## INTRODUCTION

The Smoke Creek Desert, located approximately 100 km ( 60 mi ) north of Reno near the California-Nevada border (fig. 1), is a large basin situated along the northernmost parts of the Walker Lane Belt (Stewart, 1988), a part of the Basin and Range physiographic province defined by diverse topographic expression and strike-slip faulting. Because geologic framework studies play an important role in understanding the hydrology of the Smoke Creek Desert, a geophysical effort was undertaken to help determine basin geometry, infer structural features, and estimate depth to basement.

The study area (fig. 1) is bounded by Permian and Triassic metavolcanic rocks and Cretaceous granitic rocks along the western margin of the Smoke Creek Desert, Triassic and Jurassic metasedimentary rocks and Cretaceous granitic rocks in the Fox and parts of the Granite Ranges along the eastern and northeastern margin of the Smoke Creek Desert (fig. 2). Tertiary basalts are mapped to the north, west, and south of the Smoke Creek Desert playa in the Buffalo Hills, Skedaddle Range, and Terraced Hills, respectively (fig. 2). (See Stewart and Carlson, 1978; G.L. Dixon and others, written commun., 2005; Faulds and Ramelli, in press). Metavolcanic and metasedimentary rocks, granitic rocks, volcanic rocks, and unconsolidated alluvial deposits exhibit densities and magnetic properties that create a distinguishable pattern of gravity and magnetic anomalies that can be used to infer subsurface structure and determine the geologic and geophysical framework of the area.

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Figure 1. Shaded-relief topographic map of the Smoke Creek Desert and vicinity derived from a 15' (about 450 m ) digital elevation model. Black lines (labeled A-G), location of geologic cross sections (G.L. Dixon and others, written commun., 2005). Bold black line, approximate outline of the Smoke Creek Desert study area.


Figure 2. Simplified geologic map of the Smoke Creek Desert and vicinity (modified after Bonham, 1969; Jennings et al., 1977; Stewart and Carlson, 1978; G.L. Dixon and others, written commun., 2005; and Faulds and Ramelli, in press). MVF, Mid-valley fault; M1-M6, magnetic features discussed in the text.

