WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
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GEOLOGIC MAP OF THE WEST HALF OF THE TOPPENISH QUADRANGLE, WASHINGTON

Compiled by
TIMOTHY J. WALSH

WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

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Natural Resources
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INTRODUCTION

This map is one of a series of 1:100,000-scale geologic maps compiled by staff geologists of the Division of Geology and Earth Resources and used as source maps for the southwest quadrant of the geologic map of Washington (Walsh and others, in press). Other maps in the series are available for all 1:100,000-scale quadrangles within the southwest quadrant, that is, south of 47°15' north latitude and west of 120°30' west longitude.

The 1:100,000-scale maps in this series that have been released to date are:

Korosec, M. A., compiler, 1987, Geologic map of the Mount Adams quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-5, 41 p., 1 pl., scale 1:100,000

Korosec, M. A., compiler, 1987, Geologic map of the Hood River quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-6, 42 p., 1 pl., scale 1:100,000

Logan, R. L., compiler, 1987, Geologic map of the Chehalis River and Westport quadrangles, Washington: Washington Division of Geology and Earth Resources Open File Report 87-8, 18 p., 1 pl., scale 1:100,000

Logan, R. L., compiler, 1987, Geologic map of the south half of the Shelton and the south half of the Copalis Beach quadrangles, Washington: Washington Division of Geology and Earth Resources Open File Report 87-9, 17 p., 1 pl., scale 1:100,000

Phillips, W. M., compiler, 1987, Geologic map of the Mount St. Helens quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-4, 63 p., 1 pl., scale 1:100,000

Phillips, W. M., compiler, 1987, Geologic map of the Vancouver quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-10, 32 p., 1 pl., scale 1:100,000

Phillips, W. M.; Walsh, T. J., compiler, 1987, Geologic map of the northwest part of the Goldendale quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-13, 9 p., 1 pl., scale 1:100,000

Schasse, H. W., compiler, 1987, Geologic map of the Centralia quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-11, 27 p., 1 pl., scale 1:100,000

Schasse, H. W., compiler, 1987, Geologic map of the Mount Rainier quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-16, 43 p., 1 pl., scale 1:100,000

Walsh, T. J., compiler, 1986, Geologic map of the west half of the Toppenish quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 86-3, 8 p., 1 pl., scale 1:100,000

Walsh, T. J., compiler 1986, Geologic map of the west half of the Yakima quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 86-4, 12 p., 1 pl., scale 1:100,000

Walsh, T. J., compiler, 1987, Geologic map of the Astoria and Ilwaco quadrangles, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-2, 30 p., 1 pl., scale 1:100,000

Walsh, T. J., compiler, 1987, Geologic map of the south half of the Tacoma quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-3, 12 p., 1 pl., scale 1:100,000

DESCRIPTION OF MAP UNITS OF THE WEST HALF OF THE TOPPENISH QUADRANGLE, WASHINGTON

Qal

Alluvium--Stream deposits of silt, sand, and gravel; largely confined to valley bottoms; locally includes lacustrine, paludal, and eolian deposits in depressions

Qt

Terraced Deposits--Stream deposits of silt, sand, and gravel of diverse composition; largely confined to Yakima River drainage system; poorly indurated and moderately to slightly weathered clasts; hatchures point to lower level

Qaf

Alluvial Fan Deposits--Sand and gravel of diverse composition with basalt clasts dominant in larger sizes; cone-shaped with little or no caliche development; surface relatively undissected

Qls

Landslide Deposits--Clay, silt, sand, and gravel; unstratified and poorly sorted; surface commonly hummocky; deposited by rotational-translational slides and flows

Qlo

Eolian Deposits--Silt and fine sand; pale orange to brown; locally contains multiple caliche and tephra beds

Qafo

Older Alluvial Fan Deposits--Sand and gravel; semiconsolidated fanglomerate; primarily basalt clasts cemented by iron-stained clays; most fan surfaces dissected and capped by well-developed caliche

Qf

Catastrophic Flood Slackwater Sediments--Silt, with minor amounts of sand and gravel; rhythmically bedded and graded; deposited by lower energy slackwater floods or surges of catastrophic floods; locally contains clastic dikes, tephra beds, and ice-rafted fragments

QTg

Older Gravel Remnants--Coarse sand and gravel; alluvial fan and

associated with steep slopes of anticlinal ridges of the Yakima fold belt; age uncertain, but may be in part correlative with Thorp Gravel

Simcoe Mountains Volcanics of Sheppard (1960, 1967)

QTsb

Olivine Basalt--Gray to gray-black; younger flows generally aphyric; older flows generally olivine-plagioclase-phyric; plagioclase phenocrysts generally as much as 1.5 cm long; contains lesser interstratified volcaniclatic deposits; individual flows 1 to 13 m thick (3 to 40 ft); collective thickness greater than 220 m (720 ft); includes silic tuff along Satus Creek

QTsd

Dacite--Light to dark gray, flow banded, hyalopilitic and porphyritic; phenocrysts of plagioclase, clinopyroxene, hypersthene, oxyhornblende, biotite, and rare sanidine (Sheppard, 1967)

QTsr

Rhyolite and Associated Volcaniclastic Rocks--White to dark gray or light brown; flow banded, spherulitic and porphyritic; includes flows, domes, debris flows, breccia, and tuff; obsidian, perlite, and tuff present in some areas and are common components of debris flows; maximum exposed thickness greater than 500 m (1,650 ft) south of Toppenish quadrangle

Columbia River Basalt Group

Yakima Basalt Subgroup

Saddle Mountains Basalt

Tse

Elephant Mountain Flow, Elephant Mountain Member--Fresh surfaces are black; weathers gray black; fine grained; sparsely to slightly phyric with colorless plagioclase Microphenocrysts; Elephant Mountain chemical type of Wright and others (1973); normal and transitional magnetic polarity; K-Ar age about 10.5 m.y. (McKee and others, 1977); single flow in map area

Tsp

Pomona Flow, Pomona Member--Fresh surfaces are gray to blue black, weathers gray, fine grained; abundantly to slightly phyric with white to colorless plagioclase microphenocrysts, sparse plagioclase glomerocrysts; sparse olivine phenocrysts; invasive

contacts common in pumicite of Ellensburg Formation; well-developed entablature with fanning columns; Pomona chemical type (Wright and others, 1973); reversed magnetic polarity (Rietman, 1966; Choiniere and Swanson, 1979); K-Ar age about 12 m.y. (McKee and others, 1977); single flow in map area; generally equivalent to the Wenas basalt of Smith (1903)

Tsu

Umatilla Flow, Umatilla Member--Fresh exposures gray black; weathers reddish brown; very fine grained and sparsely plagioclase phyric; Umatilla chemical type (Wright and others, 1973); normal magnetic polarity; single flow in map area

Twp

Priest Rapids Member--Fresh exposures are gray black; weathers rusty brown; medium to coarse grained; very sparsely phyric, with rare plagioclase and olivine phenocrysts; well-developed colonnade with 0.5-1.5-m-diameter columns; Rosalia chemical type (Swanson and others, 1979a); reversed magnetic polarity; one flow in area map

Twr

Roza Member--Fresh exposures gray black; weathers reddish brown; fine to medium grained, with plagioclase phenocrysts and glomerocrysts generally 0.5-1.0 cm.; phenocrysts commonly a few hundred per square meter surface area; well-developed colonnade with columns as much as 1m in diameter; Frenchman Springs or Roza chemical type (Wright and others, 1973); transitional magnetic polarity

Twf

Frenchman Springs Member Undivided--Fresh exposures are gray to black; gray to reddish-brown on weathered surfaces; medium-to coarse-grained; highly to very sparsely plagioclase-phyric flows of Frenchman Springs chemical type (Wright and others, 1973); normal magnetic polarity (Rietman, 1966); thin sedimentary interbeds common; one to three flows in map area; lower flows commonly pillowed at base

Grande Ronde Basalt

Unnamed basalt flows, nonporphyritic to very sparsely plagioclasephyric, generally fine-grained and petrographically non-distinct; chemical composition varies within a broad field named Grande Ronde chemical type (formerly called Yakima chemical type by Wright and others, 1973); divided into magnetostratigraphic units on the basis of dominant magnetic polarity (Swanson and others, 1979a)

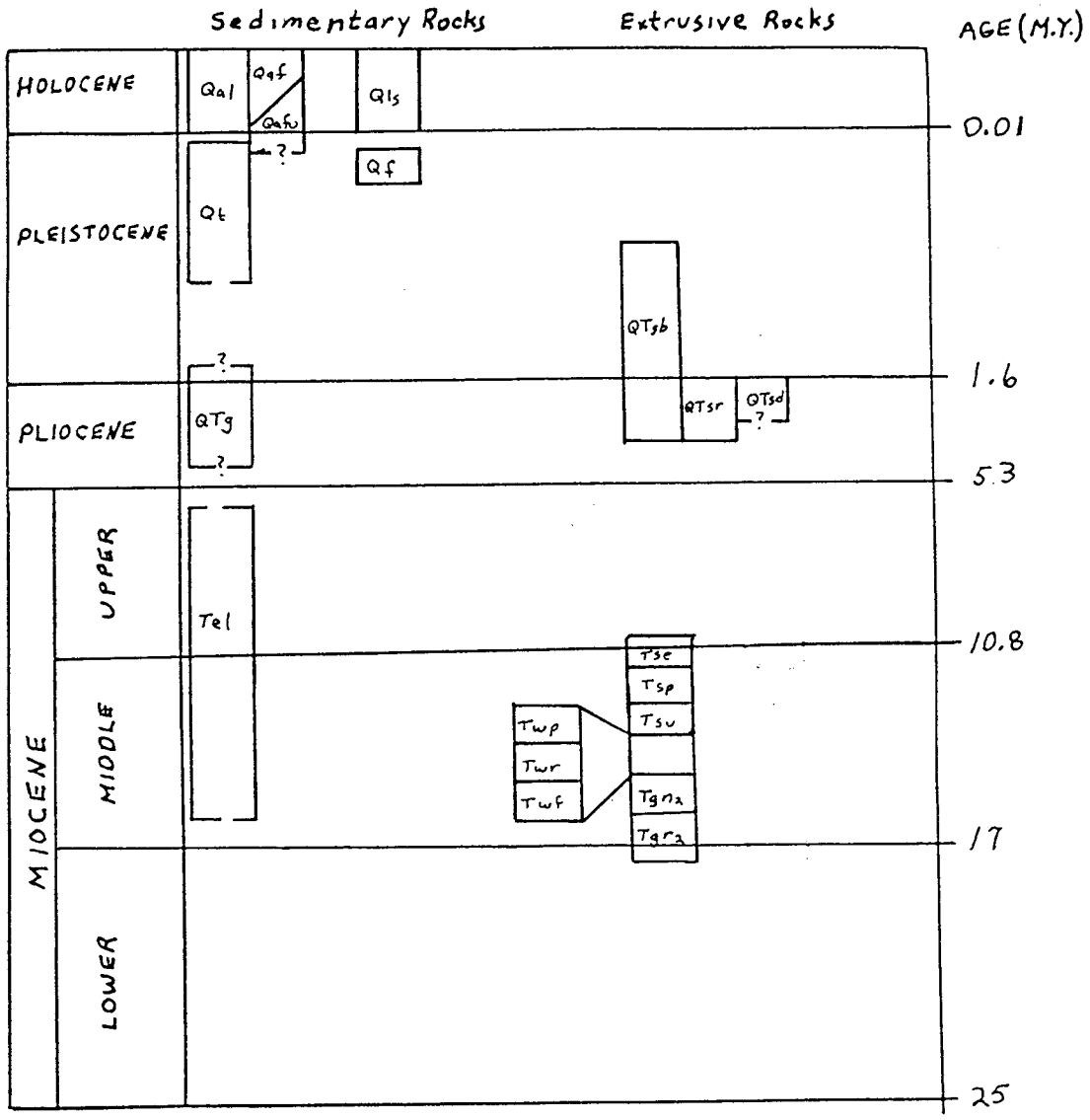
Tgn_2 Upper flows of normal polarity

Tgr_2 Flows of reversed polarity

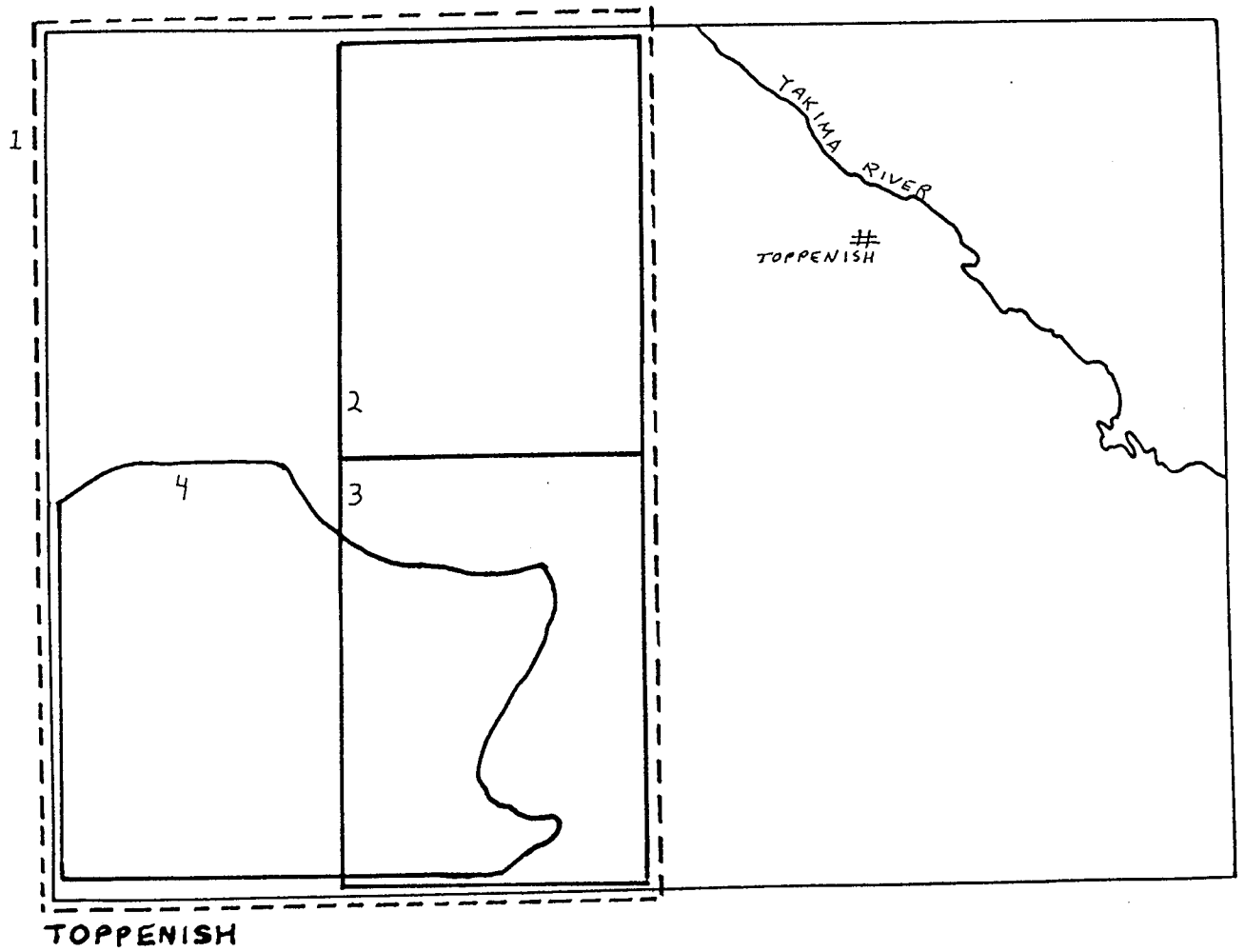
Tel

Ellensburg Formation, Undivided--Gravel, sand, silt, and clay; white to light red brown; weakly to moderately indurated fluvial and laharic deposits; dominated by pumiceous dacitic, andesitic, and basaltic clasts; grades downward into thin units of fluvial sand and clay, locally pebbly sand, with mixed volcanic clasts and locally hyaloclastic units; base defined as top of locally lowermost flow of Columbia River Basalt Group, but unit includes all conformably underlying sediments of similar lithology beyond edge of lowermost flow of Columbia River Basalt Group; top of unit defined as below Thorp Gravel or other Pliocene(?)-Pleistocene units; intertongues to east with flows of Yakima Basalt Subgroup

Unit descriptions modified from Anderson (1986), Bentley and Campbell 1986, Bentley and others (1986), and Sheppard (1960, 1967)



Correlation Chart



1. Bentley and others, 1980
2. Bentley and Campbell, 1986
3. Bentley and others, 1986
4. Sheppard, 1967

Source of Data Map

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