Montville Rodgers Bedrock Compilation Sheet (paper)

Map

NOTICE !

Bedrock quadrangle 1:24,000 scale compilation sheets for the Bedrock Geological Map of Connecticut, John Rodgers, 1985, Connecticut Geological and Natural History Survey, Department of Environmental Protection, Hartford, Connecticut, in Cooperation with the U.S. Geological Survey, 1:125,000 scale, 2 sheets. [minimum 116 paper quad compilations with mylar overlays constituting the master file set for geologic lines and units compiled to the State map, some quads have multiple sheets depicting iterations of mapping]. Compilations drafted by Nancy Davis, Craig Dietsch, and Nat Gibbons under the direction of John Rodgers.

Geologic unit designation table translates earlier map unit nomenclature to the units ultimately used in the State publication.

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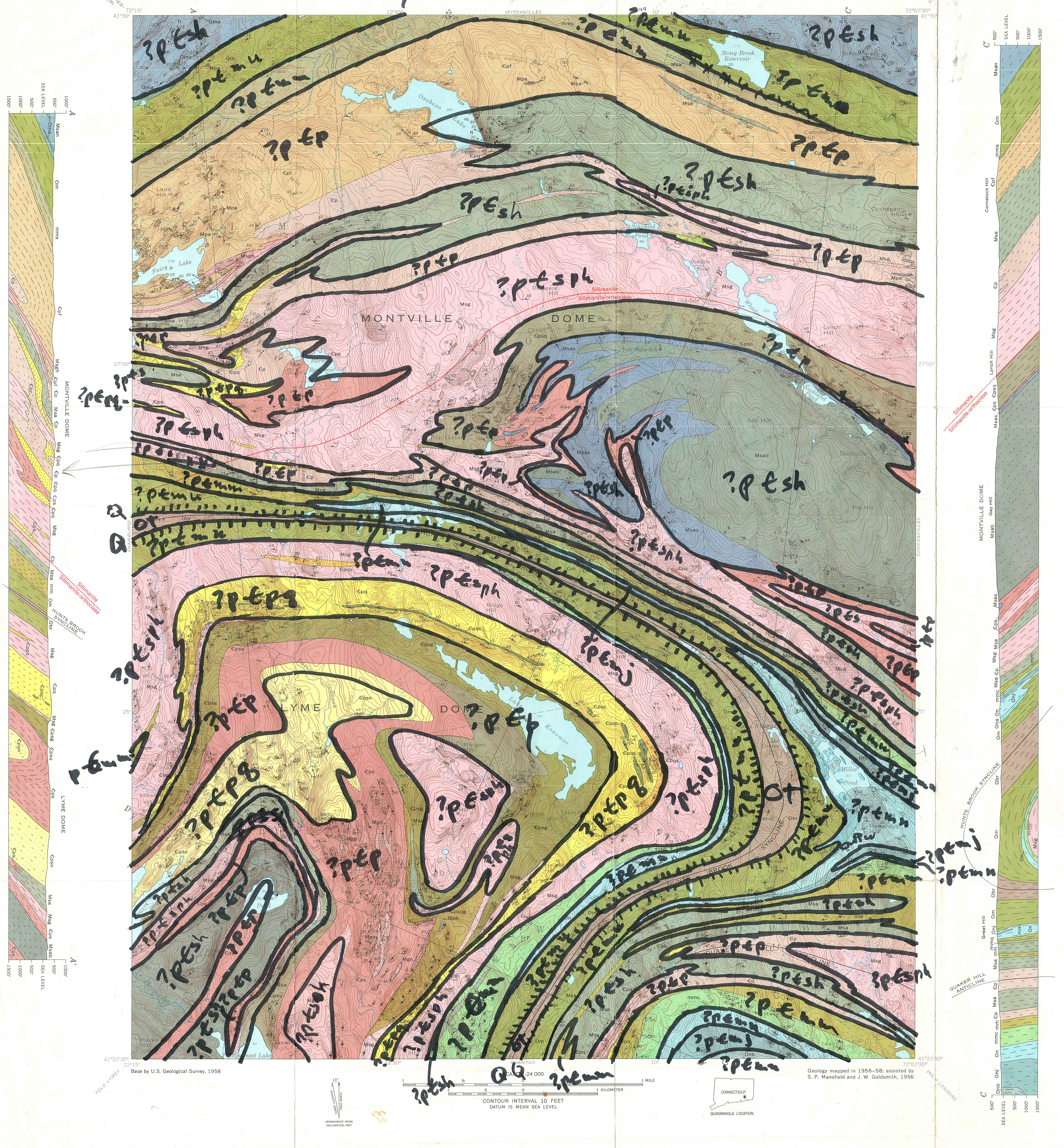
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE STATE OF CONNECTICUT
GEOLOGICAL AND NATURAL HISTORY SURVEY

GEOLOGIC QUADRANGLE MAP
BEDROCK GEOLOGY
MONTVILLE QUADRANGLE, CONNECTICUT
GQ-609



EXPLANATION

Mineral modifiers in rock names are given in order of increasing abundance. Rock types within units are listed in order of decreasing abundance

The term granite is used below in a broad sense to include plutonic rocks with a color index less than 20 and containing between 10 and 40 percent quartz and a potassium feldspar to plagioclase ratio greater than 0.6. Less specifically the term granite as used here would include rocks customarily classified as granite and quartz monzonite, but not granodiorite

PENNSYLVANIAN OR YOUNGER

Pw — Westerly Granite

Gray, fine- to medium-grained, equigranular granite composed of calcic oligoclase>microcline≥quartz, and about 3 percent biotite and 1 percent muscovite and accessory minerals

MISSISSIPPIAN(?) OR OLDER — **CARBONIFEROUS**

Mpa — Pegmatite

Concordant to semi-concordant orange-pink pegmatite composed of microcline, quartz, oligoclase or albite, and accessory biotite and magnetite. Locally contains garnet, muscovite, and sillimanite

Mgn — Nodular granite

White to light-gray, locally pink, microcline-rich, mafic-poor granite containing sillimanite or nodules of quartz and sillimanite

Sterling Plutonic Group

This group consists of orange-pink, gray to white, locally red gneisses; foliation typically marked by flat lenses of gray quartz and feldspars, as well as by parallel biotite flakes; biotite tends to be concentrated on boundaries of lenses. Biotite, and magnetite and associated ilmenite and hematite are the common accessory minerals

Msa, Msab, Msan, Msas — Alaskite gneiss

Msa, *orange-pink to light-gray, fine- to medium-grained, equigranular gneissic granite composed of approximately equal amounts of quartz, microcline and albite or sodic oligoclase, and about 1 percent magnetite or as much as 2 percent magnetite and biotite*

Msan, *similar to* (Msa) *except finer grained, less homogeneous in texture and composition, contains more oligoclase than microcline, and locally contains hornblende. Is progressively sheared towards the Honey Hill fault*

Msab, *white to cream-colored, medium-grained gneissic granite composed of approximately equal amounts of microcline, quartz, and oligoclase, and 1 to 2 percent biotite and magnetite. Mass on Gay Hill contains garnet and sillimanite near contacts; mass near Darrow Pond is rusty weathering, friable, and locally contains muscovite*

Msas, *white, fine-grained, poorly foliated granite containing equal amounts of quartz, microcline perthite, and albite, and accessory tourmaline and rosettes of sillimanite or ellipsoidal nodules of quartz and sillimanite*

Msg, Msgh — Biotite granite gneiss

Msg, *orange-pink, gray, locally red, medium- to coarse-grained gneissic biotite granite; somewhat inhomogeneous in texture and mineral composition. Contains mafic-poor and mafic-rich zones. Composed of approximately equal amounts of quartz, microcline and oligoclase, and 2 to 7 percent biotite and iron oxides. Locally contains garnet, sillimanite* (s) *and muscovite. Gneiss in belt through Ridge and Sodom Hills is gray, medium grained, contains slightly more biotite, and more oligoclase than microcline*

Msgh, *gray, medium-grained gneissic hornblende-biotite granite, oligoclase or andesine more abundant than microcline*

ORDOVICIAN OR OLDER

Obr — Brimfield Schist

Gray to dark-gray, sillimanite-bearing biotite-quartz-feldspar schist and gneiss; thin layers of calc-silicate gneiss; thin amphibolite; rusty weathering, sulfide-bearing garnet-sillimanite-biotite-quartz-feldspar schist and gneiss that contains abundant pegmatite pods; rare thin rusty weathering quartzite at bottom

Om, Oma — Monson Gneiss*

Om, *gray to dark-gray, medium- to coarse-grained, streaked and generally lenticularly layered biotite-quartz-plagioclase gneiss and hornblende-biotite-quartz-plagioclase gneiss. Unit includes subordinate layers containing as much as 25 percent microcline, and small lenses of amphibolite. Rock in belt through Salem and Stony Brook Reservoir is fine- to medium-grained and less well streaked; upper part includes approximately 500 feet of gray, fine-grained, biotite-quartz-microcline-albite gneiss, locally interlayered with pink aplitic alaskite*

Oma, *amphibolite, where mapped separately*

ORDOVICIAN(?) OR OLDER

On, Ona, Onb, Onj — New London Gneiss

On, *interlayered light-gray granodioritic gneiss and amphibolite, unit has swirled foliation and contains rotated blocks of amphibolite near Miller Pond. Includes small masses and layers of alaskite and biotite granite*

Ona, *massive amphibolite, where mapped separately*

Onb, *massive, gray, fine- to medium-grained granodioritic gneiss with inclusions of amphibolite; shows flowage*

Onj, *Joshua Rock Gneiss Member, gray, forms small cherry-red spots on weathering, equigranular, medium-grained gneissic granite; composed of microperthite>quartz>albite and as much as 5 percent aegirine-augite, iron oxides, and rare-earth-bearing sphene; trace amounts of riebeckite, zircon, allanite, and aeschynite; possibly is younger than rest of New London Gneiss*

PRE-SILURIAN

mm, mmc, mmq, mms — Mamacoke Formation*

mmc, *swirled, inequigranular amphibolite; garnet-rich biotite-quartz-andesine gneiss with and without sillimanite; calc-silicate gneiss; and light-colored biotite-sillimanite-quartz gneiss containing ellipsoids of quartz and sillimanite; local thin quartzite at top. Relative abundance of rocks differs in different areas*

mm, *well to indistinctly layered, light- to dark-gray biotite-quartz-feldspar gneiss and subordinate hornblende-biotite-quartz-feldspar gneiss, locally granitoid; thin amphibolite, and thin quartzite. Biotite typically small and evenly distributed*

mmq, *white, gray, or tan quartzite with thin micaceous partings; similar to quartzites of Plainfield Formation*

mms, *biotite-quartz-andesine or labradorite gneiss, biotite-andesine-quartz gneiss locally contains minor amounts of hornblende, epidote, and calcite. At top, sillimanite-rich biotite schist and muscovite-biotite schist, and lenses of gray, medium-grained muscovite-biotite-quartz-plagioclase gneiss*

*The unit mapped as "plagioclase gneiss and amphibolite south of the Honey Hill fault" in the Fitchville quadrangle to the north (Snyder, 1964) is subdivided into the Monson Gneiss (Om) and Mamacoke Formation (mms) in this report

CAMBRIAN(?)

Lyme Dome: Ꞓpq, Ꞓpqc, Ꞓpqs, Ꞓpsg, Ꞓpsq, Ꞓpsqg, Ꞓps, Ꞓpsn

Montville Dome and Quaker Hill Anticline: Ꞓpq, Ꞓp, Ꞓpf, Ꞓpc, Ꞓps, Ꞓpsq

Plainfield Formation

Ꞓpq, *thick- to thin-bedded, coarse- to fine-grained, white, gray, rarely pink or greenish quartzite; micaceous feldspathic quartzite; subordinate interlayers of garnet- and sillimanite-bearing schist and gneiss. Schist and gneiss more abundant near Sodom Hill*

Ꞓpqs, *garnet- and sillimanite-bearing biotite-quartz-feldspar gneiss*

Ꞓpqc, *calc-schist and graphite-bearing micaceous feldspathic quartzite*

Ꞓpsg, *dark biotite-quartz-feldspar schist and gneiss, some phases contain garnets; calcareous schist and gneiss; sillimanitic and nodular (quartz and sillimanite) schist*

Ꞓpsq, *white and light-gray quartzite in layers as much as 2 feet thick*

Ꞓpsqg, *gray, massive, biotite-feldspar-quartz gneiss, locally contains nodules of quartz and sillimanite*

Ꞓps, *garnet-sillimanite-biotite-quartz-feldspar gneiss; garnet-biotite-quartz-feldspar gneiss; minor biotite-quartz-feldspar gneiss; thin quartzite and micaceous quartzite; and calc-silicate layers and lenses*

Ꞓpsn, *light-gray quartzite and feldspathic quartzite; and light-gray sugary textured biotite-feldspar-quartz gneiss containing nodules of quartz and sillimanite; thin interlayers of sillimanite schist; locally feldspathic and granitoid*

Ꞓpf, *thin-bedded, gray quartzite and schistose quartzite; thin-bedded micaceous feldspathic quartzite; garnet-sillimanite-biotite schist; thick- to thin-bedded, white to greenish-white quartzite and diopsidic quartzite; light- to dark-green calc-schist containing tremolite and diopside; local amphibolite*

Ꞓp, *dark-gray, hornblende-biotite-quartz-plagioclase gneiss, in part diopsidic, and dark biotite-quartz-plagioclase gneiss containing varying amounts of microcline; garnet-biotite-quartz-feldspar schist and gneiss; amphibolite; light-gray, sugary textured biotite-feldspar-quartz gneiss, locally with sillimanite; minor thin-bedded gray quartzite and rare thick-bedded white quartzite*

Ꞓpc, *calc-silicate quartzite and gneiss*

Ꞓpq, *quartzite, where mapped separately*

Ꞓps, *garnet-sillimanite-biotite-quartz-feldspar schist and gneiss; garnet-biotite-quartz-feldspar gneiss; biotite-quartz-feldspar gneiss; minor biotite-quartz-andesine gneiss containing diopside and colorless amphibole; thin quartzite, locally pyritic; rare thin calc-schist*

Ꞓpsq, *thick- to thin-bedded, white, tan, or light-gray, rarely pale-green quartzite, beds rarely as much as 3 feet thick; thin-bedded micaceous quartzite, locally graphitic; thin interlayers of garnet- and sillimanite-bearing schist*

Bedrock exposures

Individual outcrops and areas of abundant outcrops

Contact

Long dashed where approximately located; short dashed where inferred; dotted where concealed

Syncline — Anticline

Trace of axial plane of overturned fold

Showing dip of limb

Sillimanite / Sillimanite-orthoclase

Mineral isograd

Based on mineral assemblages in metapelitic rocks. Muscovite is lacking in rocks within the sillimanite-orthoclase metamorphic zone except in some plutonic masses and in some rocks which contain late muscovite after sillimanite

PLANAR FEATURES

35 Top not determined — 25 Top determined by relict sedimentary features

Strike and dip of bedding

45 Inclined — Vertical — 25 Undulatory

Strike and dip of mineral foliation and lenticular layering not clearly bedding

45 Inclined — Vertical — 55 Folded

Strike and dip of bedding and parallel mineral foliation

80 Inclined — Vertical

Strike and dip of prominent joints

40

Strike and dip of axial plane of small fold in foliation

75

Coexisting planar features

Symbols joined at point of observation

LINEAR FEATURES

May be combined with any of the above planar features

FA 35 Inclined — Horizontal

Bearing and plunge of lineation

Tail of arrow at point of observation. Letter symbols indicate type of lineation: FA, *fold axis;* s, *sillimanite;* F, *quartz-sillimanite nodules (faserkiesel);* q, *quartz;* h, *hornblende;* f, *feldspar*

Note: Attitudes of lineation may not represent actual plunges of rock masses, particularly in plutonic rocks, because of superposition of deformations

MINOR FOLDS

One fold or a group of folds; map sense of fold shown where determinable. May be combined with any of the planar or linear features above. Folds of at least two generations are present. The older folds are not clearly discernible but are tight and have axial plane foliation. The younger are more open folds in foliation and layering

20, 45 Tight and isoclinal folds

Form of fold and bearing and plunge of axis. Recognizable older folds indicated by o

65, 45 Open folds and plicated foliation

Showing bearing and plunge of axes and attitude of steep limb where determined

F

Quartz-sillimanite nodules (faserkiesel)

s

Outcrops of alaskite or granite gneiss containing sillimanite

Abandoned quarry

TABLE SHOWING ECONOMIC USES OF CERTAIN ROCKS

Unit	Alaskite gneiss	Alaskite gneiss	Joshua Rock Gneiss Member	Biotite granite gneiss	Monson Gneiss
Letter symbol	Msa	Msan	Onj	Msg	Om*
Crushed stone	**P	U			
Rip-rap	P		P	P	
Building stone: rough construction	P		U	U	
Paving blocks			U		
Curbing			U		
Flagstone					P

*Only in upper part of belt through Stony Brook Reservoir and north of Salem Airport

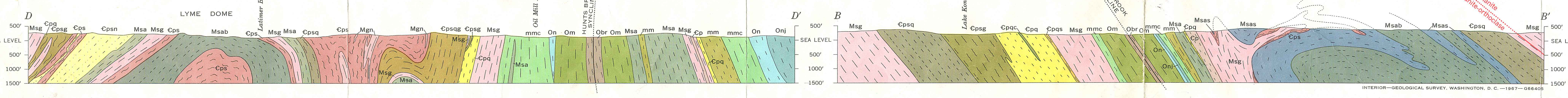
**Where fine grained

U-Used or has been used

P-Potential

REFERENCE CITED

Snyder, G. L., 1964, Petrochemistry and bedrock geology of the Fitchville quadrangle, Connecticut: U.S. Geol. Survey Bull. 1161-I.



BEDROCK GEOLOGIC MAP OF THE MONTVILLE QUADRANGLE, NEW LONDON COUNTY, CONNECTICUT

By

Richard Goldsmith

1967

For sale by U.S. Geological Survey, price $1.00