



DESCRIPTION OF MAP UNITS

Because the Henrys Lake quadrangle is prime recreation and scenic country, much advanced planning will be needed to assure the reclamation of unsightly quarries or rock-waste dumps which would result from economic exploitation of the construction materials.

- us** UNCONSOLIDATED SILT, SAND, AND GRAVEL - Sedimentary rocks (mainly carbonates), 75 percent; crystalline rocks (mainly metamorphic), 17 percent; volcanic rocks (mainly rhyolite tuff), 8 percent. Deposits moderately well sorted (uniform-sized particles); locally contain distinctive lenses or layers of clay and volcanic ash. Rocks range in shape from subangular to well rounded. Although these deposits can be used as aggregate for concrete they contain deleterious materials, mainly fragments of soft shale, shaly siltstone, friable sandstone, and chert
- uv** UNCONSOLIDATED SILT, SAND, AND GRAVEL (VOLCANIC) - Derived mainly from disintegration of volcanic ash flows. Moderately well sorted dark-gray to black sand and fine gravel. Forms thin lenses and layers 2-4 feet thick. Fragments range in shape from angular to subangular. Easily excavated
- bf** BOULDER DEPOSITS - Tightly wedged angular boulders about 1 foot to 6 feet on a side. Rock types include limestone, dolomite, sandstone, and volcanic and crystalline rocks. Deposits generally are inaccessible and somewhat difficult to work because of inherent instability of slopes
- sc** SEMICONSOLIDATED DEBRIS - Heterogeneous mixture of materials of diverse composition, shape, and size ranging from clay to boulders. Many of these deposits are extremely unstable. Commonly the clay and rock-flour content is so great that the deposits are almost unworkable when wet
- lv** VOLCANIC ROCKS, LIGHT-GRAY - Light-gray, locally pale-red, dense, sound (relatively fracture-free), and very fine- and even-grained. Of uniform texture, but sparsely sprinkled with small glassy grains. Quarried with moderate difficulty. Rock has a pleasing color and has been used sparingly in this timber-rich country as a building stone for homes
- mv** VOLCANIC ROCKS, MEDIUM-GRAY - Brownish-gray to gray, dense with a fine-grained matrix through which is scattered many round and angular glassy grains
- dv** VOLCANIC ROCKS, DARK-GRAY - Two varieties are recognizable: most common is a dense, durable, dark-gray to black, brown-weathering volcanic rock that contains abundant small, very dark green tabular grains of pyroxene. Interlayered with this dense rock are lenses and layers of large and small angular fragments of volcanic debris. The dense rock may be a possible source of riprap
- cl** CARBONATE ROCKS, MAINLY LIMESTONE - Light-gray to bluish-gray, with several beds marked by light-tan siltstone mottles which give them a unique "blue-and-gold" appearance. Most limestones are thin to medium bedded, platy, with some interleaved shale partings; locally they are massive. Calcium carbonate (CaCO<sub>3</sub>) content ranges from about 60 to 90 percent. A few limestone beds contain considerable chert both as nodules and as thin seams. The siltstone, the small amount of shale, and the chert may adversely affect the performance of these units as concrete aggregate. Several chert-free limestone beds marked by high CaCO<sub>3</sub> and low MgCO<sub>3</sub> contents may, when mixed with shale (for silica and alumina), be suitable for the manufacture of Portland cement
- cd** CARBONATE ROCKS, MAINLY DOLOMITE - Light-brown, thick-bedded to massive, and generally coarsely crystalline containing abundant seams of crinkly quartz. Magnesium carbonate content (MgCO<sub>3</sub>) ranges from about 25 to 40 percent. The dolomites are harder than the limestones and commonly are much broken and fractured. Locally they break into large boulders
- st** SILTSTONE - Light-gray, light-brown, and deep-red to varicolored. Most units are thin bedded, platy, and contain thin lenses and layers of sandstone or limestone. Many siltstone beds are calcareous
- sh** SHALE - Gray to greenish-gray, thin-bedded, fissile; breaks into minute angular fragments. Disintegrates readily to form unstable slopes. Possible source of silica and alumina if various limestones in the area are used to manufacture Portland cement
- sq** SANDSTONE AND QUARTZITE - Includes both sandstones weakly to firmly cemented by silica and iron oxide, and a dense hard quartzite. Of the sandstones only a reddish-brown, thin- to medium-bedded, fine- to coarse-grained sandstone seems suitable as a dimension stone. The quartzite is light gray, locally greenish gray, fine grained, and extremely hard. In general, quartzite has a pleasing appearance. It breaks easily along parting planes and so may be difficult to shape by hand
- cr** CRYSTALLINE ROCKS - Includes a variety of igneous and metamorphic rocks. Common igneous rock types are diabase and gabbro - typically dark-gray fine- to coarse-grained hard rocks. Common metamorphic rock types are metagranodiorites, mica schist (stippled area), and amphibolite - typically strongly layered light-gray to black fine- to coarse-grained rocks. The mica schist disintegrates readily to a mica-rich residual soil

POSSIBLE USES

Appropriate engineering tests must be completed to determine the suitability of the units for specific uses

POSSIBLE INDUSTRIAL USES	POSSIBLE SOURCE MATERIALS												
	us	uv	bf	sc	lv	mv	dv	cl	cd	st	sh	sq	cr
Aggregate (mainly sand and gravel)	X	X	-----	?	-----	-----	-----	-----	-----	-----	-----	-----	-----
Aggregate for bituminous (asphaltic) concrete (bitumen is used as binding agent, rather than cement).	X	X	-----	?	-----	-----	-----	X	X	-----	-----	-----	-----
Cement materials (mainly Portland cement)	-----	-----	-----	-----	-----	-----	-----	X	-----	-----	X	-----	-----
Crushed stone	-----	-----	X	-----	X	X	X	X	X	-----	-----	X	X
Dimension stone (includes cutstone, paving block, curbing, flagstone, etc.).	-----	-----	-----	-----	X	-----	-----	?	?	-----	-----	X	-----
Granules (used chiefly as roofing materials)	-----	-----	-----	-----	X	X	?	X	X	-----	-----	X	-----
Lightweight aggregate	-----	X	-----	-----	X	-----	-----	-----	-----	-----	?	-----	-----
Lime	-----	-----	-----	-----	-----	-----	-----	X	X	-----	-----	-----	-----
Mineral filler	-----	-----	-----	-----	-----	-----	-----	X	X	-----	-----	-----	-----
Riprap (large irregular blocks used for shore protection - lakes, reservoirs).	-----	-----	X	-----	X	X	X	X	X	-----	-----	X	X
Road fill, subbase, base course, and railroad ballast	X	X	X	X	X	X	X	X	X	?	?	X	X
Road metal	X	X	-----	-----	-----	-----	-----	X	X	-----	-----	-----	-----
Silica sand and gravel (used chiefly for abrasive purposes); will have to be crushed, washed, screened, and chemically treated to remove impurities.	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	X	-----

\*Some material from parts of stippled area of unit cr may not be completely suitable for construction uses.

MAP SHOWING CONSTRUCTION MATERIALS IN THE HENRYS LAKE QUADRANGLE, IDAHO AND MONTANA

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