

Geologic Map of the Athena 7.5' Quadrangle, Umatilla County, Oregon

2023

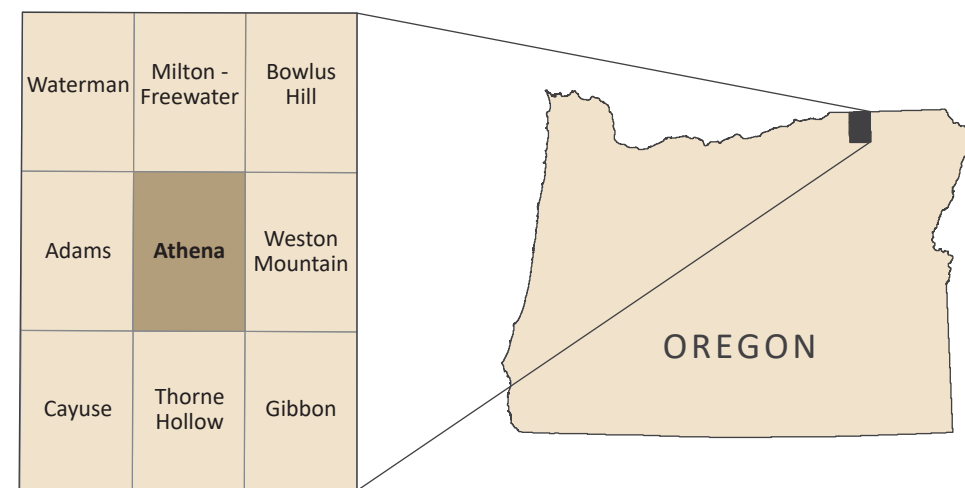
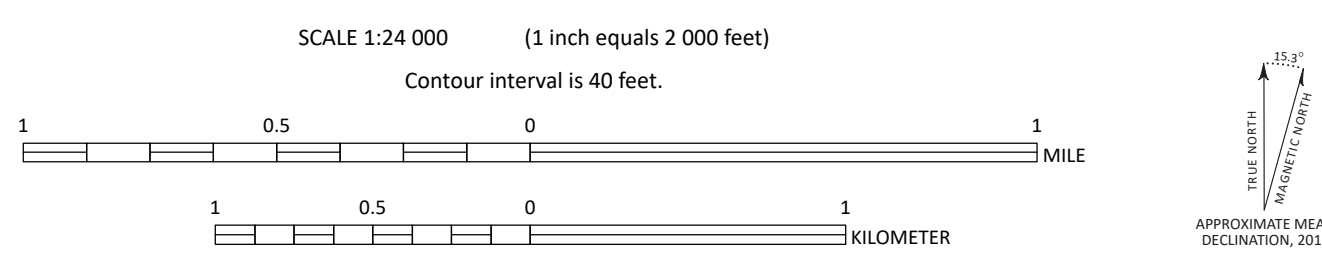
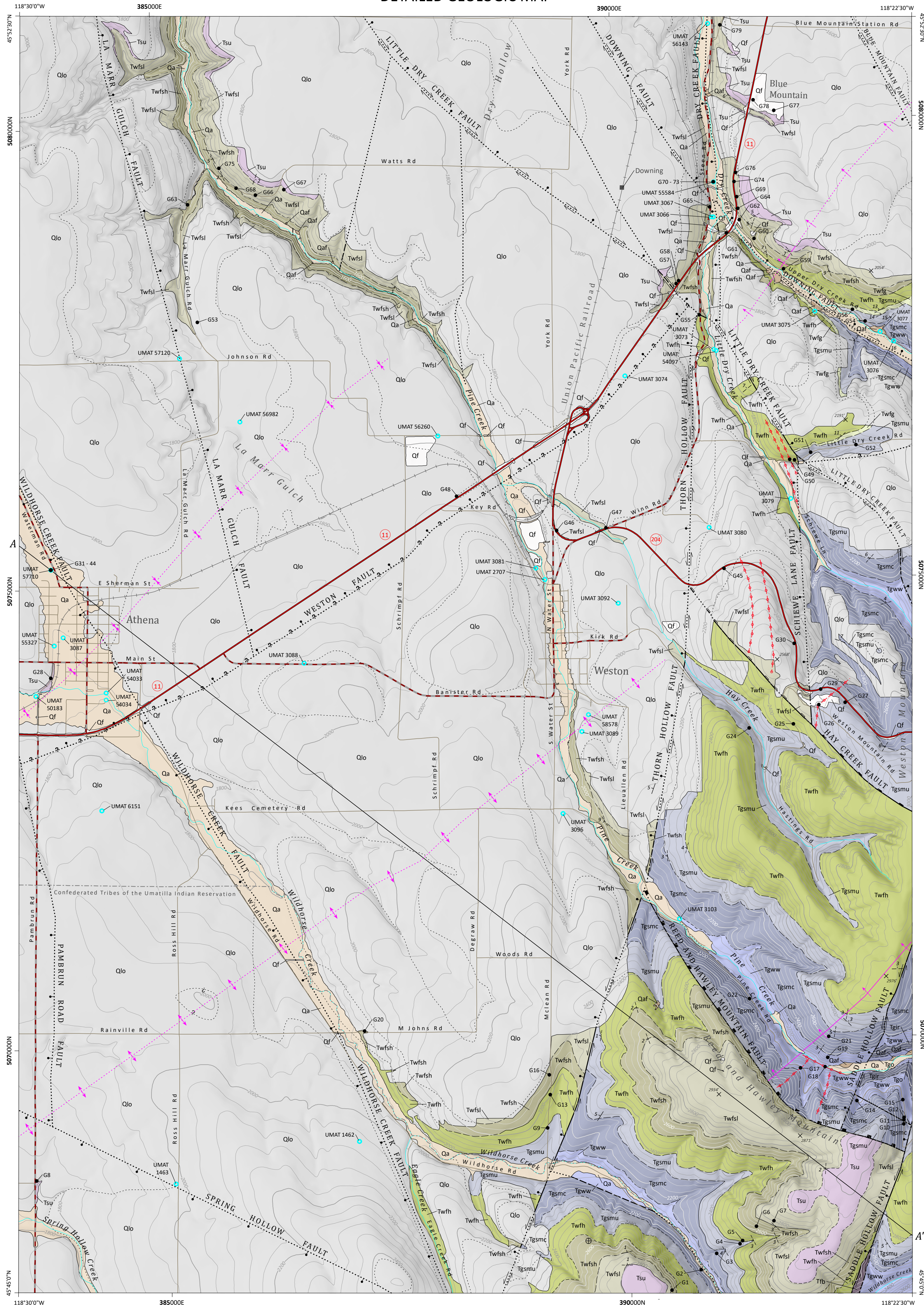
GMS-129

Geologic Map of the Athena 7.5' Quadrangle, Umatilla County, Oregon
James D. McLaughlin and Carlie M. Azzopardi

Cartography by Jon J. Francis and Geodatabase by Carlie M. Azzopardi

Oregon Department of Geology and Mineral Industries, State Capitol Office, Salem, Oregon 97331, 1999. The Oregon Department of Geology and Mineral Industries is a part of the Oregon State Government. The Oregon Department of Geology and Mineral Industries is a part of the Oregon State Government. The Oregon Department of Geology and Mineral Industries is a part of the Oregon State Government.

DETAILED GEOLOGIC MAP



Source Data: U.S. Geological Survey (USGS) National Elevation Dataset (NED) 10-meter digital elevation model for the Athena 7.5' quadrangle. Water features from USGS National Hydrography Dataset (NHD). Aquatic Resources Information System (ARIS) (2017). Road features from Oregon Department of Transportation (ODOT) (2015).

Projection: Oregon Statewide Lambert Conformal Conic, Unit: International Foot, Horizontal Datum: NAD 1983 HARN, UTM Coordinate Zone 11N, NAD83.

Software: Esri ArcGIS® v10.7.1 and Adobe Illustrator® 2022 v26.3.1.

Field Work: Field work continued in 2020, 2021, and 2022 by James D. McLaughlin and Carlie M. Azzopardi (DOGAMI), with assistance from Christine Azzopardi (DOGAMI) and John De. Consolidated Tribes of the Umatilla Indian Reservation (CTUIR).

References: Cohen, K. M., Finney, S. C., Gibbard, P. L., and Fan, J. X., 2013, The KS International Chronostratigraphic Chart, *Geochronology*, 36, p. 199-204.

Gradstein, F. M., Ogg, J. G., and Smith, A. G., eds., 2004, *A geologic time scale*, Cambridge, U.K., Cambridge University Press, 589 p.

Ogg, J. G., Ogg, J. G., and Gradstein, F. M., 2008, *The concise geologic time scale*, New York, Cambridge University Press, 189 p.

Geologic Briefings: Ken De. (CTUIR), Mark Forre (DOGAMI-revised), Joe Koenig, Oregon Water Resource Department (OWRD), Jon Woody (OWRD), Andrew Westworth (OWRD), and Lulu Guerrero (DOGAMI).

Digital Cartography: Jon J. Francis and Geodatabase by Carlie M. Azzopardi (DOGAMI).

Geodatabase: Carlie M. Azzopardi (DOGAMI).

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LIST OF MAP UNITS

See Explanation of Map Units on Plate 2 for complete unit descriptions.

UPPER CENOZOIC SURFICIAL DEPOSITS

- Qf modern fill and construction material (upper Holocene)
- Qa alluvium (Holocene and Upper Pleistocene)
- Qaf fan deposits (Holocene and Upper Pleistocene)
- Qlo loess deposits (Holocene to lower Pleistocene)

Unconformity

UPPER CENOZOIC VOLCANIC AND SEDIMENTARY ROCKS

- Qtzg conglomerate (lower Pleistocene [?], Pliocene [?], or upper Miocene)

Disconformity

COLUMBIA RIVER BASALT GROUP

- Saddle Mountains Basalt
- Umatilla Member
- Tsu Umatilla Member (middle Miocene)

Disconformity — Mabton Member of the Ellensburg Formation

Wanupum Basalt

Frenchman Springs Member

Basalt of Sentinel Gap (middle or lower Miocene)

- Twfi Basalt of Sentinel Gap, low-phosphorus lava flows (middle or lower Miocene)
- Twfh Basalt of Sentinel Gap, high-phosphorus lava flows (middle or lower Miocene)
- Twfh Basalt of Sand Hollow (middle or lower Miocene)
- Twfg Basalt of Ginkgo (middle or lower Miocene)

Disconformity — Vantage Member of the Ellensburg Formation

Grande Ronde Basalt

Normal-polarity (N2) magnetostratigraphic unit subdivided into:

Sentinel Bluffs Member

Basalt of Museum (lower Miocene)

Basalt of McCoy Canyon (lower Miocene)

Winter Water Member (lower Miocene)

Indian Ridge Member (lower Miocene)

Orley member (lower Miocene)

Buttermilk Canyon member (lower Miocene) (cross section only)

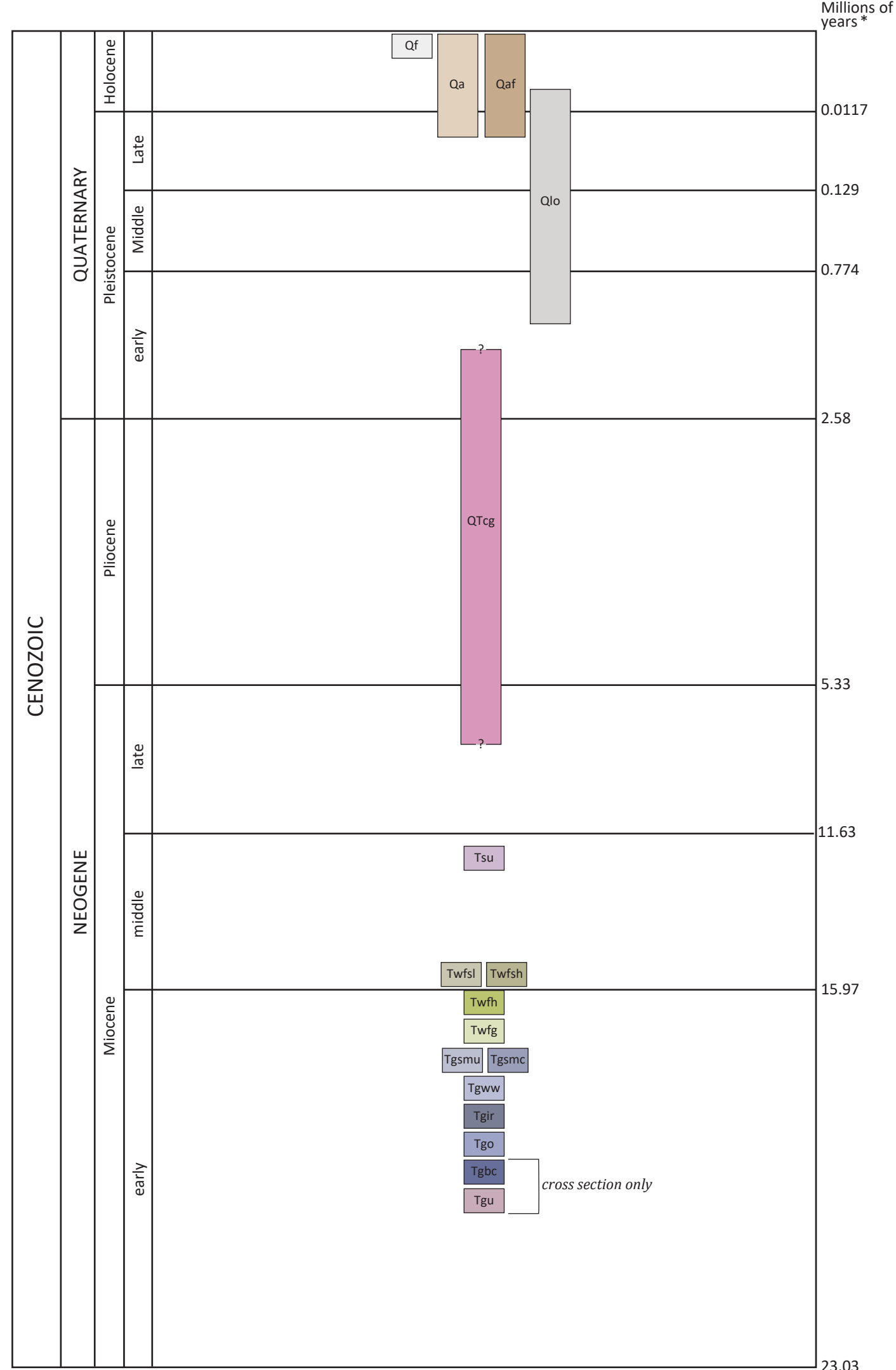
Reversed-polarity (R2) magnetostratigraphic unit/Normal-polarity (N1) magnetostratigraphic unit subdivided into:

Grande Ronde Basalt, undivided (lower Miocene) (cross section only)

OTHER ROCKS

- Tfb fault breccia (upper to middle Miocene [?])

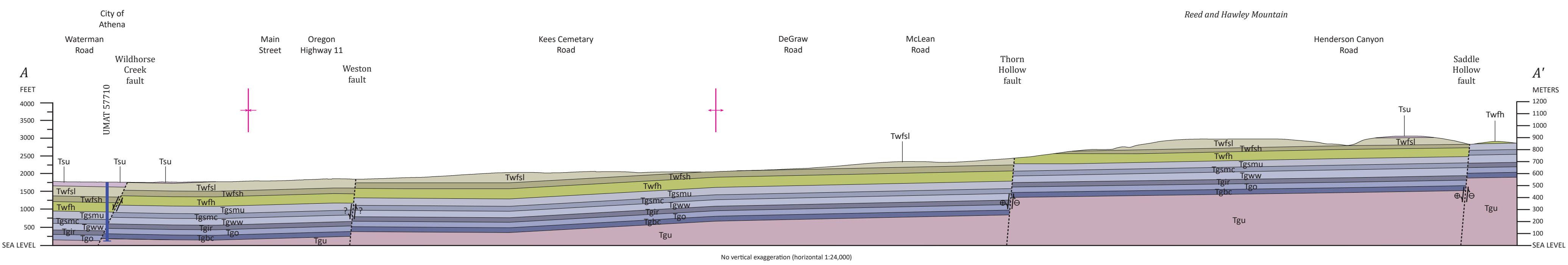
TIME ROCK CHART



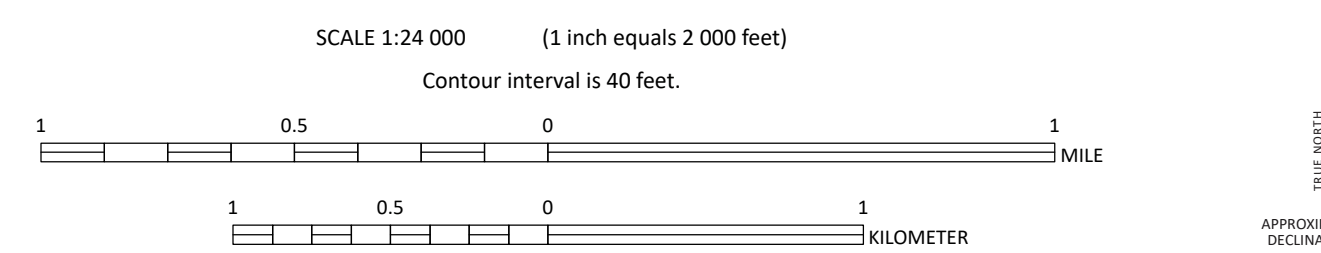
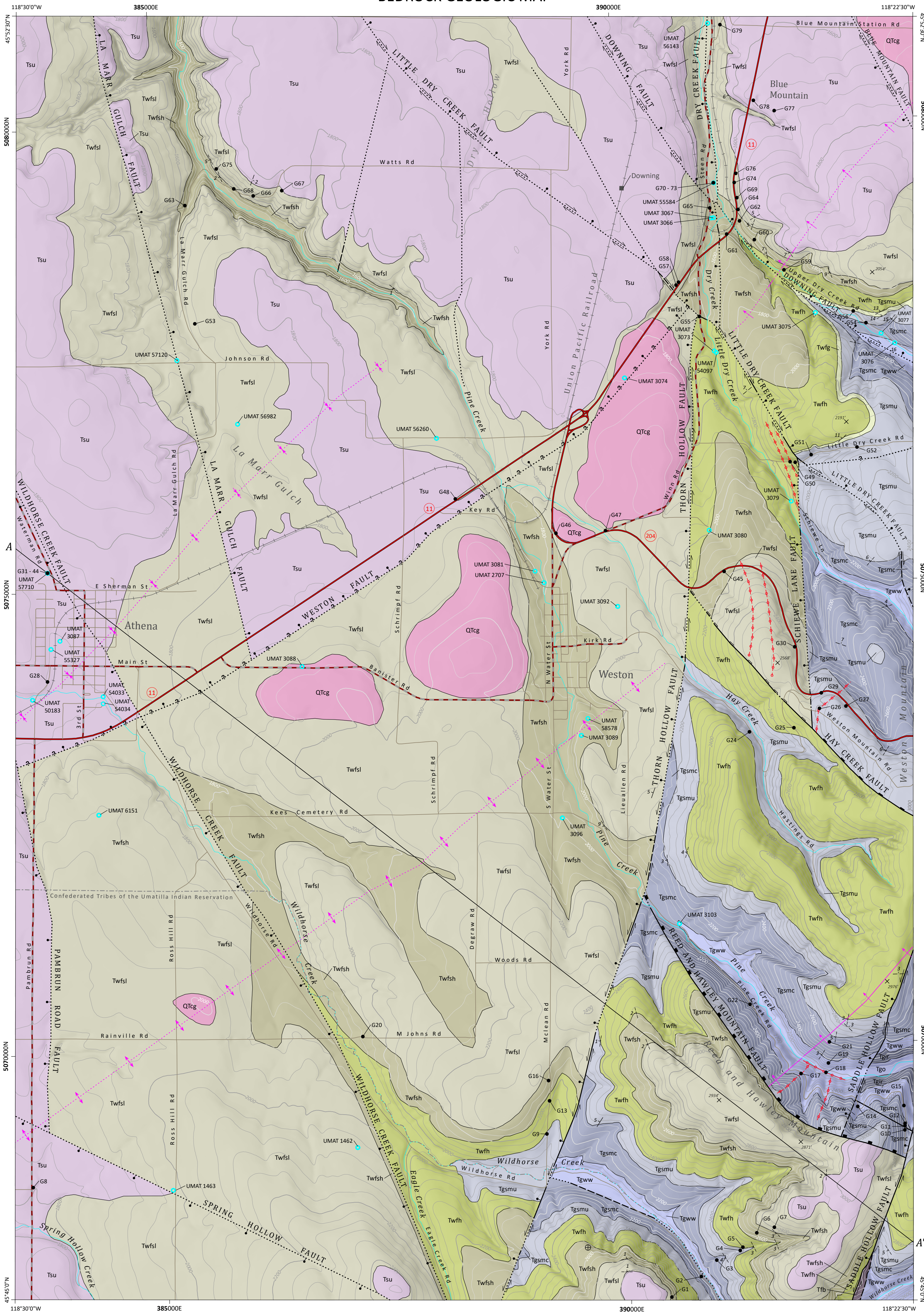
*The geologic time scale used is the 2022 (2022/10) version of the International Commission on Stratigraphy International Chronostratigraphic chart (<https://stratigraphy.org/chart>) revised from Gradstein and others (2004), Ogg and others (2008), and Cohen and others (2013).

GEOLOGIC CROSS SECTION

Quaternary units not shown in cross section.



BEDROCK GEOLOGIC MAP



EXPLANATION OF SYMBOLS

- Stream
- Road
- Secondary highway
- Primary highway
- Railroad
- Boundary — Confederation
- Water well (cross section only)
- Cross section
- Lidar-derived elevation
- Location of whole-rock XRF geochemical analysis sample
- Water well, as shown on topographic maps or on general-purpose or smaller-scale maps
- Horizontal bedding
- Inclined bedding — showing strike and dip
- Approximate orientation of inclined bedding — Showing approximate strike and dip
- Gently inclined (between 0 and 30) bedding, as determined remotely or from aerial photographs — showing approximate strike and direction of dip
- Contact — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Fault — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Normal fault — ball and bar on downthrown block. Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Oblique-slip fault, right-lateral offset, ball and bar on downthrown block — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Oblique-slip fault, left-lateral offset, ball and bar on downthrown block — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Reverse fault — solid line where accurately located, long-dashed where approximate, dotted where concealed, queried where uncertain. Rectangles on upthrown block.
- Rotational or scissor fault, reverse-slip offset — solid line where accurately located, long-dashed where approximate, dotted where concealed, queried where uncertain. Rectangles on upthrown block.
- Rotational or scissor fault, normal-slip offset — solid line where accurately located, long-dashed where approximate, dotted where concealed, queried where uncertain. Rectangles on downthrown block.
- Normal fault (in cross section) — Short-dashed line where inferred, dotted where approximate, queried where existence and identity confidence questionable. Arrows show relative motion. Arrows indicate downthrown block.
- Oblique-slip fault, left-lateral offset (in cross section) — minus, away from observer; plus, towards observer. Arrows indicate downthrown block.
- Anticline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed.
- Syncline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed.
- Monocline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed.
- Dike — Identity and existence certain, solid line where location accurate, short-dashed where approximate.