

by
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Contours on this map show the generalized configuration of the hard rock-saprolite (soft weathered rock) interface. This interface, which is gradational and irregular, forms the contact zone between soft, porous, relatively permeable saprolite above and relatively impermeable (except for fractures) hard bedrock below. Drilled water wells and bedrock exposures were used as elevation control points; the well locations, obtained from the Fairfax County Department of Health, were not further verified and should be considered only as approximations. Locally, bedrock elevations change abruptly over short distances; therefore, this map should not be used for detailed site evaluation, which requires additional drill-hole or geophysical surveys.

The base of saprolite roughly parallels the topographic surface. Bedrock "high" form over quartz, mafic, and ultramafic bodies and either saprolite is absent or only a veneer of saprolite and soil is present. Bedrock "low" however, form over schist, or granitic bodies and are usually covered by thick saprolite.

A planar metamorphic rock structure (schistosity), commonly defined by parallel plates of mica, pervades the saprolite. This structure, together with joints and fractures, probably influences the rate and direction of fluid migration in the saprolite.

Nutter and Otton (1969), Otton (1972) and Stewart (1962, 1964) have made groundwater studies in saprolite terrains, but much work remains as not enough is known to enable accurate predictions about the physiochemical nature, filtration, transmissivity and hydrologic properties of saprolite and soil derived from various rock types in differing physiographic settings.

Possible uses of this map: This map can be used to show the subsurface configuration of bedrock suitable for preliminary evaluation of proposed construction projects. Low areas on the bedrock surface which are overlain by a thick porous saprolite cover have large storage capacities and may be favorable sites for developing groundwater supplies from wells in bedrock fractures (Cederstrom, 1972). This map may help predict subsurface migration routes for ground-water as well as for septic tank effluent and leachate from landfills, sewage disposal sites, or sludge pits. This map, used in conjunction with the thickness of overburden map (open-file map, 76-612), can help determine most favorable locations for sanitary landfill and industrial waste disposal sites. In addition, when used with a topographic map, the saprolite contours may suggest avenues where storm water runoff may enter the saprolite.

EXPLANATION

- X Bedrock outcrop; not all outcrops shown
- 260 Drill hole, approximately located; with approximate elevation of unweathered bedrock in feet, estimated from drillers logs or inferred from depth of casing in water wells. Not all wells shown.
- ~ 160 Spring with approximate elevation
- Generalized contours on base of saprolite, contour interval 20 feet (dashed where projected over erosion surface); hachures indicate possible basins.

References

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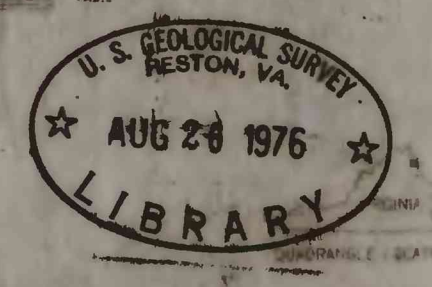
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Mapped, edited, and published by the Geological Survey
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Topographic base photogrammetric methods from aerial photographs taken 1969. Flats checked 1965. Revised from aerial photographs taken 1965. Flats checked 1965.
Datum: 1927 North American datum
1:100,000-foot grid based on Virginia coordinate system, north-south 1:100,000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
File red dashed lines indicate selected fence and field lines, where generally as they appear on aerial photographs. This information is unverified.
Red tint indicates areas in which only landmark buildings are shown.

SCALE 1:24,000
CONTOUR INTERVAL 10 FEET
DARTON TO MEAN SEA LEVEL
UTM GRID AND 15-MINUTE METRIC DEFORMATION AT 1:24,000 SCALE
THIS MAP CONFORMS WITH NATIONAL MAP ACQUISITION STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. 20547
AND VIRGINIA DIVISION OF MINERAL RESOURCES, CHARLOTTESVILLE, VIRGINIA 22903
A FOLDER OF THIS TOPOGRAPHIC MAP AND SYMBOLS IS AVAILABLE ON REQUEST



ROAD CLASSIFICATION
Heavy duty ——— Light duty ———
Medium duty ——— Unimproved dirt ———
Interstate Route U.S. Route State Route
1966
FAIRFAX, VA.
N3045-W7713/7.5
1966
ANSI Z39.18-1968 PERMANENT PAPER
U.S. Geological Survey
OPEN FILE MAP 76-621

BASE OF SAPROLITE MAP, FAIRFAX QUADRANGLE, VIRGINIA

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This map is preliminary and has not been edited for conformity with Geological Survey standards or nomenclature.

Virginia (Fairfax quad) Surficial, 1:24,000, 1976
CNSI