LANDFORMS MAP OF THE HERNDON QUADRANGLE, VIRGINIA

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This map shows three major landform subdivisions: lowlands (Units 1a and 1b), uplands (Units 3a, 3b, and 3c), and valley walls (Units 2c and 2d). The landform categories are closely related to general slopes; thus, categories designated by "a" have slopes generally less than 3%, "b" indicates slopes generally from 3% to 8%, "c" indicates those from 8% to 15%, and "d" indicates slopes generally more than 15%.

The Herndon quadrangle lies along the eastern edge of the Triassic Lowlands in the Culpeper Basin. The topography of the western half of the quadrangle is characteristic of the Triassic area, with level to undulating uplands, generally 300 to 350 feet in altitude, drained by broad, shallow valleys. Some lowland units merge into upland units with essentially no intervening valley walls. The topography of the eastern half is transitional to the crystalline rock terrain of the Piedmont, which is characterized by narrow, steep valleys and somewhat higher ridges, generally 350 to 450 feet.

The dominant geomorphic processes affecting landforms are closely related to major landform categories. Fluvial processes dominate in the lowlands, and mass movement dominates on the valley walls. Chemical weathering is significant in the uplands, and mass movement is also important in the more rolling areas. Construction of the Dulles International Airport has altered the landscape of the west-central part of the quadrangle; hills were leveled, stream valleys filled and rerouted, and runoff now flows in man-made channels.

Possible uses of the map: This map permits a rapid terrain evaluation for specific uses. Valley bottoms, steep slopes, or flat uplands have markedly differing potentialities for land use. For example, uplands (Units 3a, 3b, and 3c) may be suitable for building construction, but the flood-plains of Unit 1a are obviously not. The map gains added utility when used with a surface materials map; correlations may reveal potential problems in the combination of steep slopes with naturally unstable materials.

EXPLANATION OF MAP UNITS

Landform Unit	Generally Slopes	Description
Lowlands:		
1a	Less than 3%	Nearly level flood plains of major streams, underlain by alluvium and subject to periodic flooding of varying intensity. Includes a number of small man-made lakes and ponds, and other potential sites exist.
1b	Less than 8%	Gently sloping plains, differentiated from Unit 1a by somewhat greater local relief, as much as 20 or 30 feet. Locally underlain by alluvium and subject to flooding by major storms.
Valley Walls:		
2c	8% to 15%	Moderately sloping valley walls, transitional between valley flood plains and the adjacent uplands. Local relief commonly less than 75 feet.
2d	15% or more	Includes the steeper valley walls, with slopes 15% to 30%. Local relief commonly less than 75 feet.
Uplands:		
3a	Less than 3%	Nearly level upland, typically in the western part of the quadrangle, at altitudes of 300 to 350 feet, with local relief of 20 to 50 feet. Broad open terrain drained by streams that have cut shallow valleys.
3b	3% to 8%	Undulating upland, with relief generally less than 50 feet. Drained by streams that have cut valleys of varying width to depths generally less than 75 feet, although upland crests rise in a few places as much as 100 feet above the adjacent valleys.
3c	8% to 15%	Rolling to hilly upland, differentiated from Unit 3b by steeper slopes and somewhat greater local relief.