

EXPLANATION

PLUTONIC ROCKS

d
Diabase dikes

Massive, jointed, porphyritic to ophitic, greenish-black diabase, composed of olivine, labradorite, and augite phenocrysts in a groundmass composed of oxyhornblende, labradorite, augite, (epidote, carbonate) serpentine, chlorite, and magnetite.

+
Massive binary granite

Medium to fine, massive, white-gray hypidiomorphic granite, composed of microcline, quartz, oligoclase, biotite, muscovite, chlorite, and magnetite.

#
Microcline pegmatite

Very coarse, massive, pink pegmatite, composed of quartz, microcline, biotite and muscovite.

mg
Microcline granite

Medium, massive to foliated, pink granite composed of quartz, microcline, biotite and muscovite.

x p
Microcline-albite pegmatite

Very coarse, massive, white pegmatite composed of microcline, albite, quartz, muscovite, and biotite. Contains schist as inclusions.

bgf
Foliated binary granite

Medium, porphyritic to hypidiomorphic, foliated, cataclastic, white-gray granite composed of microcline, albite, and muscovite, phenocrysts in a groundmass composed of microcline, quartz, albite, muscovite, almandine (if garnetiferous), apatite and zircon.

agd
Ayer granodiorite

Chiefly coarse, foliated, with compositional banding in places, gray granodiorite, composed of twinned microcline phenocrysts, where porphyritic, in a groundmass composed of oligoclase, biotite, microcline, hornblende, zircon, apatite, sphene, garnet and magnetite. Minor amounts of: (1) medium, faintly foliated pink granodiorite composed of oligoclase, biotite, almandine, quartz, microcline, epidote and apatite. (2) Medium, foliated, green quartz diorite, composed of oligoclase, hornblende, biotite, quartz, chlorite, sphene, zircon and magnetite. and (3) Very coarse, massive to foliated, white pegmatite, composed of microcline, quartz, biotite and almandine.

mgn
Massabesic gneiss

Chiefly coarse to medium, foliated, compositionally banded, pink gneiss composed of microcline quartz, biotite, oligoclase, muscovite and magnetite. Minor amounts of: (1) Coarse to medium foliated compositionally banded, white gneiss, composed of oligoclase, quartz, biotite, garnet and minor sillimanite and muscovite. (2) Medium foliated green to gray amphibolite composed of actinolite, quartz, andesine, diopside, biotite and sphene.

METAMORPHIC ROCKS

DI
Littleton formation

Sillimanite zone: Chiefly coarse to medium crinkled, gray, rusty schist composed of biotite, quartz, sillimanite, muscovite and almandine. Minor amounts of coarse, gray-white gneiss composed of quartz, biotite, muscovite, sillimanite and garnet.

Sbu
Berwick formation (Upper member)

Chlorite zone: Fine fissile gray phyllitic-schist composed of quartz, chlorite, sericite, green biotite, albite, magnetite and dolomite. Brown biotite zone: Medium purplish-brown schist, composed of quartz, biotite, oligoclase, muscovite, apatite and chlorite. Garnet zone: Chiefly coarse gray schist composed of quartz, oligoclase, biotite and magnetite. Minor amounts of: (1) Medium gray-pink, spotted gneiss composed of actinolite, quartz, andesine, almandine-grossularite, epidote, chlorite, muscovite, calcite, diopside, and apatite. (2) Fine, green granulite, composed of chlorite, epidote, oligoclase, quartz and calcite. (3) Coarse fasciculate schist, composed of quartz, actinolite, andesine, biotite, diopside, epidote and sphene. and (4) Greenish-black gneiss composed of hornblende, labradorite, quartz, sphene and apatite.

Sbl
Berwick formation (Lower member)

Chlorite zone: Chiefly pinkish-brown granulite, composed of quartz, biotite, sericite, chlorite, albite, and magnetite. Minor plicated green-gray phyllitic schist composed of biotite, chlorite, sericite, quartz, albite, magnetite and dolomite. Brown biotite zone: Chiefly pinkish brown granulite composed of quartz, biotite, oligoclase and muscovite. Minor oligoclase, biotite, muscovite, actinolite, calcite, epidote and sphene.

Seu
Eliot formation (Upper member)

Garnet zone: Chiefly fine pinkish-brown granulite, composed of quartz, biotite, oligoclase, muscovite and epidote. Minor amounts of medium gray, granulite composed of quartz, biotite, actinolite, oligoclase, quartz, biotite, diopside, calcite, garnet, magnetite, sphene, apatite, and zircon.

Sel
Eliot formation (Lower member)

Garnet zone: Chiefly fine, pinkish-brown granulite, composed of quartz, biotite, oligoclase, muscovite and epidote. Minor amounts of medium gray, granulite composed of quartz, biotite, andesine (oligoclase and microcline), actinolite, garnet, sphene, apatite and zircon.

METAMORPHIC ZONES

Chlorite zone
Biotite zone
Garnet zone
Muscovite-sillimanite zone
Microcline-sillimanite zone
(Shown by biotite, garnet, muscovite-sillimanite, and microcline-sillimanite isograds)

GARNET ISOGRAD

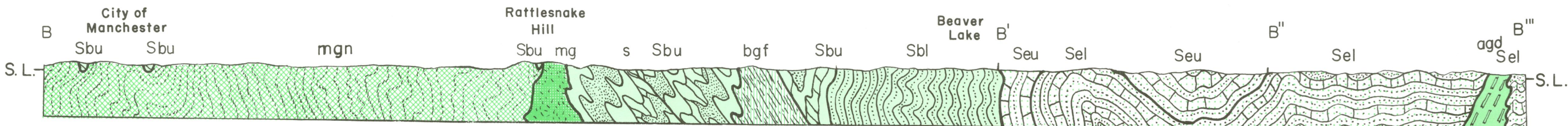
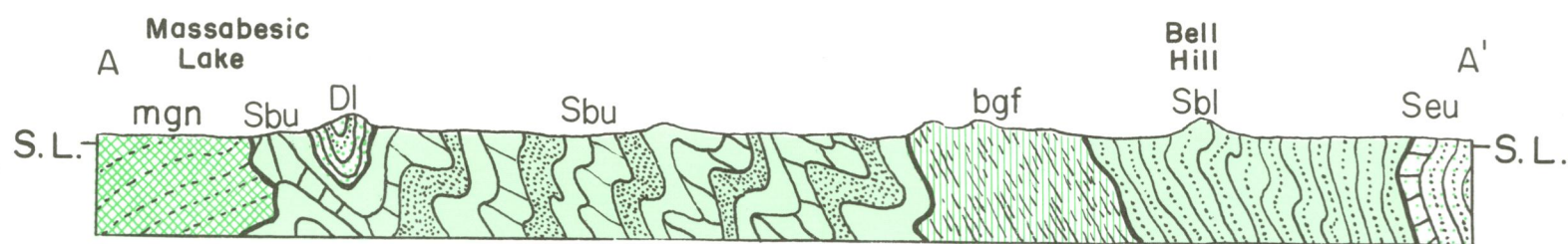
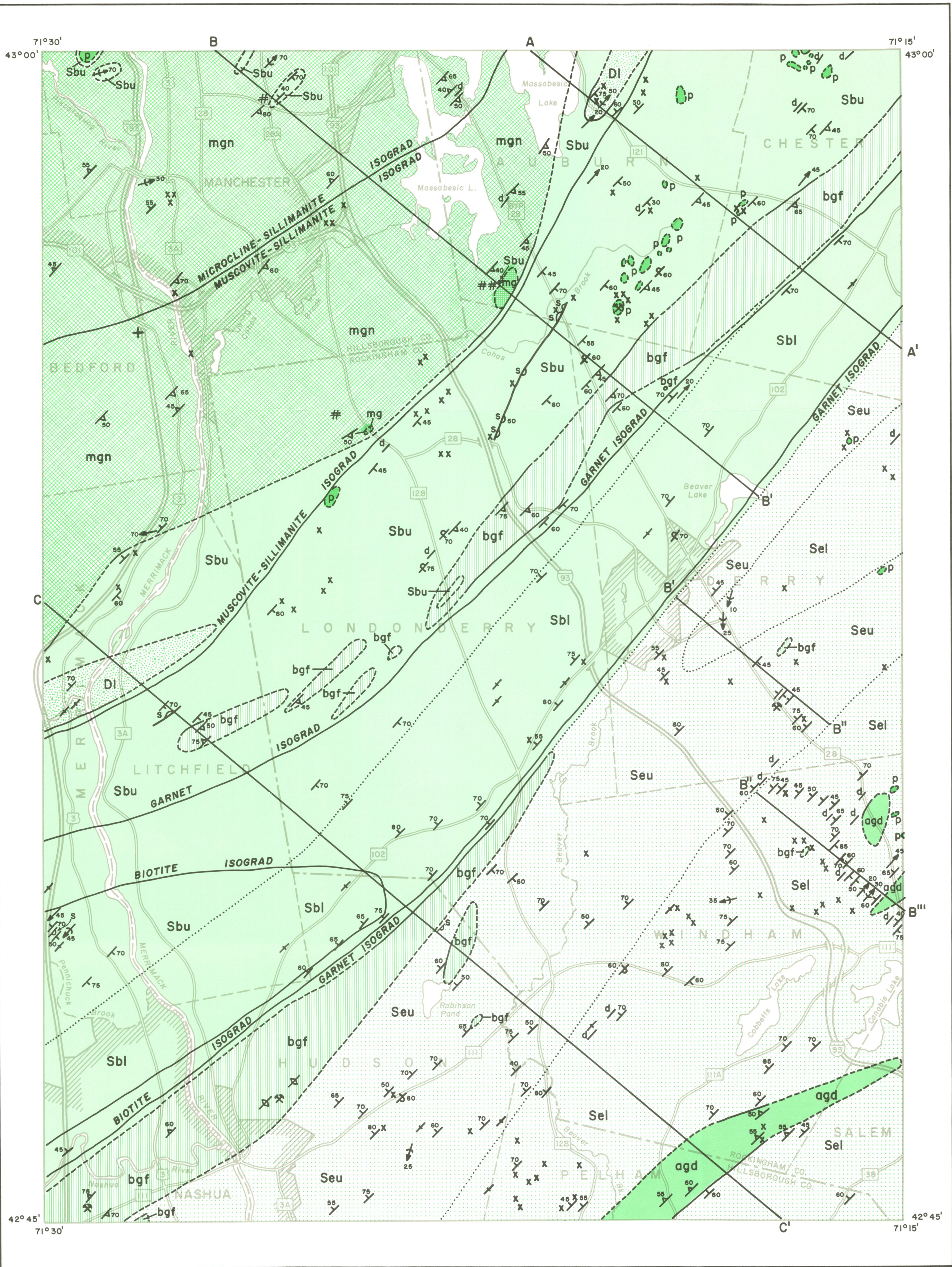
CONTACTS
Accurate Approximate Gradational

STRUCTURAL SYMBOLS

Inclined Strike and dip of bedding (includes bedding schistosity).
Vertical
Overturned

Inclined Strike and dip of axial plane cleavage of metamorphic rocks and foliation in plutonic rocks.
Vertical
Plunges of lineation; anticline; syncline

Silicified zones
Abandoned quarries in granite and pegmatite

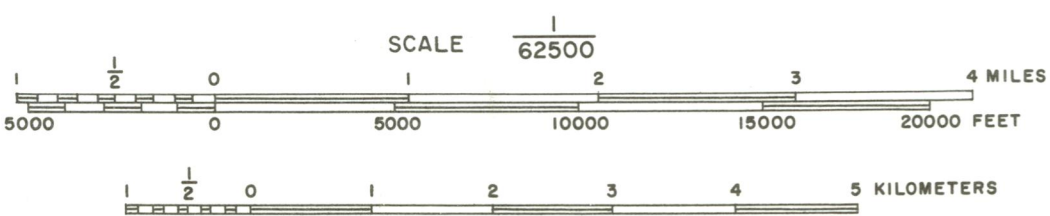


GEOLOGIC MAP AND STRUCTURE SECTIONS OF THE MANCHESTER QUADRANGLE
NEW HAMPSHIRE

Geo-61

Design and drafting of
map by Graphic Arts Section,
Department of Resources and
Economic Development

APPROXIMATE MEAN
DECLINATION, 1953



Geology by Aluru Sriamadas.
Directed by Marland P. Billings.
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PLATE I