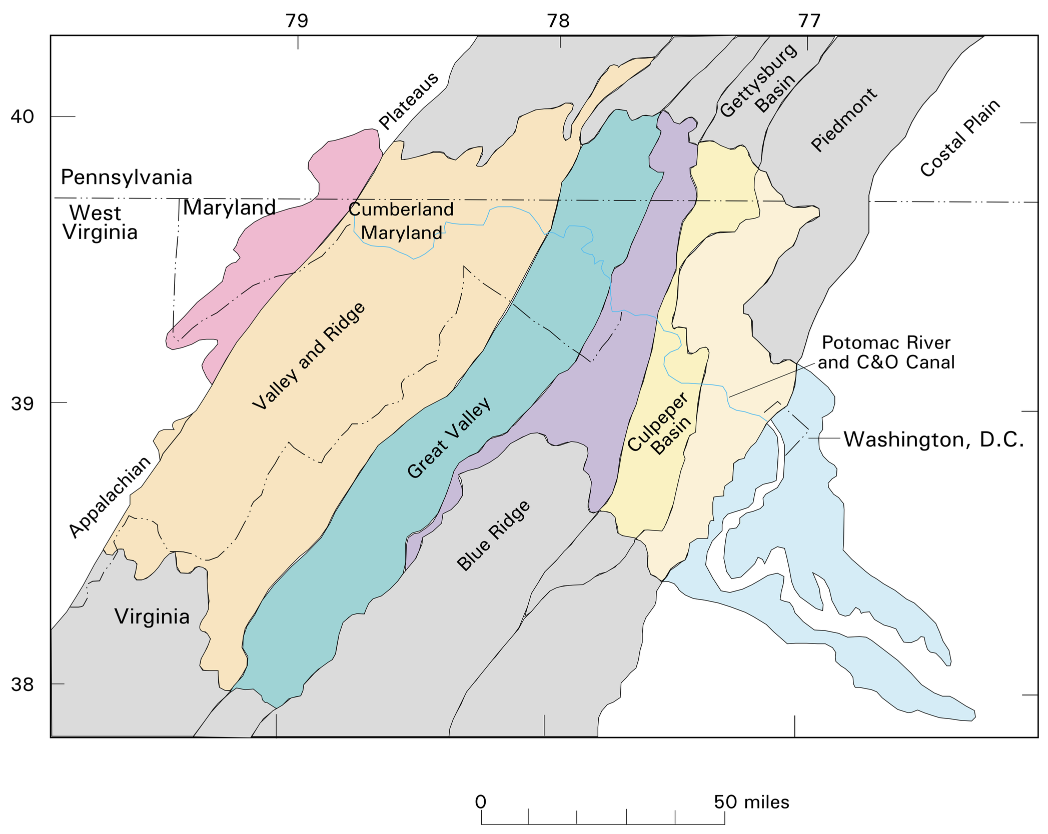
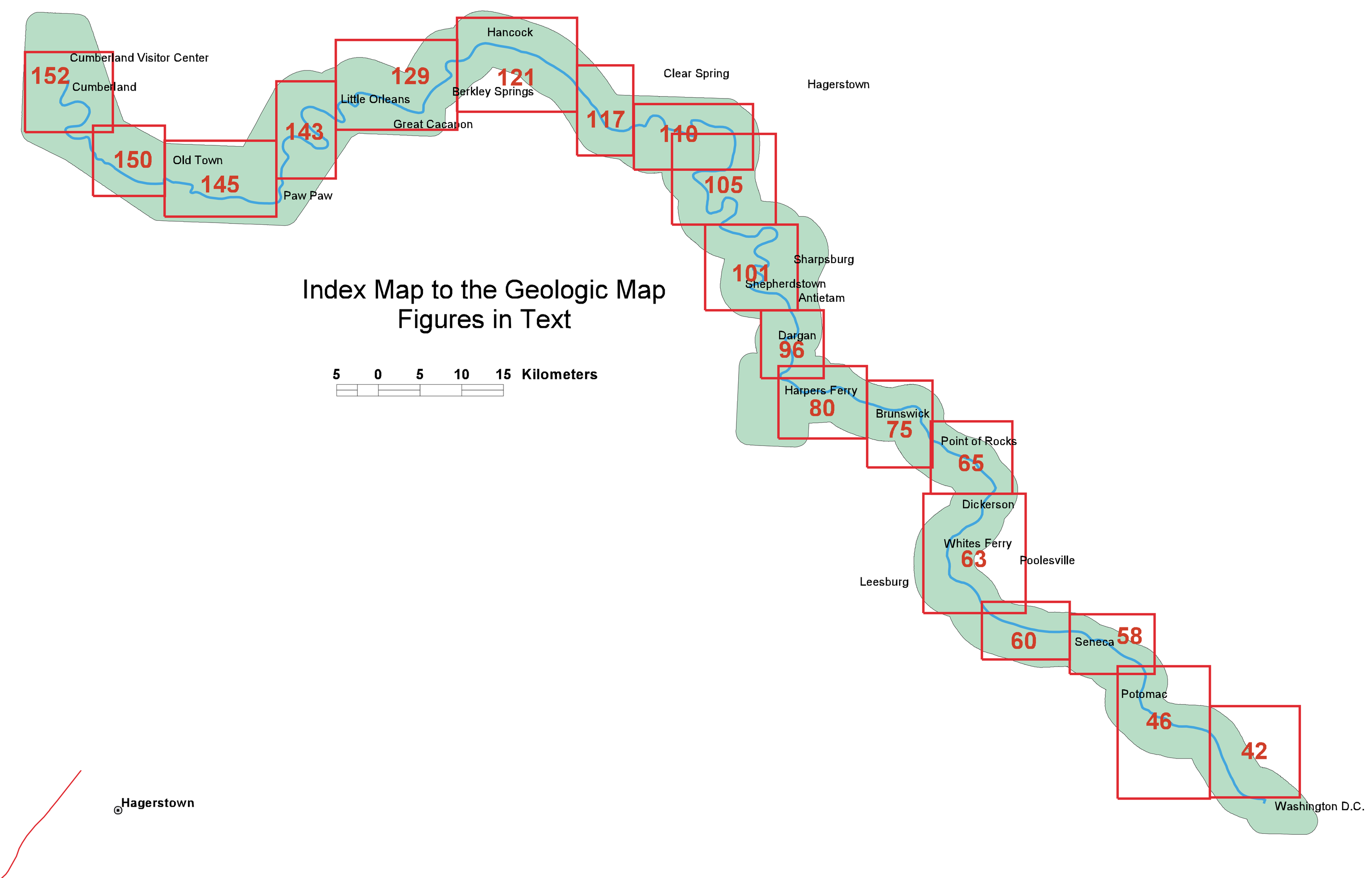
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGIC SURVEY

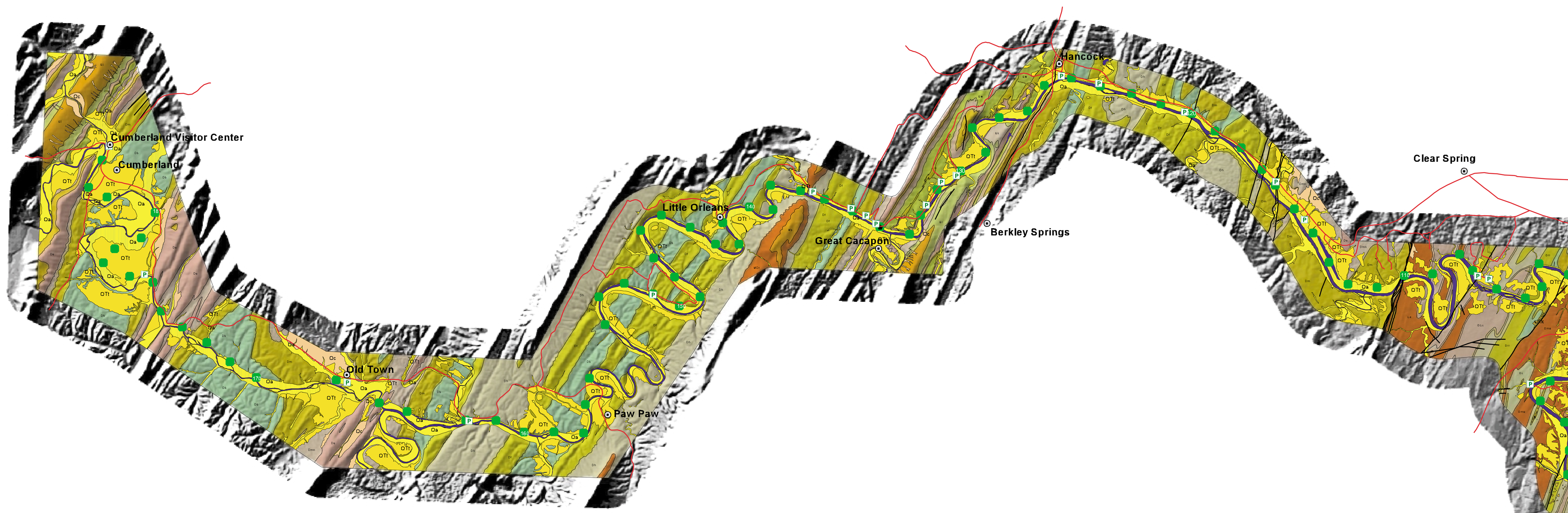
Prepared In Cooperation with
The National Park Service and The Maryland Geologic Survey

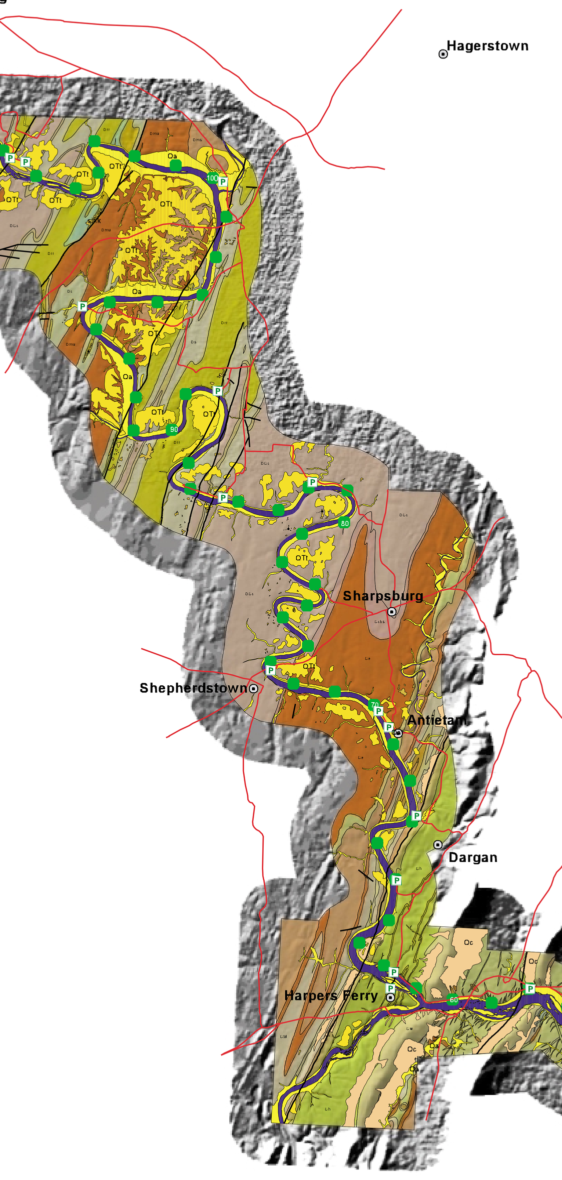
OPEN FILE REPORT 01-188A

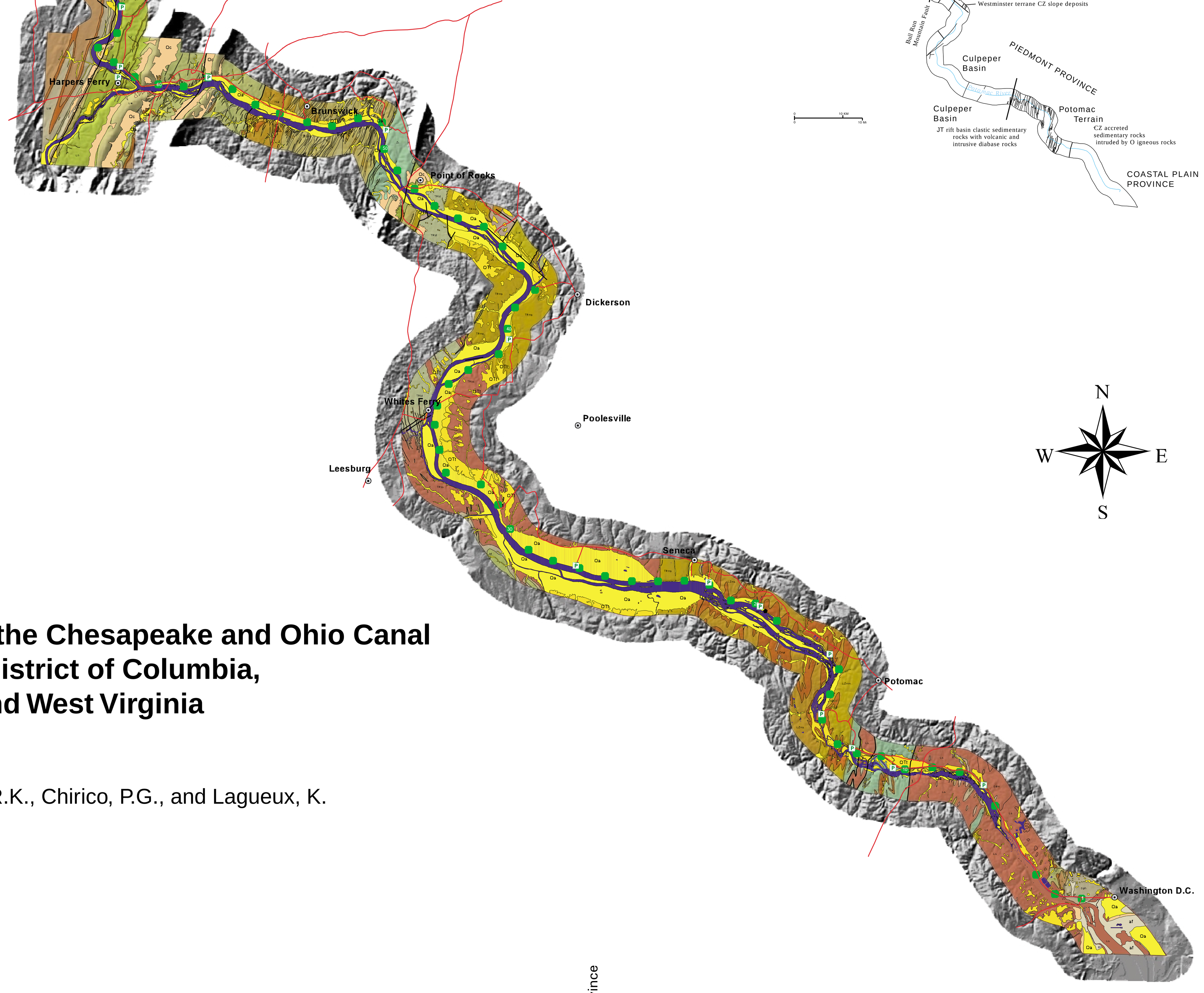


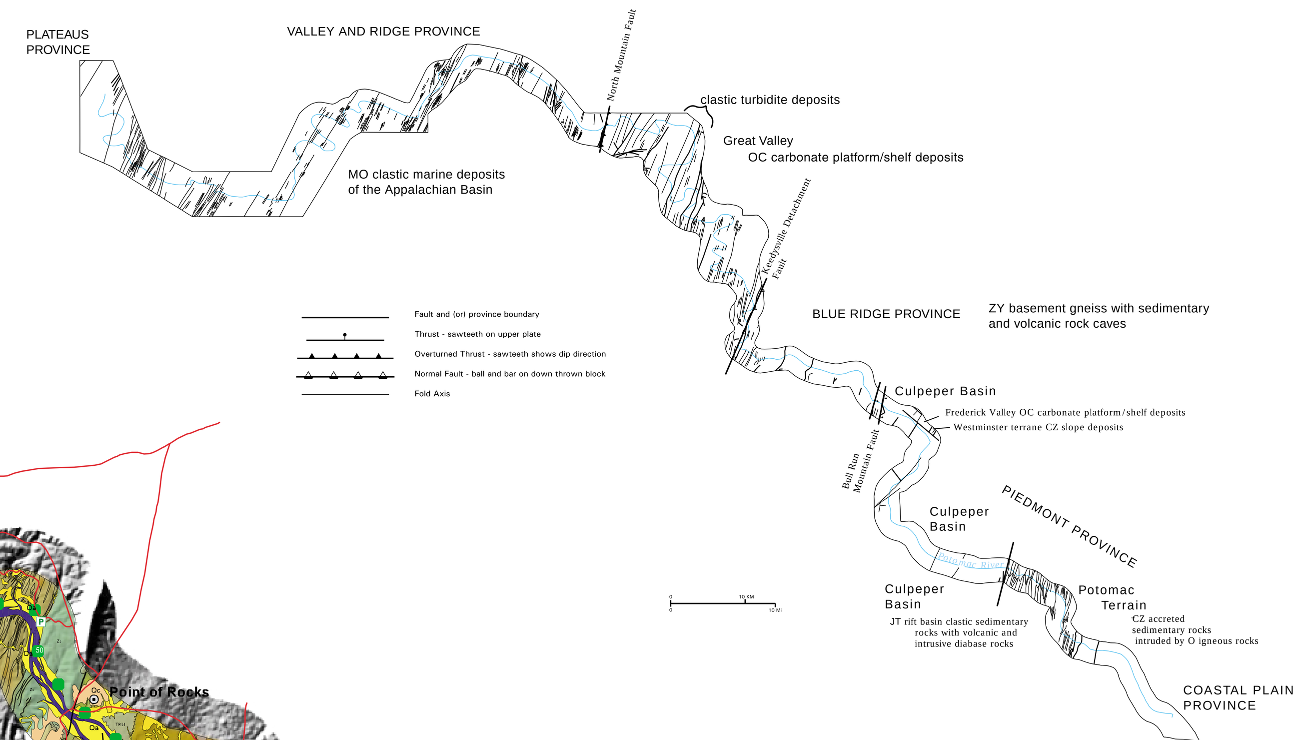


Index Map to the Geologic Map Figures in Text









N
W E
S

DESCRIPTION OF MAP UNITS

CENOZOIC SURFICIAL DEPOSITS

- **Qa** Alluvium (Holocene) -- Unconsolidated clay, silt, sand, and gravel underlying flood plains.
- **Qc** Colluvium (Holocene and Pleistocene) - Cobbles and boulders on mountian slopes.
- **QTt** Terraces (Holocene, Pleistocene, and Tertiary?) - - Sand, gravel, and boulders underlying flat benches and isolated hills; includes some strath terraces with no deposits.

COASTAL PLAIN PROVINCE

- **Kps** Potomac Formation (Lower and Upper Cretaceous) - - Sand and clay with plant leaves, stems, and trunks

PIEDMONT PROVINCE

CULPEPER BASIN

- **Jd** Diabase dikes and sills (Early Jurrasic) - - Black fine- to coarse-grained crystalline diabase
- Balls Bluff Siltstone (Upper Triassic) - -
  - **TRbl** Lacustrine Member - Red arkosic sandstone
  - **TRbs** Leesburg Member-Pink variegated carbonate conglomerate
- Manassas Sandstone (Upper Triassic) - -
  - **TRmp** Poolesville Member - - Red arkosic sandstone
  - **TRmt** Tuscarora Creek Member--Pink variegated carbonate conglomerate
  - **TRmr** Reston Member - - Tan quartz-pebble conglomerate

VALLEY AND RIDGE PROVINCE

- **Mp** Purslane Formation (Lower Mississippian) - - Red and brown sandstone and pebble conglomerate
- **MDr** Rockwell (Upper Devonian and Lower Mississippian) - - Green to gray sandstone, siltstone, and shale
- **Dh** Hampshire Formation (Upper Devonian) -- Gray, green, and red sandstone, siltstone, and shale
- **Df** Foreknobs Formation (Upper Devonian) - - Greenish- to reddish-gray conglomeratic sandstone, medium- and coarse-grained sandstone, siltstone, and shale
- **Db** Brallier Formation (Upper Devonian) - - Dark gray, fine-grained sandstone, siltstone, and shale
- **Dm** Mahantango Formation (Middle Devonian) - Light grey siltstone, shale, and minor sandstone
- **Dmn** Marcellus Shale and Needmore Formations (Middle and Lower Devonian) - Gray black shale, calcite-rich shale, and limestone
- **Do** Oriskany Formation (Lower Devonian) - Light gray sandstone and pebble conglomerate
- **DShk** Helderberg Formation and Keyser Limestone (Lower Devonian and Upper Silurian) - - Gray limestone, shale, and cherty limestone
- **Stl** Tonoloway Limestone (Upper Silurian) - Gray limestone, dolomite, calcareous shale, and thin sandstone
- **Sw** Wills Creek Formation (Upper Silurian) - - Gray shale, limestone, claystone, and sandstone
- **Sb** Bloomsburg Formation (Upper Silurian) - - Red sandstone, siltstone, and shale
- **Sm** Mckenzie Formation (Middle and Upper Silurian) - - Gray shale, calcareous shale, and limestone
- **Sk** Keefer Sandstone (Middle Silurian) - - Tan and Gray sandstone with SKOLITHUS LINEARIS
- **Srk** Rosehill Formation and Keefer Sandstone, undifferentiated
- **Sr** Rosehill Formation (Middle Silurian) - - Tan and red siltstone, red hematite sandstone, and tan sandstone
- **St** Tuscarora Quartzite (Middle and Lower Silurian) - - White and gray quartzite, sandstone, and quartz pebble conglomerate
- **Oj** Juniata Formation (Late Ordovician) - - Maroon sandstone and siltstone

GREAT VALLEY SECTION

- Martinsburg Formation (Upper and Middle Ordovician) - -
  - **Omu** Upper Member - - Brown and green shale, siltstone, and sandstone
  - **Oms** Stickley Run Member - - Gray shale and limestone
- **Oc** Chambersburg Limestone (Middle Ordovician) - Gray argillaceous, nodular limestone
- **On** New Market Limestone (Middle Ordovician) - Gray thick-bedded limestone
- **Op** Pinesburg Station Dolomite (Middle Ordovician) - - Gray, cherty, fractured dolomite
- **Orr** Rockdale Run Formation (Middle and Lower Ordovician) - - Gray limestone interbedded with dolomite
- **Os** Stonehenge Limestone (Lower Ordovician) - - Gray limestone
  - **Oss** Stoufferstown Member - Gray silty, laminated limestone with shale partings
- **OCc** Conococheague Limestone (Lower Ordovician and Upper Cambrian) - Gray limestone interbedded with gray dolomite and sandstone
  - **Ccb** Big Spring Member (Upper Cambrian) - - Dolomite and dolomitic sandstone
- **Ce** Elbrook Limestone (Upper and Middle Cambrian) - - Interbedded limestone and dolomite
- Waynesboro Formation (Lower Cambrian) - -
  - **Cwac** Chewsville Member - - Red siltstone and shale
  - **Cwak** Cavetown Member - - Gray limestone interbedded with dolomite
  - **Cwar** Red Run Member - - Tan sandstone and green shale
  - Undifferentiated
- Tomstown Formation (Lower Cambrian) - -
  - **Ctd** Dargan Member-Gray - - Gray limestone interbedded with dolomite
  - **Ctb** Benevola Member - Light gray dolomite
  - **Ctf** Fort Duncan Member - Dark gray dolomite with bioturbation structures
  - **Ctbh** Bolivar Heights Member - Dark gray limestone
  - Undifferentiated

BLUE RIDGE PROVINCE

- **Ct** Tomstown Formation (Lower Cambrian) - - Gray dolomite
- **Ccp** Carbonaceous phyllite (Lower Cambrian) - Dark gray lustrous graphitic phyllite
- **Ca** Antietam Formation (Lower Cambrian) - Brown iron-rich sandstone
- **Ch** Harpers Formation (Lower Cambrian) - Gray and green phyllitic metasiltstone
  - Light gray and brown thin bedded sandstone
- Weverton Formation (Lower Cambrian) - -
  - **Cw** Owens Creek Member - Light gray and white quartzite and quartz-pebble
  - Maryland Heights Member - Gray quartzite and dark metasiltstone
  - Buzzard Knob Member - Gray and blue quartzite with pebbles, metagraywacke and metasiltstone
  - Undifferentiated
- Loudoun Formation (Lower Cambrian) -
  - **Clc** Conglomerate - Dark gray and blue variegated cobble and pebble conglomerate; Clasts composed of vein quartz, quartzite, red jasper, greenstone, and gneiss
  - **CZlp** Phyllite - Gray, black, cream, and pink variegated phyllite
- Catoctin Formation (Neoproterozoic) - -
  - **Zc** Greenstone - - Green metamorphosed basaltic lava flows
  - **Zcs** Phyllite and sandstone - Gray variegated vesicular and blebby phyllite and tan medium-grained sandstone
- **Zrd** Metarhyolite dike (Neoproterozoic) - - Tan fine-grained felsite with feldspar crystals
- **Zmd** Metadiabase dikes (Neoproterozoic) - - Green schistose metadiabase
- Swift Run Formation (Neoproterozoic) - -
  - **Zsm** Marble - - Pink and tan massive to schistose marble
  - **Zsp** Phyllite - - Tan sandy sericitic phyllite
  - Schist - - Tan quartz sericite schist
  - **Zsq** Metasandstone - - Tan medium-grained metasandstone with cobbles and pebbles of vein quartz
- Blue Ridge Basement Complex (Mesoproterozoic) -
  - **Ybg** Biotite granite gneiss - Light gray foliated granite gneiss with black specks of biotite
  - **Yg** Leucocratic metagranite - - Light-gray foliated metagranite
  - **Ygt** Garnetiferous leucocratic metagranite - - Light gray foliated meta-granite with red spots of garnet
  - **Yqp** Quartz plagioclase gneiss - - White massive gneiss
  - **Yhg** Hornblend monzonite gneiss - - Tan to dark foliated gneiss with greenish black hornblende crystals
  - **Yp** Garnet graphite paragneiss - Rusty schist with garnet crystals and flakes of graphite

PEIDMONT

FREDERICK VALLEY

- Frederick Formation (Upper Cambrian) - -
  - **Cfa** Adamstown Member - Silty limestone and silty dolomite
  - **Cfr** Rocky Springs Station Member - - Dolomitic limestone, breccia of limestone clasts, and sandstone
  - Grayish black shale
  - Undifferentiated
- **Car** Araby Formation (Middle and Lower Cambrian) - Gray and brown mottled sandy metasiltstone
- Tomstown Formation (Lower Cambrian) - - Light gray dolomite

WESTMINSTER TERRANE

- Ijamsville Phyllite (Lower Cambrian? and Neoproterozoic?) - -
  - **CZi** Phyllite-Blue and purple phyllite, slate, and phyllonite with vein quartz
  - **CZig** Greenstone-Green schistose basaltic volcanic rock
  - **CZil** Metalimestone-Light gray thin-bedded silty limestone with black phyllite

POTOMAC TERRANE

- **Dl** Lamprophyre dike (Late Devonian) - - Gray fine-grained quartz-plagioclase rock with biotite crystals
- **Ok** Kensington Tonalite (Middle Ordivician) - Gray garnet-rich, muscovite-biotite tonalite
- Georgetown Intrusive Suite (Middle Ordovician) - -
  - **Ogh** Gray foliated biotite-hornblende tonalite containing inclusions of mafic and metasedimentary rock
  - **Ogb** Gray foliated biotite tonalite containing inclusions of mafic and metasedimentary rocks
  - **Ogg** Dark gray foliated quartz gabbro and quartz diorite
  - **Ogv** Green foliated serpentinite, soapstone, and talc schist
- Dalecarlia Intrusive Suite (Middle Ordovician) - -
  - **Odm** Gray foliated biotite monzogranite and granodiorite
  - **Odt** Light gray muscovite trondjemite; occurs as dikes, sheets and bodies of
- Clarendon Granite (Early Ordovician) - Light gray foliated biotite-muscovite monzogranite
- **Ob** Bear Island Granodiorite (Early Ordovician?) - Light gray and white muscovite-biotite granodiorite and pegmatite
- **Oq** Quartz (Early Ordovician and Cambrian?) - Massive bodies of white vein quartz
- Amphibolite (Cambrian) - Green foliated epidote-plagioclase-hornblende amphibolite; metamorphosed mafic volcanic rock
- **Cs** Sykesville Formation (Lower Cambrian) - Gray quartzofeldspathic matrix with fragments and bodies of metamorphosed sedimentary, volcanic, and igneous rocks
- **Cl** Laurel Formation (Lower Cambrian) - Gray quartzofeldspathic matrix with fragments of meta-arenite and muscovite biotite schist
- Mather Gorge Formation (Lower Cambrian and Neoproterozoic) - -
  - **CZmg** Metagraywacke - - Gray metagraywacke interbedded with schist
  - **CZmm** Migmatite - - Mixture of former partial melt of dark gray quartzose schist (older paleosome) and light gray and white quartz plagioclase granitoid (younger leucosome)
  - **CZmp** Phyllonite-Gray and green lustrous chlorite-sericite phyllonite with white vein quartz
  - **CZms** Schist - Gray, green, and brown quartz-rich schist and mica gneiss interbedded with metagraywacke and calc-silicate rock
- **CZu** Ultramafic rock (Lower Cambrian and Neoproterozoic) - Dark and light green serpentinite, soapstone, and talc schist
- Bodies and Fragments of rock within the Sykesville, Laurel, and Mather Gorge Formations (Lower Cambrian and Neoproterozoic) - -
  - **CZa** Dark green and black amphibolite and ultramafic rock
  - **CZg** Dark metagabbro and metapyroxenite
  - **CZt** Hornblende-plagioclase-quartz-muscovite felsic tuffaceous schist
  - Green soapstone and actinolite-chlorite schist

EXPLANATION OF MAP SYMBOLS

- Towns
- Access Points
- Mile Markers
- Faults
- Contacts
- Major Roads

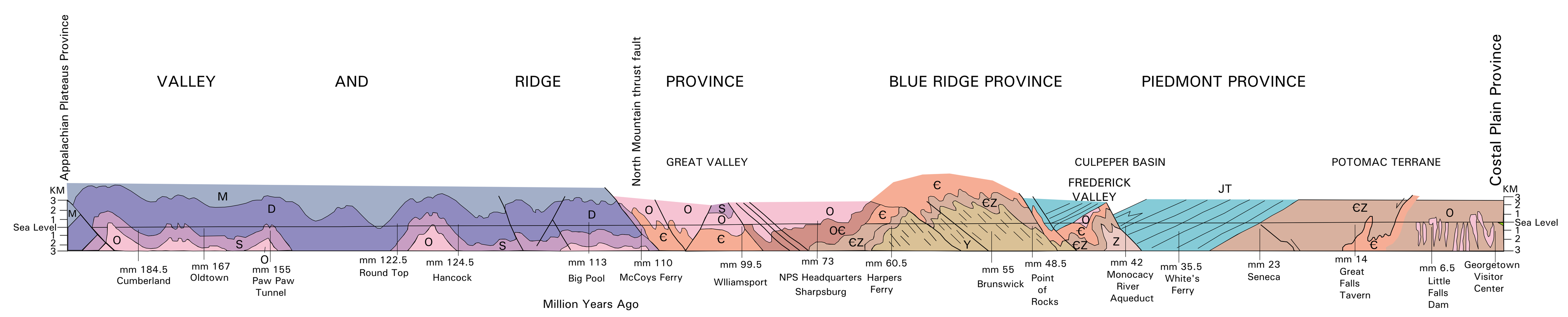
Digital Geologic Map and Database of the Chesapeake and Ohio Canal Hational Historical Park, District of Columbia, Virginia, Maryland, and West Virginia

By

Southworth, S., Brezinski, D.K., Orndorff, R.K., Chirico, P.G., and Lagueux, K.

2001

5 0 5 10 15 Kilometers



		Million Years Ago
K	Cretaceous	146-65
JT	Triassic and Jurassic	245-146
M	Mississippian	360-325
D	Devonian	410-360
S	Silurian	440-410
O	Ordovician	505-440
Є	Cambrian	544-505
Z	Neoproterozoic	800-544
Y	Mesoproterozoic	1145-1051

OЄ
ЄZ

Reference to any specific commercial product, process, or service by trade name trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof.

Graphical depictions of this data are intended to be used within the map scale limits applicable to the source data. Although a geographic information system enables the user to show data at various scales, the user is reminded to refer to the appropriate map scale limitations.

This report is preliminary and has not been reviewed for the conformity with the U.S. Geological Survey editorial standards (or with the North American