State of Washington
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Department of Conservation
EARL COE, Director

DIVISION OF MINES AND GEOLOGY
MARSHALL T. HUNTTING, Supervisor

Geologic Map GM-1

PRELIMINARY GEOLOGIC MAP OF THE HOBART AND MAPLE VALLEY QUADRANGLES, KING COUNTY, WASHINGTON

By

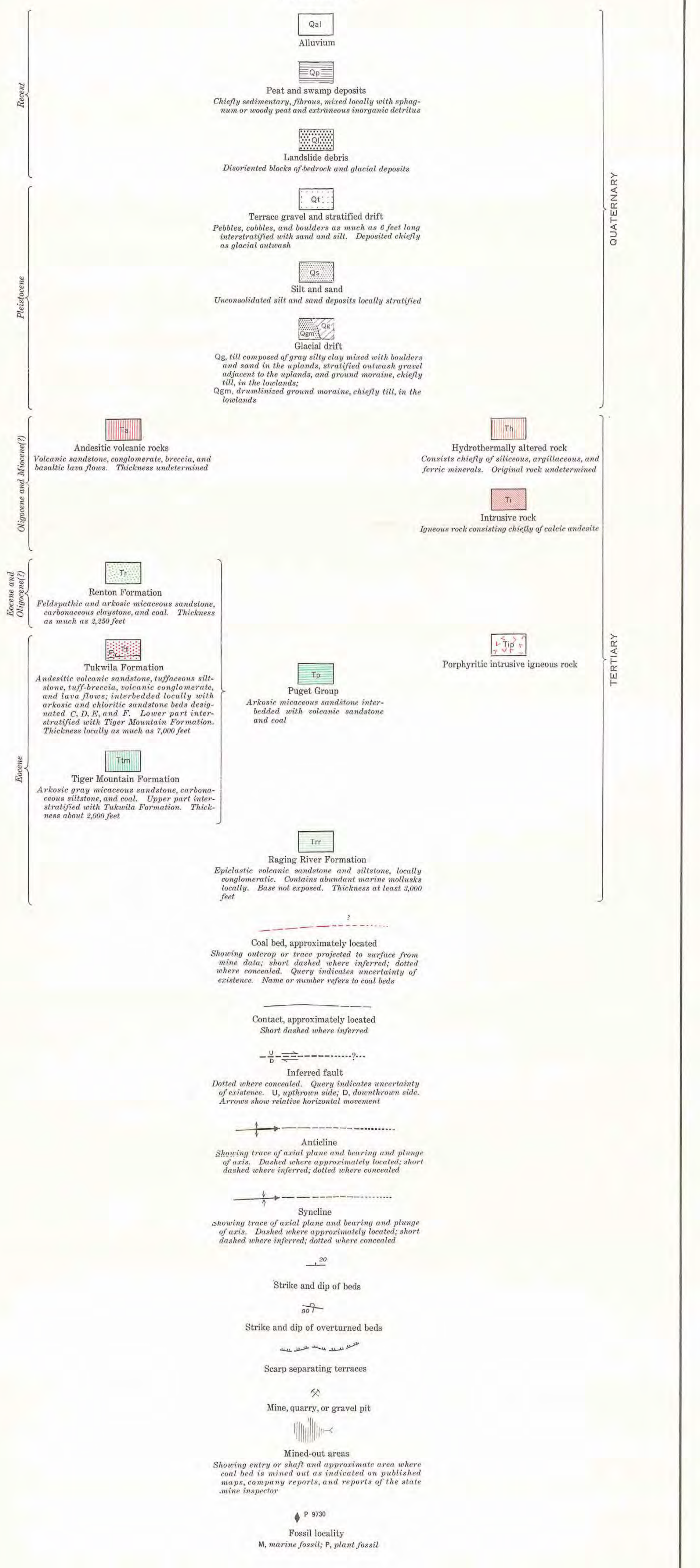
JAMES D. VINE

U. S. GEOLOGICAL SURVEY

Prepared cooperatively by the U. S. Geological Survey

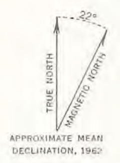
STATE PRINTING PLANT, OLYMPIA, WASH.
1962

For sale by Department of Conservation, Olympia, Washington.

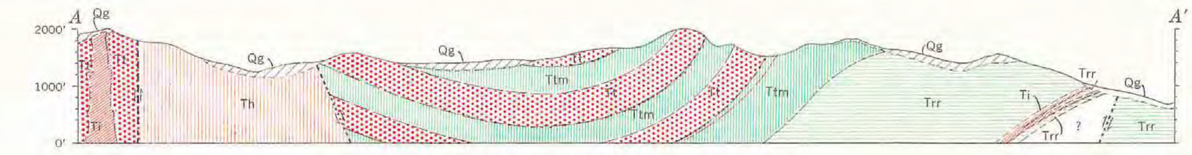


Base from U.S. Geological Survey topographic quadrangles, Maple Valley 7½', 1949 and Hobart 7½', 1953

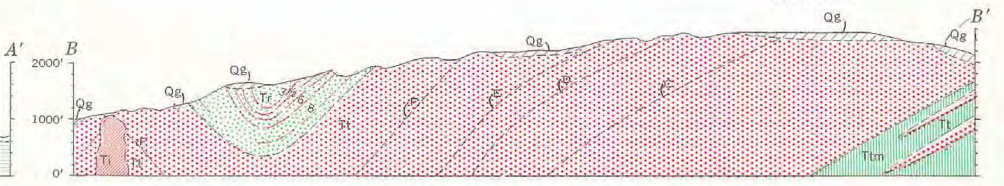
INDEX MAP



APPROXIMATE MEAN DECLINATION, 1962



GEOLOGIC SECTION ALONG LINE A-A'



GEOLOGIC SECTION ALONG LINE B-B'

1 ½ 0 1 MILE
SCALE 1:24 000

INTRODUCTION

The Hobart and Maple Valley quadrangles are located on the eastern margin of the Puget Sound lowland, about 11 to 26 miles southeast of the center of Seattle, and include parts of the Tiger Mountain-Taylor Mountain upland area in the western foothills of the Cascade Range. Altitudes within the quadrangles range from about 115 to 3,000 feet. Except for the small farms in the lowlands and numerous suburban home sites, most of the area is heavily timbered. Maple Valley is located on State Highway 5, between Seattle and Enumclaw. A hard-surface county road between Issaquah, about 2 miles to the north, and Ravensdale, about 2 miles to the south, provides access to the Hobart area. Travel within the timber lands is generally restricted by the private landowners and government agencies who administer the land. Travel restrictions apply to the Washington State Department of Natural Resources roads and the City of Seattle Cedar River Watershed roads.

The coal fields of King County were described by Evans (1912), and the bedrock geology of the area was previously mapped by Warren and others (1945). The area of the present investigation is covered in both these earlier reports, from which many valuable basic data have been incorporated.

This map was prepared cooperatively by the United States Geological Survey and the Division of Mines and Geology of the Washington Department of Conservation. The writer is indebted to Mr. E. H. Rogers, former Chief Engineer, Seattle Water Department, for granting permission to work within the Cedar River Watershed area and to Mr. D. H. Dowling, Branch Forester of the Weyerhaeuser Co., and Mr. John Buchanan, District Forester, Washington Department of Natural Resources, for granting permission to work within the area of the Tiger Mountain timber reserve. Field work was done in September 1959, June through August 1960, and part of June and July 1961. The writer wishes to acknowledge the assistance of P. J. Pattee in the summer of 1959 and C. L. Rice during the summer of 1960. The Cumberland quadrangle, which adjoins the Hobart quadrangle on the south, has been mapped by Howard D. Gower and Alexander A. Wanek as a part of this same project.

TERTIARY ROCKS

STRATIFIED ROCKS

Raging River Formation

The Raging River Formation of Eocene age is the oldest rock unit that crops out in this area. It is named and described in another report (Vine, 1962). Epiclastic volcanic sandstone, siltstone, and conglomerate of marine origin compose most of the exposures of the Raging River Formation. Though these rocks are probably at least 3,000 feet thick, only the upper 1,000 to 2,000 feet are well exposed. The lower part of the Raging River Formation has been intruded by igneous sills, is partly recrystallized, is broken by faults, and is largely covered by glacial deposits in the valley of the Raging River, so that detailed knowledge is lacking. The dominant lithology of the exposed part of this formation is medium-gray to dark-gray, fine- to medium-grained impure volcanic sandstone that is generally well indurated and very thick bedded. The matrix contains rock and mineral fragments and cement, including calcite, the clay minerals chlorite and montmorillonite, and pyrite. Grains of plagioclase compose at least 50 percent and locally as much as 95 percent of the plus 50-mesh fraction. The outcrops commonly form massive resistant ledges that are devoid of visible bedding or lamination, though carbonaceous laminae occur locally. Along the streams many of the outcrops form hard rounded shapes that resemble those of fine-grained igneous rock. Medium- to coarse-grained friable sandstone and chert pebble conglomerate crop out locally in the Raging River Formation, and dark-gray to black massive carbonaceous claystone occurs locally at the top.

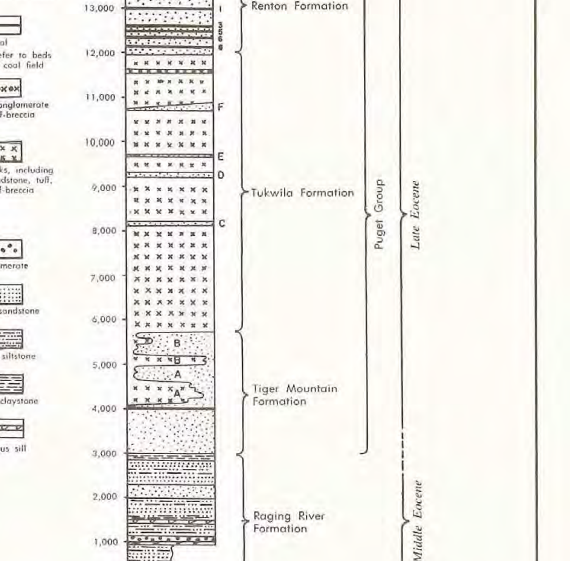
A marine fauna, including gastropods, pelecypods, scaphopods, echinoids, and Foraminifera is characteristic of the finer grained sandstones and siltstones. During the present investigation, fossils were collected from seven localities in secs. 9, 15, 16, and 17, T. 23 N., R. 7 E. The megafossils were studied by F. Stearns MacNeil, who indicates they are probably of middle Eocene age. Foraminifera about 125 feet below the top of the formation, locality M-648, were identified by W. W. Rau (written communication, 1961) as probably of early late Eocene age. Thus, the Raging River Formation is regarded as middle and late(?) Eocene in age.

Puget Group

Tiger Mountain Formation.—The marine rocks of the Raging River Formation are conformably overlain by the Puget Group (White, 1888, p. 447), a sequence of nonmarine rocks including both volcanic and nonvolcanic (sedimentary) types that have an aggregate thickness of nearly 11,000 feet locally. The Tiger Mountain Formation (Vine, 1962) consists of about 2,000 feet of nonvolcanic rocks in the lower part of this sequence. Outcropping rocks of the Tiger Mountain Formation consist chiefly of arkosic and feldspathic micaceous sandstone that is medium grained and cross laminated and weathers gray and brown. Clay minerals constitute the matrix in these rocks and probably represent more than 10 percent of the rock. Montmorillonite is the most abundant clay mineral in sandstone near the base, where these rocks are transitional with the underlying marine rocks, whereas kaolinite or chlorite is predominant locally above the basal 100 to 200 feet. The upper part of the Tiger Mountain Formation is interstratified with volcanic rocks of the overlying Tukwila Formation throughout an interval of 800 feet or more. A zone of carbonaceous shale and coal occurs, at least locally, near the top of the lower main body of the Tiger Mountain Formation.

Leaf fossils collected from the zone of coaly rocks in the Tiger Mountain Formation have been identified by Jack A. Wolfe (written communication, 1961) as probably of middle Eocene age, and fossils of late Eocene age have been identified from beds of the Tukwila Formation that are interstratified with the upper part of the Tiger Mountain Formation. The Tiger Mountain Formation is therefore classed as middle(?) and late Eocene age.

Tukwila Formation.—The Tukwila Formation (Waldron, 1962) consists of andesitic volcanic rocks about 7,000 feet thick that are wholly equivalent to and interstratified with the nonvolcanic rocks in the Puget Group that are characterized by micaceous sandstone. Epiclastic volcanic sandstone, tuffaceous siltstone, tuff-breccia, volcanic conglomerate, and thin vesicular lava flows or sills compose the bulk of the Tukwila Formation. Quartz- and mica-bearing arkosic sandstone beds (designated C, D, E, and F) are interstratified with the predominantly volcanic sequence on the south slope of Taylor Mountain. Chlorite is an abundant alteration product, not only in the volcanic rocks but also in the nonvolcanic sandstone beds, where both the clay matrix and the mica flakes have been altered to chlorite. In general, the upper part of the Tukwila Formation contains more coarse-grained epiclastic rocks than the lower part. These include tuff-breccia and volcanic conglomerate of more coarsely textured porphyritic andesites than occur lower in the formation. Tuff-breccia and volcanic conglomerate beds form resistant ledges



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Price, 75 cents