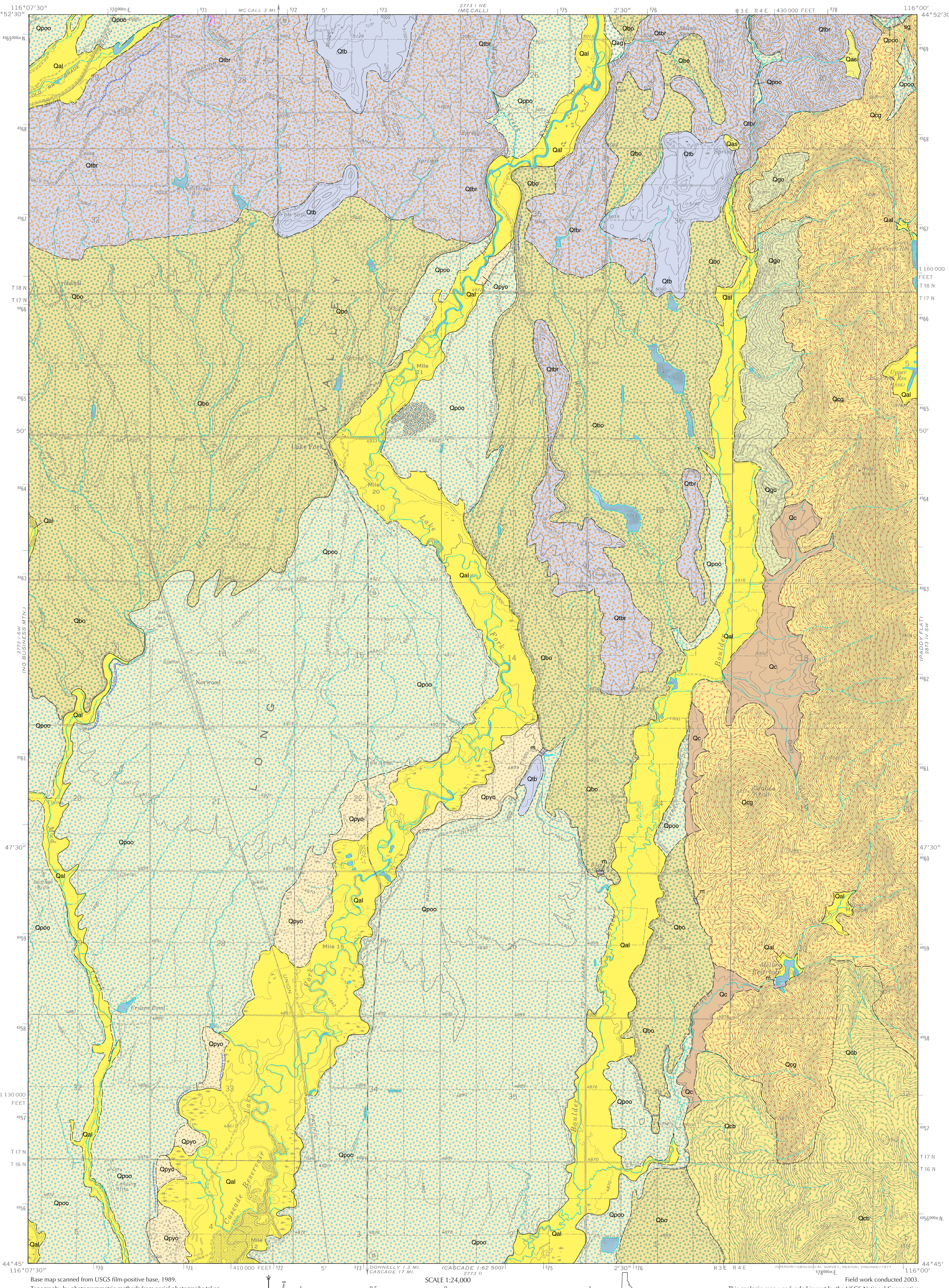
SURFICIAL GEOLOGIC MAP OF THE LAKE FORK QUADRANGLE, VALLEY COUNTY, IDAHO

Roy M. Breckenridge and Kurt L. Othberg

2005



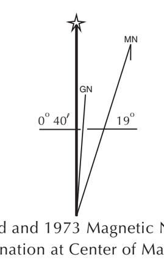
Base map scanned from USGS film-positive base, 1989.

Topography by photogrammetric methods from aerial photographs taken 1965-66 and 1972. Field checked 1973.

Transverse Mercator. 1927 North American Datum.

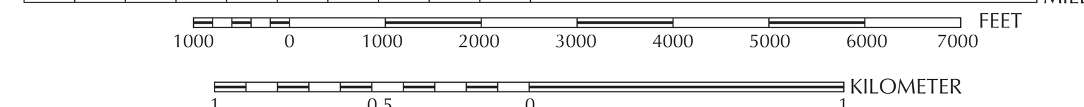
10,000-foot grid ticks based on Idaho coordinate system, west zone.

1000-meter Universal Transverse Mercator grid ticks, zone 11.



UTM Grid and 1973 Magnetic North Declination at Center of Map

SCALE 1:24,000



Contour interval 20 feet

QUADRANGLE LOCATION

Field work conducted 2003.

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program.

Digital cartography by Loudon R. Stanford at the Idaho Geological Survey's Digital Mapping Lab.

Map version 1-14-2005.

DESCRIPTION OF MAP UNITS

MAN-MADE DEPOSITS

m — **Made land (Historical)**—Mixed deposits of man-made fill. Mostly coarse boulder ballast, cobbles, and boulders. Made land includes highway and railroad beds and constructed levees, and earthfill dams.

ALLUVIAL DEPOSITS

Qas — **Alluvium, fine grained (Holocene)**—Silt, clay, and organic muck of alluvium in ponds and depressions in glacial deposits or meander scars in flood plains. Soils primarily Blackwell series (Rasmussen, 1981). Thickness - 3 m.

Qal — **Alluvium (Holocene)**—Variable clayey silt, silty sand, gravelly sand and sandy gravel form flood plains in modern stream valleys of Lake Fork and Boulder Creek. Gravel clasts are rounded to subrounded. Bedding distinct to indistinct in sand and gravel, and thin to medium in silt and clay. At mouths of streams entering Cascade Reservoir consists of soft clayey silt and at depth is locally underlain by late glacial outwash. Soils primarily Blackwell, Donnel, Kangas, Melton and Roseberry series (Rasmussen, 1981). Thickness 1-3 meters; thicker where entering Cascade Reservoir.

Qag — **Alluvial gravel deposits (Holocene)**—Mostly silty sandy gravel. Cobble- to large boulder gravels in modern flood plains and terraces just above the flood plain of Lake Fork. Rounded and subrounded gravel clasts derived from intrusive granitic rocks and extrusive basalts. Mostly consists of reworked Pleistocene glacial deposits. Soils primarily Donnel and Kangas series (Rasmussen, 1981). Thickness 5-10 meters (16 -33 feet).

GLACIAL AND RELATED DEPOSITS

Qpyo — **Outwash of younger Pinedale age (late Pleistocene)**—Surface: Silty cobbly- to bouldery sand; grayish brown, and brown. Below 1 meter: consists of gravelly coarse sand with a silty fine sand matrix; pebble-to boulder-sized gravel; grayish brown and gray. Forms a terrace above the modern flood plain cut in *Qpoo*. Outwash graded to younger Pinedale moraines in the McCall quadrangle. Soils primarily Donnel series (Rasmussen, 1981). Thickness variable; up to tens of meters.

Qpoo — **Outwash deposits of older Pinedale age (late Pleistocene)**—Surface: silty sand and local areas of clay and silt; gray brown and dark gray (locally mottled: gray, yellow, brown, and olive). Below 1 meter: silty sand and pebbly sand; gray, brown and dark gray (locally mottled: gray, yellow, brown and olive). Forms large outwash plain graded to the end moraines in the McCall quadrangle. Underlain in places by glaciolacustrine silts and sands deposited in a proglacial lake(?). Equivalent to outwash of McCall age of Colman and Pierce (1983). Soils primarily Roseberry series (Rasmussen, 1981). Thickness variable; may exceed tens of meters.

Qtb — **Till deposits of Bull Lake glaciation (pre-late Pleistocene)**—Surface: cobbly and bouldery silty clay and clayey silt; brown and dark brown. 0.5-2 meters: gravelly sandy clayey silt and gravelly clayey silty sand; pebble- to boulder-sized gravel dark brown, brown, and yellowish brown. Below 2 meters: massive unsorted till; consists of gravelly silty sand; pebble to boulder-sized gravel clasts; brown and gray. Gravel clasts primarily subangular to angular; many faceted. Forms end moraines of Timber Ridge. Equivalent to till of Timber Ridge age of Colman and Pierce, 1983. Soils primarily McCall series (Rasmussen, 1981). Thickness tens of meters.

Qtbr — **Recessional, ice contact and end moraine deposits of Bull Lake (pre-late Pleistocene)**—Surface: cobbly and bouldery silty clay and clayey silt; brown and dark brown. 0.5-2 meters: gravelly sandy clayey silt and gravelly clayey silty sand; pebble-to boulder-sized gravel dark brown, brown, and yellowish brown. Below 2 meters; massive unsorted till: consists of gravelly silty sand; pebble to boulder-sized gravel clasts, brown and gray Grades laterally into and includes water-laid till and ice contact and meltwater deposits. Unstratified to stratified and angular to subrounded clasts. Occasional very large rounded boulders of basalt and granite. Forms subdued hummocky stagnation moraine with filled depressions and dissected drainage; and recessional moraines with irregular subdued crests. Soils primarily Archabal series (Rasmussen, 1981). Thickness variable; up to tens of meters.

Qbo — **Outwash deposits of Bull Lake (pre-late Pleistocene)**—Surface: silty clan and clayey silt; brown and dark brown. 0.5-2 meters; sandy clayey silt, clayey silt, clayey silty sand, and pebbly sand; dark brown, brown, and yellowish brown. Below 2 meters: silty sand, sand, and pebbly sand; brown , pale brown, and light gray. Pebble clasts, rounded to subrounded. Forms flat to gently undulating remnants of a broad plain of outwash graded to *Qtbr*. Includes narrow dissected channels. Soils primarily Archabal loam (Rasmussen, 1981). Thickness unknown.

Qgo — **Older glacial deposits (early Pleistocene and Tertiary?)**—Cobbly and bouldery silty clay and clayey silt; brown and dark brown. Mostly till(?) deposits. Unsorted to moderately sorted, sandy pebble- to boulder gravel. Rounded to sub-rounded granitic clasts and sub-rounded to subangular basalt clasts. Thickness unknown.

COLLUVIUM AND BEDROCK

Qc — **Colluvium (Holocene and Pleistocene)**—Surface: highly variable—clay, silt, sand, and gravel. Clasts subangular to subrounded. Locally includes reworked clasts of *Qgo*. Forms fans and aprons in foot slopes. Soils primarily Grestin and Takeuchi series (Rasmussen, 1981). Thickness 1-5m (3-16 feet).

Qcg — **Colluvium derived from granitic rocks (Holocene and Pleistocene)**—Mostly sandy grus derived from the Idaho batholith. Rock types include highly fractured and weathered granite, gneiss, mica schist, and porphyritic biotite-granite. Soils primarily Pyle, Koppes, Naz, Quartzburg, and Shellrock series (Rasmussen, 1981). Thickness 0.5 to 2 meters (2- 8 feet).

Qcb — **Colluvium derived from basaltic rocks (Holocene and Pleistocene)**—Mostly cobbly, angular gravel with a matrix of fine sand, silt, and clay. Derived from the Columbia River Basalt Supergroup. Soils primarily Bluebell, Demast, and Tica series (Rasmussen, 1981). Thickness 0.5 to 2m (2- 8 feet).

Intrusive Rock

sg — **Ice-scoured granitic bedrock, grus residuum and Holocene colluvium**—Soils in colluvium and residuum primarily Koppes and Pyle series (Rasmussen, 1981).

REFERENCES

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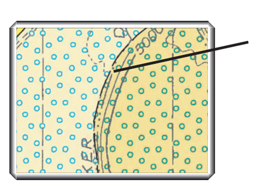
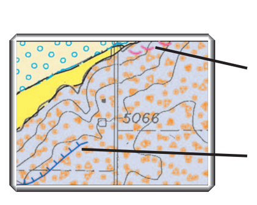
SYMBOLS



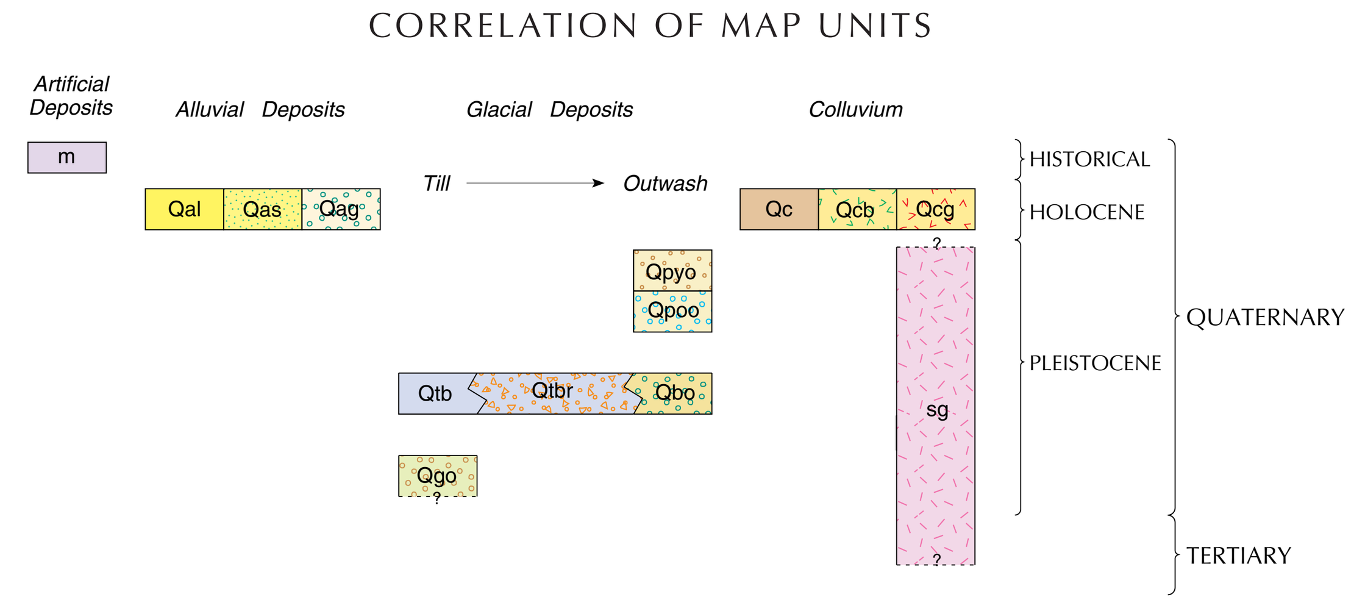
Contact: Line showing the boundary between one map unit and another; dashed where approximately known. The location accuracy of a contact is more than 80 feet on the ground.



Small-scale slumps.

Terrace scarp.

CORRELATION OF MAP UNITS



INTRODUCTION

Long Valley is bounded on the west by the West Mountains, a block of tilted Columbia River basalt, and on the east by the Salmon River Mountains of the Idaho batholith. The valley floor is about 4800 feet in elevation and the adjacent glaciated mountains rise above 7000 feet. The Payette Lakes are dammed behind a sequence of Pleistocene end moraines and Tertiary basalt is exposed along the shorelines. Long Valley is dominated by moraines and ice contact deposits to the north and by outwash to the south.

The placer deposits of Long Valley were studied in the 1950s by D.L. Schmidt and J.H. Mackin. Geology depicted on this 1:24,000-scale Lake Fork 7.5' quadrangle is based partly on their mapping (Schmidt and Mackin, 1970). Colman and Pierce (1981, 1983) used weathering-rind dating techniques to subdivide the glacial sequence and estimate the numerical ages of Schmidt and Mackin's units but did not map the quadrangle. The landforms and surface deposits of the area were described by Othberg (1987). This map subdivides the glacial stratigraphy based on genesis, geomorphology, texture and relative age of the surficial units. The map uses terminology of Schmidt and Mackin (1970) and the Rocky Mountain Glacial model (Mears, 1974), not because the units are directly correlated to the type localities, but because of the informal relationship to equivalent units in Idaho. At this time we have not applied new names based on the ages proposed by Colman and Pierce (1981, 1983), but their equivalents are listed in the map unit descriptions.

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