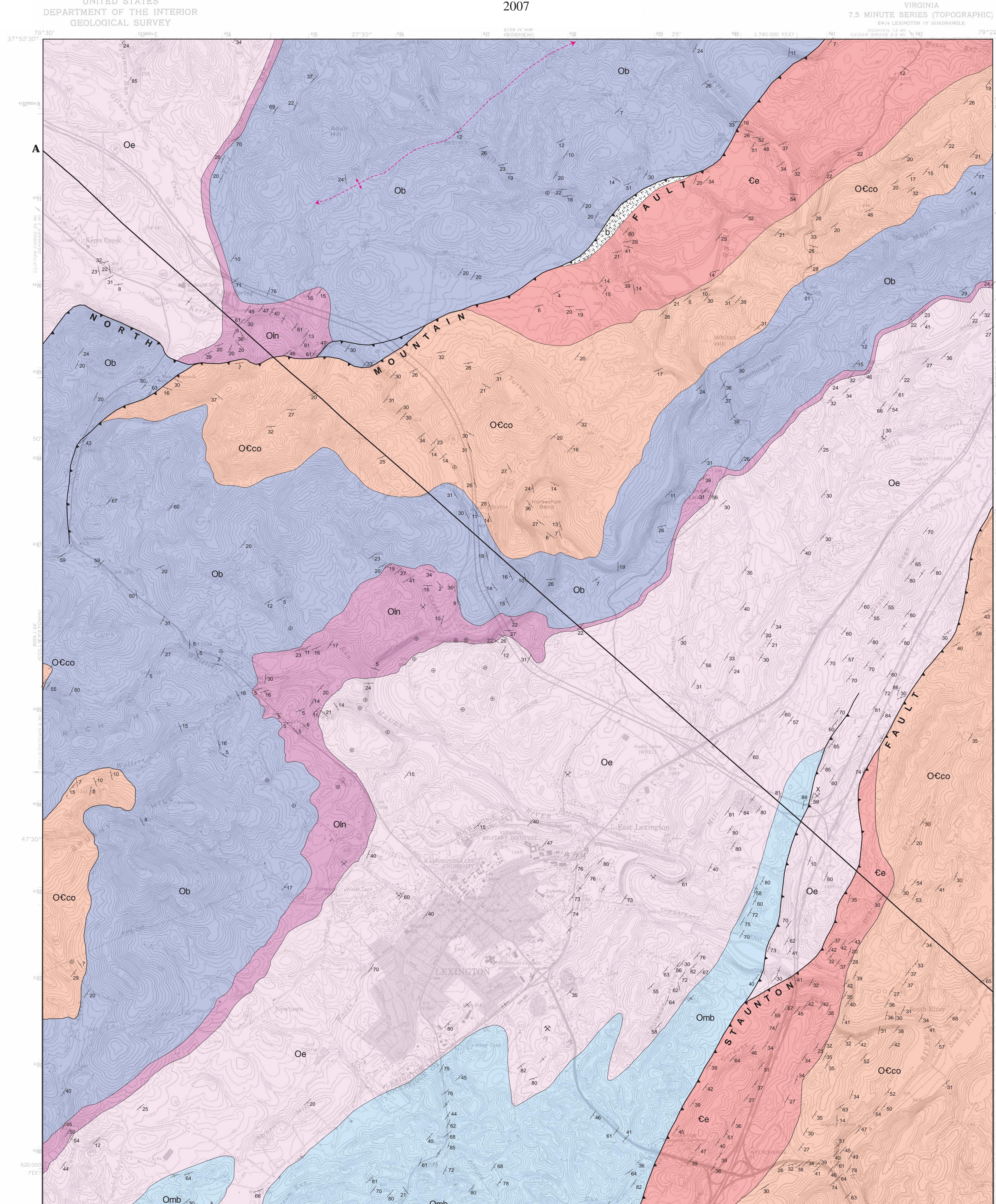
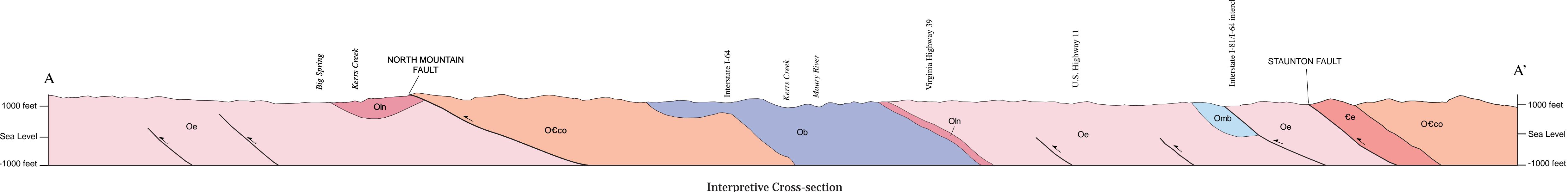
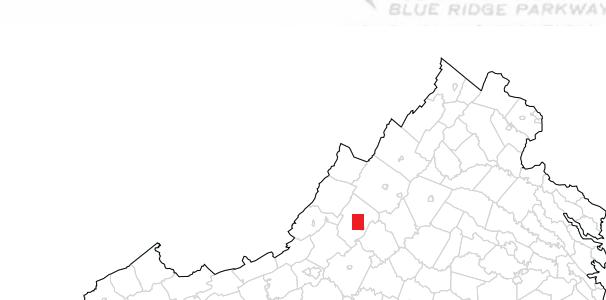


BEDROCK GEOLOGIC MAP OF THE LEXINGTON 7.5-MINUTE QUADRANGLE, VIRGINIA

Gerald P. Wilkes
2007LEXINGTON QUADRANGLE
VIRGINIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 1/4 LEXINGTON 1° QUADRANGLE

Basemap, modified U.S. Geological Survey DRG
1967 Lexington Quadrangle, Virginia
Projection: UTM zone 17
NAD 1927 Datum
Digital Cartography by Aaron Cross

SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
Geology mapped from September 2005 to May 2006



DESCRIPTION OF MAP UNITS

- BRECCIA**
Highly fractured Elbrook Formation. Fractures are filled with calcite.
- Omb**
MARTINSBURG FORMATION
Only the lowest few hundred feet of the Martinsburg Formation is present. It is limestone, light- to dark-gray, argillaceous, and thin- to thick-bedded, with minor amounts of light-gray calcareous shale. It contains cephalopod, brachiopod, bryozoan, and coral fossils. The Martinsburg weathers to a yellow-chip soil that is variable in thickness, which often obscures bedding features. Contact with the underlying Edinburg Formation is conformable, grading through an approximately 1000-foot-thick interval of interbedded Martinsburg and Edinburg lithologies. These interbeds may be a few feet to tens of feet thick and represent the shifting facies relationship of the two formations through time. The gradational relationship is well represented in the pastures east of U. S. Route 11 approximately 0.75 miles north of the I-64/U. S. 11 interchange. The Martinsburg has use as fill material.
- Oe**
EDINBURG FORMATION
The uppermost limestone of the Edinburg Formation is the Collierstown Member, which is traditionally considered the marker bed separating the Edinburg and the underlying Martinsburg Formations. This limestone is black, fine- to coarse-grained, and conglomeric at the base. Notable fossils include large coral heads. Although typically a few tens of feet thick, the Collierstown exceeds 500 feet in thickness south of Lexington. Below the Collierstown, the Edinburg consists of two basic facies. The Liberty Hall facies is limestone, black to dark-gray, fine grained, thick-bedded, with black shale partings that are typically less than an inch thick. In addition, there are thick black shale intervals (greater than 100 feet) well exposed in the quadrangle. In contrast, the Lantz Mills facies is limestone, black to dark-gray, medium- to coarse-grained, with distinctive cobbly weathering. Both the Liberty Hall and Lantz Mills facies are only sparsely fossiliferous, but graptolites are reported in the black shale unit. At many places in the quadrangle the Edinburg has been subject to structural deformation as attested by slickensides, gouge veins filled with calcite, and deformed bedding. Zones of intense deformation suggest intraformational faulting. The Edinburg typically forms a moderately deeply weathered soil. Contact with the underlying Lincolnshire Limestone is sharp and conformable. Thickness estimate of the Edinburg Formation is indeterminate because of structural deformation, but it is probably 800 to 1250 feet thick. The Edinburg is currently being quarried and is used primarily for road stone and gravel fill. There may be potential for high-calcium limestone from the Collierstown Member. Many of the stone walls that are seen throughout Lexington, including those at Washington and Lee University and Virginia Military Institute are constructed of limestone from the Edinburg Formation.
- Oln**
LINCOLNSHIRE LIMESTONE AND NEW MARKET LIMESTONE
The Lincolnshire Limestone and the New Market Limestone are mapped as a single unit because the New Market is too thin to map at 1:24,000 scale (it is less than 50 feet thick). Also included in this map unit is a locally occurring limestone bed known as the Whistle Creek Limestone. The Whistle Creek is limestone, medium- to dark-gray, irregularly bedded, and very cherty. Its type section is west of Lexington between Whistle Creek and State Route 850 (old U. S. Route 60). The Lincolnshire Limestone consists of limestone, light to dark-gray to black, very fine to coarse-grained, with medium to thick beds. Thick intervals of grainstone, packstone, and micrite comprise Lincolnshire. It is well exposed at Beans Bottom. The New Market is limestone, dove-gray, micro-grained, and thick-bedded. Local areas of massive biostromic limestone, light- to medium-gray, and coarse-grained, represent the Murat facies of the Lincolnshire Limestone. It is well exposed in the cliffs at Beans Bottom. This map unit forms shallow- to moderately-deep soil. Contact with the underlying Beekmantown Formation is unconformable. Because of this unconformity and the varying local facies, total thickness for the Lincolnshire/New Market is highly variable and can range between 100 to at least 450 feet. This rock unit has potential for aggregate and high-calcium limestone.
- Ob**
BEEKMANTOWN FORMATION
The Beekmantown Formation is dominantly dolostone, light- to medium-gray, fine-grained, thick-bedded, containing beds and nodules of black chert with distinct, massive, white chert beds in the upper part of the unit. There are interbeds of limestone, light- to medium-gray, fine-grained, and thin- to medium-bedded. The dolostone facies weathers to a "butcher-block" surface. The underlying Stuartsburg Limestone is not of mapable thickness on the Lexington quadrangle (typically 20 feet thick) and is therefore included with the Beekmantown. The Stuartsburg is limestone, dark- to black, fine-grained, thick-bedded, with minor amounts of black chert. The Beekmantown forms a deep soil profile and is often conspicuous by its absence of outcrop. Contact with the underlying Conococheague Formation is conformable and the Beekmantown is approximately 1500 to 2000 feet thick. Parts of the Beekmantown have use as aggregate and possibly high-magnesium dolostone.
- Occo**
CONOCOQUEAGUE FORMATION
The Conococheague Formation is limestone, light- to medium-gray, fine-grained, thin- to very thick-bedded, with cyclically interbedded dolostone, light-gray, fine- to medium-grained, and thin- to medium-bedded. This unit contains distinctive undulating stringers of sand and silt that stand out in relief on weathered surfaces. Also diagnostic are quartz sandstone beds that are light-yellow on weathered surfaces. These sandstones have rounded, medium to coarse grains, occur as beds up to five feet thick, and are carbonate-cemented. Minor amounts of black, bedded chert are present throughout the Conococheague. The Conococheague forms moderately deep soil and the contact with the underlying Elbrook Formation is conformable. The Conococheague is 2000 to 2500 feet thick and may have potential use as aggregate.
- Ce**
ELBROOK FORMATION
The Elbrook Formation consists of interbeds of mostly dolostone with lesser amounts of limestone. Both rocks are medium-gray, fine- to medium-grained, thin- to thick-bedded, and are interbedded with minor amounts of pink and green shale. The Elbrook forms moderate- to deeply-weathered, yellow-chip soil. Because of the thin beds and shaly nature of the formation, the Elbrook is a zone of structural weakness and often displays bedding-parallel slip in outcrop. In the Lexington quadrangle, the Elbrook is the hanging wall along the Staunton and North Mountain faults and is brecciated or otherwise deformed near the fault traces. Only the upper part of the Elbrook Formation is present in the Lexington quadrangle. The Elbrook could be used as fill material.

ACKNOWLEDGEMENT

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Wilkes, Gerald P., 2007, Bedrock geologic map of the Lexington 7.5-minute quadrangle, Virginia: Virginia Division of Mineral Resources Open-File Report 07-05.

MAP SYMBOLS

- | | | | |
|-----|---------------------------------------|-----------------|--------------------------------------|
| — | Contact, exposed or approximate | — ³¹ | Strike and dip of inclined beds |
| —▲— | Thrust fault, teeth on upthrown block | — ⁴⁷ | Strike and dip of overturned beds |
| ←→ | Fold axis (anticline) | + ⁴⁷ | Vertical beds - showing strike |
| ⊗ | Quarry (limestone) | ⊕ | Horizontal beds |
| ✗ | Quarry, abandoned | ↑ ¹⁴ | Strike and dip of inclined foliation |
| × | Sample | + | Vertical foliation |
| △ | Disturbed beds | ▽ | |

Interpretive Cross-section
No vertical exaggeration.
Subsurface structures interpreted from surface measurements.