EXPLANATION

ROCKS EXHIBITING MAPPABLE STRATIGRAPHIC RELATIONS

QUATERNARY

Pleistocene and Recent

Qu | Ql

Alluvium and landslide debris

Qu, unconsolidated clay, silt, sand, and gravel, poorly sorted and poorly to well stratified. Chiefly flood plain and streambed deposits, but includes marine beach deposits at mouths of most rivers and streams and at Freshwater, Crescent, and Agate Bay; marine beach and bar deposits at Ediz Hook; deltaic sediment at Lake Aldwell, at the mouth of Barnes Creek in Lake Crescent, and at the mouths of the Lyre River and Twin River; and possible estuarine deposits near the mouths of the Elwha River and Salt Creek
Ql, landslide debris

Qg

Glacial drift

Qg, till, outwash, and glaciofluvial sediments deposited from continental and local alpine glaciers

TERTIARY

Upper Eocene to Lower Miocene

Ttu / Ttm / Ttc / Ttl

Twin River Formation

Ttu, upper member, massive medium-gray to olive-gray mudstone and light-gray thin- to thick-bedded sandstone
Ttm, middle member, massive greenish-gray concretionary siltstone with sparse sandstone laminae; sandier and better bedded toward the west
Ttc, conglomerate member, massive ridge-forming pebble and cobble conglomerate lithologically similar to Lyre Conglomerate and containing large reworked blocks of Lyre, but with abundant coarse angular basaltic debris at base; found only in the axis of the Clallam Syncline south of Freshwater Bay
Ttl, lower member, greenish-gray well-bedded siltstone and fine-grained basaltic sandstone; contains basal Lyre-type conglomerate where it onlaps volcanic rocks at Agate Bay, Crescent Bay, and on Elwha River west of Dry Creek School

Tlc / Tls

Lyre Formation

Tlc, conglomerate, massive ridge-forming pebble and cobble conglomerate, pebbles chiefly of argillite, quartzite, chert, and metamorphosed volcanic rocks, with subordinate amounts of metamorphosed arkose, diorite(?) gneiss, quartz, quartz-mica schist, and basalt
Tls, sandstone member, fine- to medium-grained olive-gray graywacke, thin- to thick-bedded

Eocene

Ta / Tav

Aldwell Formation

Ta, thinly bedded, indurated olive-gray siltstone and argillite with thin beds of sandstone and lenses of basaltic conglomerate
Tav, pillow basalt, basaltic breccia, or basaltic pyroclastic rock occurring as thin interbeds in Ta

Tct / Tcv / Tcs

Crescent Formation

Tcv, pillow basalt, massive finely crystalline basalt, flow breccia, and tuff breccia, with sills of massive diabase and thin interbeds of grayish-red or pale-green calcareous or siliceous argillite; locally contains pods and lenses of manganese minerals, chiefly hausmannite, bementite, and neotocite
Tct, tuffaceous sedimentary rock and tuff, chiefly of rhyolitic or dacitic parentage
Tcs, bedded grayish-red argillite and argillaceous limestone, graywacke, and basaltic conglomerate

Tksa / Tksv / Tksc / Tkss

Argillite and graywacke sequence

Tksa, greenish-gray argillite and fine- to coarse-grained graywacke with thin beds of feldspathic or quartzose micaceous sandstone
Tksv, pillow lava and flow breccia with thin beds of grayish-red argillite and limestone; locally contains pods and lenses of manganese minerals
Tksc, pebble conglomerate, pebbly granule sandstone, and graywacke in complexly interlensing relations
Tkss, light-gray, fine- to coarse-grained micaceous, arkosic and feldspathic sandstone, massive to thick-bedded; contains angular fragments of siltstone and argillite

ROCKS OF UNCERTAIN STRATIGRAPHIC POSITION

TERTIARY

SOUTH OF CALAWAH RIVER FAULT ZONE

Tus

Undifferentiated sedimentary rocks

Tus, thick-bedded to massive, light-gray to olive-gray, fine- to coarse-grained arkosic or lithic arkosic sandstone with laminae to thick beds of medium dark-gray siltstone

SOUTH OF LAKE CREEK FAULT

Tlt

Lyre and Twin River Formations undifferentiated

Tlt, thin- to thick-bedded greenish-gray basaltic fine- to medium-grained sandstone with lenses of massive to thick-bedded Lyre-type pebble conglomerate; pebbles are similar to those found in the Lyre conglomerate, but basalt clasts are relatively more abundant than in the Lyre; locally contains as much as 50 percent dark-gray to greenish-gray siltstone as interbeds

Contact

Solid where accurately located; long dash where approximate; short dash where concealed

U / D

Fault, approximately located
Dotted where concealed; U, upthrown side; D, downthrown side

Anticline **Syncline**
Folds
Showing approximate trace of axial plane and direction of plunge; dotted where concealed

30 **Anticline** 20 **Syncline**
Minor folds; axial plane vertical
Showing direction of plunge and amount, where known

20 30 60

Minor anticline; axial plane inclined
Showing amount and direction of plunge and dip of fold limbs

30

Strike and dip of beds
Known to be right-side-up

80

Strike and dip of beds
Direction of top of beds unknown

90

Strike and dip of vertical beds
Direction of top of beds shown by number

75

Strike and dip of overturned beds

Horizontal beds

Gravel pit

Abandoned mine

Prospect

Hole drilled for oil or gas, abandoned

To accompany: Geologic map of the north central part of the Olympic Peninsula, by Robert D. Brown, Jr.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.