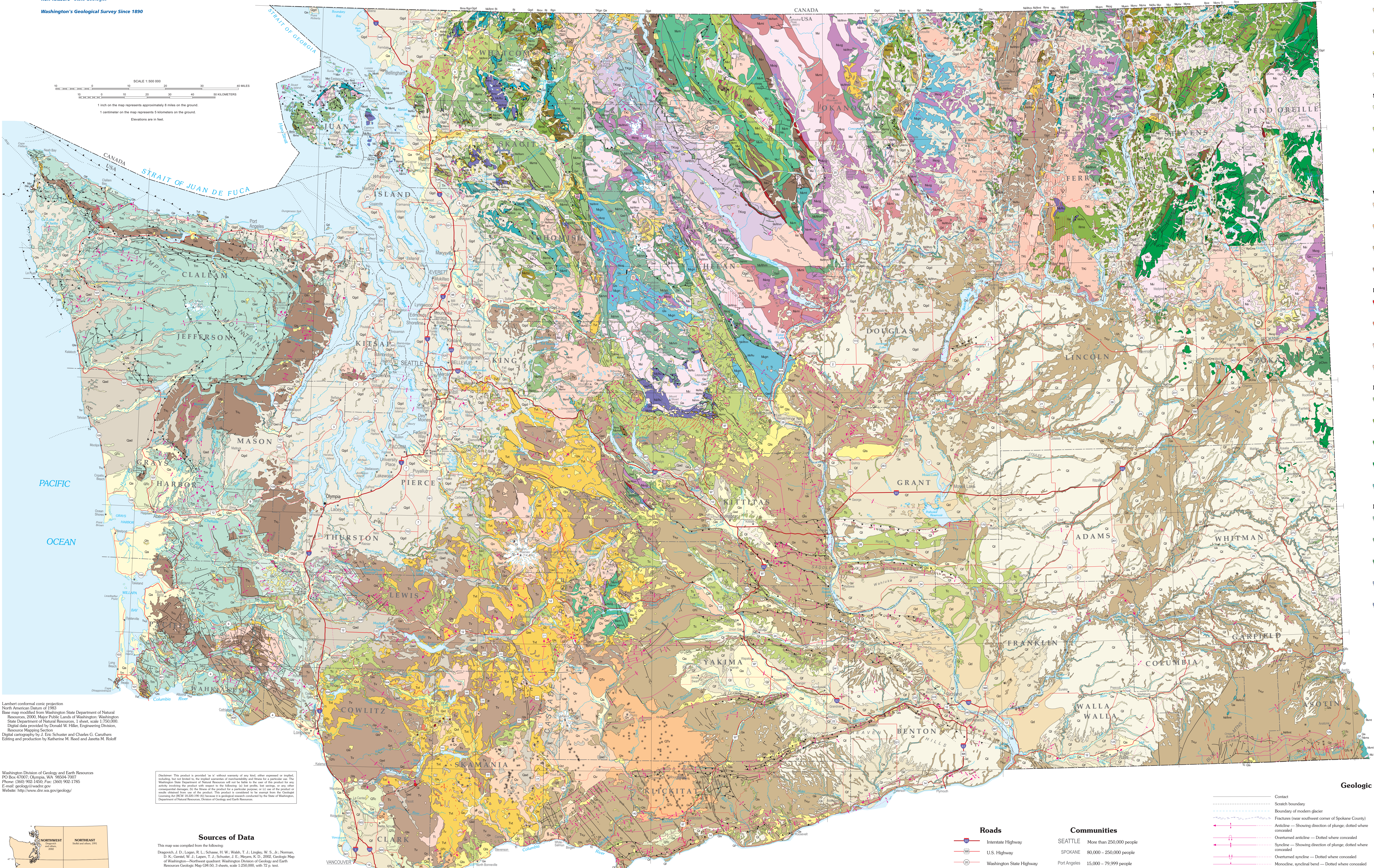


Geologic Map of Washington State

by J. Eric Schuster

2005



Lambert conformal conic projection
North American Datum of 1983
Base map modified from Washington State Department of Natural Resources, 2000, Major Public Lands of Washington, Washington State Department of Natural Resources, 1:250,000 scale, 1:250,000. Digital data provided by Donald W. Hiller, Engineering Division, Resource Mapping Section.
Digital cartography by J. Eric Schuster and Charles G. Cauley. Editing and production by Katherine M. Reed and Jaetta M. Roloff.

Washington Division of Geology and Earth Resources
PO Box 47007, Olympia, WA 98504-7007
Phone: (360) 902-1450 Fax: (360) 902-1785
E-mail: geology@dnr.wa.gov
Website: http://www.dnr.wa.gov/geology/

Disclaimer: This product is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular use. The Washington State Department of Natural Resources will not be liable in the case of the product for any activity involving the product with respect to the following: all but profits, lost wages, or any other results obtained from use of the product. This product is intended to be used for the purpose of the Geologic Map of Washington (1:250,000 scale) and is not intended to be used for any other purpose.

Sources of Data

This map was compiled from the following:

Diagonich, J. D., Logan, R. L., Schaefer, H. W., Walsh, T. J., Langley, W. S., Jr., Norman, D. K., Gensel, W. J., Lapan, T. J., Schuster, J. E., Meyers, R. D., 2002. Geologic Map of Washington—Northwest quadrant. Washington Division of Geology and Earth Resources Geologic Map GM-50, 3 sheets, scale 1:250,000, with 72 p. text.

Schuster, J. E., Galick, C. W., Roloff, S. P., Foster, K. R., Ziemann, Stephanie, 1997. Geologic map of Washington—Southeast quadrant. Washington Division of Geology and Earth Resources Geologic Map GM-45, 2 sheets, scale 1:250,000, with 20 p. text.

Stall, R. L., Joseph, N. L., Waggoner, S. Z., Galick, C. W., Koenig, M. A., Benning, B. B., 1993. Geologic map of Washington—Northeast quadrant. Washington Division of Geology and Earth Resources Geologic Map GM-39, 3 sheets, scale 1:250,000, with 50 p. text.

Walsh, T. J., Koenig, M. A., Phillips, W. M., Logan, R. L., Schaefer, H. W., 1987. Geologic map of Washington—Southwest quadrant. Washington Division of Geology and Earth Resources Geologic Map 34, 2 sheets, scale 1:250,000, with 28 p. text.

Key to Geologic Units

Unconsolidated Sediments			
Qd	Pleistocene dune sand	Qf	Pleistocene outburst-flood deposits
Qa	Quaternary alluvium	Qgd	Pleistocene glacial drift
Qls	Quaternary mass-wasting deposits	Qad	Pleistocene alpine glacial drift
Ql	Quaternary loess		

Sedimentary Rocks and Deposits			
QTC	Quaternary-Tertiary continental sedimentary rocks and deposits	Tn	Tertiary nearshore sedimentary rocks
Tc	Tertiary continental sedimentary rocks	Mn	Mesozoic nearshore sedimentary rocks
Mc	Mesozoic continental sedimentary rocks	Tm	Tertiary marine sedimentary rocks
		Mm	Mesozoic marine sedimentary rocks

Volcanic Rocks and Deposits			
Qv	Quaternary volcanic rocks	Tvc	Tertiary volcanic rocks, Crescent Formation
QTV	Quaternary-Tertiary volcanic rocks	Mv	Mesozoic volcanic rocks
Tvg	Tertiary volcanic rocks, Columbia River Basalt Group	Qat	Quaternary fragmental volcanic rocks and deposits (includes labels)
Tv	Tertiary volcanic rocks	Tvt	Tertiary fragmental volcanic rocks

Intrusive Rocks			
Qi	Quaternary intrusive rocks	Mi	Mesozoic intrusive rocks
QTI	Quaternary-Tertiary intrusive rocks	Pi	Paleozoic intrusive rocks
Ti	Tertiary intrusive rocks	pCi	Precambrian intrusive rocks
TKi	Tertiary-Cretaceous intrusive rocks	Mfu	Mesozoic-Paleozoic ultramafic rocks

Metasedimentary and Metavolcanic Rocks			
Mms	Mesozoic metasedimentary rocks	Mfms	Mesozoic-Paleozoic metasedimentary and metavolcanic rocks
Pms	Paleozoic metasedimentary rocks	Pfms	Paleozoic metasedimentary and metavolcanic rocks
Ppms	Paleozoic-Precambrian metasedimentary rocks	Mmv	Mesozoic metavolcanic rocks
pPms	Precambrian metasedimentary rocks	Pmv	Paleozoic metavolcanic rocks
Mmt	Mesozoic metasedimentary and metavolcanic rocks	pCmv	Precambrian metavolcanic rocks

Metamorphic Rocks (Amphibolite Facies and Higher)			
Mhm	Mesozoic heterogeneous metamorphic rocks	TKgn	Tertiary-Cretaceous gneiss
Mfhm	Mesozoic-Paleozoic heterogeneous metamorphic rocks	Mgn	Mesozoic gneiss
pChm	Precambrian heterogeneous metamorphic rocks	Pgn	Paleozoic gneiss
Mam	Mesozoic amphibolite	TKog	Tertiary-Cretaceous orthogneiss
Mfam	Mesozoic-Paleozoic amphibolite	Mog	Mesozoic orthogneiss
		Mmi	Mesozoic migmatite and mixed metamorphic and igneous rocks

Other Geologic Units or Features	
	Glaciers and ice fields
tz	Tectonic zones; areas of intense cataclasis, including mylonitization
	Dike swarms: shown where dikes are too numerous to show individually at map scale; labeled as to geologic unit
	Eruptive centers; volcanic vents of Quaternary to Miocene age, generally the same age and composition as the surrounding volcanic rocks
	Quaternary to Mesozoic dikes; unlabeled dikes are of Tertiary age

Geologic Symbols

Roads	
	Interstate Highway
	U.S. Highway
	Washington State Highway
	U.S. Forest Service Road

Communities	
SEATTLE	More than 250,000 people
SPOKANE	80,000 – 250,000 people
Port Angeles	15,000 – 79,999 people
Tonawanda	Fewer than 15,000 people or unincorporated
Bellingham	County Seat (underlined)
★ Olympia	State Capital

	Contact
	Scratch boundary
	Boundary of modern glacier
	Fractures (near southwest corner of Spokane County)
	Anticline — Showing direction of plunge; dotted where concealed
	Overturned anticline — Dotted where concealed
	Syncline — Showing direction of plunge; dotted where concealed
	Overturned syncline — Dotted where concealed
	Monocline, synclinal bend — Dotted where concealed
	Monocline, antiform bend — Dotted where concealed
	Fault — Long-dashed where approximately located, short-dashed where inferred, dotted where concealed, quartered where uncertain
	Reverse fault — R on upthrown side
	Thrust fault — Sawtooth on upper plate; long-dashed where approximately located, short-dashed where inferred, dotted where concealed, quartered where uncertain; sawtooth omitted in crowded areas

	Right-lateral strike-slip fault — Arrows show relative movement; short-dashed where inferred, dotted where concealed; arrows omitted in crowded areas
	Left-lateral strike-slip fault — Arrows show relative movement; short-dashed where inferred, dotted where concealed; arrows omitted in crowded areas
	Low-angle normal fault — Blocks on upper plate; dotted where concealed; quartered where uncertain; blocks omitted in crowded areas
	Dip-slip fault — Bar and ball on downthrown side; long-dashed where approximately located, short-dashed where inferred, dotted where concealed, quartered where uncertain; bar and ball omitted in crowded areas
	Normal left-lateral strike-slip fault — Arrows show relative horizontal movement, bar and ball on downthrown side; arrows and bar and ball omitted in crowded areas
	Normal right-lateral strike-slip fault — Arrows show relative horizontal movement, bar and ball on downthrown side; dotted where concealed; arrows and bar and ball omitted in crowded areas