

Washington Department of Natural Resources  
Division of Geology and Earth Resources

Preliminary surficial geological map of part of  
the Gardiner quadrangle, Clallam County, Washington

by  
Kirt L. Othberg and Pam Palmer

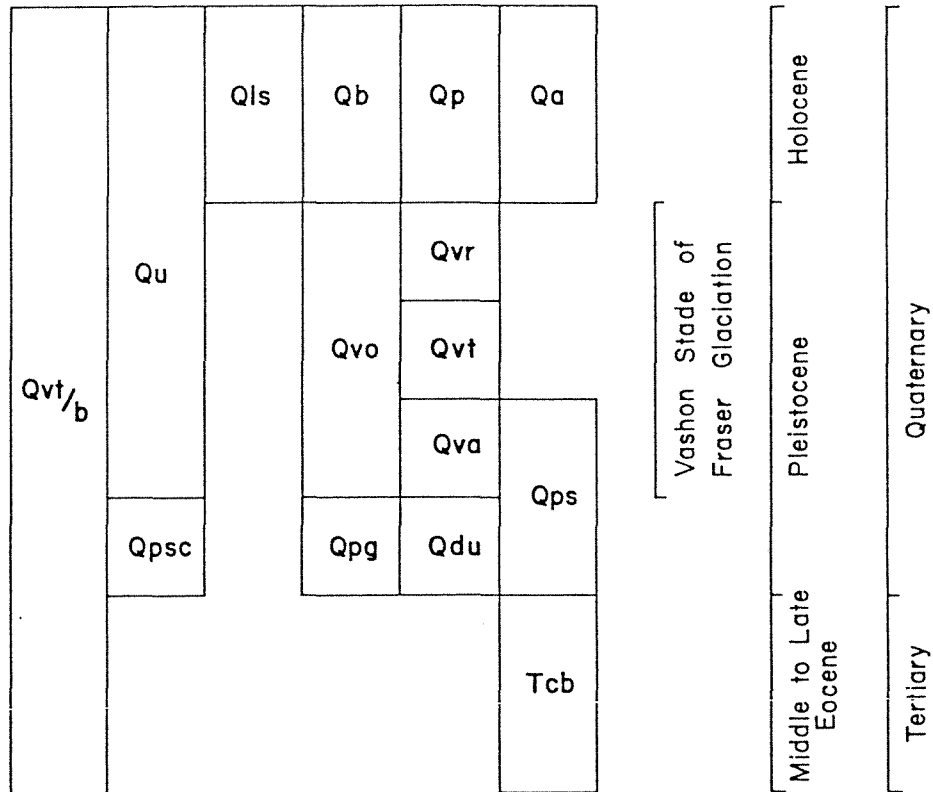
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of the Gardiner Quadrangle, Clallam County, Washington

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Correlation of Units – Gardiner Quadrangle



Description of Units

Qa Alluvium

Deposited in and along present streams. Varies from cobbly stream gravels laid down in channels to finer grained sands, silts, and clays deposited in a floodplain environment. Particle sizes vary laterally and vertically due to the lateral migration of streams across their floodplains

Qb Beach deposits

Varies from sand to sandy, pebble gravels. Includes spits and bars created by longshore drift of sediment

Qp Peat and marsh deposits

Formed by the accumulation and decomposition of organic material in wet depressions and other areas of poor drainage. Includes local areas of fine-grained, saturated sediments and organic matter found in fresh- and salt-water swamps, marshes, and bogs

Qls Landslide

Mapped where there is a geomorphic expression of active or old landslides. Generally outlines the entire landform, from head-wall to toe. May include both landslide scars and debris. Debris consists of variously textured colluvium resulting from slumps, slides, falls, and flows

Qvr Vashon recessional outwash and ice-contact stratified drift

Highly varied deposits resulting from deposition upon, within, or near stagnant ice. Deposits are characterized by stratified sand and gravel with local occurrences of flow till. Includes possible alluvial fan deposits formed by streams, now relict, flowing off the bedrock high in the southern part of the map (Blyn Lookout Relay Station). Streams may have been active during ice recession in this area

Qvt Vashon till

Lodgment till, a compact, poorly sorted nonstratified pebbly sandy silt with occasional boulders; generally quite hard as a result of compaction by thick glacier ice. Mapped where thickness is greater than approximately 1 meter. Includes thin but extensive ablation till; generally a loose, nonstratified stony silty sand with noticeable voids. Where exposures cut through ablation till, it is typically underlain by deformed beds of sand, silt, and gravel. The stratigraphic relationship between ablation till and lodgment till was not clearly demonstrated in the exposures

Qvt/b Vashon till overlying bedrock

Bedrock-controlled landforms overlain by relatively thin lodgment till and ablation deposits. Foothill landforms are underlain by bedrock, but were overridden by glacier ice. Bedrock is generally within several meters of the surface and crops out locally. Identified rock exposures indicated on the map by spot symbol (⊙ Tcb)

Qva Vashon advance outwash

Well-sorted, well-stratified sandy pebble to cobble gravel. Mapped where its stratigraphic position beneath the Vashon till can be established. Sediments represent melt-water deposits coming from the advancing front of the glacier

Qvo Vashon outwash undifferentiated

Well-sorted, well-stratified sand and pebbly sand. Relative age with respect to Vashon till not established

Qps Pre-Vashon-till sands

Pebbly to silty sands of unknown origin, stratigraphically older than Vashon till. May locally include the Esperance Sand Member of Vashon Drift

Qpg Pre-Vashon gravels

Sandy pebble to cobble gravels of varied origins; older than Vashon Drift. Gravels include glacially derived outwash, fluvial gravels with interbeds of sand and silt, and gravels of unknown origin. Commonly characterized by iron-oxide staining and partial cementation

Qpsc Pre-Vashon silts and clays

Compact bedded sandy silt, silt, and clay that may include interbeds of peat. Origin may be nonglacial or glacial. All deposits mapped are older than Vashon Drift

Qdu Pre-Vashon diamictons undifferentiated

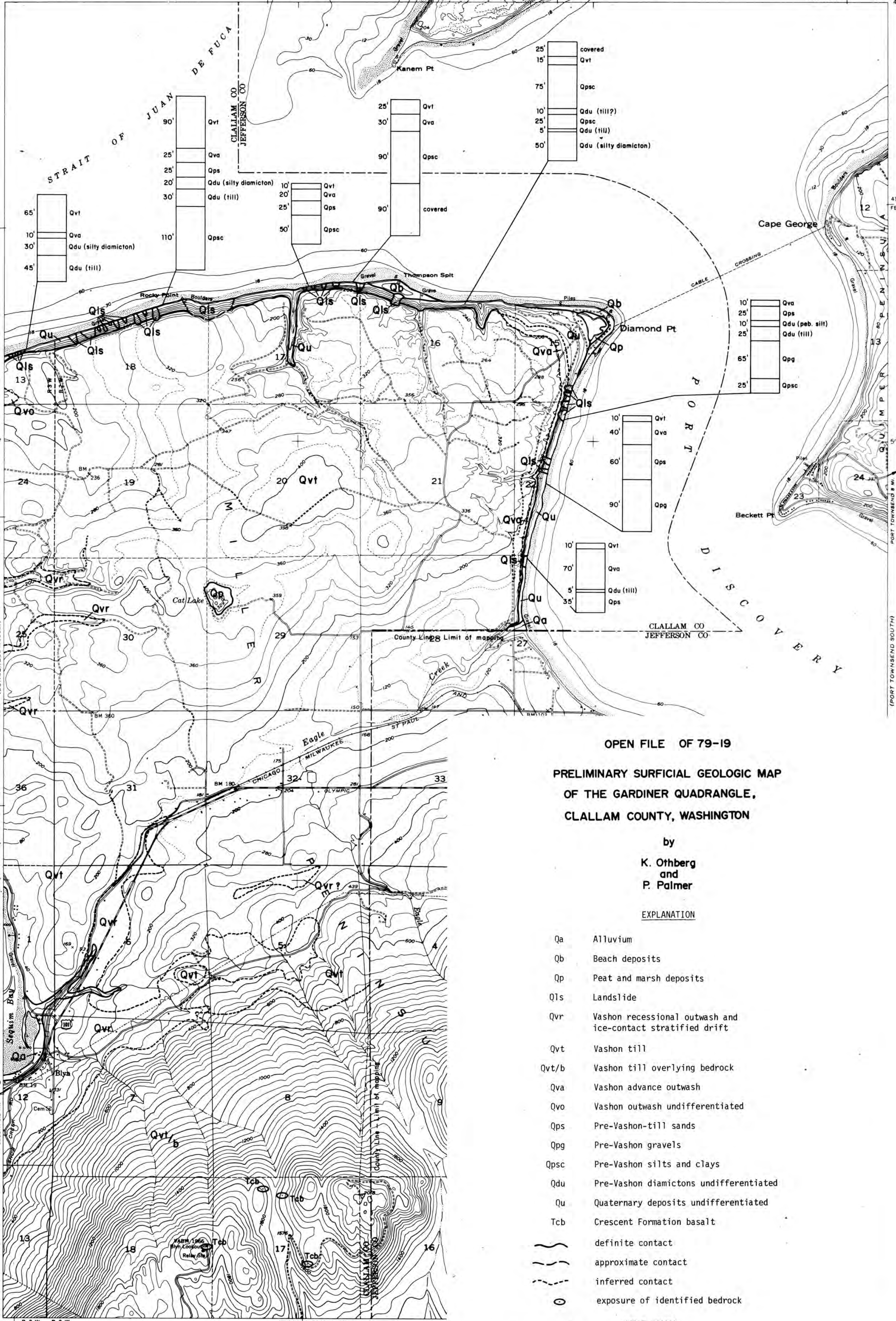
Undifferentiated diamictons that are older than Vashon Drift. Typically, deposits are very stony, sandy "tills" or pebbly clayey silts

Qu Quaternary deposits undifferentiated

Generally found along steep slopes of sea cliffs and along stream valleys where exposures are poor. Where possible, stratigraphic sections show more detailed subdivisions, correlations, approximate thicknesses, and lithologies at specific sea cliff exposures

Tcb Crescent Formation basalt

Primarily Eocene submarine basalt flows and breccias



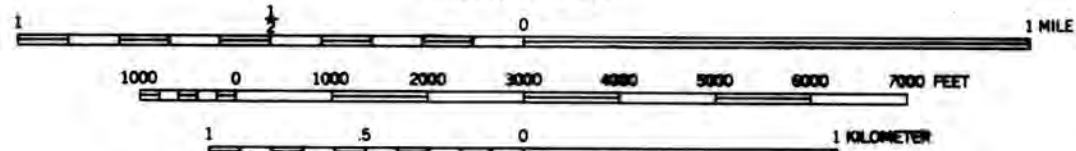
OPEN FILE OF 79-19  
PRELIMINARY SURFICIAL GEOLOGIC MAP  
OF THE GARDINER QUADRANGLE,  
CLALLAM COUNTY, WASHINGTON

by  
K. Othberg  
and  
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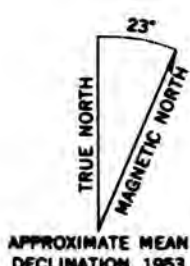
EXPLANATION

- Qa Alluvium
- Qb Beach deposits
- Qp Peat and marsh deposits
- Qls Landslide
- Qvr Vashon recessional outwash and ice-contact stratified drift
- Qvt Vashon till
- Qvt/b Vashon till overlying bedrock
- Qva Vashon advance outwash
- Qvo Vashon outwash undifferentiated
- Qps Pre-Vashon-till sands
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- Qpsc Pre-Vashon silts and clays
- Qdu Pre-Vashon diamictons undifferentiated
- Qu Quaternary deposits undifferentiated
- Tcb Crescent Formation basalt
- definite contact
- - - approximate contact
- · - · - inferred contact
- exposure of identified bedrock

SCALE 1:24000



CONTOUR INTERVAL 40 FEET  
DASHED LINES REPRESENT HALF INTERVAL CONTOURS  
DATUM IS MEAN SEA LEVEL  
DEPTH CURVES IN FEET—DATUM IS MEAN LOWER LOW WATER  
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER  
THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 8 FEET



QUADRANGLE LOCATION