The Grand Canyon Essay, Research Paper

The Grand Canyon

We decided, for our Science Project, that we would learn about the Grand Canyon and its layers. It is located in Arizona and is one of the greatest natural wonders of the world that is around eighteen miles wide and nearly 280 miles long. The width and depth of the Canyon vary from place to place. At the South Rim, near Grand Canyon Village, it?s a vertical mile, which is about 5000 feet from rim to river. The width of the Canyon at Grand Canyon Village is 10 miles from rim to rim; though in places it is as much as 18 miles wide.

Another way to look at the enormous size is by the time a trip takes. From the bottom of the Canyon and back on foot is a two-day journey. Rim-to-rim hikers generally take three days one-way to get from the North Rim to the South Rim. A trip through Grand Canyon by raft can take two weeks or longer and experienced backpackers have spent weeks in the more remote areas of the Canyon.

In 1975 the park was nearly doubled in size by the inclusion of Grand Canyon National Monument and Marble Canyon National Monument and portions of Glen Canyon and Lake Mead national recreation areas. The effects of tourism and federal water management policies led the government to take steps to protect the canyon?s environment during the 1990s. In March 1996 a controlled flood through Glen Canyon Dam was generated as a way to re-create natural spring flooding through the canyon. The results of this led to a new water-management plan. This plan incorporates flooding to restore the canyon?s natural ecosystems, which had been changed by the construction of Glen Canyon Dam in 1963. In 1997 the government restricted small planes and helicopters from flying over the canyon and was considering other ways to limit the effects of tourism on the park.

The sites of the park are incredible with its beauty and mystery. One of the main attractions is the Colorado River, which is about 242,000 square miles of land ranging from the states of Wyoming, Colorado, Utah, New Mexico, Arizona, Nevada and California. From here, at an altitude of 9,010 feet, the Colorado begins it’s flow southwestward toward the Gulf o f California and the Pacific Ocean. By the time the river enters the Grand Canyon, at Lee?s ferry, its altitude has fallen to 3,110 feet, dropping over one mile since its beginning. The river will drop another 2,200 feet before it reaches the other end of the Grand Canyon, the Grand Wash Cliffs 277 miles away. The park itself includes over a million acres of land 1,218,375.54 acres.

The Grand Canyon has been sculpted in general by the downward cutting of the Colorado River, which flows through the canyon’s lowest portions. Other factors have also played a part. The Kaibab Plateau, which forms the northern rim of the canyon, is about 1200 ft higher than the Coconino Plateau, which forms the southern rim. Water from the northern side has flowed into the canyon, forming tributary valleys, while the streams of the southern plateau flow away in a southerly direction without carving valleys in the canyon walls. The underlying rock beds also have a southwestern slant, with the result that groundwater from the north finds its way into the canyon, but water from the south does not. In the entire canyon region, jointing and faulting has broken the rocks, and fractures in the rocks resulting from these processes have contributed to the rapid erosion of the gorge.

Being named a national monument in 1906 by Theodore Roosevelt first protected this park. A famous quote by Roosevelt was he proclaimed it to be ?the most impressive piece of scenery I have ever looked at?. Congress named it a National Park in 1919. Back in 1869, when Major John Wesley Powell led the first expedition through Grand Canyon, he used wooden boats. Although they were not a very good design, they worked, and for seventy years, those who followed Powell?s route experimented with different designs and techniques, refining to a science the art of rowing wooden boats in whitewater.

The extreme variations in elevation from the depths of the canyon to the northern rim create four distinct zones of climate and plant life. Dense virgin forests of aspen, pine, fir, and spruce grow on the colder northern rim. The southern rim though, is sparsely covered with pi?on and juniper. Wildlife includes deer, antelope, cougar, and mountain sheep. Prehistoric Native American groups lived in the canyon and on its rims; ruins of pueblos and cliff dwellings remain. The park is bordered on the south by the reservation of the Havasupai people.

In 1990 3,752,901 people attended and were down -5.4%. In 1991 3,905,989 went and were up 4.1%. In 1992 4,547,027 people visited and were record with a 16.4% increase. In ?93 4,928,509 visited and were up 8.4%. In 1994 4,704,070 people attended and went down 4.6%. Then in 1995 4,908,073 people went to the park and were an increase of 4.4%. In 1996 4,730,682 people attended and went down 3.6%. In ?97 4,851,931 people came and it went up 2.6%. Finally in 1998 4,578,089 people came and made a 5.6% decrease from the year before.

By using the charts we concluded that the temperatures at the Inner Canyon were much hotter than the ones on the South Rim. The inner part had a high temperature of about 110 degrees and a low temperature of about 37 degrees. The southern rim had a high temperature of 85 degrees while the low was about 20 degrees.

Our main problem was to find the layers of the Grand Canyon. With much research we discovered all the layers with their exact time formations. We also found out the colors of the layers, which got lighter as it went higher in elevation. In a typical section of the canyon, toward its eastern end, nine separate rock layers can be seen, piled vertically like a stack of pancakes. The topmost layer is a limestone, the Kaibab limestone. Below this layer is a thick depositing of sandstone, called the Coconino sandstone, and below that a layer of soft, shaly rock known as the Hermit shale. Still lower is a series of shales and sandstones interbedded with each other, collectively termed the Supai formation. The fossils found in the Supai and the rocks above it suggest that these rocks were all deposited in the Permian Period, at the end of the Paleozoic Era, from 225 million to 280 million years ago. However, the Supai may be slightly older still. Next comes a deposit of light gray-blue limestone, the Redwall limestone, which in many places has been colored red by seepage from the Supai beds above. The Redwall is 152 m (500 ft) thick and is easily identified because of the prominent sheer cliffs that it forms in the canyon walls. This layer has been identified as belonging to the Mississippian Period (360 million to 330 million years ago). A thin layer of sandstone, the Temple Butte, beneath the Redwall, gives evidence of having originated in the Devonian Period (410 million to 360 million years ago). The next three rock layers, consisting of the brown Muav limestone, the green Bright Angel shale, and the Tapeats sandstone, all belong to the Cambrian Period (570 million to 500 million years ago), at the dawn of the Paleozoic Era. Beneath these layers, at the bottom of the canyon, are the most ancient rocks of all, Precambrian schists and gneisses, from half a billion to a billion years old.

So after all this work, what have we learned? We have learned that the Grand Canyon is one of the greatest natural formations in the world. It is not one big smooth canyon, but rather thousands of differently detailed rocks and ledges. The sight of the magnificent park is unmatched with any other. It has thousands of millions of different colors, which are beautiful and spectacular. From the bright morning sun to the evening of a rainbow sunset, the Grand Canyon has a lovely view no matter what time of day. The rocks and plants reflect the rays of the sun like the glittering evening ocean. The Colorado River stretches for thousands of miles and can be seen from almost any part of the park. From the desert type summer weather to the freezing Snow Mountains of winter, the appearance of the canyon is different throughout the whole year. We were glad that we chose the Grand Canyon as our project because it has proved to be very interesting and exciting to learn about. We learned a great amount of information on

this park and it taught us a lot about nature and how the Grand Canyon came to be.

?Charts of Canyon? http://highsonoran.com/tempcharts.html

?Overall facts about the Canyon? http://www.nps.gov/grca/facts/index.htm

?Grand Canyon Graphs? http://www.pbs.org/kuat/grandcanyontlood/graphs.html

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