NEVADA BUREAU OF MINES AND GEOLOGY

OPEN-FILE REPORT 2025-02
GEOLOGIC MAP OF THE NORTHERN SNAKE RANGE METAMORPHIC CORE COMPLEX, WHITE PINE COUNTY, NEVADA AND MILLARD COUNTY, UTAH
Text accompanies map

GEOLOGIC MAP OF THE NORTHERN SNAKE RANGE METAMORPHIC CORE COMPLEX, WHITE PINE COUNTY, NEVADA AND MILLARD COUNTY, UTAH

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2025

GEOLOGIC UNITS

See accompanying text for full unit descriptions and references for this map.

QUATERNARY AND TERTIARY SEDIMENTARY DEPOSITS AND VOLCANIC ROCKS

Q	Alluvium, undivided (Quaternary), in cross sections only
Qal	Alluvium (Quaternary)
Ql	Landslides (Quaternary)
Qt	Talus (Quaternary)
Qtl	Talus and landslide deposits, undivided (Quaternary)
Qla	Lacustrine and alluvial deposits, undivided (Quaternary)
Qlg	Lacustrine gravels (Quaternary)
Qll	Lagoonal deposits (Quaternary)
Qlf	Fine-grained lacustrine deposits (Quaternary)
Qbla	Lake Bonneville lacustrine and alluvial deposits (Quaternary)
Qbs	Lake Bonneville sand and gravel (Quaternary)
Qbl	Lake Bonneville lagoonal deposits (Quaternary)
Qg	Glacial deposits (Quaternary)
Qol	Older alluvium (Quaternary)
Tc	Conglomerate (Tertiary)
Tm	Marl (Tertiary)
Tl	Limestone (Tertiary)
Tbx	Rock-avalanche breccia (Tertiary)
Tj	Jasperite fault breccia (Tertiary?)
Tv	Rhyodacite flows and subvolcanic intrusive bodies (Tertiary)
Tco	Older conglomerate (Tertiary)

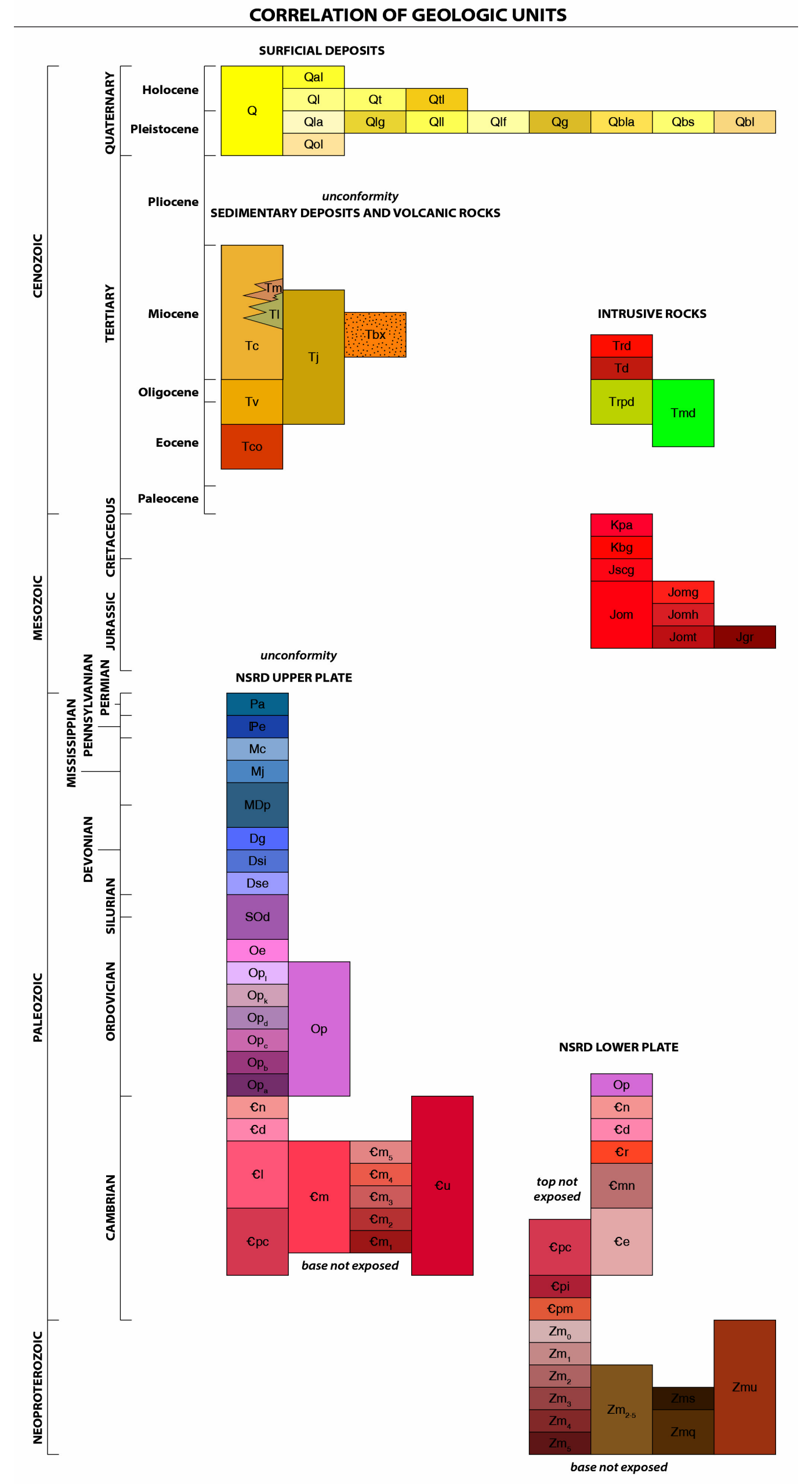
PALEOZOIC AND NEOPROTEROZOIC STRATIFIED ROCKS

Pa	Arcturus Formation (Permian)
IPe	Ely Limestone (Pennsylvanian)
Mc	Chainman Shale (Mississippian)
Mj	Joana Limestone (Mississippian)
MDp	Pilot Shale (Mississippian to Devonian)
Dg	Guilmette Formation (Devonian)
Dsi	Simonson Dolomite (Devonian)
Dse	Sevy Dolomite (Devonian)
SOd	Laketown and Fish Haven dolomites, undivided (Silurian to Ordovician)
Oe	Eureka Quartzite (Ordovician)
Op	Pogonip Group, undivided (Ordovician)
Op_l	Lehman Formation
Op_k	Kanosh Shale
Op_d	Pogonip Group Unit D
Op_c	Pogonip Group Unit C
Op_b	Pogonip Group Unit B
Op_a	Pogonip Group Unit A
€n	Notch Peak Limestone (Upper Cambrian)
€d	Dunderberg Shale (Upper Cambrian)
€l	Lincoln Peak Formation (Middle Cambrian)
€r	Raiff Limestone (Middle Cambrian)
€mn	Monte Neva Formation (Middle Cambrian)
€e	Eldorado Limestone (Middle Cambrian)
€pc	Pole Canyon Limestone (Middle Cambrian)
€m	Limestone, undivided (Middle Cambrian)
$€m_5$	Subunit 5
$€m_4$	Subunit 4
$€m_3$	Subunit 3
$€m_2$	Subunit 2
$€m_1$	Subunit 1
€u	Limestone, undivided (Upper to Middle Cambrian)
€pi	Pioche Shale (Lower Cambrian)
€pm	Prospect Mountain Quartzite (Lower Cambrian)
Zmu	McCoy Creek Group, undivided (Neoproterozoic)
Zm_0	Osceola Argillite
Zm_1	Unit 1, quartzite
Zm_2	Unit 2, quartzite and schist
Zm_3	Unit 3, quartzite
Zm_4	Unit 4, schist and quartzite
Zm_5	Unit 5, schist and quartzite
Zm_{2-5}	Units 2–5, undivided, in cross section B–B' only
Zms	Schist, undivided (Neoproterozoic)
Zmq	Quartzite, undivided (Neoproterozoic)

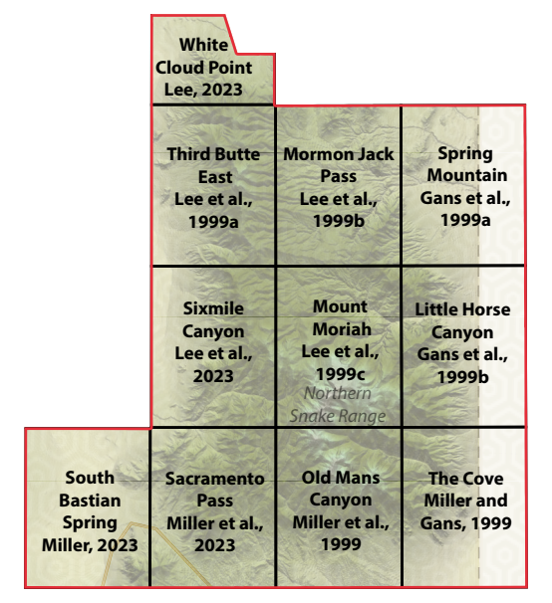
INTRUSIVE ROCKS

Trd	Rhyolite dikes and sills (Tertiary)
Td	Dacite intrusion (Tertiary)
Trpd	Rhyolite porphyry dikes (Tertiary)
Tmd	Mafic dikes (Tertiary)
Kpa	Pegmatite and aplite (Cretaceous)
Kbg	Biotite orthogneiss (Cretaceous)
Jscg	Silver Creek granite (Jurassic)
Jom	Old Mans Pluton, undivided (Jurassic)
Jomg	Old Mans granite
Jomh	Old Mans hornblende-bearing diorite
Jomt	Old Mans tonalite
Jgr	Granite (Jurassic)

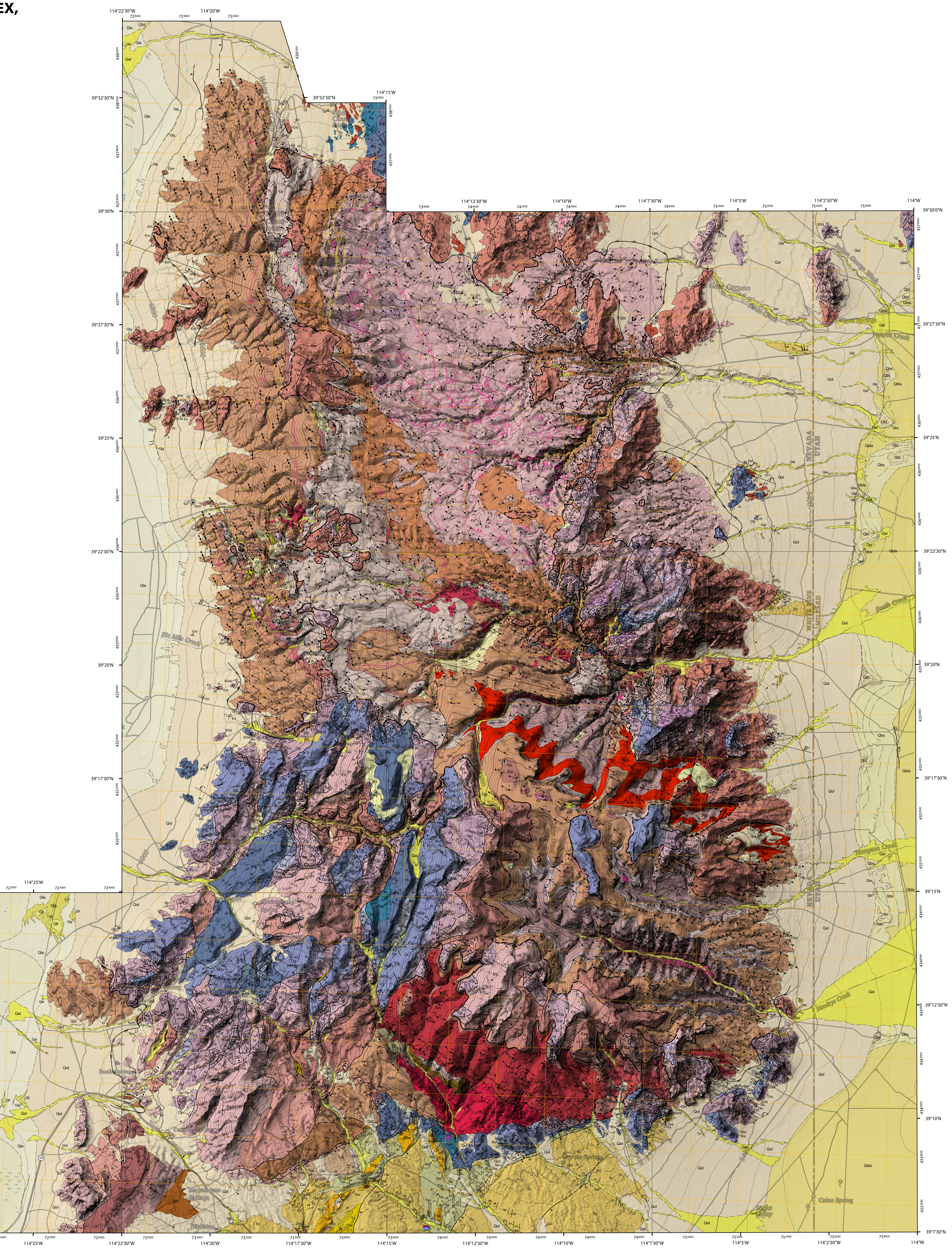
CORRELATION OF GEOLOGIC UNITS



Sources of Geologic Mapping


White Cloud Point Lee, 2023
Third Butte East Lee et al., 1999a
Mormon Jack Pass Lee et al., 1999b
Spring Mountain Gans et al., 1999a
Sixmile Canyon Lee et al., 2023
Mount Moriah Lee et al., 1999c
Northern Snake Range
Little Horse Canyon Gans et al., 1999b
South Bastian Spring Miller, 2023
Sacramento Pass Miller et al., 2023
Old Mans Canyon Miller et al., 1999
The Cove Miller and Gans, 1999

Many of the overturned anticlines and synclines in the northern part of the range are from Wrobel et al. (2021).



MAP SYMBOLS

Contact Solid where certain, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain.

Internal Contact Medium dash with two small dashes where approximately located.

Fault Solid where certain, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain.

Normal fault Solid where certain, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Long arrow showing fault striation trend and plunge. Short arrow showing fault dip and dip azimuth; ball on hanging wall. *In cross section, arrows show relative motion. A—away from observer, T—toward observer.*

Northern Snake Range Décollement Solid where certain, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Double tick marks on upper plate. Long arrow showing fault striation trend and plunge. Short arrow showing fault dip and dip azimuth.

Thrust fault Solid where certain, dashed where approximately located, dotted where concealed; queried if identity and existence uncertain. Solid teeth on hanging wall. Short arrow showing fault dip and dip azimuth.

Low-angle normal fault Solid where certain, dashed where approximately located; queried if identity and existence uncertain. Low-angle normal fault, with a dip of <5°, in the lower plate. Solid half circles on hanging wall.

Oblique-slip normal fault Solid where certain, dashed where approximately located, dotted where concealed. Arrows show relative motion, ball on hanging wall.

Paleo-shoreline of late Pleistocene pluvial lake Dashed where approximately located.

Limit of abundant pegmatite and aplite Dashed where approximately located. Triple tick marks point in the direction of abundant pegmatite and aplite.

Anticline Solid where certain, dashed where approximately located.

Syncline Solid where certain.

Overturned Anticline Solid where certain. Arrow points in the direction of fold plunge.

Overturned Syncline Solid where certain, dashed where approximately located. Arrow points in the direction of fold plunge.

Trpd Tmd **Dike** Solid where certain.

A A′ **Line of cross section**

Strike and dip of bedding

- 30 Inclined
- Horizontal
- Vertical
- Overturned

Strike and dip of metamorphic foliation

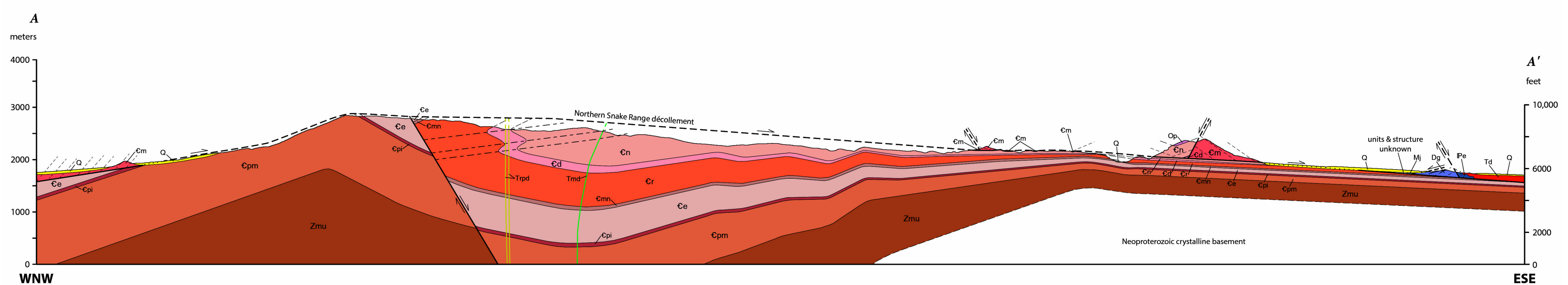
- 47 Inclined

Bearing of D3 stretching lineation

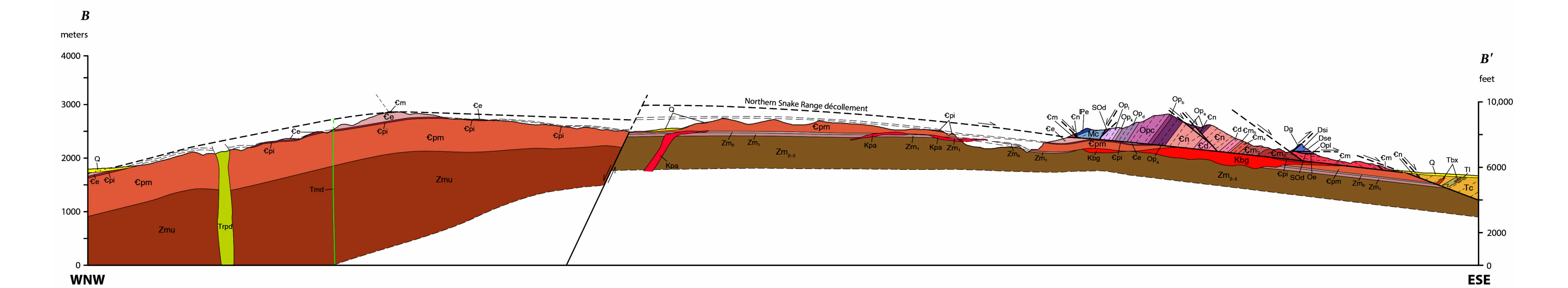
- Inclined

Bearing of D2 intersection and stretching lineation

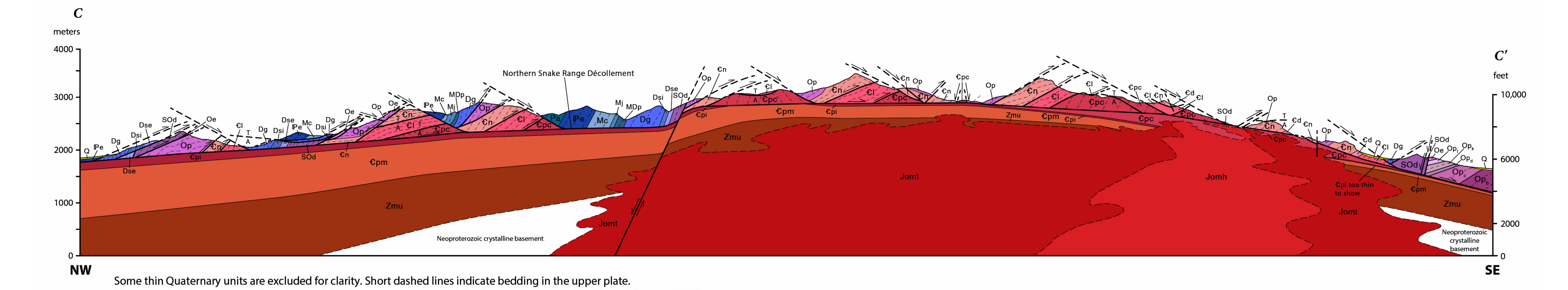
- Inclined



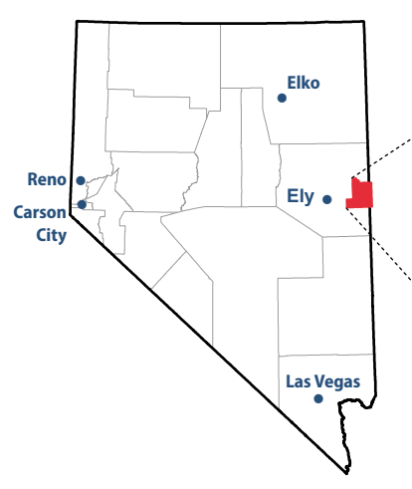
Some thin Quaternary units are excluded for clarity. Short dashed lines indicate bedding in the upper plate. Medium dash and short dash lines represent axial plane. Modified from Long et al. (2023).



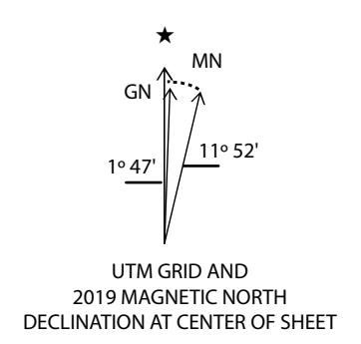
Some thin Quaternary units are excluded for clarity. Short dashed lines indicate bedding in the upper plate. Eastern one-third of cross section modified from Gans et al. (1999).



Some thin Quaternary units are excluded for clarity. Short dashed lines indicate bedding in the upper plate. Western third of cross section from Lee et al. (2023) and eastern two-thirds of cross section modified from Johnston (2000).



Suggested citation:
Lee, J., 2025, Geologic map of the Northern Snake Range metamorphic core complex, White Pine County, Nevada and Millard County, Utah: Nevada Bureau of Mines and Geology Open-File Report 2025-02, scale 1:62,500, 25 p.



UTM GRID AND
2019 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Scale 1:62,500

0 0.5 1 1.5 2 2.5 3 3.5 KILOMETER

0 0.5 1 1.5 2 2.5 MILE

0 2,000 4,000 6,000 8,000 10,000 12,000 FEET

CONTOUR INTERVAL 150 FEET

Projection: Universal Transverse Mercator, Zone 11,
North American Datum 1983 (m)

Base map: U.S. Geological Survey Kern Mountains, NV 100K quadrangle (2024)
U.S. Geological Survey Ely, NV 100K quadrangle (2024)

Hillshade: Derived from 1/3 arc second data from The National Map.

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