

Cave Air Quality Study

by Bryan and Taran Doty

Air Quality Study of Select Caves Within the Payson Ranger District, Gila County, Arizona Researchers: Taran Doty, P.E. (NSS #44128) and Bryan Doty (NSS #47451), Central Arizona Grotto of the National Speleological Society Abstract The primary objective of the proposed scope of work was to collect and analyze air quality data regarding seasonal variations of select chemical components and physical properties of the atmospheres in several caves within Gila County, Arizona. The primary compounds of interest include oxygen and carbon dioxide, and volatile organic compounds (VOCs). The concentrations of these species were evaluated over the course of one year to identify seasonal variations of atmospheric conditions and to identify likely periods in which the caves may contain hazardous oxygen-deficient conditions that are unsuitable for human occupation. In addition to compositional information, physical data was be recorded including temperature, barometric pressure, and relative humidity. Non-quantitative observations were made including current weather conditions, recent precipitation, or influx of organic materials.

