cross section scale - 1:24 000 no vertical exaggeration

This map supersedes NCGS Open File Report 2013-04

Bedrock Geologic Map of the Southern Portion of the Essex 7.5-minute Quadrangle, Halifax, Nash and

Warren Counties, North Carolina



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

BEDROCK GEOLOGIC MAP OF THE ESSEX 7.5-MINUTE QUADRANGLE, NASH, HALIFAX AND WARREN COUNTIES, NORTH CAROLINA

By David E. Blake, Edward F. Stoddard, Daniel L. Rhodes, and Robert H. Morrow Digital representation by Michael A. Medina, Heather D. Hanna and Philip J. Bradley

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> This Open-File report is preliminary and has been reviewed internally for conformity with the North Carolina Geological Survey editorial standards. Further revisions or corrections to this preliminary map may occur.

Bounds of GeoPDF based on 7.5-minute grid projection in UTM 17S; North American Datum of 1983 (NAD83).

Boltin, W. R., and E. F. Stoddard, 1987, Transition from Eastern Slate belt to Raleigh belt in the Hollister area, eastern North Carolina Piedmont: Southeastern Geology, v. 27, p. 185-205. Coler, D., and Samson, S., 2000, Characterization of the Spring Hope and Roanoke Rapids terranes, southern Appalachians: A U-Pb geochronolgic and Nd isotopic study: Geological Society of America Abstracts with Programs, v. 32, p. A-11-12.

Goldberg, S. A., 1994, U-Pb geochronology of volcanogenic terranes of the eastern North Carolina Piedmont: Preliminary results, in Stoddard, E. F., and D. E. Blake (eds.), Geology and Field Trip Guide, Western Flank of the Raleigh Metamorphic Belt, North Carolina: Carolina Geological Society Hibbard, J. P., E. F. Stoddard, D. T. Secor, and A. J. Dennis, 2002, The Carolina Zone: Overview of Neoproterozoic to Early Paleozoic peri-Gondwanan terranes along the eastern flank of the southern Appalachians: Earth Science Reviews, v. 57, p. 299-339. Hibbard, J., van Staal, C., Rankin, D., and Williams, H., 2006, Lithotectonic map of the Appalachian orogen (South), Canada-United States of America: Geological Survey of Canada Map 02096A, scale 1:1500000.

Kite, L. E., and E. F. Stoddard, 1984, The Halifax County complex: Oceanic lithosphere in the eastern North Carolina Piedmont: Geological Society of America Bulletin, v. 95, p. 422-432. Lawrence, D. P., 1999, Bouguer gravity study along the Hollister fault zone, eastern North Carolina, in Sacks, P. E. (ed.), Geology of the Fall Zone region along the North Carolina-Virginia state line: Carolina Geological Society Field Trip Guidebook, p. 37-48. Le Maitre, R.W., ed., 2002, Igneous Rocks: A Classification and Glossary of Terms: Recommendations of the International Union of Geological Sciences (IUGS) Subcommission on the Systematics of Igneous Rocks: Cambridge, Cambridge University Press, 252p. McDaniel, R. D., 1980, Geologic map of Region K: North Carolina Department of Natural Resources and Community Development, Geological Survey Section, Open File Map NCGS 80-2 [scale 1:100,000].

Sacks, P. E., 1999, Geologic overview of the eastern Appalachian Piedmont along Lake Gaston, North Carolina and Virginia, in Sacks, P. E. (ed.), Geology of the Fall Zone region along the North Carolina-Virginia state line: Carolina Geological Society Field Trip Guidebook, p. 1-15. Sacks, P. E., W. R. Boltin, and E. F. Stoddard, 2011, Bedrock geologic map of the Hollister 7.5-minute quadrangle, Warren and Halifax Counties, North Carolina. North Carolina Geological Survey Open-file Report 2011-03, scale 1:24,000, in color. Spruill, R. K., Lawrence, D. P., and Moncla, A. M., 1987, Petrological, geochemical, and geophysical evaluation of the Rocky Mount igneous complex, northeastern Piedmont, North Carolina, in Whitteear, G. R., (ed.), Geological excursions in Virginia and North Carolina, Guidebook for field trips,

Stoddard, E.F., Bechtel, R., Sacks, P.E., and Price, L.K., 2012, Geologic map of the Red Oak 7.5-minute Quadrangle, Nash County, North Carolina: North Carolina Geological Survey Open file Report 2012-004, scale 1:24,000, in color. Stoddard, E. F., Fuemmeler, S., Bechtel, R., Clark, T. W., and Sprinkle II, D. P., 2009, Preliminary bedrock geologic map of the Gold Sand, Centerville, Castalia, and Justice 7.5-minute quadrangles, Franklin, Nash, Warren and Halifax Counties, North Carolina: North Carolina Geological Survey Stoddard, E. F., and Miller, B. V., 2011, The Spring Hope terrane: Lithostratigraphy and new age constraints: Geological Society of America Abstracts with Programs, v. 43, No. 2, p. 31. Stoddard, E. F., Sacks, P. E., Clark, T. W., and Bechtel, R., 2011, Bedrock geologic map of the Littleton 7.5-minute quadrangle, Warren and Halifax Counties, North Carolina: North Carolina Geological Survey Open-file Report 2011-02, scale 1:24,000, in colo

EXPLANATION OF MAP SYMBOLS

CONTACTS, FAULTS AND FOLDS Lithologic contacts - Distribution and concentration of structural symbols indicates degree of reliability ----- ductile fault - location inferred **← − − † − − −** anticline, plunging in cross section, ductile fault (A indicates movement away from observer, **←** — **+** — — — syncline, plunging T indicates movement towards observer) LINEAR FEATURES bearing and plunge of slickenline lineation bearing and plunge of fold hinge PLANAR FEATURES strike and dip of inclined undifferentiated shear strain foliation strike and dip of inclined joint/fracture surface strike and dip of inclined undifferentiated shear strain foliation strike and dip of inclined joint/fracture surface (multiple observations at one location) (multiple observations at one location) strike of vertical undifferentiated shear strain foliation strike of vertical joint surface strike of vertical undifferentiated shear strain foliation strike of vertical joint surface (multiple observations at one location) (multiple observations at one location) strike and dip of overprinting cleavage strike and dip of inclined slickenline surface strike and dip of overprinting cleavage (multiple observations at one location) strike of quartz vein, dip unknown strike and dip of crenulation cleavage strike of vertical quartz vein strike and dip of spaced cleavage strike of vertical diabase dike strike and dip of spaced cleavage strike and dip of axial surface (multiple observations at one location) of mesoscale fold strike of vertical spaced cleavage horizontal regional cleavage/weak schistosity strike and dip of inclined mesoscale fault (multiple observations at one location) OTHER FEATURES ————— diabase dike - location inferred clay pit sucrosic and friable quartz diabase station location diabase dike - location concealed location of bull quartz in cross section, diabase dike mine or prospect Tertiary upland sediment location debris and/or veins geochemical station location Base map is from USGS 2010 GeoPDF of the Essex 7.5-minute quadrangle. Aerial photo, map collar and select features removed.

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