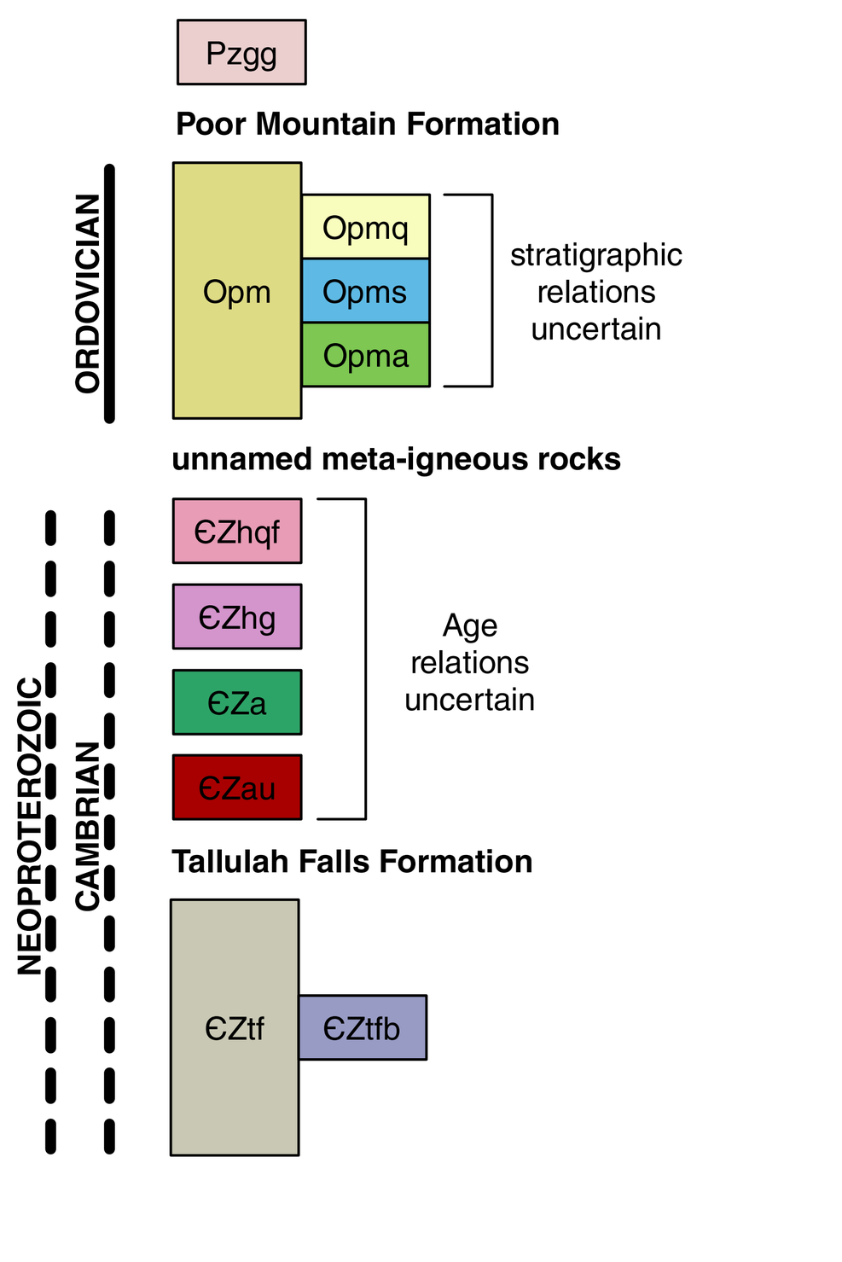
North Carolina Department of Environmental Quality
Energy Group
Jenny Kelvington, Executive Director
Kenneth B. Taylor, State Geologist

This Geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program

North Carolina Geological Survey
Open File Map 2016-07

CORRELATION OF MAP UNITS



INTRODUCTION

The Pea Ridge 7.5-minute Quadrangle is located in the southwestern portion of the Piedmont physiographic province in Polk and Rutherford counties, North Carolina. The quadrangle lies southwest of Rutherfordton, NC and northeast of Columbus, NC. It is located within the Rutherfordton-Spindale-Forest City metropolitan projected growth area, and southern Pea Ridge is home to the Tryon International Equestrian Center. Major transportation corridors include U.S. Highway 74 and N.C. Highway 108. Total elevation relief is 459ft with a low of 705ft and a high of 1164ft. Major rivers include the Green River, Broad River, and Mountain Creek.

GEOLOGIC OVERVIEW

The Pea Ridge quadrangle comprises the following units of the Tugaloo terrane (Hatcher and others, 2007). Neoproterozoic to early Cambrian Tallulah Falls Formations (TFF); Ordovician Poor Mountain Formation (PMF); and intrusive unnamed meta-igneous rocks (UMIR) of uncertain correlation. The TFF and PMF are interpreted to lie within the Six Mile Thrust Sheet (Griffin, 1974).

The PMF contains sillimanite-grade meta-sedimentary units interlayered with mafic and felsic meta-volcanic rocks. The PMF structurally overlies all other units on the quadrangle by a ductile thrust fault evidenced by associated sheared and mylonitic rocks. The TFF consists of meta-sedimentary and meta-igneous rocks thought to have been deposited in a distal marine basin outboard of the Laurentian rifted margin (Hatcher and others, 2007). TFF rocks on the quadrangle have been metamorphosed to upper amphibolite facies and are migmatitic. Structural and textural relationships indicate that the UMIR intrude into the TFF, but not into the PMF. Age of the UMIR are uncertain, but cross-cutting relationships constrain them be post-TFF deposition and pre-fault emplacement of the PMF. Several resistant and less deformed granitoid gneiss bodies intrude the UMIR and TFF.

Foliations trends are variable and most dip less than 35 degrees. A prominent ENE-WSW joint set and a less prominent ESE set exist on the quadrangle. ENE-trending quartz breccias on the quadrangle are likely associated with the Tryon-Marietta fault zone of Garihan and Ranson (1992).

REFERENCES

Garihan, J. M., and Ranson, W. A., 1992, Structure of the Mesozoic Marietta-Tryon graben, South Carolina and adjacent North Carolina, in M. J. Bartholomew, D. W. Hyndman, and R. Mason (editors), Basement Tectonics 8: Characterization and Comparison of Ancient and Mesozoic Continental Margins: Proceedings of the Eighth International Conference on Basement Tectonics, Kluwer Academic Publishers, Dordrecht, p. 539-555.

Griffin, V.S., 1974, Analysis of the Piedmont in Northwest South Carolina, Geological Society of America Bulletin, v.85, p. 1123-1138.

Hatcher, R.D., Jr., Bream, B.R., and Merschat, A.J., 2007, Tectonic map of the southern and central Appalachians: A tale of three orogens and a complete Wilson cycle, in Hatcher, R.D., Jr., Carlson, M.P., McBride, J.H., and Martínez Catalán, J.R., eds., 4-D Framework of Continental Crust: Geological Society of America Memoir 200, p. 595–632.

DESCRIPTION OF MAP UNITS

▽ **Breccia —** Linear-trending cataclastic fault breccias and silicified microbreccias form resistant outcrops and concentrations of characteristic quartz float. Breccia is typically white to very light-gray; fine- to medium-grained; massive to weakly foliated; quartz crystal growth locally present in void spaces and along joint surfaces; consists of quartz, trace biotite, and opaque minerals.

Pzgg **Granitoid gneiss —** white to pinkish-gray to light-gray; fine- to medium-grained; massive to weakly foliated; equigranular to locally inequigranular; consists of plagioclase feldspar, potassium-feldspar, quartz, biotite, and muscovite. Locally observed to cross-cut and intrude foliated and migmatitic gneisses. Many small bodies are not mappable at this scale.

Poor Mountain Formation

Opm **Undivided —** Heterogeneous unit of metagraywacke, schist, amphibolite, quartzite, metasandstone, meta-arkose, quartzo-feldspathic gneiss, and calc-silicate.

Metagraywacke — medium-light-gray to medium-dark-gray; medium- to coarse-grained; foliated; locally mylonitic; equigranular to inequigranular; granoblastic to lepidoblastic; migmatitic; consists of quartz, plagioclase feldspar, biotite, muscovite, potassium feldspar, garnet, and accessory minerals.

Calc-silicate — light-gray; medium- to coarse-grained; weakly foliated; consists of quartz, feldspar, epidote group minerals, garnet, biotite, and trace chlorite.

Opmq **Metasandstone/Quartzite/Meta-arkose —** Very pale-orange to grayish-orange to grayish-purple; dusky-yellowish-brown on weathered surfaces; fine- to medium-grained; foliated; locally mylonitic/sheared; equigranular; granoblastic; consists of quartz, potassium feldspar, plagioclase feldspar, garnet, biotite, muscovite, epidote, and opaque minerals. Interlayered with lesser amounts of metagraywacke, schist, quartzo-feldspathic gneiss, and amphibolite.

Opms **Schist —** Silvery-gray to light-reddish-gray; fine- to medium-grained; inequigranular; lepidoblastic and porphyroblastic; typically has a sheared (S-C) fabric; migmatitic; consists of muscovite, sillimanite, biotite, garnet, quartz, feldspar, and trace opaque minerals, tourmaline, and apatite. Interlayered with lesser amounts of metasandstone, meta-arkose, metagraywacke, and amphibolite.

Opma **Amphibolite —** Occurs as a mappable unit structurally beneath metasandstone, quartzite, and meta-arkose layers in places on the quadrangle, and as a minor rock type throughout other map units of the Poor Mountain Formation. Amphibolite is typically mottled white to dark-green to black; fine- to coarse-grained; foliated; equigranular to nematoblastic; consists of hornblende, plagioclase, biotite, epidote group minerals, quartz, and minor garnet, chlorite, pyroxene, titanite, and opaque minerals. Interlayered with lesser amounts of metasandstone, quartzite, meta-arkose, and sillimanite schist.

Unnamed meta-igneous rocks

€Zhqf **Hornblende quartzo-feldspathic gneiss —** Very light-gray to grayish-black, commonly weathers to dark-yellowish-orange; fine- to coarse-grained; foliated; well layered; equigranular; consists of quartz, plagioclase, potassium feldspar, epidote group minerals, biotite, muscovite, hornblende, chlorite, garnet, and trace apatite, rutile, monazite, and opaque minerals; interlayered with amphibolite and hornblende gneiss. Locally contains rotated enclaves (xenoliths?) of layered amphibolite and small pods of altered ultramafic rocks.

€Zhg **Hornblende gneiss —** Contains dominantly hornblende gneiss with lesser amounts of biotite gneiss. Hornblende gneiss is mottled white to greenish-black on fresh surfaces; weathered surfaces are mottled white to dark-reddish-brown; medium- to coarse-grained; foliated; massive to well-layered; equigranular; migmatitic; consists of hornblende, plagioclase, quartz, biotite, epidote group minerals, titanite, actinolite, magnetite, minor muscovite and opaque minerals, and trace apatite, monazite, chlorite, and zircon. Biotite granitic gneiss layers within hornblende gneiss are gray to grayish-black; medium- to coarse-grained; foliated; migmatitic; consists of plagioclase, quartz, biotite, muscovite, hornblende, minor epidote group minerals and sericite, and trace apatite.

€Za **Amphibolite —** Occurs as mappable and small unmappable bodies within the hornblende gneiss and hornblende quartzo-feldspathic gneiss units. Amphibolite is typically mottled white to dark-green to black; fine- to coarse-grained; foliated; equigranular; nematoblastic; consists of hornblende, plagioclase, biotite, epidote group minerals, quartz, muscovite, and minor garnet, chlorite, pyroxene, titanite, and opaque minerals.

€Zau **Altered ultramafic —** Interpreted to be an altered pyroxenite. Ultramafic is typically medium-gray-green to dark-gray-green; medium- to coarse-grained; weakly foliated; equigranular to inequigranular; nematoblastic. Bronze, coarse-grained, poikilitic hypersthene with green amphibole inclusions locally preserve a relict porphyritic texture. Consists of actinolite/tremolite, talc, hypersthene, enstatite, chlorite, and minor opaque minerals including magnetite. Lesser amounts of medium- to coarse-grained amphibolite and hornblende gneiss occur within this unit.

Tallulah Falls Formation

€Ztf **Undivided —** The Tallulah Falls Formation is a thick, heterogeneous sequence of metamorphosed sedimentary and volcanic rocks. Sequences of metagraywacke, schistose metagraywacke, mica schist, and amphibolite are interlayered at all scales.

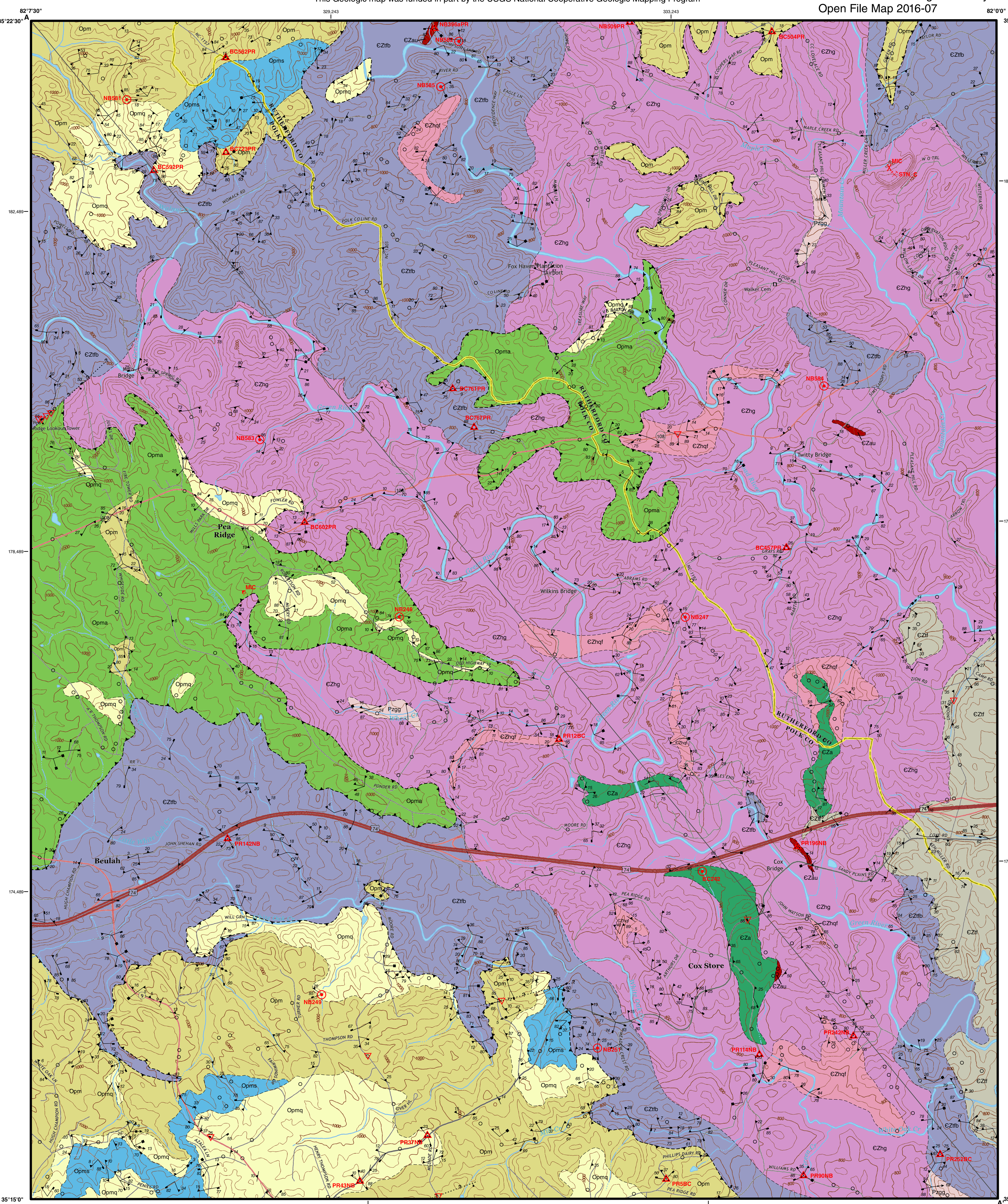
Metagraywacke — medium-light-gray to medium-dark-gray; medium- to coarse-grained; foliated (ranges from massive to gneissic); equigranular to inequigranular; granoblastic to lepidoblastic; migmatitic; consists of quartz, plagioclase, biotite, muscovite, potassium feldspar, sillimanite, and minor garnet, opaques, epidote, and apatite; thickness of layering ranges from decimeters to meters. Interlayered at all scales with mica schist, schistose metagraywacke, amphibolite, and minor calc-silicate.

Schistose metagraywacke — medium-gray to dark-gray; fine- to medium-grained; foliated; equigranular to inequigranular; lepidoblastic to weakly granoblastic to porphyroblastic; migmatitic; consists of quartz, plagioclase, muscovite, biotite, potassium feldspar, sillimanite, epidote group minerals, chlorite, garnet, and trace opaque minerals; thickness of layering ranges from several millimeters to meters; commonly interlayered with metagraywacke, mica schist, conglomeratic metagraywacke, amphibolite, and minor calc-silicate.

Mica schist — silvery-gray to medium-dark-gray; fine- to medium-grained; equigranular; lepidoblastic to porphyroblastic; migmatitic; consists of muscovite, biotite, garnet, quartz, feldspar, and trace epidote group minerals, chlorite, and opaque minerals; interlayered with metagraywacke, schistose metagraywacke, amphibolite, and rare calc-silicate.

€Ztfb **Biotite gneiss —** Heterogeneous unit consisting of interlayered porphyroblastic biotite gneiss, with lesser amounts of metagraywacke, schist, and hornblende-biotite gneiss. Biotite gneiss is typically gray to grayish-black; medium- to coarse-grained; well foliated; compositionally layered; locally protomylonitic; inequigranular; porphyroblastic to lepidoblastic; migmatitic; consists of plagioclase, quartz, biotite, potassium feldspar, muscovite, garnet, epidote group minerals, chlorite, opaques, and little to no hornblende.

Mineral abundances are listed in decreasing order of abundance based upon visual estimates of hand samples and thin sections.



STREAM SEDIMENT HEAVY MINERAL ANALYSIS

Stream sediment heavy mineral analysis was conducted from March 2015 through June 2016 to aid geologic mapping, better define conditions of metamorphism, and inventory minerals of potential economic significance. Procedure: In the field, approximately 13.6 kg of stream sediment material is panned to approximately 300 g of heavy mineral concentrate at each sample locality. In the laboratory, concentrate is washed and passed through heavy liquid separation using tetrabromoethane, and scanned with short- and long-wave ultraviolet illumination using an Ultra-violet Products Inc. Model UVGL-48 Mineralight Lamp. Magnetite is removed with a hand magnet. A sample split is grain mounted on a standard 27x46 mm glass slide and approximately 200 grains are identified and counted with the aid of a petrographic microscope and 1.67 index of refraction oil. Results of stream sediment heavy mineral analysis are tabulated below.

Mineral abbreviations used in table: Mg-magnetite; Gt-garnet; Zr-zircon; Bt-biotite; Rt-rutile; Czo- clinozoisite; Ep-epidote group minerals; Sil – sillimanite; Hbl-hornblende; Ttn-titanite; Tur-tourmaline; Mnz- monazite; Ap-apatite; Qtz-quartz; Ilm-ilmenite and other black opaque minerals; Hem-hematite and other red opaque minerals; Lx-leucoxene; Ud-unidentified.

SAMPLE[1]	COORDINATES (State Plane, NAD 83 m)	MAP UNITS DRAINED[2]	% TOTAL HM IN SAMPLE[3]	PERCENT HEAVY MINERALS IN SAMPLE[4]																	
				Mg	Gt	Zr	Bt	Rt	Czo	Ep	Sil	Hbl	Ttn	Tur	Mnz	Ap	Qtz	Ilm	Hem	Lx	Ud
NB 246	177,584N; 329,824E	Opmq, Opma	1.47	1.72	-	17.69	2.95	-	1.97	31.94	-	37.84	1.47	0.49	-	-	-	1.97	1.47	-	0.49
NB 249	173,168N; 328,771E	Opm, Opmq	0.09	13.16	3.91	6.08	2.17	-	-	35.17	0.43	19.97	-	0.43	-	-	-	18.24	0.43	-	-
BC 242	174,478N; 333,294E	€Za,€Zhg	0.60	20.62	0.40	0.79	1.19	0.79	0.40	12.30	-	55.96	-	0.79	-	-	-	4.76	1.59	0.40	-
NB 247	177,475N; 333,188E	€Zhg, €Zhqf	0.04	6.25	0.47	13.13	-	0.94	2.34	1.41	2.34	16.41	0.47	2.81	1.41	-		36.09	14.06	1.88	-
NB 251	172,439N; 331,997E	€Ztfb, Opmq	1.00	1.47	-	14.15	2.44	-	-	39.02	-	38.53	0.49	-	0.98	-	-	0.49	1.95	0.49	-
NB 581	183,768N; 326,811E	Opm	0.78	15.44	8.03	0.42	-	0.42	1.27	3.81	2.54	2.96	0.42	-	-	-	0.42	62.15	1.69	-	0.85
NB 582	184,333N; 330,736E	€Ztfb	0.69	86.83	-	0.72	-	-	0.46	1.51	-	0.53	0.72	-	-	0.46	-	3.03	1.51	4.08	0.13
NB 583	179,719N; 328,250E	€Zhg, Opmq, Opma	1.99	2.51	-	6.34	-	-	1.46	35.58	-	42.41	0.49	-	-	-	-	0.97	5.36	4.87	-
NB 584	180,143N; 334,904E	€Zhg, €Ztfb	1.98	0.47	-	-	-	-	1.99	4.48	-	85.10	2.49	-	-	-	-	0.50	1.00	3.98	-
NB 585	183,880N; 330,494E	€Ztfb, €Zhqf	0.29	2.88	2.91	8.26	-	-	1.94	2.43	-	68.47	9.71	-	-	-	-	-	0.97	2.43	-

[1]Sample numbers correspond to stream sediment heavy mineral sample localities shown on geologic map
[2]Up to three most dominant map units contributing to the drainage basin, listed in decending order of map area
[3]Percentage of heavy minerals in 13.6 kg stream sediment sample
[4]Point count percentages of heavy minerals from processed samples

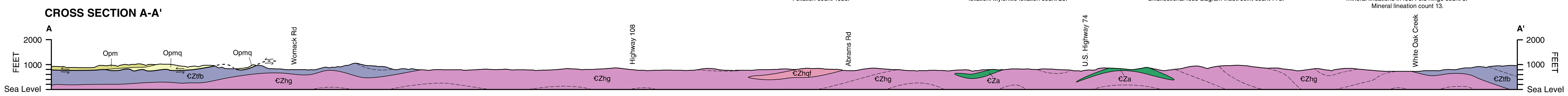
WHOLE ROCK ICP ANALYSIS[1] OF SELECTED SAMPLES

SAMPLE[2]	COORDINATES (State Plane, NAD 83 m)	ROCK TYPE	MAP UNIT	OXIDES IN PERCENT											ELEMENTS IN PPM[3]											LOI[4]	SUM[5]
				SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Cu	Ba	Zn	Ni	Co	Sr	Zr	Ce	Y	Nb	Sc		
PR 5 BC	170,869N; 332,755E	sillimanite-garnet schist	Opm	58.34	18.90	11.13	0.26	0.04	0.45	3.58	1.30	0.16	0.06	0.018	46	789	34	22	<20	67	217	105	26	14	28	5.6	99.98
BC 562 PR	184,226N; 327,991E	biotite meta-arkose	Opm	66.23	15.44	6.63	0.57	2.8	2.44	0.87	0.52	0.12	0.08	<0.002	3.2	274	82	<20	16.3	113.5	169.4	33.7	14.8	8.6	24	4.2	99.92
BC 504 PR	184,328N; 334,424E	muscovite arkosic metasandstone	Opm	85.17	8.63	1.44	0.22	0.01	0.08	1.5	0.36	0.02	<0.01	0.007	24.8	989	7	<20	3.2	4.3	82	53.4	32.9	6.7	12	2.3	99.87
BC 723 PR	183,110N; 327,961E	biotite-garnet metasandstone	Opm	77.55	8.8	8.32	0.44	0.14	0.54	3.52	0.38	0.06	0.1	0.022	8.7	637	54	46	21.2	55.5	65.9	29.8	14.7	5.2	13	0	99.95
PR 37 NB	171,471N; 329,964E	muscovite metasandstone	Opmq	77.49	12.42	2.07	0.54	<0.01	0.05	2.53	0.20	0.02	0.02	<0.002	24	1166	23	<20	<20	2	119	<30	13	<5	10	4.5	100.01
PR 43 NB	170,958N; 329,155E	kyanite-garnet metasandstone	Opmq	78.92	5.53	11.99	1.20	0.51	<0.01	0.01	0.28	0.08	0.51	0.004	52	65	44	<20	21	5	56	84	19	<5	7	0.9	100.00
PR 12 BC	176,082N; 331,658E	hornblende-biotite quartz syenite orthogneiss	€Zhqf	57.01	19.52	4.91	1.59	3.66	3.45	5.97	0.77	0.34	0.09	<0.002	24	2480	56	<20	<20	760	1520	107	25	13	9	2.1	99.98
PR 90 NB	170,859N; 334,371E	gabbroic orthogneiss	€Zhg	52.32	16.10	8.71	7.02	11.00	2.64	0.73	0.17	<0.01	0.18	0.021	8	138	56	39	34	194	19	<30	6	<5	45	0.9	99.87
PR 114 NB	172,302N; 333,898E	hornblende tonalite gneiss	€Zhg	67.36	15.64	4.02	1.20	5.29	2.54	0.23	0.26	0.04	0.06	<0.002	21	97	33	<20	<20	112	64	<30	15	<5	19	3.3	100.00
PR 242 NB	172,484N; 335,011E	epidote-biotite tonalitic gneiss	€Zhg	74.24	13.32	2.80	0.72	3.63	2.56	0.80	0.18	0.03	0.03	<0.002	84	240	21	<20	<20	160	127	<30	<3	<5	4	1.6	100.01
BC 602 PR	178,729N; 328,747E	biotite felsic gneiss	€Zhg	72.07	14.77	2.01	0.32	1.29	3.01	5.71	0.13	0.07	0.02	<0.002	3	1204	17	<20	2.1	281.4	113.7	38.8	7.2	4.9	2	0.4	99.95
NB 509 PR	184,492N; 332,755E	biotite-muscovite felsic gneiss	€Zhg	71.29	14.9	2.04	0.36	0.2	3.3	5.31	0.31	0.49	0.02	<0.002	3.2	1586	23	<20	1.8	328.8	199.4	161.4	10.2	7.9	2	1.5	99.87
BC 457 PR	178,254N; 334,402E	biotite-hornblende quartzofeldspathic gneiss	€Zhg	59.54	15.65	7.99	2.44	7.88	2.39	0.99	0.57	0.14	0.14	0.01	91.3	282	49	21	18.8	445	213.1	51.5	17.1	7.7	23	2.1	99.82
PR 196 NB	174,732N; 334,420E	altered ultramafic	€Zau	45.00	7.30	11.66	23.09	4.60	0.25	0.03	0.53	0.04	0.18	0.336	42	39	85	957	82	7	26	<30	16	<5	20	6.4	99.62
NB 396a PR	184,492N; 330,457E	altered meta-pyroxenite	€Zau	51.85	6.42	8.85	17.89	11.02	0.7	0.13	0.21	<0.01	0.16	0.296	68.2	24	6	278	51.6	29.8	14.6	5.3	8.4	0.5	52	2.1	99.66
PR 142 NB	175,037N; 327,725E	biotite gneiss	€Ztfb	62.36	16.92	6.29	2.13	3.88	2.93	2.87	0.78	0.22	0.09	0.002	8	860	96	<20	<20	330	438	148	25	17	13	1.3	99.97
PR 252 BC	171,058N; 335,987E	amphibolite	€Ztfb	47.64	14.29	17.67	5.01	7.15	3.12	0.67	2.37	0.06	0.27	0.002	28	43	115	<20	38	135	107	<30	41	<5	43	1.5	99.85
BC 761 PR	180,247N; 330,537E	biotite gneiss	€Ztfb	63.08	16.84	6.47	1.89	3.3	3.46	2.75	0.72	0.19	0.1	0.003	7.7	549	104	<20	11.2	277	372	119.2	33.7	18.1	13	1	99.83
BC 592 PR	182,923N; 327,104E	quartz amphibolite	€Ztfb	54.14	14.77	13.31	3.42	6.01	5.03	0.13	1.91	0.29	0.24	<0.002	56.8	29	21	<20	24.3	137.1	137.5	18.3	49.3	3.1	31	0.6	99.87
BC 767 PR	179,785N; 330,776E	biotite meta-melagabbro	€Ztfb	37.5	14.92	17.4	6.89	12.03	0.92	2.4	3.21	1.76	0.19	<0.002	42	3558	45	<20	56.3	1210.6	134.9	110.7	35.5	10.1	31	1.9	99.55

[1]Whole Rock Inductively Coupled Plasma - Atomic Emission Spectrometer (ICP) analysis conducted by Bureau Veritas, 9050 Shaughnessy St, Vancouver, BC Canada V6P 6E5.
[2]Sample numbers correspond to thin section and whole rock sample localities shown on geologic map
[3]PPM = parts per million
[4]LOI = loss on ignition in percent
[5]SUM = Sum total in percent

Environmental Quality

CROSS SECTION A-A'



Unit Contact
Fault Contact — arrows indicate relative motion along fault
Form Lines — interpretive patterns of subsurface foliation orientations based upon surficial structural measurements

Topographic base produced by the United States Geological Survey.
Altered by the North Carolina Geological Survey for use with this map.
North American Datum of 1983 (NAD83).
World Geodetic System of 1984 (WGS84).
Projection: State Plane North Carolina FIPS 3200 (Meters)
4,000-meter ticks: State Plane North Carolina FIPS 3200 (Meters)

Roads....................©2006-2012 TomTom
Names....................GNIS, 2013
Hydrography....................National Hydrography Dataset, 2012
Contours....................National Elevation Dataset, 2008
Boundaries....................Census, IBWC, IBC, USGS, 1972 - 2012

UTM GRID AND 2013 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
6° 41′ 119 MILS
0° 37′ 11 MILS

U.S. National Grid
100,000-m Square ID
LV | MV
Grid Zone Designation
17S

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011. A metadata file associated with this product is draft version 0.6.11

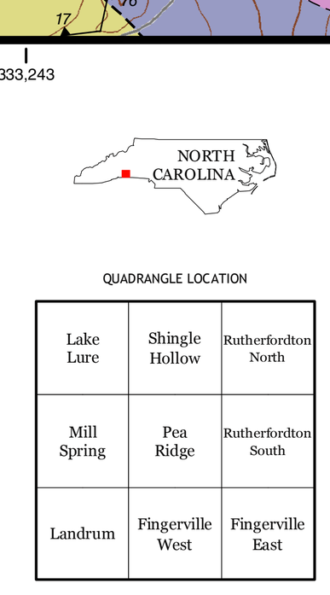
QUADRANGLE LOCATION

Lake Lure	Shingle Hollow	Rutherfordton North
Mill Spring	Pea Ridge	Rutherfordton South
Landrum	Fingerville West	Fingerville East

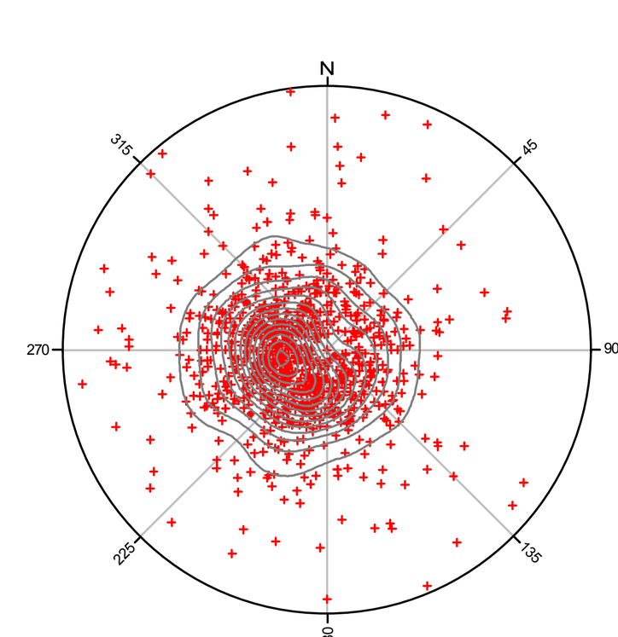
ADJOINING 7.5' QUADRANGLES

ROAD CLASSIFICATION
Expressway — Local Connector
Secondary Hwy — Local Road
Ramp — 4WD
Interstate Route — US Route — State Route
FS Primary Route — FS Passenger Route — FS High Clearance Route

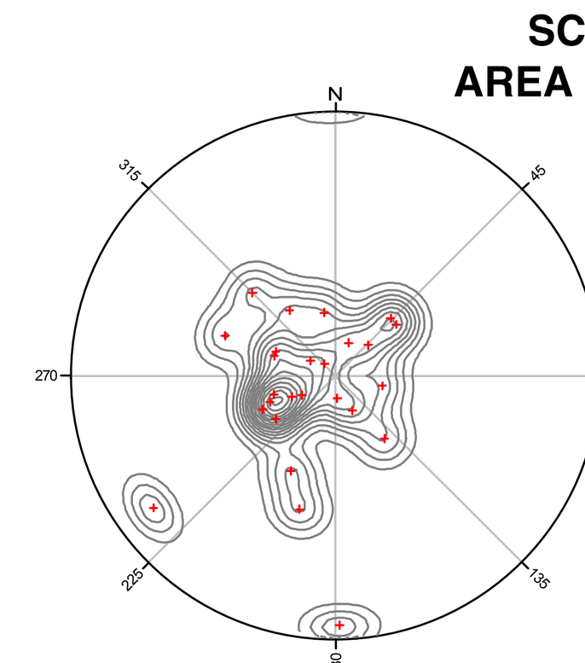
PEA RIDGE, NC
2013



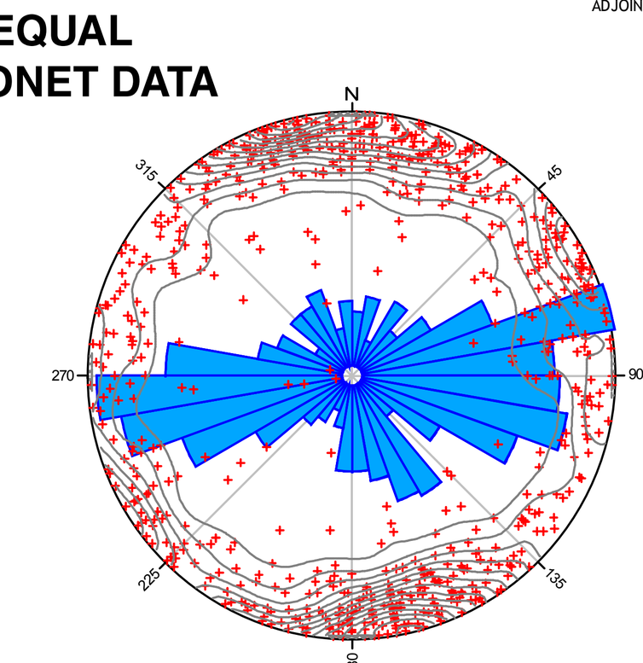
SCHMIDT EQUAL AREA STEREONET DATA



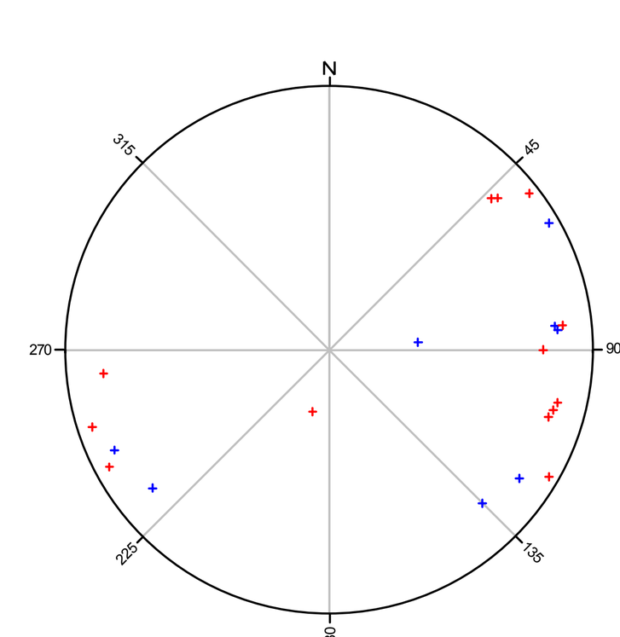
Equal area Schmidt Net projection of contoured poles to foliation. Foliation count 1036.



Equal area Schmidt Net projection of contoured poles to mylonitic foliation. Mylonitic foliation count 26.



Equal area Schmidt Net projection of contoured poles to joints and unidirectional rose diagram inset. Joint count 775.



Equal area Schmidt Net projection of fold hinges in blue and mineral lineations in red. Fold hinge count 8. Mineral lineation count 13.

EXPLANATION OF MAP SYMBOLS

CONTACTS

Contact—Identity and existence certain, location inferred

Thrust fault—Identity and existence certain, location inferred. Sawteeth on upper (tectonically higher) plate

Normal fault--Identity or existence questionable, location concealed. Ball and bar on downthrown block

PLANAR FEATURES

(For multiple observations at one locality, symbols are joined at the "tail" ends of the strike lines)

Inclined metamorphic or tectonic foliation—Showing strike and dip

Inclined metamorphic or tectonic foliation, for multiple observations at one locality—Showing strike and dip

Inclined mylonitic foliation—Showing strike and dip

Inclined mylonitic foliation, for multiple observations at one locality—Showing strike and dip

Small, minor inclined joint—Showing strike and dip

Small, minor inclined joint, for multiple observations at one locality—Showing strike and dip

Small, minor vertical or near-vertical joint, for multiple observations at one locality—Showing strike

LINEAR FEATURES

Inclined aligned-mineral lineation—Showing bearing and plunge

Inclined slickenline, groove, or striation on fault surface—Showing bearing and plunge

Inclined fold hinge of generic (type or orientation unspecified) small, minor fold—Showing bearing and plunge

NATURAL RESOURCES

MIC - Mica
STN_C - Stone, Crushed/Broken

OTHER FEATURES

Float station

NB206 Thin section and whole rock analysis sample location

NB251 Heavy mineral sample location

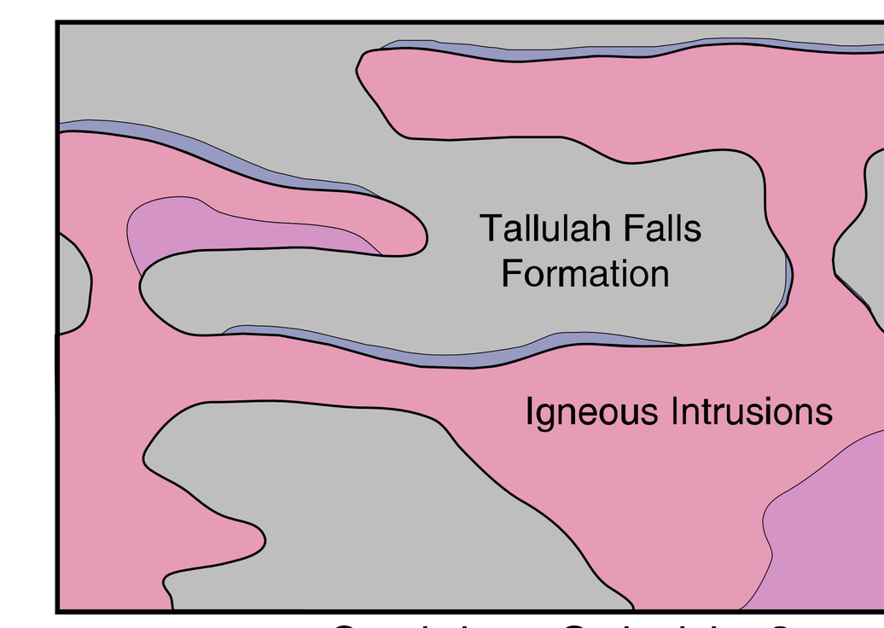
Prospect (pit or small open cut)

Abandoned open pit, quarry, or glory hole

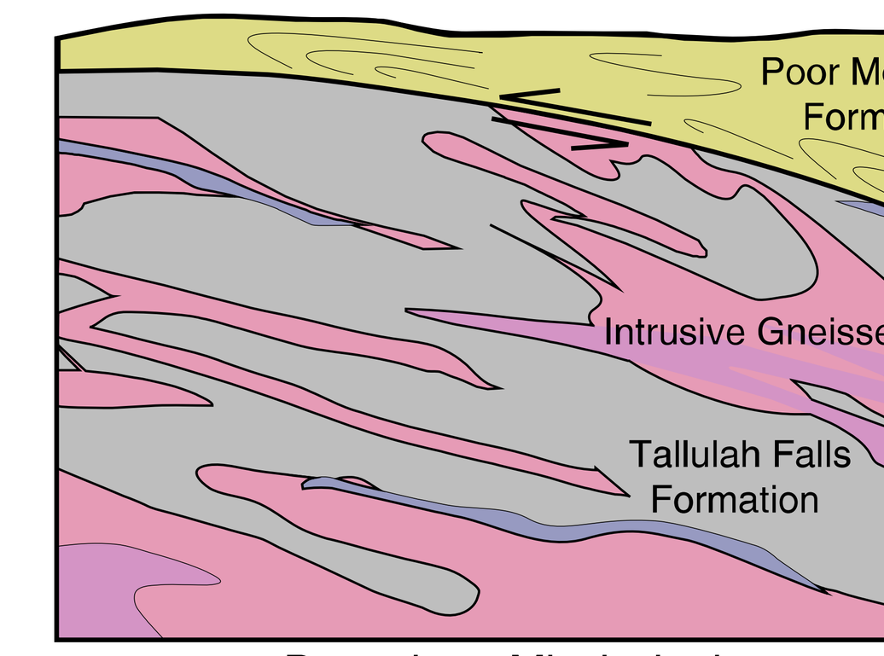
Open pit, quarry, or glory hole

Inclined mine shaft

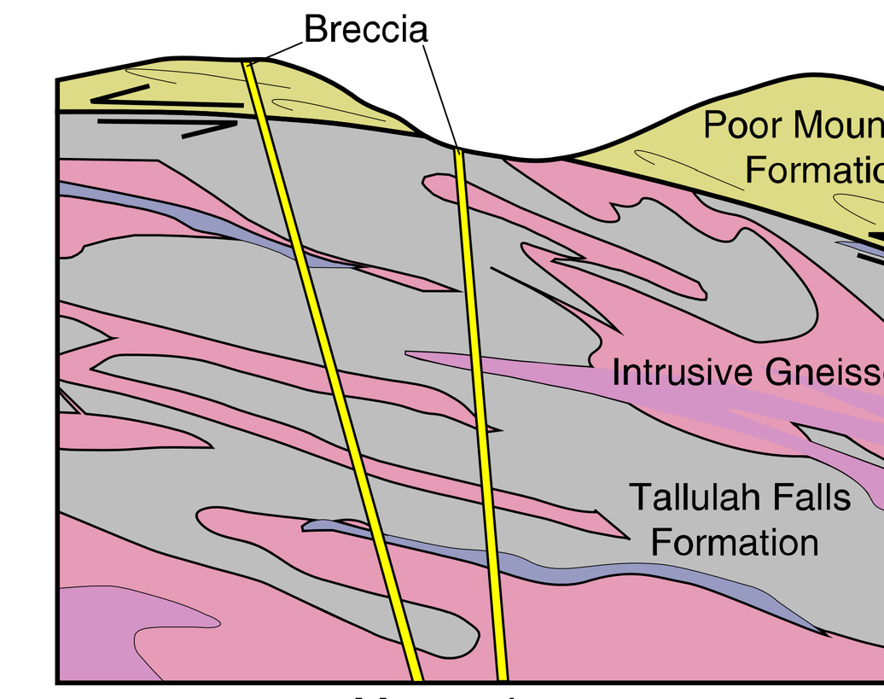
GENERALIZED STRATIGRAPHY AND SEQUENCE OF TECTONIC EVENTS IN CROSS-SECTIONAL VIEW



Cambrian - Ordovician?
Igneous intrusion & deformation



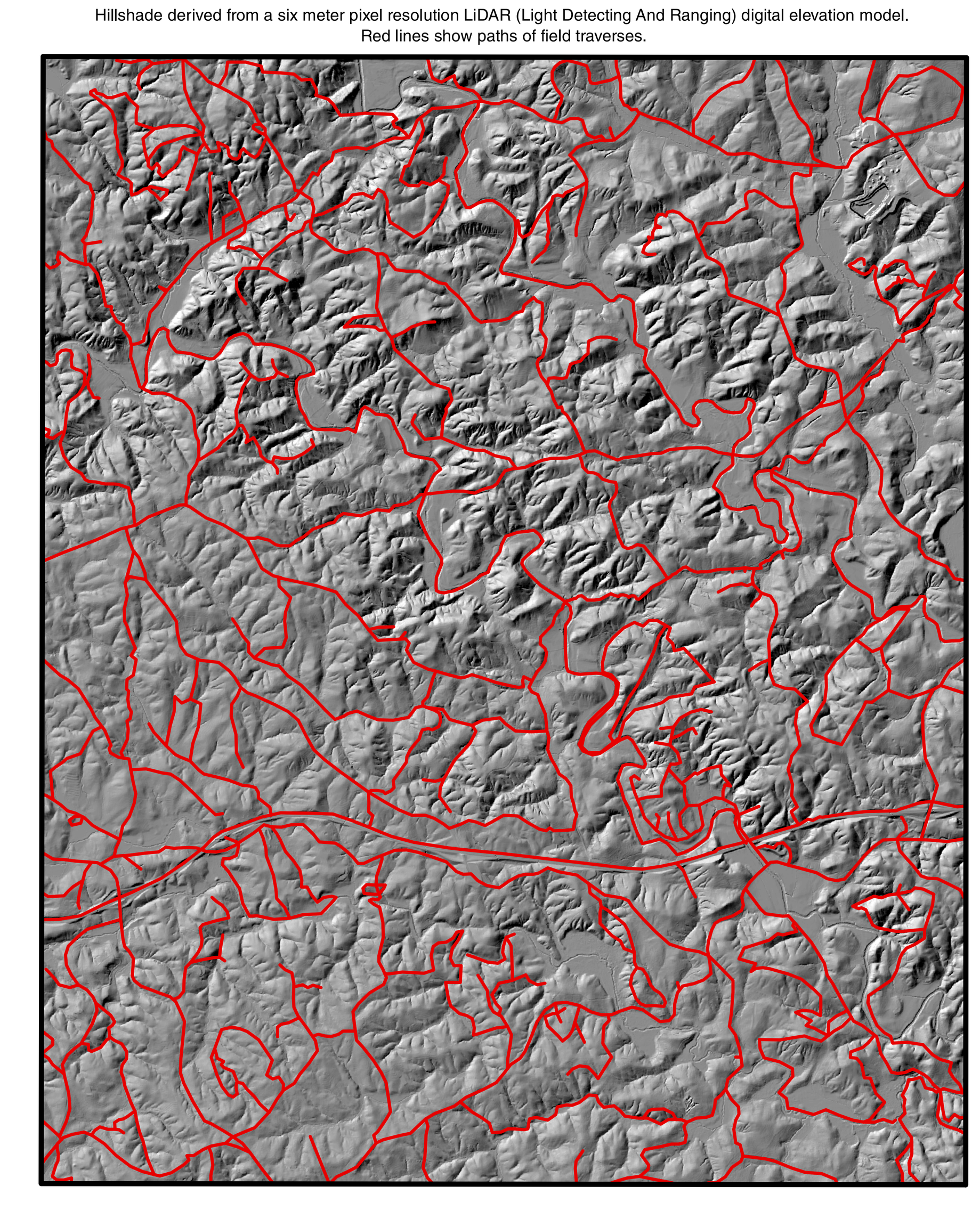
Devonian - Mississippian
Peak metamorphism & deformation



Mesozoic - present
Brittle faulting & erosion

TRAVERSE MAP

Hillshade derived from a six meter pixel resolution LiDAR (Light Detecting And Ranging) digital elevation model. Red lines show paths of field traverses.



Bedrock Geologic Map of the Pea Ridge 7.5-minute Quadrangle, Polk and Rutherford Counties, North Carolina

By

Bart L. Cattanach, G. Nicholas Bozdog, Sierra J. Isard, and Richard M. Wooten

Geology mapped from November 2014 to May 2016.
Map preparation, digital cartography and editing by G. Nicholas Bozdog, Bart L. Cattanach, Sierra J. Isard
2016

Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program under STATEMAP (Awards - 2015, G15AC00237; 2014, G14AC00230). This map and explanatory information is submitted for publication with the understanding that the United States Government is authorized to reproduce and distribute reprints for governmental use. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either express or implied, of the U.S. Government.

This map supersedes NCGS OFR 2015-04. This is an Open-File Map. It has been reviewed internally for conformity with North Carolina Geological Survey mapping standards and with the North American Stratigraphic Code. Further revisions or corrections to this Open File map may occur. Some station data omitted from map to improve readability. Please contact the North Carolina Geological Survey for complete observation and thin-section data.