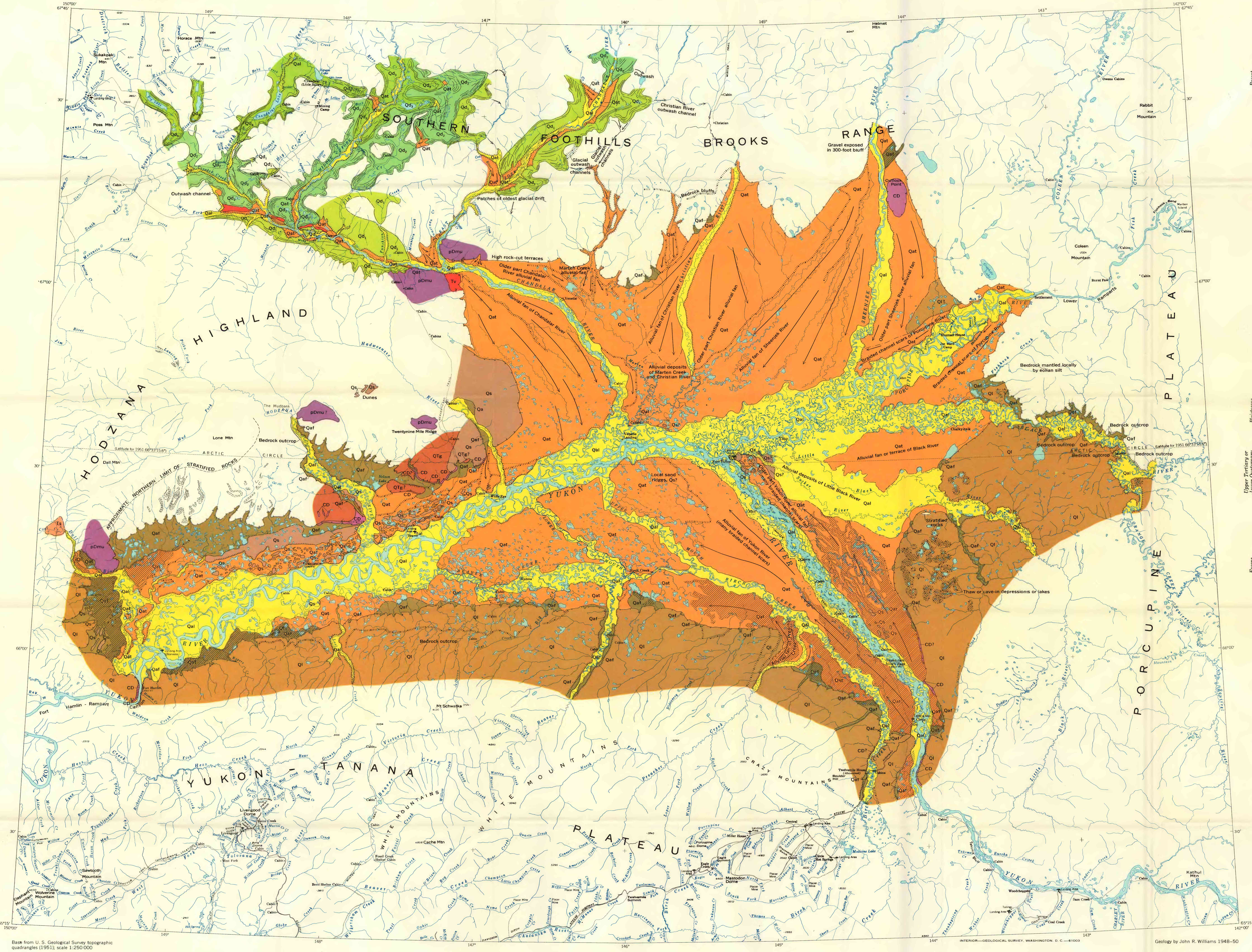
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BULLETIN 1111
PLATE 42



GEOLOGIC MAP OF THE YUKON FLATS DISTRICT, ALASKA

SCALE 1:500 000

5 0 5 10 15 20 25 30 35 MILES

EXPLANATION

Symbols queried where identification of mapped unit doubtful

Quaternary deposits in part contemporaneous

QUATERNARY

Recent

Qal

Flood-plain and low-terrace alluvium

Well-stratified layers and lenses of gray to brown coarse to fine well-sorted rounded to subangular gravel and minor amounts of sand and silt, mantled by as much as 25 feet of well-stratified layers and lenses of silt, sand, and locally, organic matter, chiefly peat, sticks, and logs. Thickness unknown except at Fort Yukon where alluvium is about 100 feet thick. Generally perennially frozen; many unfrozen zones, particularly beneath present and former water bodies. Ground-ice masses generally limited to wedges 2 to 3 feet thick in a polygonal network in local areas where silt mantle is more than 8 feet thick

Qaf

Alluvial-fan silt deposits

Stratified layers and lenses of gray to brown well-sorted silt, fine sand, and near fan apex, sand and fine gravel deposited at base of terrace and marginal escarpment by small permanent and intermittent streams draining the adjoining high ground. Include layers and lenses of peat and woody material. Form veneer as thick as 100 feet over alluvial-fan and terrace deposits of Yukon River and tributaries. Generally perennially frozen; many occurences of large, irregular, tabular, and polygonal ground-ice masses

Ql

Loess

Massive well-sorted homogeneous tan to gray silt and sandy silt as much as 50 feet thick on flat interfluves, hilltops, and upper slopes. Includes creek-bottom deposits of reworked loess washed downslope; stratified silt and sandy silt mixed with peat and woody matter as much as 100 feet thick. Deposits generally perennially frozen; large ground-ice masses especially common in creek-bottom deposits

Qs

Eolian sand

Massive well-sorted homogeneous gray to tan sand and silty sand, ranging from 6 to 60 feet in thickness. Generally perennially frozen, but contains few ground-ice masses

Qat

Alluvial-fan and related terrace deposits

Well-stratified layers and lenses of well-sorted gray to brown coarse to fine gravel containing minor amounts of sand and silt and a few layers and lenses of peat and woody material. Dominantly pebble to boulder gravel deposited by the Yukon River and its larger tributaries. Locally stained and cemented by iron oxide. Gravelly deposits covered by mantle of silt, sand, and organic material as thick as 25 feet. Generally perennially frozen; a few unfrozen zones beneath water bodies and in well-drained sites; locally polygonal ice wedges where silt mantle is thicker than 8 feet. Thickness not known, but probably locally exceeds 100 feet

Pleistocene

Qd_3

Qd_2

Qd_1

Glacial drift

Buff to gray till, gravel, sand, and silt in morainal complexes of succeeding glaciations; generally perennially frozen. Maximum thickness not known, but locally exceeds 100 feet. Scattered remnants of oldest drift indicated by note on map

Upper Tertiary or lower Quaternary

QTg

High-level alluvium

Stratified gray to blue-gray to rusty brown well-sorted pebble to boulder gravel with minor amounts of sand and silt. Particles slightly cemented and strained by iron oxide. Maximum thickness not known, but locally exceeds 100 feet

TERTIARY

Tv

Basalt

Basalt and olivine basalt, locally amygdaloidal and porphyritic. Forms intrusive dikes and sills and extrusive flows

Eocene

Ts

Sedimentary rocks

Chiefly shale and lignite where known on Dall River. Include shale, subbituminous coal, and lignite where reported on Hodzana River. Probably equivalent to stratified rocks of unknown lithology noted on map between Dall Mountain and Hodzana River on marginal upland

DEVONIAN AND CARBONIFEROUS

CD

Sedimentary and volcanic rocks and associated intrusive igneous rocks

Quartzite, chert, crystalline limestone, chlorite schist or phyllite, shale, tuff, and basalt, intruded by diorite, gabbro, diabase, quartz diorite, and granite. Mafic intrusive igneous rocks, tuff, and basalt generally of greenstone habit. Include Early Mississippian rocks of Rampart group near Fort Hamlin and Circle volcanics near Circle; and a chert-slate formation of Late Devonian age at Outlook Point.

PRE-DEVONIAN(?)

pDmu

Metamorphic rocks and associated intrusive igneous rocks

Quartzite, quartz-mica schist, and locally graphitic and calcareous schist, phyllite, and biotite schist. Minor beds of crystalline limestone. Intruded by granite, gneissic and porphyritic granitic rocks, and silicic dikes. Predominantly of pre-Devonian age, but include some rocks that may be correlated with Birch Creek schist of Precambrian age and possibly some of Mesozoic age

CONTACTS BETWEEN GEOLOGIC UNITS

Plotted from aerial photographs; dashed where gradational or indefinite

Marginal escarpment separating geologic units in Yukon Flats from those in marginal upland. V-shaped hachures on upslope side

Contact between geologic units having little or no difference in altitude

Contact between geologic units within Yukon Flats or within marginal upland and bordering mountains marked by an escarpment. Hachures on upslope side

Contact between subdivisions of alluvial fans and related terrace deposits (Qat) to show deposits of individual rivers as noted on map

Terrace escarpment within geologic unit. Arrows point downslope

SPECIAL SYMBOLS

Glacial moraine, diagrammatically sketched from aerial photographs

Trace of stratification in rocks of possible early Tertiary age between Dall Mountain and Hodzana River, diagrammatically sketched from aerial photographs

Direction of abandoned stream courses diagrammatically shown

Muskeg