PLATE I.--GENERALIZED GEOLOGIC MAP OF NORTHWESTERN KING COUNTY, WASHINGTON

EXPLANATION

Unconsolidated Deposits

Recent

ma — Modified areas

Areas in which extensive excavation, filling, or construction have greatly modified or obscured the original geology and topography. Thickness of fill is 50 feet or more.

Qa — Sedimentary deposits, undifferentiated

Interfingered beds of clay, silt, muck, peat, sand, and gravel, as much as 340 feet thick. Where peat is exposed at the surface, it is shown separately as Qp. Coarse-grained material is moderately permeable. Water commonly contains objectionable quantities of iron.

Qp — Peat

Organic material deposited chiefly in closed depressions. Where mapped, generally ranges in thickness from about 3 feet to 50 feet. Water contains objectionable quantities of organic matter.

Pleistocene

Vashon drift

Qvr — Recessional stratified drift, undifferentiated

Predominantly light-gray sand and gravel. The stratified drift is 100 feet or more thick. The upper surface is commonly a terrace. Permeability is medium to high.

Qvd — Delta gravel of the recessional stratified drift

Light-gray gravel and sand deposited at the mouths of streams tributary to ice-dammed glacial lakes. The thickness of the delta gravel is 100 feet or more. The upper surface is generally a terrace. Permeability is high.

Qvt — Till

Predominantly light-gray till but includes small amounts of stratified sand and gravel both within and overlying the till. The till is a hard, unsorted mixture of clay, silt, sand, and gravel, 150 feet or more thick. Although the till is relatively impermeable, thin beds of sand and gravel mapped with the till commonly yield small quantities of perched or semiperched water.

Qva — Advance stratified drift

Predominantly gray sand and gravel but some clay and silt. The thickness is 100 feet or more. Permeability is medium to high.

Qs — Unnamed sand

Predominantly brown stratified sand and small discontinuous lenses of silt, gravel, and clay. The thickness is 200 feet or more. Exposed only in the west half of the area. Permeability is moderate.

Qcu — Upper clay unit

Predominantly laminated to massive gray, blue-gray, or brown clay and silt. Locally includes sand, gravel, and peat. The thickness is 200 feet or more. In outcrops the sand and gravel are nearly impermeable as a result of oxidation; where unweathered, the permeability generally is moderate.

Qg — Unnamed gravel

Gravel and sand. Maximum thickness is more than 200 feet. In outcrops the gravel and sand are nearly impermeable as a result of oxidation; in the subsurface the permeability is generally moderate.

Qc — Clay, undifferentiated

Where the unnamed gravel is absent or unrecognized, the upper and lower clays are not differentiated.

Qcl — Lower clay unit

Principally massive to laminated gray, blue, and brown clay and silt; locally includes varved clay, stony clay, till, peat, and pumiceous sand. The thickness is 50 feet or more. It is relatively impermeable.

Pliocene(?) and Pleistocene

QTou — Older unconsolidated deposits

Sand, silt, clay, gravel, and till, and volcanic ash. The maximum thickness may be more than 400 feet. Exposed only in sec. 12, T. 24 N., R. 5 E. Permeability ranges from small to moderate.

Consolidated Rocks

Oligocene and Miocene

Tom — Marine sedimentary rocks

Marine sandstone, shale, conglomerate, and volcanic ash. Maximum inferred thickness is more than 8,000 feet. Permeability of coarse materials is low to moderate. Dotted line represents surface trace of top of impermeable shale bed, which is inferred to be 1,000 to 2,000 feet thick.

Eocene

Tp — Puget group

Sandstone, shale, and coal, and some conglomerate. Thickness is 3,000 feet or more. Recognized only in the Newcastle Hills. Permeability is probably low.

Tec — Continental and marine sedimentary rocks

Continental and marine carbonaceous shale, fossiliferous graywacke, and conglomerate underlying late Eocene pyroclastic rocks. Maximum thickness more than 2,000 feet. Exposed near the south margin of the area.

Tv — Volcanic rocks

Andesitic tuff, breccia, and flows. Composed of andesitic tuff of Oligocene(?) age and andesite flows in secs. 22 and 23, T. 24 N., R. 6 E., and of volcanic rocks of Eocene age elsewhere. Maximum inferred thickness is more than 5,000 feet.

TERTIARY

QUATERNARY

Qvt/Tv — Where the surface deposits are thin and the underlying deposits were identified, the symbol for the underlying unit also is shown.

Contact, dashed where approximate

45° — Strike and dip of consolidated beds

A—A' — Line showing location of geologic sections in Plate 2.

Tertiary geology mapped principally by W. C. Warren and others in 1943 and 1944. Quaternary geology mapped principally by B. A. Liesch, 1951-53, using reconnaissance methods. Geology of the Duwamish Head and Seattle South quadrangles mapped by H. M. Waldron in 1955 and 1959. Post deposits from E. N. Poulson and others, 1952. Field checking of critical localities by C. E. Price, 1958-59 and K. L. Walters, 1959.

Base from U. S. Geological Survey topographic maps. Broken land lines projected for reference only.

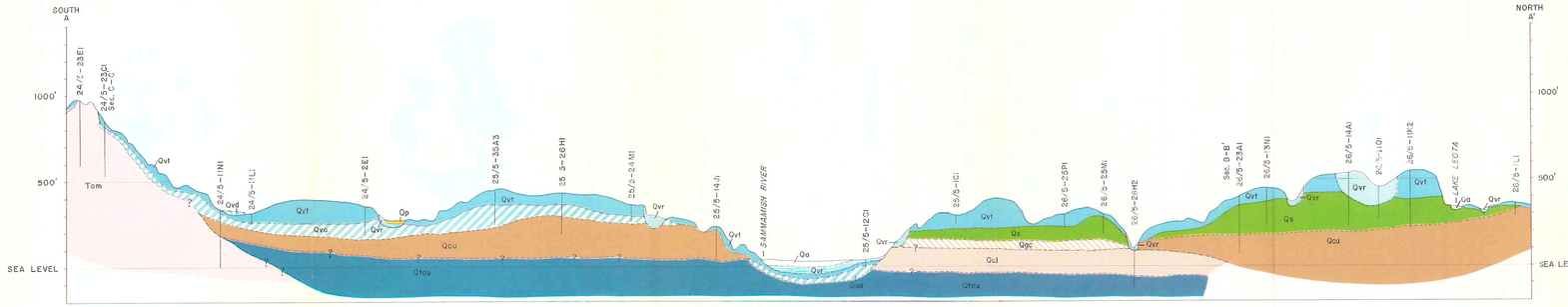
Scale 1:48,000

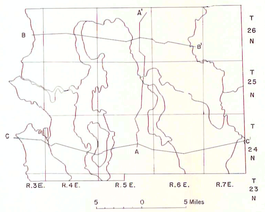
0 5 Miles

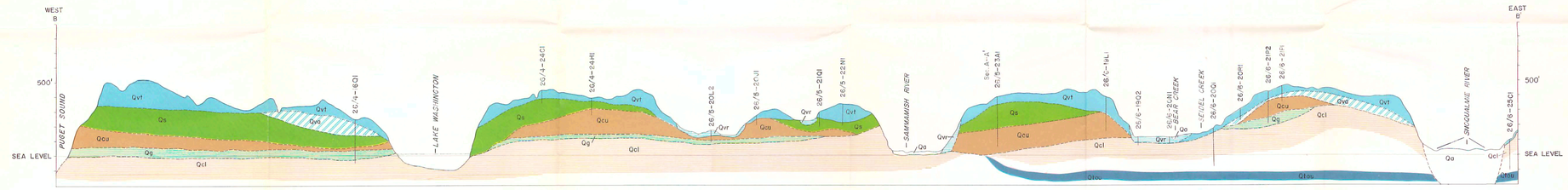
DATUM IS MEAN SEA LEVEL

Contour interval 25 feet except north of 47°45' latitude and east of 122°00' longitude, where it is 20 feet.

Edmonds West	Edmonds East	Bothell	Mobility	Monroe	
Shilshole Bay	Seattle North	Kirkland	Redmond	Carnation	
Duwamish Head	Seattle South	Mercer Island	Issaquah	Fall City	







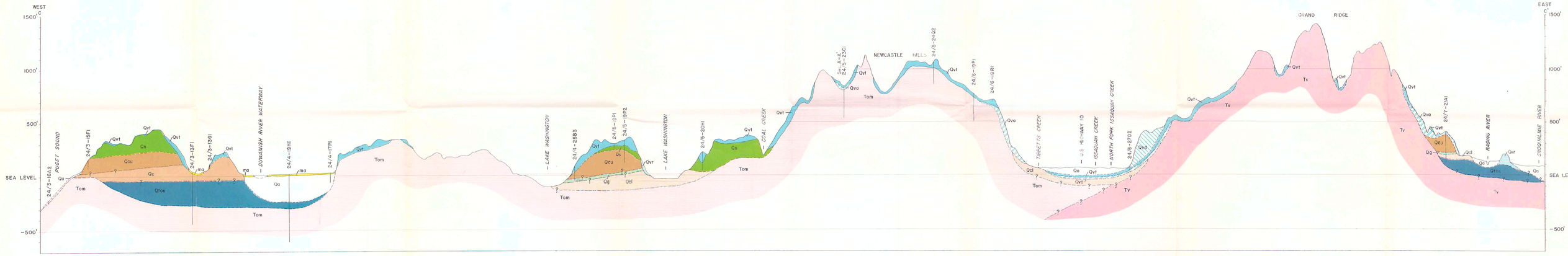


PLATE 2.-- GEOLOGIC SECTIONS OF NORTHWESTERN KING COUNTY, WASHINGTON

By C.E. Price and K.L. Walters

1959

1 0 1 2 3 4 5 Miles

Vertical Exaggeration: X 10

EXPLANATION

QUATERNARY

RECENT

- mq — Modified areas
- Qa — Sedimentary deposits, undifferentiated
- Qp — Peat

VASHON DRIFT

- Qvr — Recessional stratified drift, undifferentiated
- Qvd — Delta gravel of the recessional stratified drift
- Qvt — Till
- Qva — Advance stratified drift

PLEISTOCENE

- Qs — Unnamed sand
- Qcu — Upper clay unit
- Qg — Unnamed gravel
- Qgc — Upper clay unit and unnamed gravel, undifferentiated
- Qcl — Lower clay unit
- Qc — Clay, undifferentiated

PLIOCENE(?) AND PLEISTOCENE

- QTou — Older unconsolidated deposits

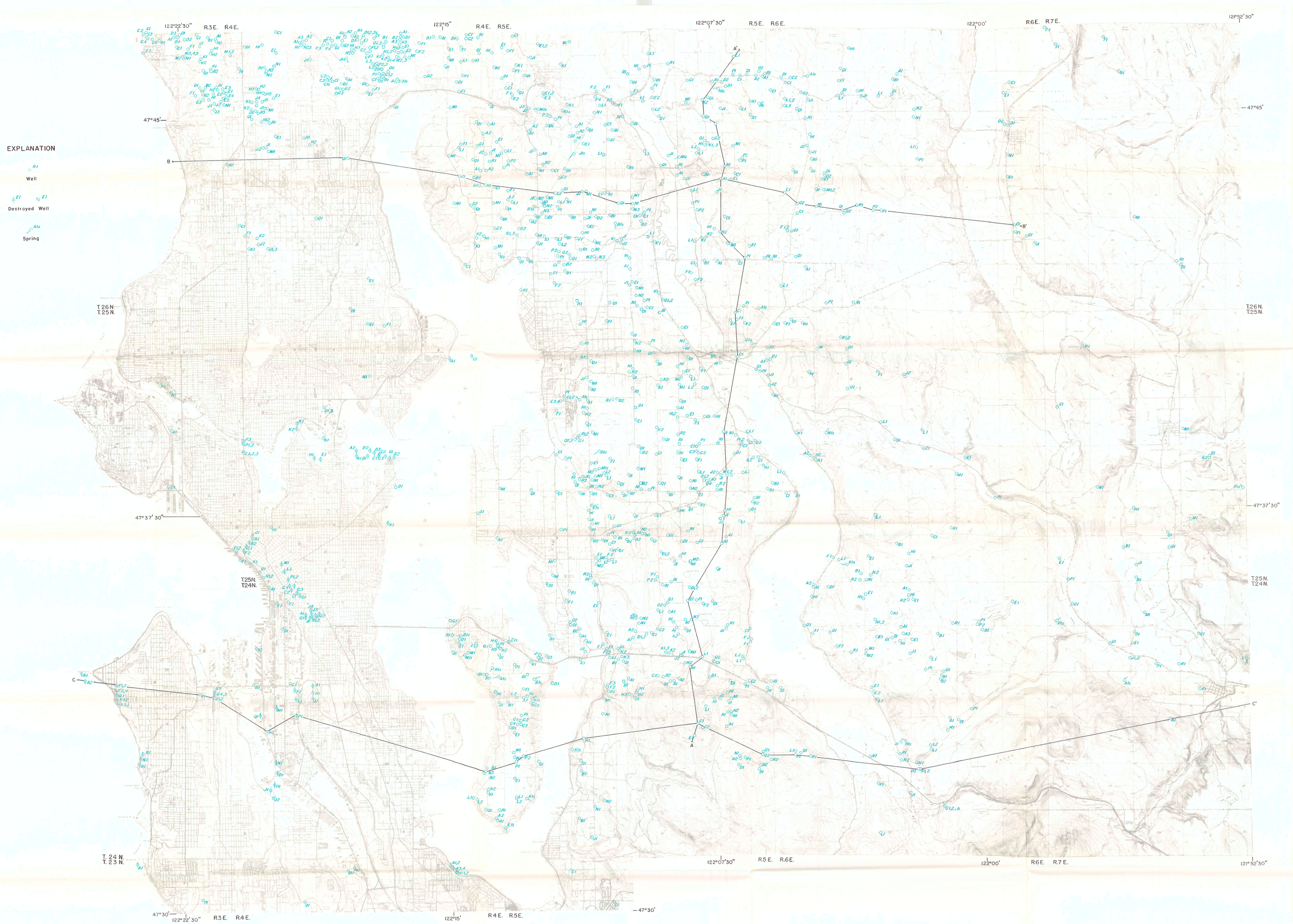
TERTIARY

OLIGOCENE AND MIOCENE

- Tom — Marine sedimentary rocks

EOCENE

- Tv — Volcanic rocks



Base from U. S. Geological Survey topographic maps. Broken land lines projected for reference only.

PLATE 3.--MAP SHOWING LOCATIONS OF REPRESENTATIVE WELLS AND SPRINGS, NORTHWESTERN KING COUNTY, WASHINGTON

By K. A. Jones
1959

Scale 1:48,000

0 — 5 Miles

DATUM IS MEAN SEA LEVEL

Contour interval 25 feet except north of lat. 47°45'N. and east of long. 122°00' W., where it is 20 feet.