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DEPARTMENT OF THE INTERIOR
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MISCELLANEOUS FIELD STUDIES
MAP [redacted]

MF - 522

GENERALIZED DESCRIPTION OF MAP UNITS IN THE ARCTIC AND TABLE MTN. QUADRANGLES, ALASKA

Map symbol	Name	Description	Distribution and thickness	Topography and vegetation	Permafrost	Susceptibility to frost action	Drainage: Surface	Drainage: Subsurface (if thawed)	Susceptibility to erosion	Suitability for construction uses	Problems
		U N C O N S O L I D A T E D						D E P O S I T S			
Qfg	Flood plain gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded of diverse rock types derived from Brooks Range. Imbricate structure of cobbles and pebbles common.	Present along Old Woman Creek and Sheenjek River; thickness unknown.	Flood plain, flat with braided drainage channels; relief generally less than 10 feet. Vegetation generally absent.	Generally free of permafrost near surface. Probably present at some (unknown) depth.	Low	Good	Good	High because of proximity to river channels.	Excellent, primarily as coarse aggregate; presence of some chert deleterious.	Subject to erosion and flooding during times of high runoff (spring breakup). Depth of river scour important to determine prior to burying pipe or cable in gravel. Local aufeis conditions occur. Shallow ground-water table is a problem to contend with during excavation.
Qcf	Colluvial fan	Very poorly sorted, angular to subangular sandy gravel. Boulders common. These fan gravels were probably derived principally by colluviation and may represent an intermediate unit between alluvial fans and talus.	Present at two localities along the sides of Old Woman and Monument Creek valleys; thickness unknown.	Fan shaped with steep slopes near the apex becoming less steep near the toe; little, if any, vegetation.	Present within a few feet of the surface.	Low	Good	Good	High	Fair, poor sorting could be a problem.	
Qc	Colluvium, undifferentiated	Poorly sorted, sand, silt and clay derived from local upslope sources. May contain minor amounts of coarse material. Generally consists of a mixture of soil and other fine-grained materials that are subject to slow downslope creep when thawed.	Present at only two localities on north and south edges of map; thickness is probably less than 20 feet.	Generally smooth slopes along the base of steeper slopes; low shrubs and grasses common.	--------do----------	High	Poor	Poor	High	Unsuited	May be occasionally subjected to surface movement. Generally this material is present at or near the base of steeper slopes and represents the accumulation of debris derived by slow flowage from upslope.
Qsm	Solifluction mantle	----------do----------	Widespread throughout the area; thin near upslope margins--perhaps 1 to 5 feet, thickens downslope up to 50 feet?	Generally smooth, but occasionally lobate slopes; marked by characteristic "horsetail" drainage patterns; low shrubs and grasses common.	--------do----------	High	Poor	Poor	High, subject to "creep" when thawed.	Unsuited	This unit is similar to the Qc, colluvium, except that this unit commonly mantles a slope rather than occurring predominantly at the base of slopes. This is one of the most widespread units in the map area.
Qvg	Vegetated gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded. Commonly mantled with 1 to 3 feet of organic-rich silt.	Local deposits along the major rivers and creeks. Probably less than 50 feet thick.	Low, flat terraces bordering and sometimes surrounded by younger flood plain gravels (Qfg). Almost always covered by tundra or low brush vegetation.	--------do----------	Low, except in silt-rich cover.	Good	Good	High, because of proximity to major rivers.	Good when stripped of thin silt overburden. However, materials would generally have to be thawed before being excavated. Some deleterious chert present.	Flooding and erosion common during high runoff. Shallow ground-water table limits depth of excavation.
Qtg	Terrace gravel	----------do----------	Occurs as low terraces along Sheenjek River and Monument Creek; thickness probably 10 to 20 feet.	Generally flat terrace bounded by scarps of 4 to 10 feet; tundra and brush vegetation.	Present within 2 feet of surface.	High in silty overburden; low in underlying gravel and sand.	Fair to poor	Good	High in areas next to river flood plains.	Fair; silty overburden and permafrost problems.	Flooding and erosion in areas near river flood plains. Shallow ground-water table limits depth of excavation.
Qog_2	Outwash gravel	Gravel and sand with minor amounts of silt and clay. Gravel clasts well rounded to subrounded. Mantled with 1 to 5 feet of organic-rich silt.	Occurs as terrace along Sheenjek River; thickness 20 to 40 feet.	Flat terrace bounded by scarps 6 to 15 feet; tundra vegetation.	--------do----------	Low, except in silt-rich cover.	Good	Good	Low	Good; silty overburden and permafrost are problems.	Permafrost would have to be thawed before excavation of gravel could take place.
Qt_2	Till	Sandy, bouldery gravel. Gravel clasts subrounded to subangular. Commonly covered with 1 to 5 feet of organic-rich silt.	Occurs as ground moraine mantling the valley floor of Old Woman Creek; thickness probably 5 to 100 feet.	Very hummocky to subdued hummocky topography; lake-filled depressions are common; tundra and shrub vegetation.	Present within 2 feet of surface; ice wedge(?) polygons observable on valley floors.	High in silty overburden	Fair to poor	Good	High	Fair; silty overburden and permafrost are problems.	----------do----------
Qt_1	Till	Sandy, bouldery gravel. Gravel clasts subrounded. Covered with 1 to 5 feet of silt.	Occurs on the smooth slopes bordering the younger glaciated topography (Qt_2) to the southwest; thickness 5 to 20 feet.	Smooth slopes; tundra vegetation.	Present within 2 feet of surface.	-------do------	Fair	Good	Low	----------do----------	----------do----------
		B E D R O C K									
Mss	Shale and sandstone	Yellow weathering micaceous silty shale, dark gray siltstone and thin beds of dark gray pyritic very fine grained micaceous lithic graywacke.	Crops out only on north side of lower Monument Creek; thickness unknown.	Moderate to steep slopes; tundra vegetation.	Where soils are more than 2 feet thick, ice-rich permafrost is probably present in the soils. Ice in voids and fractures in consolidated rock.	Low	Good	Good	Low	Limited use as coarse fill.	
Jm	Mafic rocks	Gabbro, basalt and quartz diorite sills.	Occurs primarily south of Little Brushman Mt. and on the highland north of Monument Creek and west of Sheenjek River; thickness unknown.	Moderate to steep slopes; tundra vegetation.	--------do----------	Low	Good	Good	Low	Riprap and coarse fill.	
MzPzs	Slate and quartzite	Dark gray slate and siltstone, partly manganiferous and silicified; thin beds of very fine-grained quartzite; greenish gray slate; minor amounts of gray chert and brown calcareous sandstone. Stratigraphic position uncertain.	----------do----------	----------do----------	--------do----------	Low	Good	Good	Low	----------do----------	
JTRr	Red and green argillite	Red and green manganiferous pyritic partly siliceous argillite; interbedded chert and dark gray to purple slate and siltstone.	Small outcrops in the northern part of the area; thickness about 50 to 300 feet.	----------do----------	--------do----------	Low	Good	Good	Low	----------do----------	
JTRc	Chert	Black, orange, and green radiolarian chert; black, red, and green slate and argillite.	Outcrops scattered throughout the area; thickness unknown.	----------do----------	--------do----------	Low	Good	Good	Low	----------do----------	
TRs	Shublik Formation	Gray to black clay shale, medium gray very fine grained calcareous quartz sandstone, light brown argillaceous limestone and black phosphatic fossiliferous limestone.	Occurs as a single outcrop in the south part of the map; more than 500 feet thick.	Moderate slopes; tundra vegetation.	--------do----------	Low	Good	Good	Low	Sandstone fair for riprap; of limited extent.	
PIPs	Shale and limestone	Pale brown weathering silty, partly calcareous pyritic shale, interbedded with orange weathering nodular limestone; black phosphatic? hard silty shale.	Occurs only in the southeastern part of the map; thickness unknown.	Moderate to gentle slopes; tundra vegetation.	--------do----------	Low	Good	Good	Low	Riprap and coarse fill.	
PMl and Ml	Lisburne Group	Gray cherty bioclastic limestone, dark gray fine-grained laminated limestone and black laminated chert. Ml queried on upper Monument Creek where it is gray, fine crystalline, laminated recrystallized silicified limestone, about 50 feet thick and on lower Monument Creek where it is highly fractured black recrystallized limestone with few chert nodules.	A few scattered outcrops throughout map area; thickness unknown.	Moderate to moderately steep slopes; tundra vegetation.	--------do----------	Low	Good	Good	Low	Limestone excellent for riprap, coarse fill, base course and surface courses.	
Mky	Kayak Shale	Black shale, black laminated siltstone and chert; orange weathering crinoidal limestone.	----------do----------	----------do----------	--------do----------	Low	Good	Good	Low	Unsuited	
MDkk	Kekiktuk or Kanayut Conglomerate	Quartz-chert pebble conglomerate and sandstone.	Present only in the extreme southeast corner of map; thickness probably less than 500 feet.	Gentle slopes; tundra vegetation.	--------do----------	Low	Good	Good	Low	Conglomerate good for riprap and coarse fill.	
Dk	Kanayut Conglomerate	Light gray to yellow fine- to medium-grained quartzite and quartz-chert pebble conglomerate; greenish gray very fine grained thin bedded sandstone.	Occurs throughout the area; thickness about 2,000 feet.	Gentle to moderately steep slopes; generally bare of vegetation or some tundra.	--------do----------	Low	Good	Good	Low	Conglomerate and sandstone good for riprap and coarse fill.	
Drs	Red shale	Ferruginous sandstone, quartzite, red and green shale.	Present as a single outcrop on the south side of Little Brushman Mtn.; thickness less than 500 feet.	----------do----------	--------do----------	Low	Good	Good	Low	Of too limited extent to be of much use.	
Dgw	Graywacke	Olive to orange weathering fine- to medium-grained gray and greenish gray, thin-bedded lithic graywacke and laminated siltstone; interbedded with black shale and siltstone, quartz sandstone and minor amounts of calcareous sandstone. Plant fragments of undetermined age are common.	Occurs at a single locality north of the headwaters of Monument Creek near center of map; thickness unknown.	----------do----------	--------do----------	Low	Good	Good	Low	Riprap and coarse fill.	
Ds	Shale and sandstone	Dark gray shale; interbedded limonitic fine- to medium-grained sandstone and quartzite.	Occurs only in the southern part of map area; thickness unknown.	Gentle to moderately steep slopes; generally bare of vegetation or some tundra.	--------do----------	Low	Good	Good	Low	Sandstone and quartzite of limited use for riprap and coarse fill.	
Dsc	Slate and conglomerate	Purple and green slate and quartzite; interbedded schistose calcareous graywacke, and sheared conglomerate of chert and phyllite pebbles. Includes thin layers of greenstone.	Occurs as three small outcrops south of Monument Creek; thickness unknown.	----------do----------	--------do----------	Low	Good	Good	Low	Of too limited extent to be of much use.	
MzPzg	Greenstone	Massive to schistose chloritic greenstone, in part highly calcareous.	Occurs as four small outcrops south of Monument Creek; thickness unknown.	----------do----------	--------do----------	Low	Good	Good	Low	----------do----------	