UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources

LIST OF MAP UNITS

- Qal_1 Level-1 stream and floodplain deposits
- Qal_2 Level-2 stream and floodplain deposits
- Qaly Young stream and floodplain deposits
- Qao Older alluvial deposits
- Qat_2 Level-2 stream-terrace deposits
- Qat_4 Level-4 stream-terrace deposits
- Qaf_1 Level-1 alluvial-fan deposits
- Qaf_2 Level-2 alluvial-fan deposits
- Qafy Young alluvial-fan deposits
- Qafp Alluvial-fan deposits related to Provo shoreline and regressive phase of Lake Bonneville
- Qafb, Qafb? Alluvial-fan deposits related to Bonneville shoreline and transgressive phase of Lake Bonneville
- Qaf_4 Level-4 alluvial-fan deposits
- Qafo Older alluvial-fan deposits
- Qc Colluvial deposits
- Qdp Deltaic deposits related to Provo shoreline and regressive phase of Lake Bonneville
- Qg Glacial deposits, undivided
- Qgm Glacial moraines, undivided
- Qga Glacial outwash
- Qgao Older glacial outwash
- Qh Fill and disturbed land
- Qlf Lacustrine fine-grained deposits of Lake Bonneville
- Ql Lacustrine deposits of Lake Bonneville
- Qldp Deltaic deposits related to the Provo shoreline and regressive phase of Lake Bonneville
- Qlgp Lacustrine gravel and sand related to the Provo shoreline and regressive phase of Lake Bonneville
- Qlsp Lacustrine sand and silt related to the Provo shoreline and regressive phase of Lake Bonneville
- Qlgb Lacustrine gravel and sand related to the Bonneville shoreline and transgressive phase of Lake Bonneville
- Qlsb Lacustrine sand and silt related to the Bonneville shoreline and transgressive phase of Lake Bonneville
- Qml_2 North Ogden liquefaction-induced landslide deposits
- Qms Landslide deposits
- Qmsy Younger landslide deposits
- Qmso Older landslide deposits
- Qmt Talus deposits
- Qac Alluvial and colluvial deposits
- Qaco Older alluvial and colluvial deposits
- Qafdb, Qafdb? Alluvial-fan and delta deposits, undivided, related to Bonneville shoreline and transgressive phase of Lake Bonneville
- Qam Alluvial and marsh deposits
- Qct Colluvial and talus deposits
- Qla Lacustrine and alluvial deposits
- Qmc Mass-movement and colluvial deposits
- Qafy/Qml_2 Younger alluvial-fan deposits over liquefaction-induced landslide deposits
- Qlgp/Ct Lacustrine gravel and sand related to the Provo shoreline and regressive phase of Lake Bonneville over Tintic Quartzite
- Qlgp/Xfc Lacustrine gravel and sand related to the Provo shoreline and regressive phase of Lake Bonneville over Farmington Canyon Complex, undivided
- Qlgb/Xfc Lacustrine gravel and sand related to the Bonneville shoreline and transgressive phase of Lake Bonneville over Farmington Canyon Complex, undivided
- Qafdb/Qga Alluvial-fan and delta deposits related to Bonneville shoreline and transgressive phase of Lake Bonneville over younger glacial outwash
- Qct/Qam Colluvial and talus deposits over alluvial and marsh deposits
- Qct/Qml_2 Colluvial and talus deposits over liquefaction-induced landslide deposits
- Qct/Qlgp Colluvial and talus deposits over lacustrine gravel and sand related to the Provo shoreline and regressive phase of Lake Bonneville
- Qh/Qal_1 Fill and disturbed land over level-1 stream and floodplain deposits
- Qh/Qal_2 Fill and disturbed land over level-2 stream deposits
- Qh/Qaly Fill and disturbed land over young stream deposits
- QTaf Quaternary-Pliocene alluvial-fan deposits
- Tsl Salt Lake Formation

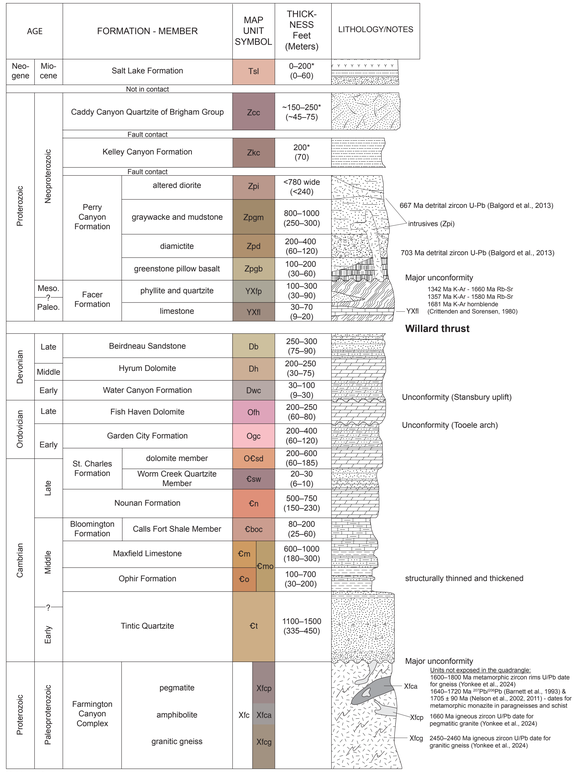
WILLARD THRUST HANGING WALL

- Zcc Caddy Canyon Quartzite of Brigham Group
- Zkc Kelley Canyon Formation
- Zpi Altered diorite of Perry Canyon Formation
- Zpgm, Zpgm? Graywacke and mudstone of Perry Canyon Formation
- Zpd Diamictite of Perry Canyon Formation
- Zpgb Greenstone pillow basalt of Perry Canyon Formation
- YXfp Phyllite and quartzite of Facer Formation
- YXfl Limestone of Facer Formation

WILLARD THRUST FOOTWALL

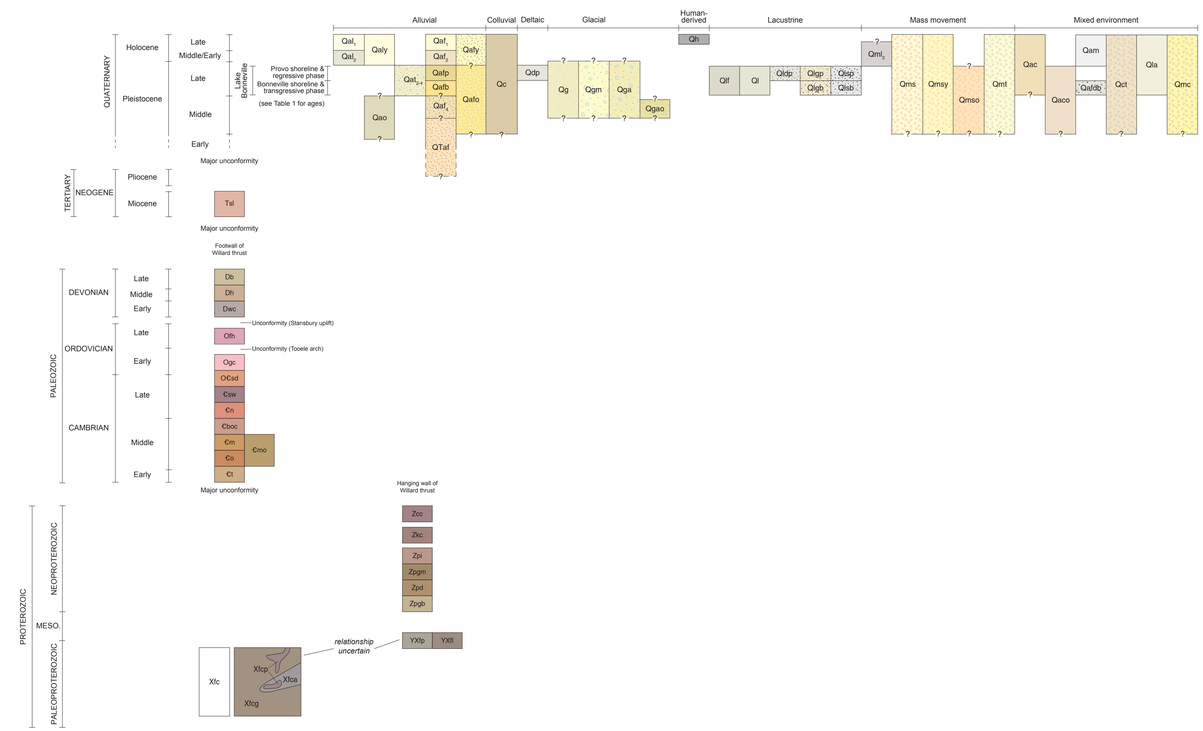
- Db Beirdneau Sandstone
- Dh Hyrum Dolomite
- Dwc Water Canyon Formation
- Ofh Fish Haven Dolomite
- Ogc, Ogc? Garden City Formation
- OCsd Dolomite member of St. Charles Formation
- Ꞓsw, Ꞓsw? Worm Creek Quartzite Member of St. Charles Formation
- Ꞓn, Ꞓn? Nounan Formation
- Ꞓboc, Ꞓboc? Calls Fort Shale Member of Bloomington Formation
- Ꞓmo Maxfield Limestone and Ophir Formation, undivided
- Ꞓm, Ꞓm? Maxfield Limestone
- Ꞓo, Ꞓo? Ophir Formation
- Ꞓt Farmington Canyon Complex, undivided
- Xfc Tintic Quartzite
- Xfcp Pegmatite of Farmington Canyon Complex
- Xfca Amphibolite of Farmington Canyon Complex
- Xfcg Granitic gneiss of Farmington Canyon Complex

LITHOLOGIC COLUMN



Not to scale
* indicates incomplete thickness

CORRELATION OF GEOLOGIC UNITS



GEOLOGIC SYMBOLS

- Contact – Dashed where approximately located, dotted where concealed
- Fault – Sense of offset not known or complex; dashed where approximately located; dotted where concealed; arrows show dip of fault; red symbols and dips are from Crittenden and Sorensen (1985b)
- Normal fault – Dashed where approximately located, dotted where concealed; bar and ball on downthrown side; arrows show dip of fault; red symbols and dips are from Crittenden and Sorensen (1985b); arrows on cross section indicate direction of relative movement
- Normal fault, concealed – Location inferred from gravity and seismic data (Cook et al., 1967; Zoback, 1983; PACES, 2012); bar and ball on downthrown side
- Thrust fault – Dashed where approximately located, dotted where concealed; saw teeth on upper plate; ball and bar on downthrown side indicates a reversal of fault slip; arrows on cross section indicate direction of relative movement
- Attenuation fault – Dashed where approximately located, dotted where concealed; low-angle-to-bedding fault in the Cambrian bedrock; rectangle on upper plate, younger over older; arrows show dip of fault; red symbols and dips are from Crittenden and Sorensen (1985b); arrows on cross section indicate direction of relative movement
- Lacustrine shorelines – Major shorelines of Lake Bonneville; mapped at the top of wave-cut bench for erosional shorelines and at the top of constructional bars and barrier beaches; may coincide with geologic contacts
- Transgressive shorelines (present above the Provo shoreline and below the Bonneville shoreline) – Dashed where approximately located
- Bonneville shoreline (highstand) – Dashed where approximately located
- Provo shoreline – Dotted where concealed
- Regressive shorelines (present below the Provo shoreline) – Dashed where approximately located
- Landslide scarp – Dashed where approximately located; hachures on down dropped side
- Limestone beds in Cambrian bedrock (Ꞓlu, Ꞓm, Ꞓo, and Ꞓt)
- Glacial cirque headwall
- Glacial arete
- Glacial moraine crest, symmetry uncertain
- Alluvial terrace scarp
- A——A′ Line of cross section
- Hinge line of anticline – Dotted where concealed
- Hinge line of overturned anticline – Dotted where concealed
- Hinge line of syncline – Dotted where concealed
- Hinge line of overturned syncline – Dashed where approximately located, dotted where concealed
- Outline of aggregate sand and gravel pit operations – contact based on 2018 orthophotography (Utah Automated Geographic Reference Center, 2018c)
- Structural measurements – red symbols and dips are from Crittenden and Sorensen (1985b)
- Strike and dip of inclined bedding
- Strike of vertical bedding
- Strike of horizontal bedding
- Strike and dip of overturned bedding
- Strike and dip of vein
- Strike and dip of cleavage
- Strike and dip of metamorphic foliation
- Strike and dip of joints
- Strike of vertical joint
- Bearing and plunge of lineation
- Bearing and plunge of minor fold
- Spring (selected)
- Water well (selected)
- Prospect
- Adit
- Sand and gravel pit
- Mine or Quarry
- Fossil sample location and number (Crittenden and Sorensen, 1985b)
- Trench sites for paleoseismic and lateral spread investigations: LV - Lomond View Park (Harty and Lowe, 2003); HV - Harrisville (Harty and Lowe, 2003); RC - Rice Creek (DuRoss et al., 2009); GC - Garner Canyon (Machette et al., 1992)

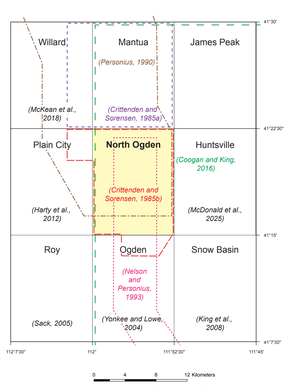
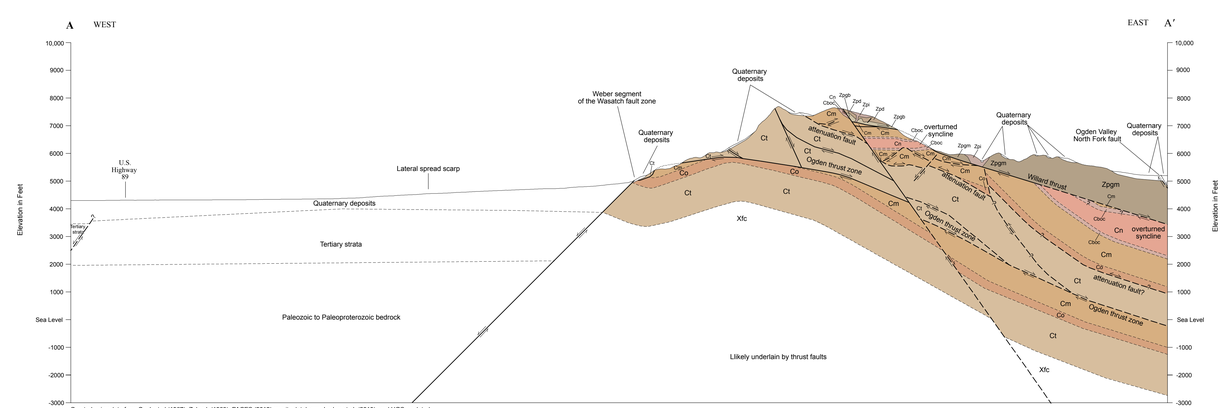



Figure 1. Index map showing selected geologic maps available for the North Ogden and surrounding 7.5′ quadrangles.