine limit - Identity and existence certain, location accurate	15.13
	8	Cross section line	31.10
	9	Perennial river, stream, or creek (single-line drainage)	30.2.1
	11	Intermittent river, stream, creak, or wash (single-line drainage)	30.2.2
	10	Map boundary	31.8
	15	Supplementary topographic contour	30.1.5
	16	Geophysical data collection line - Location accurate	3.3.1
	46	Flow lines on lava flow	18.39

ARC_TY_CD codes, listed by code number

SYMBOL	ARC_TY_CD (Line Type Code)	DESCRIPTION	USGS ref no.
	1	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location accurate	WADGER
	2	Continental ice limit, late Wisconsinan - Identity and existence certain, location accurate	WADGER
	3	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location concealed	WADGER
	4	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location accurate	WADGER
	5	Direction of downslope movement of landslide	17.10
	6	Fluvial Terrace – Identity and existence certain, location accurate. Hachures point down slope	12.1
	7	Landslide scarp - Identity and existence certain, location accurate. Hachures on downslope side	17.12
	8	Cross section line	31.10
	9	Perennial river, stream, or creek (single-line drainage)	30.2.1
	10	Map boundary	31.8
	11	Intermittent river, stream, creak, or wash (single-line drainage)	30.2.2
	12	Former shoreline or marine limit - Identity and existence certain, location accurate	15.13
	13	Potential (incipient) landslide scarp - Identity and existence certain, location accurate	WADGER
	14	Potential (incipient) landslide scarp - Identity and existence certain, location concealed	WADGER
	15	Supplementary topographic contour	30.1.5
	16	Geophysical data collection line - Location accurate	3.3.1
	17	Fault scarp - Identity and existence certain, location accurate	Repurposed 2.12.1
	18	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location inferred	WADGER
? ?	19	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity or existence questionable, location inferred	WADGER
?	20	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity or existence questionable, location accurate	WADGER
	21	Continental ice limit, pre-late Wisconsinan - Identity and existence certain,	WADGER

SYMBOL	ARC_TY_CD (Line Type Code)	DESCRIPTION	USGS ref no.
		location approximate	
	22	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location inferred	WADGER
	23	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location inferred	WADGER
	24	Continental ice limit, late Wisconsinan - Identity and existence certain, location approximate	WADGER
	25	Continental ice limit, late Wisconsinan - Identity and existence certain, location inferred	WADGER
	26	Continental ice limit, late Wisconsinan - Identity or existence questionable, location inferred	WADGER
	27	Continental ice limit, late Wisconsinan - Identity or existence questionable, location accurate	WADGER
	28	Continental ice limit, late Wisconsinan - Identity or existence questionable, location approximate	WADGER
	29	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location accurate	WADGER
	30	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location approximate	WADGER
	31	Alpine ice limit - Identity and existence certain, location accurate	WADGER
	32	Alpine ice limit - Identity or existence questionable, location accurate	WADGER
	33	Alpine ice limit - Identity and existence certain, location approximate	WADGER
	34	Alpine ice limit - Identity or existence questionable, location approximate	WADGER
	35	Alpine ice limit - Identity and existence certain, location inferred	WADGER
	36	Alpine ice limit - Identity or existence questionable, location inferred	WADGER
	37	Alpine ice limit - Identity or existence questionable, location concealed	WADGER
	38	Continental ice limit, late Wisconsinan - Identity and existence certain, location concealed	WADGER
	39	Continental ice limit, late Wisconsinan - Identity and existence questionable, location concealed	WADGER
	40	Alpine ice limit - Identity or existence certain, location concealed	WADGER
	41	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence certain, location approximate	WADGER
	42	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence questionable, location approximate	WADGER
	43	Linear geologic unit, other than a dike, or a geologic unit or other feature too thin to show as a polygon - Identity and existence questionable, location concealed	WADGER
	44	Continental ice limit, pre-late Wisconsinan - Identity and existence certain, location concealed	WADGER
	45	Continental ice limit, pre-late Wisconsinan - Identity or existence questionable, location concealed	WADGER
	46	Flow lines on lava flow	18.39

6. Miscellaneous Polygons (polygon feature class)

TYPE_CD codes

Symbol	TYPE_CD (Type Code)	Description	USGS ref no
	1	Zone of mineralized or altered rock	19.1.14
	2	Area of outcrop	31.14
	3	Geomorphic features	WADGER
	4	Area of identified mineral resources	19.1.18
	5	Other, see individual labels and comments for description	WADGER
	6	Ductile shear zone or mylonite zone - May or may not be associated with mappable faults	2.14.1
	7	Dike swarm	Repurposed 31.16

7. Point Features (point feature class)

POINT FEATURES_CD codes

SYMBOL	POINT FEATURES_ CD (Point Code)	DESCRIPTION	USGS ref no.
	1	Geochemistry sample location	WADGER
	2	Water well	26.1.1
	3	Mylonitic or shear zone	WADGER
	4	Significant site	WADGER
	5	Electron microprobe site	WADGER
	6	Earthquake hypocenter	WADGER
	7	Geologic unit too small to show as a polygon at map scale	WADGER
	8	Drill hole for hydrocarbon exploration or exploitation	19.5.10
	9	Location of photograph, schematic diagram, stratigraphic column	WADGER
	10	2.5 minute tick marks	WADGER
	11	Geophysical data collection locality	11.11
	12	Drill holes and test pits	WADGER
	13	Paleomagnetic sample - Normal magnetization	WADGER
	14	Paleomagnetic sample - Transitional magnetization	WADGER
	15	Paleomagnetic sample - Reversed magnetization	WADGER

8. Contacts and Faults (line feature class)

CONTACT_CD codes, listed by type of feature

SYMBOL	CONTACT_CD (Contact Code)	DESCRIPTION	USGS ref no.
		FOR USE ON MAPS	
	1	Contact - Identity and existence certain, location accurate	1.1.1
?—	18	Contact - Identity or existence questionable, location accurate	1.1.2
— — —	6	Contact - Identity and existence certain, location approximate	1.1.3
— — —?— -	20	Contact - Identity or existence questionable, location approximate	1.1.4
– – – – –	9	Contact - Identity and existence certain, location inferred	1.1.5
– – – – –?– –	21	Contact - Identity or existence questionable, location inferred	1.1.6
- - - - - - - - - -	2	Contact - Identity and existence certain, location concealed	1.1.7
? - - - - - - - - ?- -	19	Contact - Identity or existence questionable, location concealed	1.1.8
	3	Scratch boundary	WADGER
	4	Gradational contact - Identity and existence certain, location accurate	1.1.17
?|	22	Gradational contact - Identity or existence questionable, location accurate	1.1.18
	5	Shoreline	30.2.29
— — —	17	Shoreline, low tide	New
	7	Map boundary	31.8
	8	Modern or present-day glacial ice boundary	Repurposed 13.49
		FOR USE ON CROSS SECTIONS	
	15	Bedding form lines - Identity and existence certain, location accurate	WADGER
— — — -	16	Bedding form lines - Identity and existence certain, location inferred	WADGER
	10	Cross section box or boundary	WADGER
–	11	Elevation ticks, placed along sides of cross section box	WADGER
	12	Water well shaft	WADGER
–	13	Well tick, marks the top and bottom of a well	WADGER
	14	Topographic (land) surface	WADGER

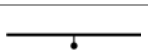
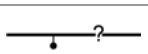
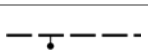
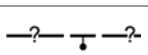
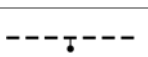
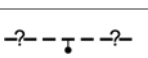
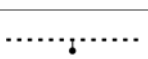
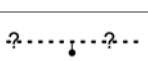
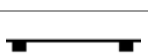
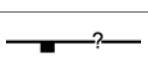
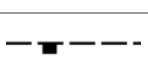
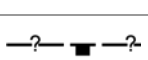
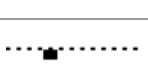
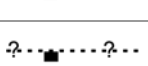
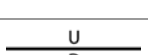
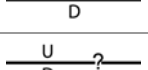
CONTACT_CD codes, listed by CONTACT_CD

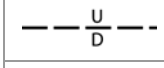
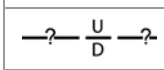
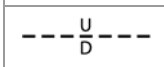
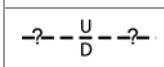
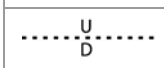
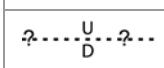
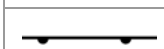
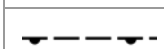
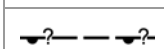
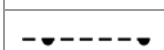
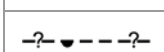
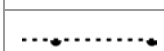
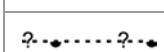
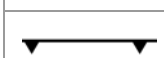
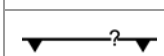
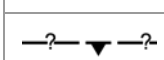
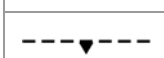
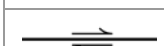
SYMBOL	CONTACT_CD (Contact Code)	DESCRIPTION	USGS ref no.
		FOR USE ON MAPS	
	1	Contact - Identity and existence certain, location accurate	1.1.1
- - - - - - - - - -	2	Contact - Identity and existence certain, location concealed	1.1.7
	3	Scratch boundary	WADGER
	4	Gradational contact - Identity and existence certain, location accurate	1.1.17
	5	Shoreline	30.2.29
— — —	6	Contact - Identity and existence certain, location approximate	1.1.3
	7	Map boundary	31.8
	8	Modern or present-day glacial ice boundary	Repurposed 13.49

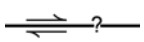
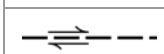
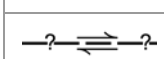
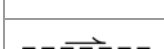
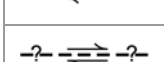
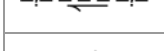
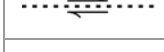
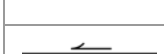
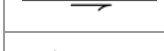
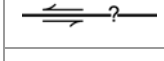
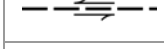
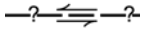
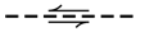
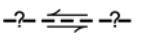
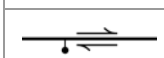
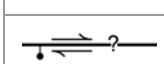
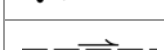
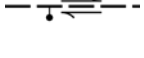
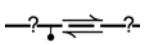
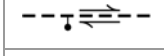
SYMBOL	CONTACT_CD (Contact Code)	DESCRIPTION	USGS ref no.
	9	Contact - Identity and existence certain, location inferred	1.1.5
	17	Shoreline, low tide	WADGER
	18	Contact - Identity or existence questionable, location accurate	1.1.2
	19	Contact - Identity or existence questionable, location concealed	1.1.8
	20	Contact - Identity or existence questionable, location approximate	1.1.4
	21	Contact - Identity or existence questionable, location inferred	1.1.6
	22	Gradational contact - Identity or existence questionable, location accurate	1.1.18
		FOR USE ON CROSS SECTIONS	
	10	Cross section box or boundary	WADGER
	11	Elevation ticks, placed along sides of cross section box	WADGER
	12	Water well shaft	WADGER
	13	Well tick, marks the top and bottom of a well	WADGER
	14	Topographic (land) surface	WADGER
	15	Bedding form lines - Identity and existence certain, location accurate	WADGER
	16	Bedding form lines - Identity and existence certain, location inferred	WADGER

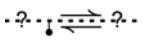
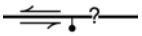
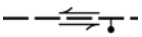
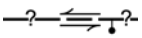
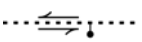
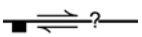
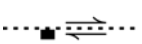
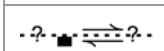
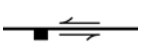
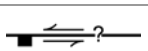
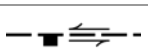
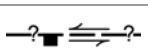
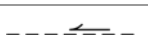
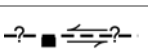
FAULT_CD codes, Grouped by type of movement

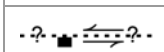
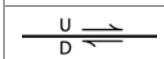
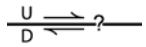
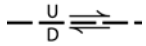
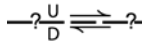
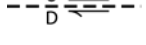
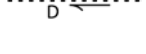
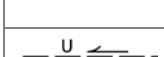
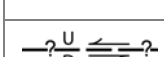
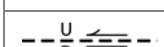
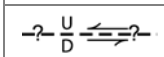
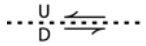
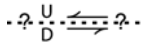
SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
		FOR USE ON MAPS	
		Movement: Unknown or None	
	1	Fault, unknown offset - Identity and existence certain, location accurate	Repurposed 2.1.1
	4	Fault, unknown offset - Identity or existence questionable, location accurate	Repurposed 2.1.2
	2	Fault, unknown offset - Identity and existence certain, location approximate	Repurposed 2.1.3
	5	Fault, unknown offset - Identity or existence questionable, location approximate	Repurposed 2.1.4
	49	Fault, unknown offset - Identity and existence certain, location inferred	Repurposed 2.1.5
	92	Fault, unknown offset - Identity or existence questionable, location inferred	Repurposed 2.1.6
	3	Fault , unknown offset - Identity and existence certain, location concealed	Repurposed 2.1.7
	6	Fault, unknown offset - Identity or existence questionable, location concealed	Repurposed 2.1.8
	25	Fracture - Identity and existence certain, location accurate	WADGER
	28	Fracture - Identity or existence questionable, location accurate	WADGER
	26	Fracture - Identity and existence certain, location approximate	WADGER

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	29	Fracture - Identity or existence questionable, location approximate	WADGER
	84	Fracture - Identity and existence certain, location inferred	WADGER
	96	Fracture - Identity or existence questionable, location inferred	WADGER
	27	Fracture - Identity and existence certain, location concealed	WADGER
	30	Fracture - Identity or existence questionable, location concealed	WADGER
		Movement: Dip-Slip	
	43	Normal fault - Identity and existence certain, location accurate. Bar and ball on downthrown block	2.2.1
	46	Normal fault - Identity or existence questionable, location accurate. Bar and ball on downthrown block	2.2.2
	44	Normal fault - Identity and existence certain, location approximate. Bar and ball on downthrown block	2.2.3
	47	Normal fault - Identity or existence questionable, location approximate. Bar and ball on downthrown block	2.2.4
	55	Normal fault - Identity and existence certain, location inferred. Bar and ball on downthrown block	2.2.5
	99	Normal fault - Identity or existence questionable, location inferred. Bar and ball on downthrown block	2.2.6
	45	Normal fault - Identity and existence certain, location concealed. Bar and ball on downthrown block	2.2.7
	48	Normal fault - Identity or existence questionable, location concealed. Bar and ball on downthrown block	2.2.8
	37	Reverse fault - Identity and existence certain, location accurate. Rectangles on upthrown block	2.4.1
	40	Reverse fault - Identity or existence questionable, location accurate. Rectangles on upthrown block	2.4.2
	38	Reverse fault - Identity and existence certain, location approximate. Rectangles on upthrown block	2.4.3
	41	Reverse fault - Identity or existence questionable, location approximate. Rectangles on upthrown block	2.4.4
	54	Reverse fault - Identity and existence certain, location inferred. Rectangles on upthrown block	2.4.5
	98	Reverse fault - Identity or existence questionable, location inferred. Rectangles on upthrown block	2.4.6
	39	Reverse fault - Identity and existence certain, location concealed. Rectangles on upthrown block	2.4.7
	42	Reverse fault - Identity or existence questionable, location concealed. Rectangles on upthrown block	2.4.8
	85	High-angle dip-slip fault - Identity and existence certain, location accurate. Relative motion shown by U and D	WADGER
	88	High-angle dip-slip fault - Identity or existence questionable, location accurate. Relative motion shown by U and D	WADGER

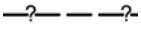
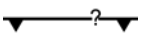
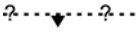
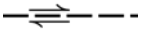
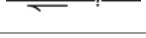
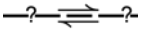
SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	86	High-angle dip-slip fault - Identity and existence certain, location approximate. Relative motion shown by U and D	WADGER
	89	High-angle dip-slip fault - Identity or existence questionable, location approximate. Relative motion shown by U and D	WADGER
	91	High-angle dip-slip fault - Identity and existence certain, location inferred. Relative motion shown by U and D	WADGER
	104	High-angle dip-slip fault - Identity or existence questionable, location inferred. Relative motion shown by U and D	WADGER
	87	High-angle dip-slip fault - Identity and existence certain, location concealed. Relative motion shown by U and D	WADGER
	90	High-angle dip-slip fault - Identity or existence questionable, location concealed. Relative motion shown by U and D	WADGER
	31	Low-angle normal fault - Identity and existence certain, location accurate. Half-circles on downthrown block	2.2.9
	34	Low-angle normal fault - Identity or existence questionable, location accurate. Half-circles on downthrown block	2.2.10
	32	Low-angle normal fault - Identity and existence certain, location approximate. Half-circles on downthrown block	2.2.11
	35	Low-angle normal fault - Identity or existence questionable, location approximate. Half-circles on downthrown block	2.2.12
	53	Low-angle normal fault - Identity and existence certain, location inferred. Half-circles on downthrown block	2.2.13
	97	Low-angle normal fault - Identity or existence questionable, location inferred. Half-circles on downthrown block	2.2.14
	33	Low-angle normal fault - Identity and existence certain, location concealed. Half-circles on downthrown block	2.2.15
	36	Low-angle normal fault - Identity or existence questionable, location concealed. Half-circles on downthrown block	2.2.16
	7	Thrust fault - Identity and existence certain, location accurate. Sawteeth on upper (tectonically higher) plate	2.8.1
	10	Thrust fault - Identity or existence questionable, location accurate. Sawteeth on upper (tectonically higher) plate	2.8.2
	8	Thrust fault - Identity and existence certain, location approximate. Sawteeth on upper (tectonically higher) plate	2.8.3
	11	Thrust fault - Identity or existence questionable, location approximate. Sawteeth on upper (tectonically higher) plate	2.8.4
	50	Thrust fault - Identity and existence certain, location inferred. Sawteeth on upper (tectonically higher) plate	2.8.5
	93	Thrust fault - Identity or existence questionable, location inferred. Sawteeth on upper (tectonically higher) plate	2.8.6
	9	Thrust fault - Identity and existence certain, location concealed. Sawteeth on upper (tectonically higher) plate	2.8.7
	12	Thrust fault - Identity or existence questionable, location concealed. Sawteeth on upper (tectonically higher) plate	2.8.8
		Movement: Strike-Slip	
	13	Strike-slip fault, right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion	2.6.1

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	16	Strike-slip fault, right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion	2.6.2
	14	Strike-slip fault, right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion	2.6.3
	17	Strike-slip fault, right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion	2.6.4
	51	Strike-slip fault, right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion	2.6.5
	94	Strike-slip fault, right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion	2.6.6
	15	Strike-slip fault, right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion	2.6.7
	18	Strike-slip fault, right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion	2.6.8
	19	Strike-slip fault, left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion	2.6.9
	22	Strike-slip fault, left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion	2.6.10
	20	Strike-slip fault, left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion	2.6.11
	23	Strike-slip fault, left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion	2.6.12
	52	Strike-slip fault, left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion	2.6.13
	95	Strike-slip fault, left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion	2.6.14
	21	Strike-slip fault, left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion	2.6.15
	24	Strike-slip fault, left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion	2.6.16
		Movement: Oblique-Slip	
	78	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.1
	81	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.2
	79	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.3
	82	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.4
	59	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.5
	103	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.6
	80	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.7

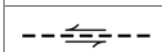
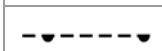
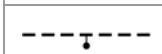
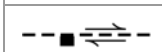
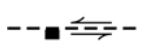
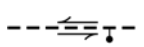
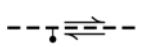
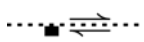
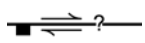
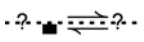
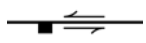
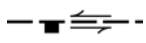
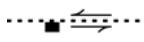
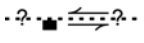
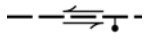
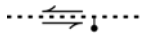
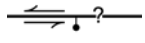
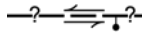
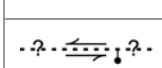
SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	83	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.8
	72	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.9
	75	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.10
	73	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.11
	76	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.12
	58	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.13
	102	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.14
	74	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.15
	77	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.16
	60	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	63	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	61	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	64	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	56	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	100	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	62	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	65	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	66	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	69	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	67	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	70	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	57	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	101	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER

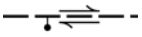
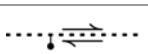
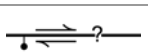
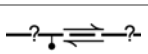
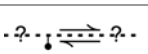
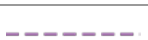
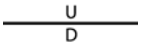
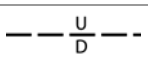
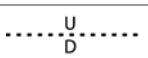
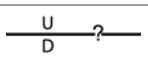
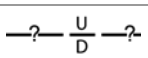
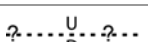
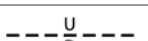
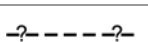
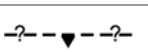
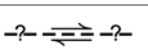
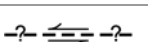
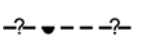
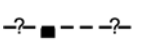
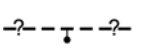
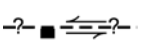
SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	68	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	71	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	105	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location accurate	WADGER
	106	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location accurate	WADGER
	107	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location approximate	WADGER
	108	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location approximate	WADGER
	109	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location inferred	WADGER
	110	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location inferred	WADGER
	111	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location concealed	WADGER
	112	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location concealed	WADGER
	113	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location accurate	WADGER
	114	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location accurate	WADGER
	115	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location approximate	WADGER
	116	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location approximate	WADGER
	117	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location inferred	WADGER
	118	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location inferred	WADGER
	119	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location concealed	WADGER
	120	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location concealed	WADGER

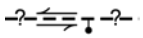
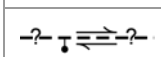
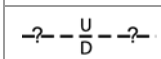
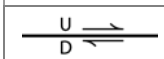
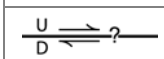
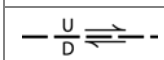
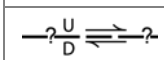
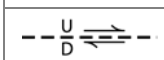
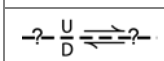
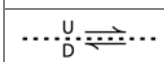
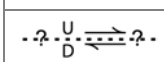
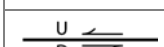
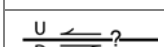
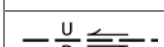
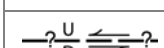
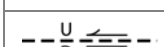
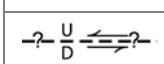
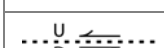
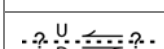
FAULT_CD codes, listed by FAULT_CD

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	1	Fault, unknown offset - Identity and existence certain, location accurate	Repurposed 2.1.1
	2	Fault, unknown offset - Identity and existence certain, location approximate	Repurposed 2.1.3
	3	Fault , unknown offset - Identity and existence certain, location concealed	Repurposed 2.1.7
	4	Fault, unknown offset - Identity or existence questionable, location accurate	Repurposed 2.1.2
	5	Fault, unknown offset - Identity or existence questionable, location approximate	Repurposed 2.1.4
	6	Fault, unknown offset - Identity or existence questionable, location concealed	Repurposed 2.1.8
	7	Thrust fault - Identity and existence certain, location accurate. Sawteeth on upper (tectonically higher) plate	2.8.1
	8	Thrust fault - Identity and existence certain, location approximate. Sawteeth on upper (tectonically higher) plate	2.8.3
	9	Thrust fault - Identity and existence certain, location concealed. Sawteeth on upper (tectonically higher) plate	2.8.7
	10	Thrust fault - Identity or existence questionable, location accurate. Sawteeth on upper (tectonically higher) plate	2.8.2
	11	Thrust fault - Identity or existence questionable, location approximate. Sawteeth on upper (tectonically higher) plate	2.8.4
	12	Thrust fault - Identity or existence questionable, location concealed. Sawteeth on upper (tectonically higher) plate	2.8.8
	13	Strike-slip fault, right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion	2.6.1
	14	Strike-slip fault, right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion	2.6.3
	15	Strike-slip fault, right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion	2.6.7
	16	Strike-slip fault, right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion	2.6.2
	17	Strike-slip fault, right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion	2.6.4
	18	Strike-slip fault, right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion	2.6.8
	19	Strike-slip fault, left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion	2.6.9
	20	Strike-slip fault, left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion	2.6.11
	21	Strike-slip fault, left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion	2.6.15
	22	Strike-slip fault, left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion	2.6.10
	23	Strike-slip fault, left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion	2.6.12
	24	Strike-slip fault, left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion	2.6.16
	25	Fracture - Identity and existence certain, location accurate	WADGER

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	26	Fracture - Identity and existence certain, location approximate	WADGER
	27	Fracture - Identity and existence certain, location concealed	WADGER
	28	Fracture - Identity or existence questionable, location accurate	WADGER
	29	Fracture - Identity or existence questionable, location approximate	WADGER
	30	Fracture - Identity or existence questionable, location concealed	WADGER
	31	Low-angle normal fault - Identity and existence certain, location accurate. Half-circles on downthrown block	2.2.9
	32	Low-angle normal fault - Identity and existence certain, location approximate. Half-circles on downthrown block	2.2.11
	33	Low-angle normal fault - Identity and existence certain, location concealed. Half-circles on downthrown block	2.2.15
	34	Low-angle normal fault - Identity or existence questionable, location accurate. Half-circles on downthrown block	2.2.10
	35	Low-angle normal fault - Identity or existence questionable, location approximate. Half-circles on downthrown block	2.2.12
	36	Low-angle normal fault - Identity or existence questionable, location concealed. Half-circles on downthrown block	2.2.16
	37	Reverse fault - Identity and existence certain, location accurate. Rectangles on upthrown block	2.4.1
	38	Reverse fault - Identity and existence certain, location approximate. Rectangles on upthrown block	2.4.3
	39	Reverse fault - Identity and existence certain, location concealed. Rectangles on upthrown block	2.4.7
	40	Reverse fault - Identity or existence questionable, location accurate. Rectangles on upthrown block	2.4.2
	41	Reverse fault - Identity or existence questionable, location approximate. Rectangles on upthrown block	2.4.4
	42	Reverse fault - Identity or existence questionable, location concealed. Rectangles on upthrown block	2.4.8
	43	Normal fault - Identity and existence certain, location accurate. Bar and ball on downthrown block	2.2.1
	44	Normal fault - Identity and existence certain, location approximate. Bar and ball on downthrown block	2.2.3
	45	Normal fault - Identity and existence certain, location concealed. Bar and ball on downthrown block	2.2.7
	46	Normal fault - Identity or existence questionable, location accurate. Bar and ball on downthrown block	2.2.2
	47	Normal fault - Identity or existence questionable, location approximate. Bar and ball on downthrown block	2.2.4
	48	Normal fault - Identity or existence questionable, location concealed. Bar and ball on downthrown block	2.2.8
	49	Fault, unknown offset - Identity and existence certain, location inferred	Repurposed 2.1.5
	50	Thrust fault - Identity and existence certain, location inferred. Sawteeth on upper (tectonically higher) plate	2.8.5
	51	Strike-slip fault, right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion	2.6.5

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	52	Strike-slip fault, left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion	2.6.13
	53	Low-angle normal fault - Identity and existence certain, location inferred. Half-circles on downthrown block	2.2.13
	54	Reverse fault - Identity and existence certain, location inferred. Rectangles on upthrown block	2.4.5
	55	Normal fault - Identity and existence certain, location inferred. Bar and ball on downthrown block	2.2.5
	56	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	57	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	58	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.13
	59	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.5
	60	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	61	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	62	Oblique-slip fault, reverse right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	63	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	64	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	65	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	66	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	67	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	68	Oblique-slip fault, reverse left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	69	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; rectangles on upthrown block	WADGER
	70	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; rectangles on upthrown block	WADGER
	71	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; rectangles on upthrown block	WADGER
	72	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.9
	73	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.11
	74	Oblique-slip fault, normal left-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.15
	75	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.10
	76	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.12
	77	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; bar and ball on downthrown	Repurposed 2.7.16

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
		block	
	78	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.1
	79	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.3
	80	Oblique-slip fault, normal right-lateral offset - Identity and existence certain, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.7
	81	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location accurate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.2
	82	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location approximate. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.4
	83	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location concealed. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.8
	84	Fracture - Identity and existence certain, location inferred	WADGER
	85	High-angle dip-slip fault - Identity and existence certain, location accurate. Relative motion shown by U and D	WADGER
	86	High-angle dip-slip fault - Identity and existence certain, location approximate. Relative motion shown by U and D	WADGER
	87	High-angle dip-slip fault - Identity and existence certain, location concealed. Relative motion shown by U and D	WADGER
	88	High-angle dip-slip fault - Identity or existence questionable, location accurate. Relative motion shown by U and D	WADGER
	89	High-angle dip-slip fault - Identity or existence questionable, location approximate. Relative motion shown by U and D	WADGER
	90	High-angle dip-slip fault - Identity or existence questionable, location concealed. Relative motion shown by U and D	WADGER
	91	High-angle dip-slip fault - Identity and existence certain, location inferred. Relative motion shown by U and D	WADGER
	92	Fault, unknown offset - Identity or existence questionable, location inferred	Repurposed 2.1.6
	93	Thrust fault - Identity or existence questionable, location inferred. Sawteeth on upper (tectonically higher) plate	2.8.6
	94	Strike-slip fault, right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion	2.6.6
	95	Strike-slip fault, left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion	2.6.14
	96	Fracture - Identity or existence questionable, location inferred	WADGER
	97	Low-angle normal fault - Identity or existence questionable, location inferred. Half-circles on downthrown block	2.2.14
	98	Reverse fault - Identity or existence questionable, location inferred. Rectangles on upthrown block	2.4.6
	99	Normal fault - Identity or existence questionable, location inferred. Bar and ball on downthrown block	2.2.6
	100	Oblique-slip fault, reverse right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER
	101	Oblique-slip fault, reverse left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; rectangles on upthrown block	WADGER

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
	102	Oblique-slip fault, normal left-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.14
	103	Oblique-slip fault, normal right-lateral offset - Identity or existence questionable, location inferred. Arrows show relative motion; bar and ball on downthrown block	Repurposed 2.7.6
	104	High-angle dip-slip fault - Identity or existence questionable, location inferred. Relative motion shown by U and D	WADGER
	105	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location accurate	WADGER
	106	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location accurate	WADGER
	107	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location approximate	WADGER
	108	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location approximate	WADGER
	109	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location inferred	WADGER
	110	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location inferred	WADGER
	111	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location concealed	WADGER
	112	Oblique-slip fault, high-angle right-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location concealed	WADGER
	113	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location accurate	WADGER
	114	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location accurate	WADGER
	115	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location approximate	WADGER
	116	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location approximate	WADGER
	117	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location inferred	WADGER
	118	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence questionable, location inferred	WADGER
	119	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity and existence certain, location concealed	WADGER
	120	Oblique-slip fault, high-angle left-lateral offset, relative horizontal motion shown by arrows, relative vertical motion shown by U and D - Identity or existence	WADGER

SYMBOL	FAULT_CD (Fault Code)	DESCRIPTION	USGS ref no.
		questionable, location concealed	

9. Geologic Unit Polygons (polygon feature class)

GUNIT_TXT

This field contains the labels that identify the geologic units. The labels contain abbreviated information on the age, lithology, and name of a geologic polygon.

Each unit shown was created by the author who mapped a particular area, and therefore the unit symbol may not correspond to similar units across map boundaries as identified by other authors. For the 1:24,000-scale data, unit descriptions corresponding to the geologic unit symbols are located in the Geologic Unit Descriptions related table, and are linked to the polygon feature class through the "**Feature Link**" field. Unit descriptions were obtained from the published maps and only minor spelling corrections were made from the originals, as necessary.

For many geologic units the geologic unit label, as recorded in ArcInfo or ArcMap will have letters and (or) numbers enclosed in parentheses. On a conventional geologic map these parenthetical characters would be depicted as subscripts. They are enclosed in parentheses in the ArcInfo and ArcMap because the software does not allow subscripts.

10. Vents (point feature class)

VENT_CD codes

Symbol	VENT_CD (Vent Code)	Description	USGS ref no
*	1	Small cone, vent, cinder cone, or spatter cone	18.55
*	2	Large cone, vent, cinder cone, or spatter cone	18.56
+	3	2.5 minute tick marks	WADGER
*	4	Active volcano on small-scale maps	18.66