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## Petrology of the Beaverdam Amphibolite, Eastern Blue Ridge, Alabama

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### ABSTRACT

The Beaverdam Amphibolite occurs as several exposures of metamorphosed mafic rocks in the Ashland-Wedowee belt in the Eastern Blue Ridge of Eastern Alabama. The exact stratigraphic position of these exposures is unclear and this research cannot resolve that question, but we can determine the character of the parent rock and begin to clarify the differences in metamorphism. Major and trace element geochemistry shows the rocks from the three outcrops have the similar protoliths and are consistent with interpretations that the parent basalts originated in a rifting environment, most likely in a back-arc setting.

The rocks have complex structural and metamorphic histories. Samples from Beaverdam Creek are well foliated, schistose to gneissic rocks composed primarily of quartz, plagioclase, epidote, and hornblende, typical of the epidote amphibolite facies. The hornblende is, green to yellow green to light brown. Occasional grains of relict pyroxene from the original basalt are present. This likely represents the earliest phase of metamorphism in the rocks. Samples from the Cornhouse antiform are amphibole schists to phyllites. Dominant minerals are blue green hornblende, quartz, and epidote, typically a greenschist facies assemblage. The rocks are finely laminated, with hornblendes lying in the foliation. Tight microfolds bend the foliation and individual hornblende grains are deformed by bending or extension fractures. These rocks likely formed during later shearing of the coarser amphibolites. Greenschist facies temperature and pressure conditions persisted after the deformation as indicated by the presence of blue green hornblende and chlorite fans that cut across the foliation.

### INTRODUCTION

The Beaverdam Amphibolite is one of several metamorphic units of basaltic character in the Northern Alabama Piedmont and is the one of the least studied of these metabasites. It is the purpose of this paper to examine several outcrops in the type area to characterize the unit. This paper focusses on the geochemistry of the amphibolites and the character of the protolith.

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