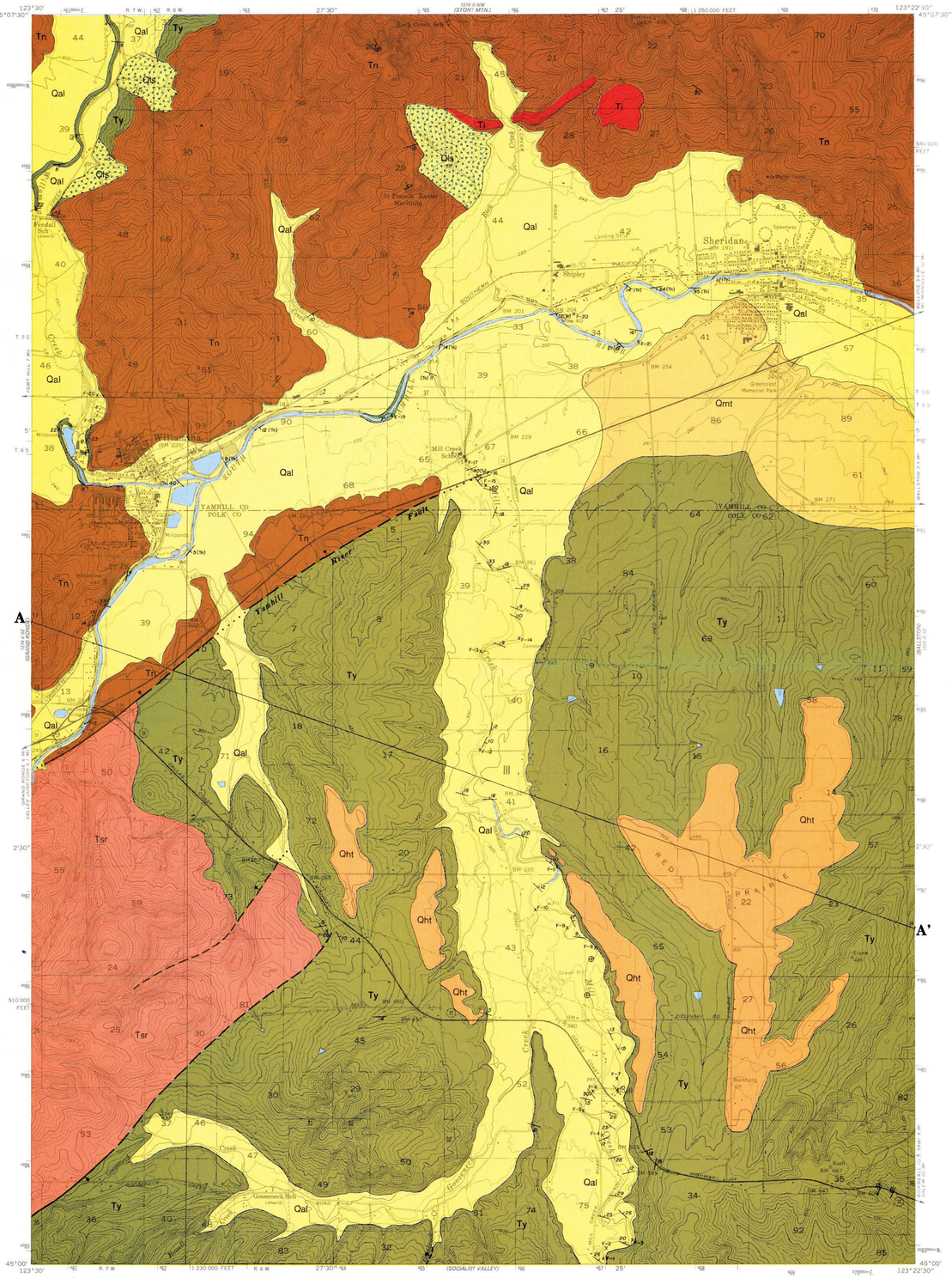
STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
DONALD A. HULL, STATE GEOLOGIST

GEOLOGIC MAP OF THE SHERIDAN QUADRANGLE, POLK AND YAMHILL COUNTIES, OREGON

GMS - 23

1982



TIME ROCK CHART

Era	Period	Epoch	Symbol	Millions of Years
CENOZOIC	QUATERNARY	Holo.	Qal, Qls	
		Pleis.	Qmt, Qht	01
	TERTIARY	Plio.		2
		Mio.		5
		Olig.		24
		Eocene	Ti, Tn, Ty, Tsr	32-37

EXPLANATION

SURFICIAL DEPOSITS (HOLOCENE AND PLEISTOCENE)

Age ranges of individual units overlap

Qal — **Alluvium and lower terrace deposits**—*Mostly poorly sorted, unconsolidated deposits of clay, silt, sand, and fine to very coarse gravel; includes recent alluvial terrace deposits along the South Yamhill River and its tributaries. 0-50 ft thick*

Qls — **Landslide deposits**—*Unconsolidated, poorly sorted slide deposits with hummocky surfaces. Mapped only where readily apparent; small soil and rock failures not shown. Nestucca (Tn) and Yamhill (Ty) strata are particularly susceptible to landsliding*

Qmt — **Middle terrace deposits**—*Poorly sorted, semiconsolidated deposits of clay, silt, sand, and fine to very coarse gravel, may include thin deposits of light-brown, massive to faintly bedded silt called Willamette Silt by Baldwin and others (1955). 0-100 ft thick*

Qht — **High terrace deposits**—*Weathered, poorly sorted, semiconsolidated deposits of gray to reddish-brown clay, silt, sand, and fine to coarse basaltic gravel; individual basaltic pebbles and cobbles have thick weathering rinds; gravels on Red Prairie and along Mill Creek, which are tentatively assigned an early to middle Pleistocene age, rest on an undeformed erosional surface at 400-600 ft elevation and were derived from the Siletz River Volcanics to the south. 0-100 ft thick*

BEDROCK GEOLOGIC UNITS

Ti — **Diabase intrusive rocks (upper Eocene?)**—*Basalt and diabase dike and sill. Medium- to coarse-grained hypocrystalline to holocrystalline basalt and diabase, with subophitic to ophitic, porphyritic, or less commonly, intergranular and intersertal texture. Consists of 40-55 percent labradorite; 10-35 percent augite; and minor amounts of olivine, magnetite, apatite, and zeolites*

Tn — **Nestucca Formation (upper Eocene)**—*Light-brown to light-gray tuffaceous siltstone and shale, with minor light-gray tuffaceous, feldspathic, cross-bedded sandstone near the base. Contains interbedded basalt flows, pillows, pillowbreccia, breccia, and tuff; porphyritic basalt feeder dikes are locally present. Unconformable above the Yamhill Formation. Foraminiferal faunas were assigned to the upper Narizian Stage of Mallory (1959) by McWilliams (1968, 1973), and mollusean faunas were referred to the upper Eocene (Tejon Stage) by Baldwin and others (1955) and McWilliams (1968). At least 2,000 ft thick*

Ty — **Yamhill Formation (middle and upper Eocene)**—*Medium- to dark-gray, massive to faintly bedded, micaceous, carbonaceous, tuffaceous shale and siltstone, with locally interbedded medium-gray to greenish-gray, calcareous, fossiliferous, basaltic sandstone; minor limestone concretions. Foraminiferal assemblages were assigned to the Narizian Stage of Mallory (1959) by McWilliams (1968, 1973) and McKeel (1980, 1982, written communication), and mollusean faunas were assigned to the late Eocene by Baldwin and others (1955). As much as 2,000 ft thick*

Tsr — **Siletz River Volcanics (lower and middle Eocene)**—*Dark-greenish-gray, aphanitic to porphyritic, vesicular basalt flows and pillow basalt, flowbreccia, and tuffbreccia, with interbedded red to green calcareous sandy tuff; contains medium- to dark-gray, calcareous, tuffaceous shale, siltstone, and sandstone at top of section. Foraminiferal assemblages were assigned to the Ulatisian and Penutian Stages of Mallory (1959) by McWilliams (1968, 1973), MacLeod (1969), and McKeel (1980). Megafossils were assigned to the Capay Stage of Weaver and others (1944) by Baldwin (1964) and MacLeod (1969). Maximum exposed thickness in the quadrangle is approximately 500 ft. Total thickness unknown but probably exceeds 12,000 ft locally in the Central Coast Range*

GEOLOGIC SYMBOLS

Contact--Approximately located and inferred; contacts exposed only along streams and roads

Fault--Approximately located; dashed where inferred; dotted where concealed. Bar and ball on downthrown side

Strike and dip of beds--Attitudes along stream beds were measured on bed rock that is intermittently exposed or too small to show at the scale of the map. Units are shown in parentheses north of the Yamhill River fault; Yamhill Formation is exposed in Mill Creek south of fault

Inclined

Horizontal

xF-25 Fossil locality--References and age given in the table

STRATIGRAPHY, STRUCTURE, AND ECONOMIC GEOLOGY

Introduction

This geological investigation of the Sheridan quadrangle was conducted as part of a regional stratigraphic study in the northern Oregon Coast Range to assess the potential for oil and gas.

The Sheridan quadrangle was first investigated by Baldwin and others (1955) as part of the U.S. Geological Survey oil and gas studies. Baldwin and Roberts (1952), Baldwin (1964), MacLeod (1969), Brownfield and Schlicker (1981a,b), and Brownfield (1982a,b) mapped areas adjoining the Sheridan quadrangle on the east, north, south, and west. McWilliams (1968, 1973) included the Sheridan area in his regional study of the Paleogene stratigraphy and biostratigraphy of the Oregon Coast Range.

Stratigraphy

The oldest rocks exposed in the Sheridan quadrangle are the Siletz River Volcanics, a thick sequence of basalt flows, pillow basalt, flow breccia, and massive to faintly bedded basaltic fragmental debris intercalated with volcaniclastic marine sedimentary rocks of early to early middle Eocene age. The unit was first described by Snavely and Baldwin (1948) and later redefined by Snavely, MacLeod, and Wagner (1968). It is the oldest exposed unit in the Coast Range, and nowhere in the central or northern portions is its base exposed.

No fossils have been collected in the Siletz River Volcanics in the Sheridan quadrangle. Molluscan faunas collected by Baldwin (1964) and MacLeod (1969) south and west of the mapped area were assigned to the Capay Stage of Weaver and others (1944). Several foraminiferal assemblages were collected in the Siletz River Volcanics outside of the quadrangle by MacLeod (1969) and McWilliams (1968, 1973) and were assigned to the Ulatisian and Penutian Stages of Mallory (1959).

Regionally, the upper surface of the Siletz River Volcanics is irregular because of volcanism, tectonism, and erosion. The volcanic pile influenced the depositional patterns of disconformably overlying middle to upper Eocene sediments, whose ages vary depending upon their relative positions along the flanks of the volcanic pile.

Marine sediments consisting of carbonaceous, micaceous shale and siltstone with local interbeds of gray to greenish-gray basaltic sandstone of the Yamhill Formation disconformably overlie the Siletz River Volcanics. The Yamhill Formation was first described by Baldwin and others (1955); its type locality is along Mill Creek from a point just south of the Sheridan quadrangle north to the Mill Creek School.

Megafossils are rare in the Yamhill, but most of the unit contains abundant Foraminifera which indicate a middle and upper Eocene age. Several foraminiferal assemblages were collected by Baldwin and others (1955) and McWilliams (1968, 1973) within the Sheridan quadrangle. Fossil assemblages collected by the author were identified and assigned by McKeel (1982, written communication) to the Narizian Stage of Mallory (1959). To the west of the mapped area, MacLeod (1969) collected several foraminiferal assemblages which were assigned to the lower Narizian and upper Ulatisian Stages of Mallory (1959).

Tuffaceous siltstone and shale with intercalated basalt flows, pillow basalt, pillow breccia, and tuff of the upper Eocene Nestucca Formation (Snavely and Vokes, 1949) unconformably overlie the Yamhill Formation. This middle upper Eocene unconformity represents a major period of deformation and erosion in the central Oregon Coast Range.

Several foraminiferal assemblages were collected in the Nestucca Formation within the Sheridan quadrangle (Baldwin and others, 1955; McWilliams, 1968, 1973) and to the west of the study area (MacLeod, 1969) and assigned to the upper Narizian Stage (Mallory, 1959). Along the Oregon coast, the foraminiferal assemblages within the Nestucca Formation are indicative of the lower Refugian (Schenck and Kleinpell, 1936; Kleinpell, 1938) and upper Narizian Stages (Snavely and others, 1969).

Structure

The central part of the Oregon Coast Range has a northward-trending anticlinal form; the Sheridan quadrangle is located on its east flank. A broad east-west downwarp crosses the Coast Range just north of latitude 45° N. and forms a broad eastward-plunging fold transverse to the Coast Range anticlinal high. Small amplitude folds are common along streams where the sedimentary rocks are well exposed, but due to limited exposures they cannot be traced beyond the stream exposures.

The Yamhill River fault of Baldwin and others (1955), a major northeast-trending fault, roughly parallels the South Yamhill River valley and juxtaposes the Siletz River Volcanics, Yamhill Formation, and Nestucca Formation. This fault, which apparently is down on the north side, is a continuation of a fault first mapped by Baldwin and Roberts (1952) in the southern part of the Grand Ronde (Spirit Mountain) quadrangle. MacLeod (1969) indicates the fault extends at least 15 mi west of the Sheridan quadrangle. A late Eocene age for the fault is consistent with the structural relationships in the Grande Ronde quadrangle, where late Eocene diabase is intruded along the Yamhill River fault. Regional studies indicate the possibility of right-lateral motion along this fault. Two other northeast-trending faults in the southwestern part of the quadrangle may be related to stress adjustments between the Yamhill River fault and a second major east-west-trending fault just south of the quadrangle boundary. Numerous, apparently small faults are seen cutting sedimentary rocks along streams, and large changes in attitudes of strata may relate to nearby faults now buried by alluvium or not identifiable in the poor exposures typical of much of the area.

Economic Geology

The Yamhill Formation contains abundant organic matter and could be considered a possible source rock for petroleum. Most of the sandstone interbeds have low porosity resulting from the presence of clay-altered volcaniclastic material. These beds would not be satisfactory reservoir rocks. The overlying tuffaceous Nestucca Formation lacks the necessary qualities for both petroleum generation and accumulation. No oil and gas holes have been drilled within the quadrangle to test oil and gas potential. Stratigraphic relationships evident in the quadrangle, however, should aid regional hydrocarbon assessments.

Quarry rock is abundant within the Sheridan quadrangle. Intrusive rocks, intercalated basalts in the Nestucca Formation, and the Siletz River Volcanics are good sources for crushed rock. Gravels that occur near the bases of the river terrace deposits have been used for road construction.

There are known clay deposits in the quadrangle. One deposit, at least 50 ft thick (Wilcox, 1935), was mined near the town of Willamina by the Willamina Clay Products Company until 1976. The unfired clay in this deposit varies in color from light gray to black. The black-colored clay contains a large amount of carbon which, when oxidized during firing, produces a nearly white brick.

The clays are developed within the Yamhill Formation on the erosional surface below the unconformity with the overlying Nestucca Formation. Similar deposits may be found elsewhere in the area along this contact.

REFERENCES

Baldwin, E.M., 1964, Geology of the Dallas and Valsetz quadrangles, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 35 (revised), 56 p.

Baldwin, E.M., Brown, R.D. Jr., Gair, J.E., and Pease, M.H. Jr., 1955, Geology of the Sheridan and McMinnville quadrangles, Oregon: U.S. Geological Survey Oil and Gas Investigations Map OM-155.

Baldwin, E.M., and Roberts, A.E., 1952, Geology of the Spirit Mountain quadrangle, Oregon: U.S. Geological Survey Oil and Gas Investigations Map OM-129.

Brownfield, M.E., 1982a, Preliminary geologic map of the Ballston quadrangle, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-82-2.

——— 1982b, Geologic map of the Grand Ronde quadrangle, Oregon: Oregon Department of Geology and Mineral Industries Geological Map Series GMS-24.

Brownfield, M.E., and Schlicker, H.G., 1981a, Preliminary geologic map of the McMinnville and Dayton quadrangles, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-81-6.

——— 1981b, Preliminary geologic map of the Amity and Mission Bottom quadrangles, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-81-5.

Kleinpell, R.M., 1938, Miocene stratigraphy of California: Tulsa, Okla., American Association of Petroleum Geologists, 450 p.

MacLeod, N.S., 1969, Geology and igneous petrology of the Saddleback area, central Oregon Coast Range: Santa Barbara, Calif., University of California doctoral dissertation, 295 p.

Mallory, V.S., 1959, Lower Tertiary biostratigraphy of the California Coast Ranges: Tulsa, Okla., American Association of Petroleum Geologists, 416 p.

McKeel, D.R., 1980, Micropaleontological study of five wells, western Willamette Valley, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-80-1, 21 p.

McWilliams, R.G., 1968, Paleogene stratigraphy and biostratigraphy of central-western Oregon: Seattle, Wash., University of Washington doctoral dissertation, 140 p.

——— 1973, Stratigraphic and biostratigraphic relationships of the Tyee and Yamhill Formations in central-western Oregon: Oregon Department of Geology and Mineral Industries, Ore Bin, v. 35, no. 11, p. 169-176.

Schenck, H.G., and Kleinpell, R.M., 1936, Refugian stage of Pacific Coast Tertiary: American Association of Petroleum Geologists Bulletin, v. 20, no. 2, p. 215-225.

Snavely, P.D. Jr., and Baldwin, E.M., 1948, Siletz River volcanic series, northwestern Oregon: American Association of Petroleum Geologists Bulletin, v. 32, no. 5, p. 806-812.

Snavely, P.D. Jr., MacLeod, N.S., and Rau, W.W., 1969, Geology of the Newport area, Oregon: Department of Geology and Mineral Industries, Ore Bin, v. 31, no. 2, p. 25-48.

Snavely, P.D. Jr., MacLeod, N.S., and Wagner, H.C., 1968, Tholeiitic and alkalic basalts of Eocene Siletz River Volcanics, Oregon Coast Range: American Journal of Science, v. 266, no. 6, p. 454-481.

Snavely, P.D. Jr., and Vokes, H.E., 1949, Geology of the coastal area between Cape Kiwanda and Cape Foulweather, Oregon: U.S. Geological Survey Oil and Gas Investigations Preliminary Map 97.

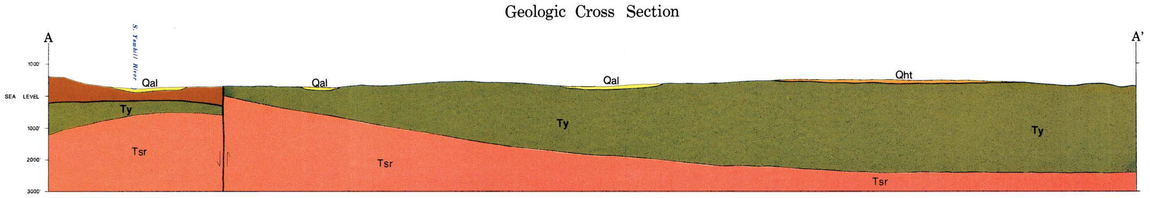
Weaver, C.E., and others (Western Cenozoic Subcommittee), 1944, Correlation of the marine Cenozoic formations of western North America: Geological Society of America Bulletin, v. 55, no. 5, p. 569-598.

Wilcox, H.G., 1935, Fireclays and light-colored clays of western Oregon and the commercial development of a number 1 firebrick: Seattle, Wash., University of Washington Engineer of Mines thesis, 32 p.

Fossil locations — Sheridan quadrangle

Location number (as shown on map)	Source of data: This report (McKeel, written communication, 1982)	Source of data: Baldwin and others (1955)	Source of data: McWilliams (1968[1], 1973[2])	Age	Unit
F-1		F-1		Middle and late Eocene	Yamhill
F-2			A5029 [1] [2] ,23	Narizian	Yamhill
F-3		F-2		Middle and late Eocene	Yamhill
F-4		F-3		Middle and late Eocene	Yamhill
F-5		F-4	A5033 [1] [2] ,24	Narizian	Yamhill
F-6			A5032 [1] [2] ,25	Narizian	Yamhill
F-7			A5031 [1] [2] ,26	Narizian	Yamhill
F-8			A5101 [1] [2] ,27	No fossils	Yamhill
F-9			A5030 [1] [2] ,28	Narizian	Yamhill
F-10		F-5		Late Eocene	Yamhill
F-11		F-6	A5034 [1] [2] ,29	Narizian	Yamhill
F-12			A5035 [1] [2] ,30	Narizian	Yamhill
F-13			A5036 [1] [2] ,31	Narizian	Yamhill
F-14			A5037 [1] [2] ,32	Narizian	Yamhill
F-15			A5038 [1] [2] ,33	Narizian	Yamhill
F-16	X			Early late Narizian	Yamhill
F-17	X			Early late Narizian	Yamhill
F-18		F-7		Late Eocene	Yamhill
F-19		F-8		Late Eocene	Yamhill
F-20		F-9		Late Eocene	Nestucca
F-21		F-10		Late Eocene	Nestucca
F-22			A5040 [1] [2] ,34	Narizian	Yamhill
F-23			A5039 [1] [2] ,35	Narizian	Nestucca?
F-24	X			Late Narizian	Yamhill
F-25		M-8		Late Eocene	Yamhill

Geologic Cross Section



Base Map by U. S. Geological Survey
Control by USGS, USC&GS, USCE, and State of Oregon
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1954. Field check 1956
Polyconic projection. 1927 North American datum
10,000-foot grid based on Oregon coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown
Map prepared by STATE OF OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Cartography by Paul E. Staub, 1982

SCALE 1:24 000
1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER
CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

OREGON
QUADRANGLE LOCATION

Geology by Michael E. Brownfield; some bedrock attitudes after Baldwin and others, 1955

Field work completed in 1981

Financial assistance provided by the Coastal Energy Impact Program under Section 308 of the Federal Coastal Zone Management Act administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, through the Oregon Department of Energy.