

# Grand Canyon Geology Training Manual

## Learning to Read the Pages of a Book

In 2003, former Geologist-in-Park Stacy Timmons completed a Grand Canyon Geology Training Manual for Grand Canyon National Park. The training manual was also part of the requirements for her Masters of Science in Geology that she completed at Oregon State University in 2002 under the supervision of Dr. Robert J Lillie.

The Grand Canyon Geology Training Manual overviews the park's geology, including information that ranges from the introductory level to more advanced concepts. It was written to help interpreters, tour guides, teachers and others learn more about the canyon's geology and to help them share the park's geology with others.

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### From the Author's Preface:

Imagine you just opened a tattered, dusty, ancient book. As you look through the pages you realize that this very old book contains valuable and wonderful stories of events that took place long ago. Grand Canyon is like this just opened book, except instead of pages you see colorful, picturesque rock layers that hold tales of times long ago. A closer look at the book reveals that some of the pages have been ripped out, and others were never written. It is an incomplete book, yet it contains an overwhelming amount of information. Processes of erosion and weathering have opened the old Grand Canyon book relatively recently, as it is a young canyon carved into very old rocks.

Before you can start to read the geologic story written in the pages of Grand Canyon, you should first understand the words and the language the book is written in. The words are the geologic

features observed in the rocks and the language is the science of geology. This training manual will help you to become proficient in the language of geology, especially what is applicable at Grand Canyon. Once you are comfortable reading the geologic story from the pages of Grand Canyon, you can then begin to tell the story to park visitors using your understanding of both the language of geology and techniques for interpreting geology provided in this manual.

The first section of this training manual will introduce the “language” of geology by providing illustrated explanations of fundamental geology concepts that are important at Grand Canyon. In the second section, the concepts are applied to the geology of the Grand Canyon region, as the “language” of geology is used to read the “book” of Grand Canyon geology. The final section is a small toolbox of interpretive tools intended to help you begin to effectively communicate the geologic history of Grand Canyon to park visitors.