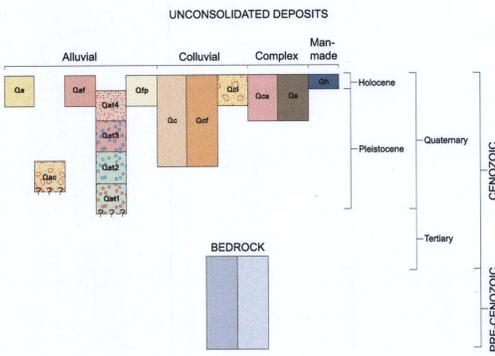


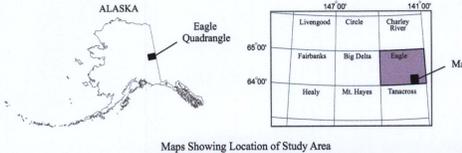


CORRELATION OF MAP UNITS



MAP SYMBOLS

- Photointerpreted contact - Dashed where approximately located or inferred
- Pingo



EXPLANATION

This map illustrates the distribution of a variety of unconsolidated deposits and undifferentiated bedrock in the Fortymile mining district. It was prepared by the interpretation of 1:63,360-scale, false-color, infrared aerial photographs taken from July 1978 through August 1981 and is locally verified by ground observations during field visits.

Terms used to describe the estimated percentages of cobbles and boulders are 'numerous', 'scattered', and 'rare.' 'Numerous' implies that drilling through the layer would encounter two cobbles or boulders in an interval of 0.6 m; 'scattered' implies that drilling would encounter two cobbles or boulders in an interval of 3 to 4.5 m; and 'rare' implies that drilling would encounter two cobbles or boulders in an interval of more than 4.5 m.

DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

- Qa** ALLUVIUM OF MODERN STREAM CHANNELS — Elongate deposits of moderately to well sorted, well stratified, fluvial pebble-cobble gravel, sand, and silt, with scattered to numerous boulders, deposited in active stream channels, floodplains, and associated low terraces. Deposit is medium to thick bedded, locally crossbedded, shows fining-upward cycles, and is locally auriferous. Cobbles are generally rounded and may reach a maximum diameter of 1 m. Locally overlain by up to 3 m of ice-rich organic silt and muck, particularly along valley margins, containing Pleistocene mammalian remains (including mammoth, horse, caribou, and bison). Surface disturbances, such as from excavation, commonly result in melting and subsequent slumping and flowage. Surface smooth except for local low scarps.
- Qaf** ABANDONED-CHANNEL DEPOSITS — Elongate deposits of variable grain size, sorting, and bedding style deposited in channels of former streams not related to modern stream regimens. These deposits are closely related to the oldest terrace deposits (Qat1) found throughout the Fortymile mining district. Composition ranges from thin, local surface lags of cobbles and boulders to thick deposits of well sorted, clean pebble-cobble gravel, and gravelly medium to coarse sand with rare to numerous cobbles up to 0.5 m diameter. Thin to thick bedded, locally crossbedded. Deposits reflect former channels and flow regimes that may be related to early Pleistocene glaciations in the regional stream headwaters. Locally thickly mantled by ice-rich, primary and reworked silt deposits. Surface disturbances of the silt mantle, such as from excavation, commonly result in melting and subsequent slumping and flowage. Placer mining in upper Lost Chicken Creek has exposed more than 8 m of frozen silt and gravel overlying auriferous channel gravels. The channel gravels of upper Lost Chicken Creek consist of well bedded, clast supported, pebble-cobble gravel and sand, with rounded to well-rounded clasts up to 13 cm diameter. The deposit is characterized by numerous limonite-filled fractures, prominent orange stains on bedding planes, and extensive limonite and MnO staining. Twigs and large wood in association with the channel gravels are abundant, but all analyzed material returned infinite dates. The Lost Chicken tephra is preserved in 0-6 cm thick discontinuous lenses and pods of fine white ash approximately 26 cm above the top of the auriferous channel gravels. Naeser and others (1982) used fission-track methods on zircon microphenocrysts and glass shards to date the tephra at 1.7 to 2.6 Ma. Surface smooth with local low scarps and bogs.
- Qat1** YOUNGEST TERRACE ALLUVIUM — Elongate deposits of well sorted, well rounded to subrounded, stratified pebble-cobble gravel and coarse sand with trace to some silt and rare to numerous boulders forming low terrace bordering Mosquito Fork floodplain. Clearly related to modern drainage. May be overlain by up to 3 m of locally ice-rich organic silt, muck, and overbank deposits. Surface smooth to hummocky with local low scarps and bogs.
- Qat2** YOUNG TERRACE ALLUVIUM — Elongate deposits of well sorted, well rounded to subrounded, stratified pebble-cobble gravel and sand with trace to some silt and rare to numerous boulders forming elevated benches bordering Mosquito Fork, Dennison Fork, North Fork, and Buckskin Creek floodplains. Clearly related to Recent drainage. Maximum tread elevation approximately 30 m above the present streams. Deposits may be capped by variable thickness of locally ice-rich primary and reworked eolian silt. Surface smooth to hummocky with local low scarps and bogs.
- Qat3** OLD TERRACE ALLUVIUM — Elongate deposits of well sorted, well rounded to subrounded, pebble-cobble gravel and sand with trace to some silt and rare to numerous boulders forming elevated benches bordering Mosquito Fork, Dennison Fork, North Fork, and Buckskin Creek. Probably related to Pleistocene drainage. Maximum tread elevation approximately 100 - 130 m above the present streams. Thickness highly variable. Deposits locally capped by variable thickness of ice-rich primary and reworked eolian silt. Surface smooth to hummocky with local low scarps and bogs.
- Qat4** OLDEST TERRACE ALLUVIUM — Elongate deposits of well sorted, well rounded to subangular, generally poorly stratified gravel, sand, and silt, possibly of glacial origin, forming elevated benches bordering Mosquito Fork, Dennison Fork, North Fork, Buckskin Creek, Uhler Creek, Napoleon Creek, and Chicken Creek basin. Maximum tread elevation approximately 165 - 230 m above the present streams. Thickness highly variable, ranging from thin gravel veneers on bedrock near Wall Street Creek and Dennison Fork to 15 m thick observed in the Napoleon Creek area. Yeend (1996) reported maximum gravel thickness of 40 m at Napoleon Creek. Maximum cobble size observed was 0.5 m diameter, but most clasts are in the range of 0.1 to 0.2 m diameter. Mostly clast-supported, with a medium to coarse, subangular sand matrix. Locally stained orange by limonite. While generally massive and structureless, a vague bedding fabric at Napoleon Creek suggests a slight (~9 degree) dip to the west. Locally thickly mantled by ice-rich, primary and redeposited eolian silt. Surface generally smooth and heavily vegetated. Bench gravels are auriferous and have been very successfully mined at Napoleon Creek.
- Qol** FLOODPLAIN ALLUVIUM — Elongate deposits of moderately to well sorted, well-stratified, fluvial gravel, sand, and silt with scattered to numerous boulders in floodplains and associated low terraces. Deposits may reflect former channels and flow regimes. Typically mantled by thin layer of silty overbank deposits. Generally finer grained than similar deposits in Qa unit because of deposition during flood-stage events. May locally include Wisconsin to Holocene terrace alluvium. Lower surfaces may be flooded during periods of maximum stream discharge. Locally overlain by up to 3 m of ice-rich organic silt and muck, particularly along valley margins, containing Pleistocene mammalian remains (including mammoth, horse, caribou, and bison). Surface disturbances of the frozen silt cover, such as from excavation, commonly result in melting and subsequent slumping and flowage. Ground ice content highly variable. Surface smooth to hummocky with local low scarps and bogs.

COMPLEX DEPOSITS

- Qoc** UNDIFFERENTIATED COLLUVIUM AND SILT — Irregular, heterogeneous blankets, aprons, and fans of angular to subangular rock fragments, gravel, sand, and silt that are left on slopes, slope bases, or high-level surfaces by residual weathering and complex mass-movement processes including rolling, sliding, flowing, gelifluction, and frost action. Locally washed by meltwater and slope runoff. Deposit is generally unsorted to very poorly sorted, and medium to thick bedded. Thickness is highly variable, with thickest deposits at the bases of slopes. Organic material is commonly incorporated in the deposit, and it is locally overlain by up to 3 m of ice-rich organic silt and muck that may contain Pleistocene mammalian remains (including mammoth, horse, caribou, and bison, especially at the bases of slopes bordering streams. Surface disturbances, such as from excavation, commonly result in melting and subsequent slumping and flowage. Surface smooth, lobed, or terraced and, if deposit is thin, generally reflects configuration of underlying bedrock surface.
- Qof** FINE-GRAINED COLLUVIUM AND SILT — Irregular, heterogeneous blankets, fans, and aprons of fine-grained colluvium and silt. Silt is largely retransported from original hillside sites of eolian deposition to lower slopes by mudflows, slopewash, gelifluction, and frost action. May contain abundant angular clasts of local origin. Massive to thinly bedded, with some wavy bedding and crossbedding. Thickness is highly variable, with thickest deposits at the bases of slopes. Commonly perennially frozen and ice rich. Surface disturbances, such as from excavation, may result in melting and subsequent slumping and flowage. Surface steep to gently sloping. Deposits blanket pediments primarily in southwest map area.
- Qot** LANDSLIDE DEPOSITS — Oval- to tongue-shaped heterogeneous mixture of fractured bedrock and pebble-cobble gravel with trace to some sand and silt deposited by near-surface to deep creep, flowing, and sliding due to instability of failed bedrock and unconsolidated surficial deposits on north fork of Napoleon Creek. Potential failure block is delineated on aerial photographs by apparent ground fractures and remains coherent, but may be subject to spontaneous slope failure at some future time. Surface ranges from smoothly sloping to slightly irregular and broken by arcuate ground cracks.

MAN-MADE DEPOSITS

- Qm** SWAMP DEPOSITS — Elongate to blanket deposits of complexly bedded peat, organic silt, and organic sand accumulated as surface deposits in local basins and in former stream channels. Saturated and locally frozen, locally ice rich. Thickness highly variable. Surface smooth, hummocky, or pitted. May have standing water.
- Qma** COLLUVIAL AND ALLUVIAL VALLEY-FILL DEPOSITS — Elongate, apron- and fan-shaped, heterogeneous mixtures of poorly to moderately sorted angular rock fragments with trace to some gravel, sand, and silt deposited in upper stream courses and on lower slopes along the margins of stream valleys by complex mass-movement processes (including rolling, sliding, flowing, gelifluction, and frost action) and strongly influenced by meltwater and slope runoff. Other important depositional processes may include debris flows, brief, intense (torrential) summer stream flows, and minor snow-avalanching. Commonly forms alternating stratified and unstratified zones and lenses in gullies and steep tributary valleys with intermittent or ephemeral streams. Locally overlain by variable thickness of ice-rich organic silt and muck, especially in areas of little or no slope. Surface disturbances, such as from excavation, commonly result in melting and subsequent slumping and flowage. Surface steep to gently sloping, with local low scarps and shallow channels from ephemeral runoff streams.

BEDROCK

- U** UNDIFFERENTIATED BEDROCK — Exposed undifferentiated bedrock.
- S** SHALLOWLY BURIED BEDROCK — Undifferentiated bedrock that is covered by a thin (generally 1 m thick or less) veneer of colluvium. Cover is sufficiently thin that planar bedrock structures, like joints, foliation, and bedding are reflected at the ground surface by linear and curvilinear shallow troughs and bands of moist ground or hydrophylic vegetation.

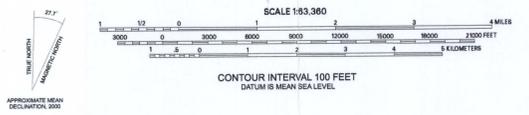
REFERENCES CITED

Naeser, N.D., Westgate, J.A., Hughes, O.L., and Péwé, T.L., 1982, Fission-track ages of late Cenozoic distal tephra beds in the Yukon Territory and Alaska; Canadian Journal of Earth Sciences, v. 19, p. 2167-2178.

Yeend, Warren, 1996, Gold placers of the historical Fortymile River region, Alaska; U.S. Geological Survey Bulletin 2125, 1 sheet, scale 1:63,360, 74 p.

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Eagle A-2 quadrangle, U.S. Geological Survey digital raster graphic image, 1996.
Geologic map produced in:
Clark 1866 datum, NAD27, UTM zone 7 projection.



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**SURFICIAL-GEOLGIC MAP OF THE EAGLE A-2 QUADRANGLE,
FORTYMILE MINING DISTRICT, ALASKA**

by
D.S. Pinney
2001

