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Association of American State Geologists

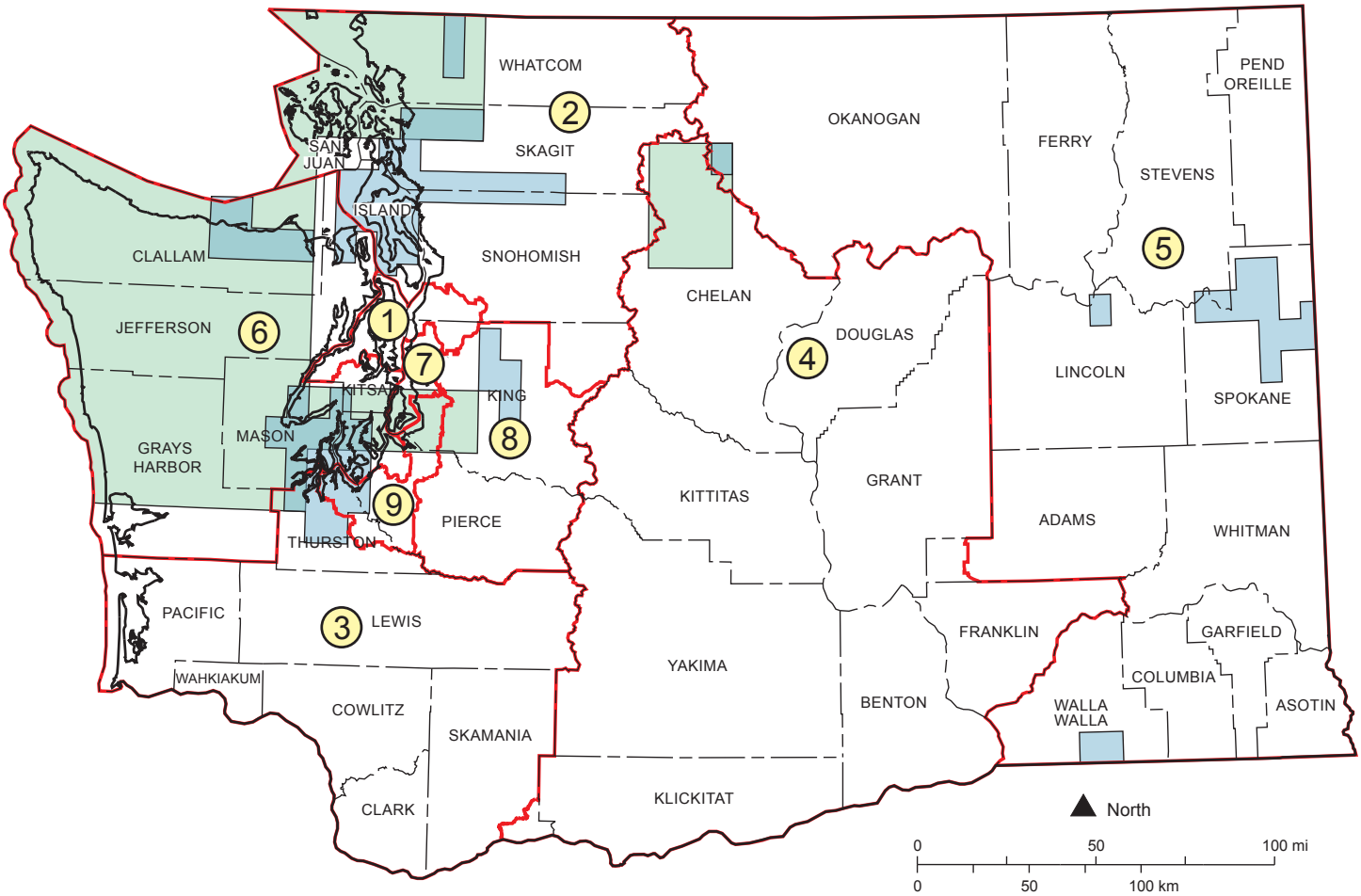
WASHINGTON STATE DEPARTMENT OF
Natural Resources

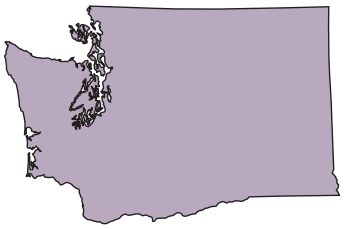
USGS
science for a changing world
United States Geological Survey

National Cooperative Geologic Mapping Program

STATEMAP Component: States compete for federal matching funds for geologic mapping

WASHINGTON





Completed statewide 1:100,000-scale and 1:250,000-scale digital geologic databases in ARC/INFO

9 Congressional Districts

STATEMAP 1:24,000-scale mapping (1995 to present)

STATEMAP 1:100,000-scale mapping (1993, 1994, and 1998)

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Summary of STATEMAP Geologic Mapping Program in Washington

Federal Fiscal Year	Project Title	State Dollars	Federal Dollars	Total Project Dollars
1993	Geologic maps of the Roche Harbor and Bellingham quadrangles, 1:100,000	$ 25,000	$ 25,000	$ 50,000
1994	Geologic map of the western half of the Twisp quadrangle, 1:100,000	30,000	30,000	60,000
1995	Geologic map of the Gilbert 7.5-minute quadrangle, 1:24,000	30,000	30,000	60,000
1996	Geologic maps of the Deming, Kendall, and Mead 7.5-minute quadrangles, 1:24,000; Digitization of the geology of eighteen quadrangles, 1:100,000	120,492	120,492	240,984
1997	Geologic maps of the Bow, Alger, Dartford, and Sequim 7.5-minute quadrangles, 1:24,000; Digitization of the geology of eleven quadrangles, 1:100,000	144,350	144,350	288,700
1998	Geologic maps of the Lyman, Sedro-Woolley North, Spokane Northeast, and Spokane Southeast 7.5-minute quadrangles, 1:24,000; Compilation, digitization, and partial mapping of nine quadrangles, 1:100,000	143,848	143,848	287,696
1999	Geologic maps of the Carlsborg, Longbranch, McNeil Island, Anacortes South, and La Conner 7.5-minute quadrangles, 1:24,000; Digitization of the geology of twelve quadrangles, 1:100,000	140,892	140,892	281,784
2000	Geologic maps of the Morse Creek, Utsalady, Conway, and Squaxin Island 7.5-minute quadrangles, 1:24,000	137,328	126,045	263,373
2001	Geologic maps of the Fortson, Darrington, Shelton, and Tumwater 7.5-minute quadrangles, 1:24,000; NGMDB Data Entry Project; Digitization of the geology of the southeast quadrant of Washington, 1:250,000	129,811	129,811	259,622
2002	Geologic maps of the Oso, Mount Higgins, Lacey, Nisqually, and Nine Mile Falls 7.5-minute quadrangles, 1:24,000	170,907	170,907	341,814
2003	Geologic maps of the Elwha, Port Angeles, Angeles Point, Ediz Hook, Summit Lake, Stimson Hill, Greenacres, and part of the Liberty Lake and Newman Lake 7.5-minute quadrangles, 1:24,000	218,306	218,306	436,612
2004	Geologic maps of the Port Townsend North, Port Townsend South, Coupeville, Oak Harbor, Crescent Harbor, Smith Island, East Olympia, Deer Park, and Chattaroy 7.5-minute quadrangles, 1:24,000	275,275	275,275	550,550
2005	Geologic maps of the McMurray, Freeland, Fox Island, College Place, Walla Walla, and part of the Camano, Langley, and Hansville 7.5-minute quadrangles, 1:24,000	288,220	288,220	576,440
2006	Geologic maps of the Fall City, Juniper Beach, Vaughn, Four Mound Prairie, and part of the Camano and Langley 7.5-minute quadrangles, 1:24,000	337,882	222,491	560,373
2007	Geologic maps of the Maytown, North Bend, and Olsen Canyon 7.5-minute quadrangles, 1:24,000; Digital conversion of the Bow and Alger 7.5-minute quadrangles, 1:24,000	292,586	228,155	520,741
2008	Geologic maps of the Snoqualmie, Belfair, and Mason Lake 7.5-minute quadrangles, 1:24,000	275,332	217,726	493,058
2009	Geologic maps of the Carnation, Lilliwaup, Skokomish Valley, and Union 7.5-minute quadrangles, 1:24,000	213,000	213,000	426,000
	Totals	**$2,973,229**	**$2,724,518**	**$5,697,747**

Skyrocketing population growth throughout Washington State is depleting natural resources and multiplying the risks associated with the state's many geologic hazards. Geologic maps are essential tools for mitigating the negative effects of this rapid growth through their use in growth management planning; infrastructure building and maintenance; dam safety; earthquake, volcano, and landslide risk assessment; water-resource appraisals; mineral resource exploitation and protection; education; recreation; and scientific research. Since its inception in 1992 when authorized by the National Cooperative Geologic Mapping Act, the STATEMAP Program has enabled the Washington Division of Geology and Earth Resources to improve map quality and coverage throughout the state.

The Division has completed a statewide 1:100,000-scale digital geographic information systems (GIS) geologic database that is now part of the National Geologic Map Database. This database is the basis for a regional sand and gravel resource inventory program that is embraced by producers, users, and regulatory agencies. Information from this map database has also been used for watershed-basin analysis, forest fertilization planning, wildlife habitat research, and aquifer protection projects, among other things. The Division has also incorporated these map data into the Washington Interactive Geologic Map (http://wigm.dnr.wa.gov/).

Geologic maps of fifty-eight 1:24,000-scale quadrangles (maps of smaller areas that show more detail than the 1:100,000-scale maps) and seven partial quadrangles have been completed under the STATEMAP program, three more quadrangles are in progress, and three more quadrangles will be completed next year. Many of these maps are being incorporated into a Puget Lowland digital geologic database, a regional cooperative program between the Division, the U.S. Geological Survey, and the University of Washington. The database is used to identify areas that are susceptible to landslides, earthquake shaking, earthquake liquefaction, and volcano-induced hazards. For example, mapping has provided evidence that part of the Interstate 5 corridor was once and could again be inundated by volcanic debris flows (lahars) from Glacier Peak, and that large areas in the Skagit Valley may be susceptible to earthquake-induced liquefaction. Also, detailed mapping in the Snoqualmie River valley has shown that the active Southern Whidbey Island fault zone extends southeast to Rattlesnake Mountain; this fault zone likely truncates the Seattle fault zone and forms a major tectonic boundary in the region. STATEMAP products have also been used in eastern Washington, where mapping in the Spokane area has delineated the volume of the region's major water resource—the Spokane–Rathdrum aquifer—and defined its vulnerability to contamination and depletion.

As public awareness of the need for information about the natural environment has grown, the demand for good geologic maps has increased dramatically. The STATEMAP program is an integral part of Washington State's ability to meet that demand.

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