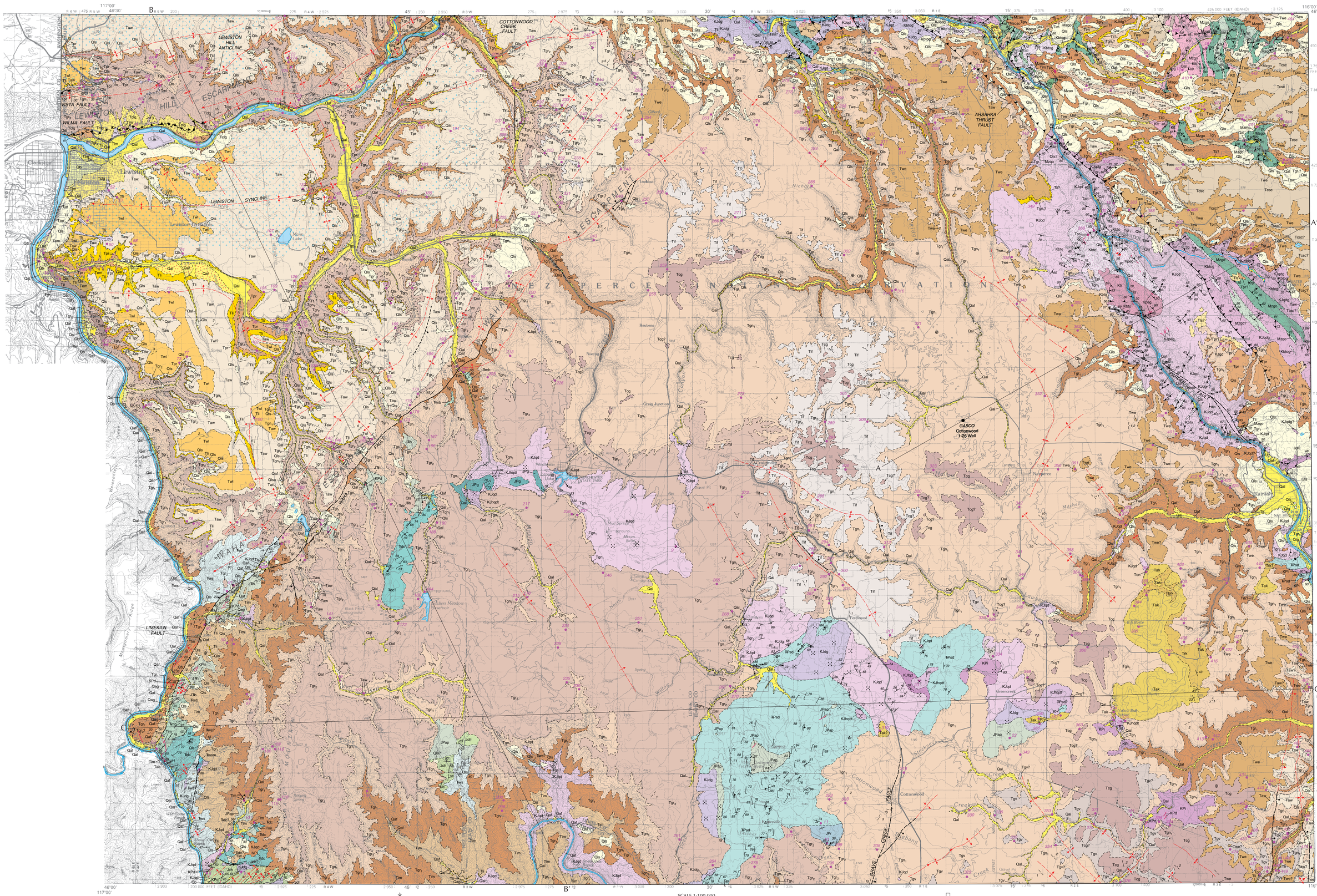


Orofino base map from digitally scanned USGS 1:100,000 composite film base, 1981. Clarkston part of base map from scanned USGS 1:100,000 paper base, 1981.
Projection and 10,000-meter grid, zone 11 (Orofino) and zone 11 (Clarkston): Universal Transverse Mercator
25,000 foot grid ticks based on Idaho coordinate system, west zone (Orofino) and on Washington coordinate system, south zone (Clarkston).
1927 North American Datum.
National geodetic vertical datum of 1929.

UTM grid convergence (GN) and 1981 magnetic declination (MN) at center of the Orofino 30' x 60'

SCALE 1:100,000
KILOMETERS
MILES
Contour interval 40 meters (Orofino part), 50 meters (Clarkston part)

IDAHO
QUADRANGLE LOCATION

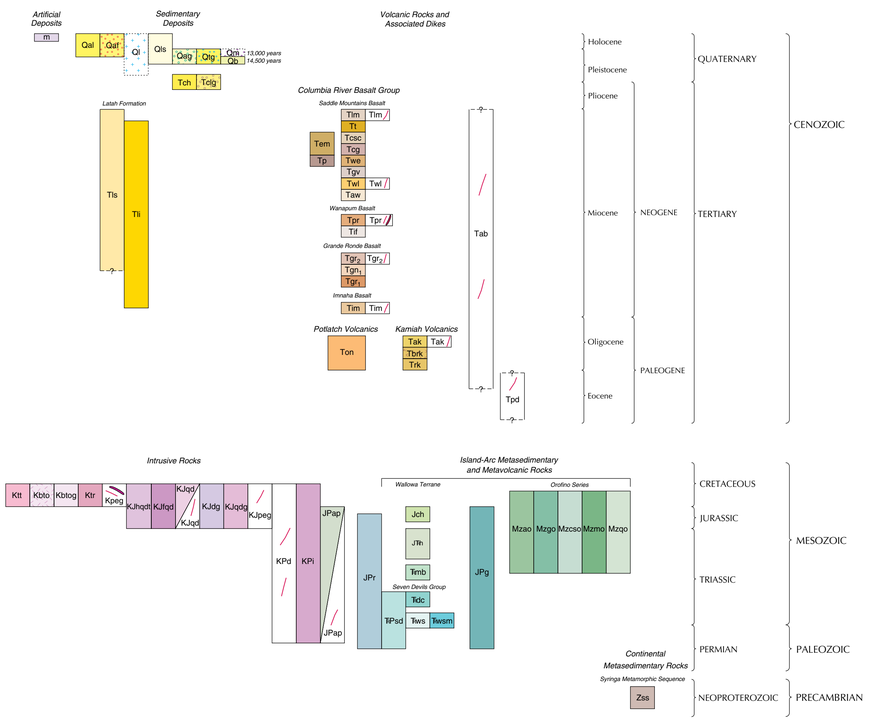
Field work conducted 2002-2005.
This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program.
Reviewed by Steve Reidel, Washington State University - Tri Cities, Richland, WA 99354 and Mark Ferns, Oregon Department of Geology and Mineral Industries, Baker City Field Office, Baker City, OR 97814.
Digital cartography and GIS data capture by Jane S. Freed, Jesse S. Bird, Loudon R. Stanford, and E. Benjamin B. Studer.
Map edited by Roger C. Stewart.
Map version 11-25-2009.
Note on printing: The map is reproduced at a high resolution of 600 dots per inch. The inks are resistant to run and fading but will deteriorate with long-term exposure to light.
PDF map (Acrobat Reader) may be viewed at www.idahogeology.org.

Geologic Map of the Idaho Parts of the Orofino and Clarkston 30 x 60 Minute Quadrangles

Mapped and compiled by John D. Kauffman, Dean L. Garwood, Keegan L. Schmidt, Reed S. Lewis, Kurt L. Othberg, and William M. Phillips

2009

CORRELATION OF MAP UNITS



MAP UNITS

See accompaning booklet for complete descriptions.

ARTIFICIAL DEPOSITS

- m — Made ground (Holocene)

SEDIMENTARY DEPOSITS

Younger Alluvial, Eolian, and Landslide Deposits

- Qal — Alluvial deposits (Holocene and Pleistocene)
- Qaf — Alluvial fan deposits (Holocene and Pleistocene)
- Qls — Landslide deposits (Holocene and Pleistocene)
- Ql — Loess deposits (Holocene and Pleistocene) *Pattern only; superimposed on bedrock.*

Older Allluvial Deposits and Sediments

- Qag — Alluvial gravel (Pleistocene)
- Qtg — Terrace gravel deposits (Pleistocene)
- Tcg — Clearwater gravel (late Pliocene)
- Tch — Clarkston Heights gravel (late Pliocene)

Catastrophic Flood Deposits

- Qm — Missoula Floods backwater deposits (Pleistocene) *Pattern only.*
- Qb — Bonneville Flood deposits (Pleistocene)

Latah Formation

- Tls — Latah Formation sediments (Miocene)
- Tli — Latah Formation interbeds (Miocene)

VOLCANIC ROCKS AND ASSOCIATED DIKES

Columbia River Basalt Group

Saddle Mountains Basalt

- Tim — Lower Monumental Member (Miocene)
- Tt — Basalt of Tammany Creek (Miocene)
- Tem — Elephant Mountain Member (Miocene)
- Tcsc — Basalts of Craigmont and Swamp Creek, undivided (Miocene)
- Tcg — Basalt of Craigmont
- Tp — Pomona Member (Miocene)
- Twe — Basalt of Weippe (Miocene)
- Tgv — Basalt of Grangeville (Miocene)

Weissenfels Ridge Member (Miocene)

- Twl — Basalt of Lewiston Orchards (Miocene)
- Taw — Asotin Member and Wilbur Creek Member, undivided (Miocene)

Wanapum Basalt

- Tpr — Priest Rapids Member (Miocene)
- Tif — Basalt of Icicle Flat (Miocene)

Grande Ronde Basalt

- Tgr_2 — Grande Ronde Basalt, R_2 magnetostratigraphic unit (Miocene)
- Tgr_1 — Grande Ronde Basalt, N_1 magnetostratigraphic unit (Miocene)
- Tgr_1 — Grande Ronde Basalt, R_1 magnetostratigraphic unit (Miocene)

Imnaha Basalt

- Tim — Imnaha Basalt (Miocene)

Potlatch Volcanics

- Ton — Onaway Member (Oligocene)

Kamiah Volcanics

- Tak — Andesite (Oligocene)
- Tbrk — Volcanic breccia (Oligocene)
- Trk — Rhyolite (Oligocene)

INTRUSIVE ROCKS

- Tab — Andesite and basalt dikes, undivided (Miocene to Eocene)
- Tpd — Porphyritic dacite dikes (Eocene?)
- Kpeg — Pegmatite and aplite dikes (Cretaceous)

Intermediate Initial $^{87}Sr/^{86}Sr$ Intrusions

- Ktt — Biotite tonalite and hornblende-biotite tonalite (Cretaceous)

Low Initial $^{87}Sr/^{86}Sr$ Intrusions

- Ktr — Biotite-muscovite trondhjemite (Cretaceous)
- Kbto — Biotite tonalite (Cretaceous)
- Kbtog — Biotite tonalite gneiss (Cretaceous)
- KJpeg — Pegmatite and aplite dikes (Cretaceous or Jurassic)
- KJhqdt — Hornblende quartz diorite and tonalite (Cretaceous? or Jurassic)
- KJqd — Biotite-hornblende quartz diorite and quartz diorite (Cretaceous or Jurassic)
- KJqdg — Quartz diorite gneiss (Cretaceous or Jurassic)
- KJfqd — Fine-grained hornblende quartz diorite (Cretaceous? or Jurassic)
- KJdg — Diorite and gabbro (Cretaceous or Jurassic)
- KPd — Dike rocks, undivided (Cretaceous? to Permian?)
- KPi — Plutonic rocks, undivided (Cretaceous? to Permian?)
- JPap — Andesite porphyry (Jurassic to Permian)

ISLAND-ARC METASEDIMENTARY AND METAVOLCANIC ROCKS

Wallowa Terrane

- Jch — Coon Hollow Formation (Jurassic)
- JPr — Rhyolite tuff (Jurassic and Permian)
- JTh — Hurwal Formation (Jurassic and Triassic)
- Tmb — Martin Bridge Limestone (Triassic)

Seven Devils Group

- TRPsd — Seven Devils Group, undivided (Triassic and Permian)
- Tdc — Doyle Creek Formation (Triassic)
- Tws — Wild Sheep Creek Formation (Triassic)
- Twsm — Wild Sheep Creek Formation, marble (Triassic)

Orofino Series

- Mzao — Amphibolite (Mesozoic)
- Mzgo — Gneiss and schist (Mesozoic)
- Mzcso — Calc-silicate gneiss and granofels (Mesozoic)
- Mzmo — Marble (Mesozoic)
- Mzqo — Quartzite (Mesozoic)

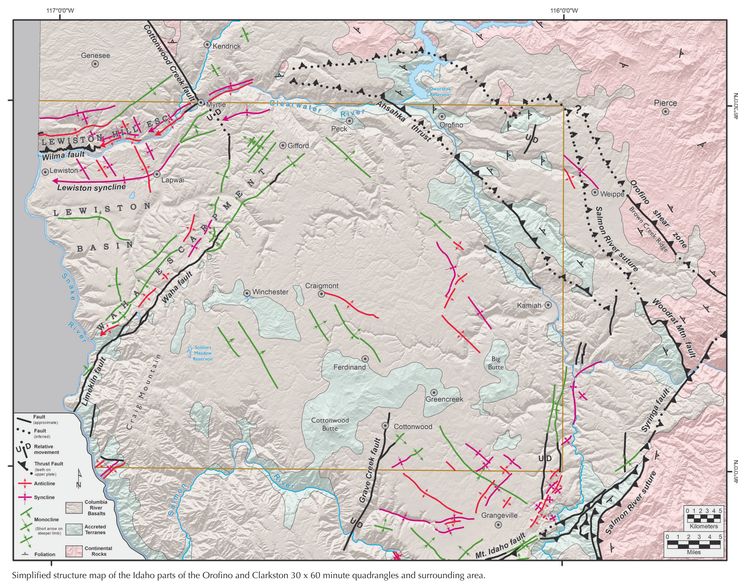
Island-Arc Rocks, Unassigned

- JPg — Gneissic and hornfelsic rocks (Jurassic to Permian)

CONTINENTAL METASEDIMENTARY ROCKS

Syringa Metamorphic Sequence

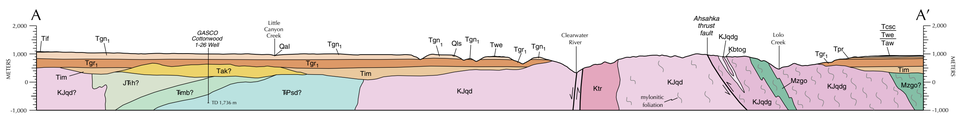
- Zss — Schist and gneiss (Neoproterozoic)

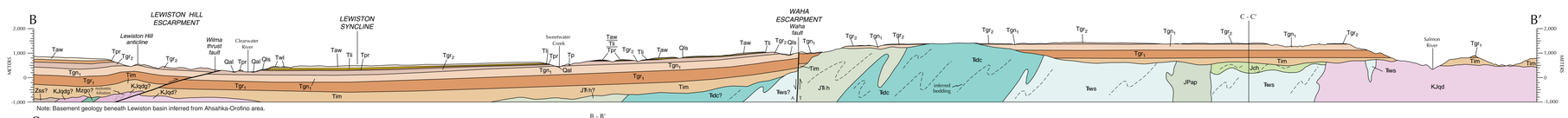


Simplified structure map of the Idaho parts of the Orofino and Clarkston 30 x 60 minute quadrangles and surrounding area.

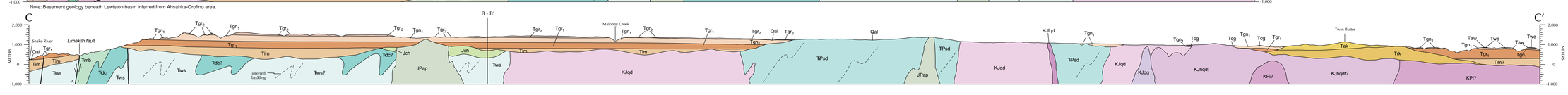
MAP SYMBOLS

- Contact: approximately located.
- Normal fault: dashed where approximately located; dotted where concealed; ball and bar on downthrown side.
- Strike-slip fault on cross sections; "A" indicates movement away from observer, "T" indicates movement toward observer.
- Thrust fault: dashed where approximately located; dotted where concealed; teeth on upper plate.
- Fold axis: dotted where concealed; arrow indicates plunge direction.
- Syncline.
- Anticline.
- Monocline.
- Monocline: anticlinal flexure; shorter arrow indicates steeper limb.
- Monocline: synclinal flexure; shorter arrow indicates steeper limb.
- 34 — Strike and dip of basalt flows or compositional layering interpreted as bedding.
- Strike of vertical bedding.
- Horizontal basalt flows or bedding.
- 52 — Strike and dip of bedding: ball indicates bedding known to be upright.
- Approximate strike and dip of basalt flows based on regional trends.
- 23 — Strike and dip of foliation.
- Strike of vertical foliation.
- 40 — Strike and dip of mylonitic foliation.
- 65 — Strike and dip of foliation that varies at outcrop scale.
- 20 — Strike and dip of cleavage.
- Strike of vertical cleavage.
- 52 — Strike and dip of flow banding and flattened pumice.
- 72 — Strike and dip of magmatic foliation.
- Strike of vertical magmatic foliation.
- 40 — Bearing and plunge of lineation, type unknown.
- 5 — Bearing and plunge of mineral lineation.
- 20 — Bearing and plunge of lineation in L tectonite.
- 20 — Bearing and plunge of mylonitic lineation.
- 36 — Bearing and plunge of small fold axis.
- 18 — Bearing and plunge of asymmetrical small fold showing counterclockwise rotation viewed down plunge.
- Vein.
- Breccia.
- No fabric.
- 228 — Sample location and number.
- Mylonite.





Note: Basement geology beneath Lewiston basin inferred from Ahsahka-Orofino area.



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