SLOAN RIVER MAP-AREA (86K), DISTRICT OF MACKENZIE

TABLE OF FORMATIONS

HADRYNIAN

(d) north-trending recessive diabase dikes

HELIKIAN

(d) northwest and northeast-trending diabase dikes

HORNBY BAY GROUP

(H) quartz arenite; conglomerate and redbeds occur north of Fault River; talus breccia occurs at the Big Bend of the Coppermine River where the sub-Hornby Bay Group erosion surface has c300 m relief; rocks underlying the Hornby Bay Group are extensively altered northwest of MacAlpine Channel-Harrison River

---------- unconformity ----------

STRIKE-SLIP FAULTING

A system of high-angle strike-slip and oblique-slip faults cuts all older rocks sharply. West of the Wopmay line is a belt of northeast-trending right-slip faults which splay and die out eastward at the Wopmay line and westward at Great Bear Lake. A less well developed belt of northwest-trending left-slip faults occurs east of the Wopmay line. Certain faults of both sets cut the Wopmay line. Strike-slip is considered to pre-date Hornby Bay Group sedimentation, although subsequent dip-slip accompanied sedimentation along Fault River and post-dates it at St-Germain Lake and elsewhere.

APHEBIAN

GREAT BEAR BATHOLITH

(G4) medium-grained hornblende diorite and tonalite stocks and dikes; these intrusions have locally remelted the granitic rocks they intrude

(G3) coarse-grained biotite granite (-k) and adamellite (-a) plutons; these intrusions are completely discordant and are not considered to have volcanic equivalents; most are very homogeneous and massive; the Uhlmann plutons are notably alkali feldspar-porphyritic

G3R	Richardson pluton	G3G	Gilleran pluton
G3H	Hixon pluton	G3U	Uhlmann plutons
G3S	Spence pluton	G3A	Adam pluton
G3P	Perrault pluton	G3k	unnamed stocks

(p) alkali feldspar-quartz-plagioclase-porphyritic granite dikes; unlike porphyries associated with the McTavish Volcanics (see below), these dikes are holocrystalline except at their margins; the main dike swarm trends south-southwest from Spence Lake and cuts G2 but not G3 plutons

(G2) medium-grained hornblende-biotite adamellite (-a) and granodiorite (-g) plutons; these intrusions are slightly less discordant than the G3 plutons; many are crudely zoned; only the Hogarth pluton is demonstrably syn-volcanic and it may be transitional between G1 and G2 types

G2H	Hogarth pluton	G2R	Rogers pluton
G2T	Torrie pluton	G2C	Copp pluton
G2J	Junius pluton	G2A	Augustus pluton
G2B	Benoit pluton	G2K	Kamut pluton
G2G	St-Germain pluton	G2-	unnamed plutons

(G1) medium-grained hornblende quartz-monzonite (-m), quartz-monzodiorite (-d) and quartz-syenite (-s); quartz content is generally less than 10%; these intrusions are crudely concordant and most are demonstrably syn-volcanic; they tend to have strong alteration haloes

G1T	Tut pluton	G1C	Contact pluton
G1-	unnamed stocks and sills		

Note: Intrusive relations indicate emplacement generally in the order listed (ie. G1 oldest, G4 youngest) in any one area. However, there may be some temporal overlap across the batholith as a whole. The IUGS (Streckeisen) classification has been followed with the exception that only their type "A granite" (Kspar/plag = 2/1 to 9/1) is here termed granite and their "B granite" (Kspar/plag = 1/2 to 2/1) is here termed adamellite.

McTAVISH VOLCANICS (SUPERGROUP) (provisional name)

INTRUSIVE PORPHYRIES

These intrusions have an aphanitic groundmass and are texturally and genetically related to the volcanic rocks they intrude.

(PG) Gagne porphyry: megacrystic alkali feldspar-quartz-plagioclase-oxybiotite porphyry forming laccoliths intrusive into mudstone of the Dumas Group

(PH) Harrison porphyry: plagioclase-hornblende (locally minor alkali feldspar and quartz) porphyry forming irregular sill-like bodies mostly intrusive into ignimbrites of the Sloan Group

(PM) Mulligan porphyry: plagioclase-quartz porphyry forming a discontinuous sill separating the Labine and Sloan Groups

(PR) Radium porphyry: plagioclase-hornblende porphyry forming irregular sill-like bodies intrusive into the basal andesite lava flows and underlying tuffaceous sediments of the Labine Group

DUMAS GROUP (provisional name)

Subdivisions are identified lithologically pending erection of formations. The group consists of cyclic alternations of ignimbrite, basalt and rhyolite lava flows, and sediments. The sediments form tongues that feather out westward away from the Wopmay line. The base of the group is arbitrarily drawn beneath the lowest exposed mudstone-turbidite unit.

ignimbrites: (Dr1) crystal-rich, rhyolite-quartz latite

(Dl1) lithic-rich, mostly rhyolitic

(Dd1) crystal-rich, dacite-rhyodacite

lava flows: (Db) basalt flows, in part strongly porphyritic

(Dr) rhyolite flows and domes

sediments: (Dm) lacustrine mudstone-turbidite

(Ds) alluvial volcanic-lithic arenite

(Dc) alluvial volcanic-pebble conglomerate, locally contains pebbles derived from east of the Wopmay line

SLOAN GROUP (provisional name)

Subdivisions are identified lithologically. The group consists almost entirely of ignimbrite, with localized rhyolite lava domes and associated sediments. The base of the group marks a dramatic increase in the thickness and relative proportion of ignimbrites.

ignimbrites: (Sr1) crystal-rich, rhyolite-quartz latite

(Sa1) mixed crystal-rich andesite-dacite and pumice-rich rhyolite

(Sd1) crystal-rich, dacite-rhyodacite

rhyolite flows and domes (Sr)

sediments distinguished as above (Sm,Ss,Sc)

LABINE GROUP (provisional name)

Subdivisions are identified lithologically pending completion of detailed stratigraphic mapping by R.S. Hildebrand (DIAND). The group consists of a major andesite shield volcano, centred near Echo Bay, which passes northward and eastward into successions of alternating ignimbrites, lava flows and sediments. The base of the group is not exposed in this map-area. Teh "Echo Bay series" and "Cameron Bay series" of the older literature refer to units within this group.

lava flows: (La) andesite, mostly porphyritic, tuffaceous intercalations in the lower part

(Ld) dacite, identity uncertain

(Lr) rhyolite, flows and domes

ignimbrites: (Ll1) lithic-rich, some pumice-rich, mostly rhyolite

(Ld1) crystal-rich, dacite

sediments distinguished as above (Lm,Ls,Lc)

---------- unconformity ----------

WOPMAY LINE

The line is the trace of a surface separating McTavish Volcanics from highly-metamorphosed gneisses (see below). Dikes related to the volcanics cut the gneisses and sediments near the line contain clasts of gneiss. The sediments and volcanics belong high in the Dumas Group and dip steeply westward at the line. The line is interpreted as a west-side-down syn-volcanic fault trace (net slip unknown). Relations involving oblique-slip faults (see above) that cut the line suggest that the Wopmay fault dips to the east.

(U) Meta-sedimentary and meta-volcanic gneisses derived from the Akaitcho Group (see Hoffman et al., Current Research, Geol. Surv. Can. Paper 78-1A) and granitic orthogneiss perhaps related to the Hepburn Batholith. These rocks are undivided pending completion of mapping in the Hepburn Lake map-area (86J).

Geological compilation and interpretation by P.F. Hoffman, 1978. Based on mapping by Hoffman assisted by M.P. Cecile (1973), I.R. Bell (1974-75) and R. Tirrul (1976). For additions and corrections in the Echo Bay area I am pleased to acknowledge R.S. Hildebrand (DIAND).