

OWNER: Hanover Water Company
DRILLER: Sydnor Pump and Well Company, Inc.
COUNTY: Hanover (Mechanicsville)

VDMR #1472
WWCR #83
TOTAL DEPTH: 395'

GEOLOGIC LOG

Columbia Group (0-60')

- 0-10 Sand — reddish brown, slightly argillaceous; fine to very coarse grained (skewed fine), poorly sorted, poorly rounded; small amount of composite quartz, traces of epidote, glauconite.
- 10-20 Sand — brown, with purple cast, very slightly argillaceous; fine to coarse grained, fairly well sorted, angular to subrounded; much of sand is stained red (hematite); traces of muscovite, magnetite, and glauconite.
- 20-30 As above — but with some yellowish (limonitic) and gray clay binder.
- 30-40 Sand — yellowish brown, slightly argillaceous; medium to coarse grained, rather poorly sorted, subangular to subrounded; traces of magnetite and brown epidote.
- 40-50 Sand — buff, clean; medium to very coarse grained, moderately sorted, subangular to subrounded; trace of brown epidote.
- 50-60 Sand — light brown, slightly argillaceous; fine to coarse grained, moderately sorted, subangular to subrounded.

Calvert Formation (60-170')

- 60-70 Sand — brown, moderately argillaceous, slightly pebbly (granules); fine to coarse grained, poorly sorted, angular to subrounded; clay is yellowish (limonitic) to gray; traces of pyrite, zircon, epidote, muscovite, hornblende, tourmaline; traces of shell fragments and shark teeth.
- 70-80 As above — but with more gray, silty clay, and with more shell fragments.
- 80-90 Clay — gray; very sandy; sand is very fine grained, well sorted, angular; traces of tourmaline, zircon, epidote, hornblende; moderate amount of shell fragments, mostly gastropods and pelecypods.
- 90-100 As above — but with a small increment of small gravel (5-20 mm), and with a few foraminifera.

OWNER: Hanover Water Company

#1472

- 100-110 Clay — gray with greenish cast, very silty and sandy; coarse silt-very fine sand fraction is well sorted, angular; scattered rounded pebbles up to 30 mm; moderate amount of shell fragments, mostly gastropods and pelecypods; and a few foraminifera.
- 110-120 As above.
- 120-130 As above.
- 130-140 Clay — gray, only slightly sandy and silty; trace of glauconite; a few shell fragments.
- 140-150 Clay — gray, only slightly sandy and silty; trace of glauconite; a few shell fragments; very slightly diatomaceous.
- 150-160 As above.
- 160-170 Clay — gray, very silty, slightly sandy; trace of glauconite; trace of diatoms.

Pamunkey Group (170-190')

- 170-180 Sand — Silt — dark gray, slightly argillaceous; very fine-grained sand to very coarse-grained silt, well sorted, angular; slightly glauconitic; "heavy" mineral relatively abundant (tourmaline, garnet, epidote, zircon, etc.).
- 180-190 Sand — dark-gray, slightly silty and argillaceous, scattered small pebbles and a small per cent of coarse, poorly sorted sand; very fine to fine grained, well sorted, angular; slightly glauconitic; small amounts of "heavy" minerals, micas.

Potomac Group (190-260')

- 190-200 Sand and Gravel — light brownish gray, argillaceous; sand (80%) is sand fine to very coarse grained, poorly sorted, variably rounded; fine, subrounded gravel (20%); small amount of pink, sand-free clay; traces of glauconite, hematite, and pyrite.
- 200-210 As above — but with about 30% gravel.
- 210-220 Clay — variegated (grays, greens, pink, and brown); moderate amount of poorly sorted and poorly rounded sand, a few small rounded pebbles; a few shell fragments.
- 220-230 As above.
- 230-240 As above.

OWNER: Hanover Water Company

#1472

240-250 Sand — gray, argillaceous, a few small pebbles; fine to very coarse grained, poorly sorted, subangular to subrounded; scattered grains of dull white feldspar and granitic rock fragments; traces of muscovite and glauconite.

250-260 As above.

Petersburg Granite (260-395')

260-270 Biotite — microcline granite residuum; enriched in quartz relative to biotite and microcline; dull, brownish-gray clay is abundant.

270-280 As above.

280-290 As above.

290-295 No sample.

295-305 Biotite — microcline granite or granitic gneiss - fresh, unaltered; white microcline; some pyrite; trace of green epidote.

305-315 As above.

315-325 As above.

325-335 As above.

335-345 As above.

345-355 Biotite- microcline granite - white and orange microcline and microperthite; minor hornblende; accessory zircon, green epidote, and pyrite.

355-365 As above.

365-375 As above.

375-385 As above.

385-395 As above.

GEOLOGIC SUMMARY

| | <u>ROCK UNIT</u> | <u>TIME ROCK UNIT</u> |
|---------|--------------------|-----------------------|
| 0-60 | Columbia Group | Pliocene-Pleistocene |
| 60-170 | Calvert Formation | Miocene |
| 170-190 | Pamunkey Group | Eocene |
| 190-260 | Potomac Group | Lower Cretaceous |
| 260-395 | Petersburg Granite | Paleozoic |

OWNER: Hanover Water Company
DRILLER: Sydnor Pump and Well Company, Inc.
COUNTY: Hanover (Mechanicsville)

VDMR #1472
WWCR #83
TOTAL DEPTH: 395'

GEOLOGIC LOG

Columbia Group (0-60')

- 0-10 Sand — reddish brown, slightly argillaceous; fine to very coarse grained (skewed fine), poorly sorted, poorly rounded; small amount of composite quartz, traces of epidote, glauconite.
- 10-20 Sand — brown, with purple cast, very slightly argillaceous; fine to coarse grained, fairly well sorted, angular to subrounded; much of sand is stained red (hematite); traces of muscovite, magnetite, and glauconite.
- 20-30 As above — but with some yellowish (limonitic) and gray clay binder.
- 30-40 Sand — yellowish brown, slightly argillaceous; medium to coarse grained, rather poorly sorted, subangular to subrounded; traces of magnetite and brown epidote.
- 40-50 Sand — buff, clean; medium to very coarse grained, moderately sorted, subangular to subrounded; trace of brown epidote.
- 50-60 Sand — light brown, slightly argillaceous; fine to coarse grained, moderately sorted, subangular to subrounded.

Calvert Formation (60-170')

- 60-70 Sand — brown, moderately argillaceous, slightly pebbly (granules); fine to coarse grained, poorly sorted, angular to subrounded; clay is yellowish (limonitic) to gray; traces of pyrite, zircon, epidote, muscovite, hornblende, tourmaline; traces of shell fragments and shark teeth.
- 70-80 As above — but with more gray, silty clay, and with more shell fragments.
- 80-90 Clay — gray; very sandy; sand is very fine grained, well sorted, angular; traces of tourmaline, zircon, epidote, hornblende; moderate amount of shell fragments, mostly gastropods and pelecypods.
- 90-100 As above — but with a small increment of small gravel (5-20 mm), and with a few foraminifera.

OWNER: Hanover Water Company

100-110 Clay — gray with greenish cast, very silty and sandy; coarse silt-very fine sand fraction is well sorted, angular; scattered rounded pebbles up to 30 mm; moderate amount of shell fragments, mostly gastropods and pelecypods; and a few foraminifera.

no D 110-120

As above.

face D 120-130

As above.

D 130-140

Clay — gray, only slightly sandy and silty; trace of glauconite; a few shell fragments.

D 140-150

Clay — gray, only slightly sandy and silty; trace of glauconite; a few shell fragments; very slightly diatomaceous.

D 150-160

As above.

¹⁶⁵
160-170

Clay — gray, very silty, slightly sandy; trace of glauconite; trace of diatoms.

Pamunkey Group (170-190')

¹⁶⁵⁻
170-180

Sand - Silt — dark gray, slightly argillaceous; very fine-grained sand to very coarse-grained silt, well sorted, angular; slightly glauconitic; "heavy" mineral relatively abundant (tourmaline, garnet, epidote, zircon, etc.).

180-190

Sand — dark-gray, slightly silty and argillaceous, scattered small pebbles and a small per cent of coarse, poorly sorted sand; very fine to fine grained, well sorted, angular; slightly glauconitic; small amounts of "heavy" minerals, micas.

Potomac Group (190-260')

190-200

Sand and Gravel — light brownish gray, argillaceous; sand (80%) is ~~sand~~ fine to very coarse grained, poorly sorted, variably rounded; fine, subrounded gravel (20%); small amount of pink, sand-free clay; traces of glauconite, hematite, and pyrite.

200-210

As above — but with about 30% gravel.

210-220

Clay — variegated (grays, greens, pink, and brown); moderate amount of poorly sorted and poorly rounded sand, a few small rounded pebbles; a few shell fragments.

220-230

As above.

230-240

As above.

OWNER: Hanover Water Company

240-250 Sand — gray, argillaceous, a few small pebbles; fine to very coarse grained, poorly sorted, subangular to subrounded; scattered grains of dull white feldspar and granitic rock fragments; traces of muscovite and glauconite.

250-260 As above.

Petersburg Granite (260-395')

260-270 Biotite — microcline granite residuum; enriched in quartz relative to biotite and microcline; dull, brownish-gray clay is abundant.

270-280 As above.

280-290 As above.

290-295 No sample.

295-305 Biotite — microcline granite or granitic gneiss - fresh, unaltered; white microcline; some pyrite; trace of green epidote.

305-315 As above.

315-325 As above.

325-335 As above.

335-345 As above.

345-355 Biotite- microcline granite - white and orange microcline and microperthite; minor hornblende; accessory zircon, green epidote, and pyrite.

355-365 As above.

365-375 As above.

375-385 As above.

385-395 As above.

GEOLOGIC SUMMARY

| | <u>ROCK UNIT</u> | <u>TIME ROCK UNIT</u> |
|---------|--------------------|-----------------------|
| 0-60 | Columbia Group | Pliocene-Pleistocene |
| 60-170 | Calvert Formation | Miocene |
| 170-190 | Pamunkey Group | Eocene |
| 190-260 | Potomac Group | Lower Cretaceous |
| 260-395 | Petersburg Granite | Paleozoic |