

## 2.2 ENVIRONMENTAL CONTEXT

The Eastern Arizona Framework Study Area encompasses southeastern Arizona east of Maricopa, Pinal, and Pima counties, an area of approximately 29,000 square miles. The study area includes portions of Apache, Navajo, Pinal, Coconino, and Yavapai counties and all of Santa Cruz, Cochise, Graham, Greenlee, and Gila counties. These counties are discussed by environmental resources according to the three focus groups that compose the study area: (1) Mogollon Rim Focus Area, (2) Copper Country Focus Area, and (3) Cochise-Santa Cruz Focus Area.

This environmental overview identifies natural, cultural, and man-made resources in the study area. The purpose of this overview is to identify those resources or areas that would need additional study for future or proposed transportation projects.

### 2.2.1 Geology and Topography

Geology within the study area is relatively homogenous and consists of sedimentary and igneous rocks. The geology of the Mogollon Rim Focus Area is characterized mostly by sedimentary (sandstone, limestone, shale, coal, etc.) and igneous (basaltic/volcanic) rocks. Igneous (volcanic and metavolcanic) rocks can be found near the Pinetop-Lakeside area and Chinle Moenkopi formations can be seen north of Show Low and Springerville (Reynolds, Stephen. *Arizona Geological Map: Interactive*, 2008). This area contains many mountain ranges separated by several basins, such as the Georges and Tonto basins. The Copper Country Focus Area consists of volcanic, subvolcanic, sedimentary, and intrusive igneous rocks. Along with alluvial fans, these are the major geologic features that are consistently found in the area. Volcanic, basaltic, and sedimentary rocks make up the Cochise-Santa Cruz Focus Area and are found throughout Graham, Greenlee, and Gila counties. The geology of the Cochise-Santa Cruz Focus Area includes eolian deposits (sand, silt, clay, etc.) alluvium deposits, and glacial deposits.

Arizona is a state that includes tremendous topographic diversity. The range of elevation within the study area is from 3,000 to 12,000 feet above sea level (asl). The topography from southeast to northwest includes a mountainous region with maximum elevations ranging between 9,000 and 12,000 feet asl. Topography in the communities within Navajo County varies between gently rolling to hilly elevations, ranging from 5,000 feet asl in the City of Holbrook to 7,500 feet asl in the Town of Pinetop-Lakeside. Apache County is characterized by rolling hills and lies 4,000 feet asl and includes peaks that exceed 10,000 feet in elevation. Santa Cruz County, located in the southeastern portion of the study area, includes basin and range topography with elevations ranging from 3,000 to 9,000 feet asl, including the Santa Rita and Patagonia mountains. The topography of Greenlee County consists of high mountain ranges, river valleys, and desert terrain.

### Slope Analysis

The study area consists mostly of 0 to 5 percent slope and 20 percent or greater slope with little variation. Erosion is affected directly by the steepness and length of slope; consequently, greater slopes increase the runoff velocity and the movement of sediment carried in runoff. Poor drainage may occur with some soils, which could increase velocity and erosion; therefore, specific soil characteristics should also be taken into consideration.