

DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, SECRETARY
U.S. GEOLOGICAL SURVEY
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AREAL GEOLOGY

STATE OF MARYLAND
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(Coatesville)

MARYLAND-DELAWARE-PENNSYLVANIA
ELKTON QUADRANGLE

EXPLANATION

SEDIMENTARY ROCKS
(Areas of unobscured
deposits are shown by
patterns of parallel lines,
subvertical deposits by
patterns of dots and
circles)

QUATERNARY

Qr
Talbot formation
(loam, sand, and gravel, with
clay lenses and ice-borne
boulders; forms terraces and
lowlands from 1 to 2 feet
above sea level)

UNCONFORMITY

Qw
Wisconsin formation
(loam, sand, and gravel, with
ice-borne boulders; covers rolling
terraces and lowlands from 2
to 200 feet above sea level)

UNCONFORMITY

Qs
Sunderland formation
(loam, sand, and gravel, covers
terraces and lowlands from 50
to 200 feet above sea level)

UNCONFORMITY

Tb
Branthorne formation
(coarse sand, loam, and gravel,
covers dunes from 200 to
300 feet above sea level)

UNCONFORMITY

Km
Monmouth formation
(reddish brown to greenish-
black sand with many iron
ore lenses)

UNCONFORMITY

Kmw
Matawan formation
(gray to black micaceous
sandy clay carrying glau-
conite)

UNCONFORMITY

Kma
Magdohy formation
(thinly bedded alternating
sand and clay with much
lignite and ferruginous sand-
stone layers)

UNCONFORMITY

Kr
Raritan formation
(conglomerate clay sand and
gravel, with some lignite)

UNCONFORMITY

Kpt
Patuxent formation
(highly colored alternating
clay interbedded with sand
and gravel)

UNCONFORMITY

Kp
Patuxent formation
(light-colored arkosic sand
with clay lenses and gravel
bands)

UNCONFORMITY

PRE-CAMBRIAN
SEDIMENTARY AND
IGNEOUS ROCKS
(metamorphism is in-
dicated by hachures)

pt
Pegmatite dikes
(coarsely crystalline quartz-
feldspar rocks)

sp
Serpentine, steatite,
and associated
alteration products
(metagabbro and metaperidotite)

gb
Gabbro
(quartz gabbro, gabbro, py-
roxene gabbro, hornblende
gabbro, olivine gabbro)

md
Metadacite
(fine-grained quartz-
feldspar hornblende-
biotite rock)

grd
Granodiorite
(quartz and biotite-hornblende
hornblende-biotite rock)

wgn
Wissahickon
mica gneiss
(isolated quartz, chlorite,
muscovite rock provisionally
reported as pre-Cambrian)

bgn
Baltimore gneiss
(hornblende-biotite rock)

IGNEOUS ROCKS

db
Diabase dikes
(augite-trochilite rock)

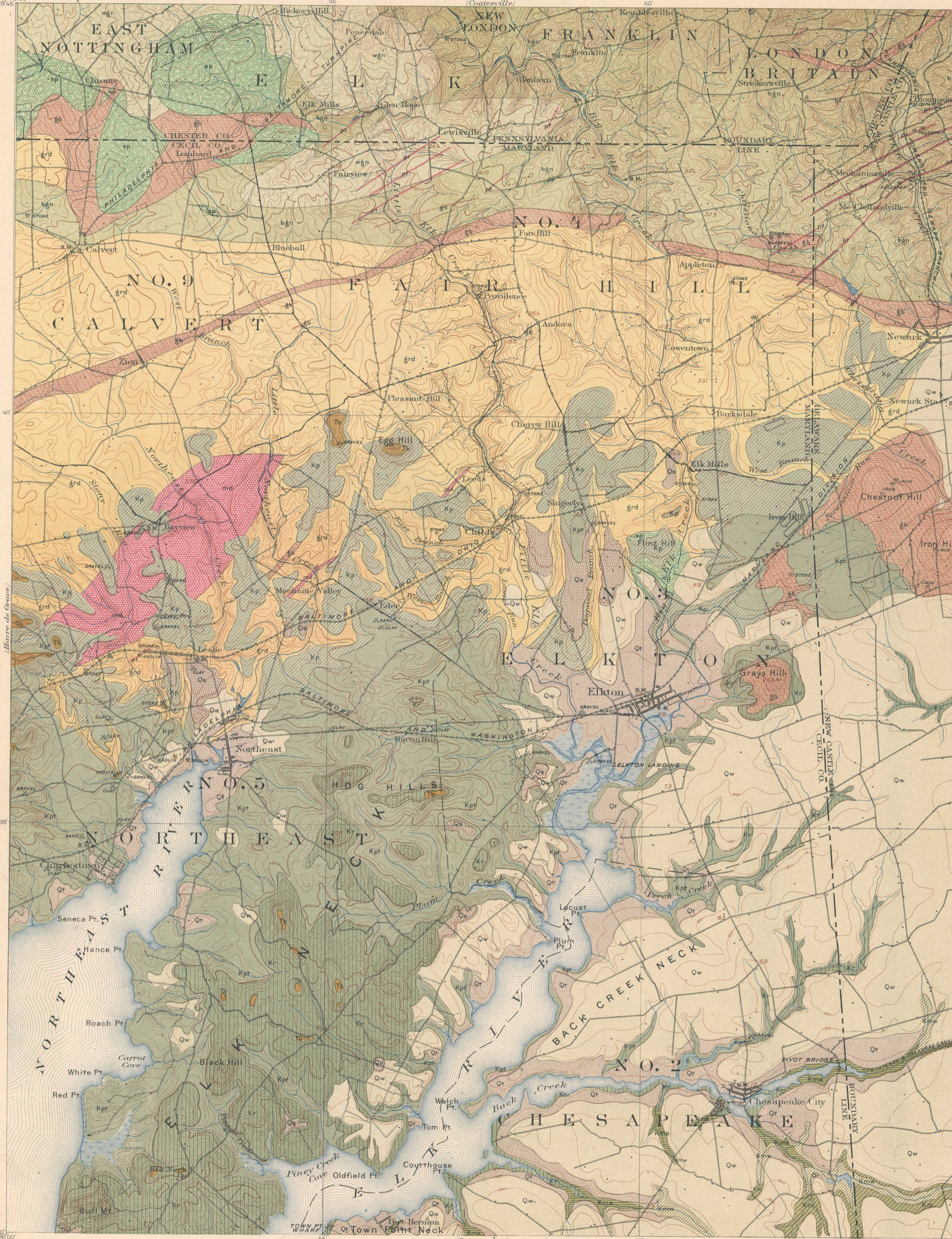
ECONOMIC AND
STRUCTURE DATA

Quarries and mines
Stone, quartz, feldspar,
bauxite, and iron.
Iron mines and some quarries
are at present abandoned.

Gravel, sand, and clay pits

Economic note: Building stone
can be obtained chiefly from
granodiorite, but also from gabbro,
Baltimore gneiss, and Wissahickon
gneiss; road metal and ballast
chiefly from gabbro, but also from
granodiorite, Baltimore gneiss, and
Wissahickon gneiss; quartz for
glass sand, feldspar and kaolin
for pottery manufacture from
pegmatite dikes and their residual
products; iron ore has been
mined from the gabbro of Ches-
nut Hill and Iron Hill and chro-
matite from serpentine. In the
coastal plain, arctic water may
generally be obtained in shallow
wells 15 to 35 feet deep; artesian
water at depths of 200 or more
feet; flowing wells may be expected
only in areas below 20 feet altitude.

Note: Structure section along line A-A'
is illustrated in the book.



H.M. Wilson, Geographer in charge.
Triangulation by U.S. Coast and Geodetic Survey and H.S. Wallace.
Shore line by U.S. Coast and Geodetic Survey.
Topography by H.S. Wallace, J.W. Thom and Albert Pike.
Surveyed in 1896 in cooperation with the States of Maryland
and Pennsylvania.

Scale 62500
1 2 3 4 5 Miles
1 2 3 4 5 Kilometers
Contour interval 20 feet.
Datum is mean sea level.
Edition of April 1920.

Geology of Coastal Plain by B.L. Miller.
Geology of the crystalline rocks by F. Bascom.
Surveyed in 1900-1913.
SURVEYED IN COOPERATION WITH THE STATE OF MARYLAND.

(Coatesville)

(New Castle)

(Dorchester)

(Dorchester)