The Scenic Drive of Capitol Reef National Park

Self-Guided Driving Tour

The Scenic Drive

Along the Scenic Drive, you will be introduced to the fascinating cultural and geologic history of Capitol Reef National Park. After passing through part of the Fruita Rural Historic District, the road follows the western face of the Waterpocket Fold and spur roads allow exploration into beautiful Grand Wash and Capitol Gorge. There are eleven stops along the drive.

The Scenic Drive is a portion of the original road through the Waterpocket Fold. Ancient peoples used the route for centuries. After settlement along the Fremont River, the ancient trail was developed into a wagon road in about 1884. It was used by the settlers, Mormon church leaders, miners, and by cattle and sheep ranchers when they moved their herds between the high country to the west and the lowlands to the east. The road was unpaved and passed through the dangerous narrows at Capitol Gorge. Flash floods periodically transformed the usually dry stream bed in the gorge into a raging river, sometimes stranding unwary travelers. This gravel road was the only one through the Waterpocket Fold until the completion of Highway 24 in 1962.

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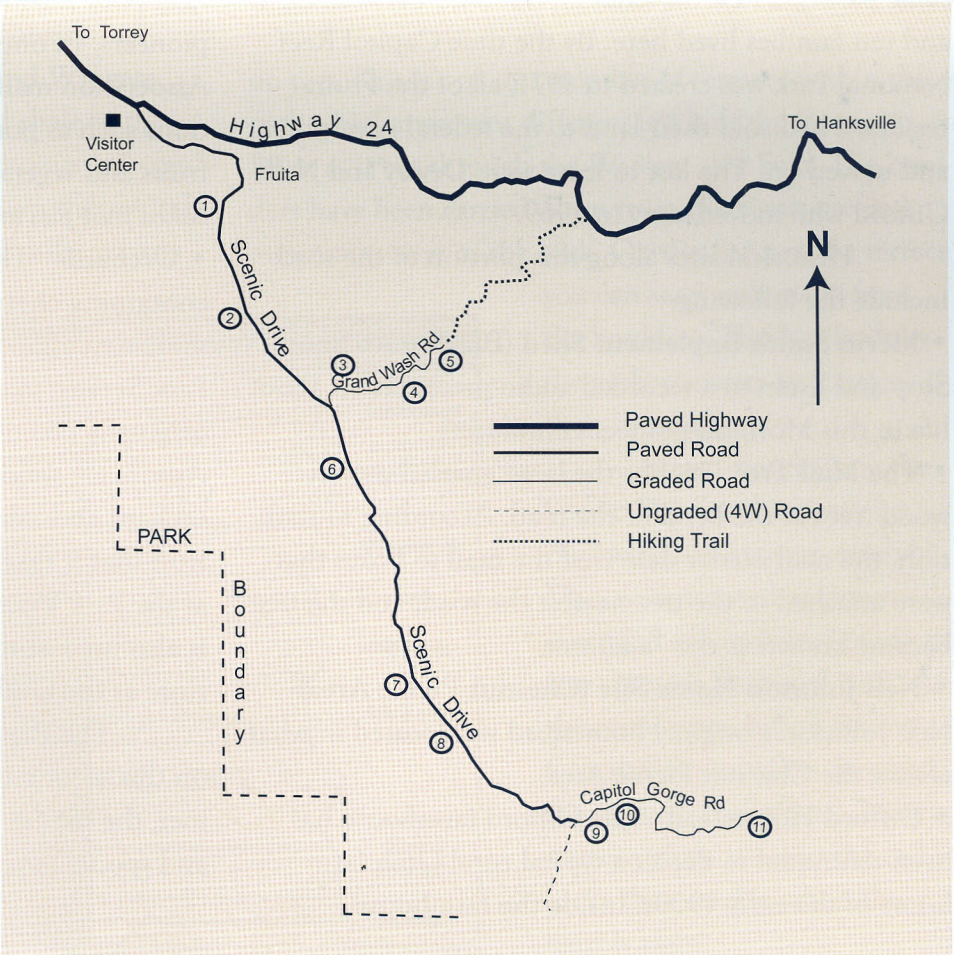
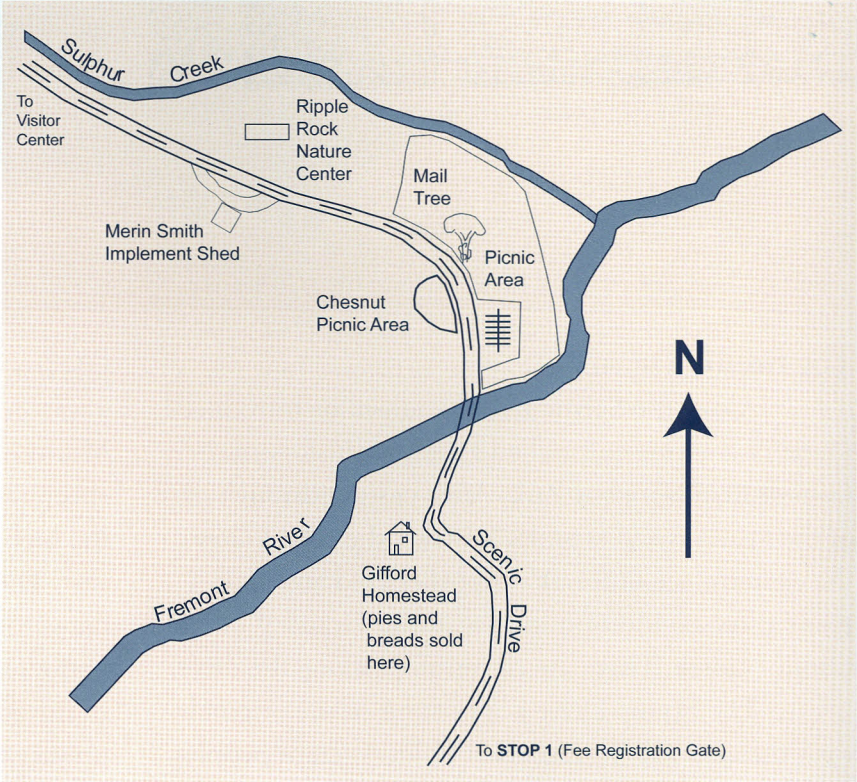
Further information about the cultural, geologic and natural history of Capitol Reef National Park is available at the Visitor Center.



Fruita Rural Historic District



Between the Park Visitor Center and Stop 1 lies part of the Fruita Rural Historic District. Along with most of the other early settlements in southern Utah, Fruita was settled by the Latter-day Saints (Mormons). The first bona fide settler in Fruita is believed to have been Nels Johnson who arrived in 1880. He built his home on the site of the current Chesnut Picnic Area. Fruita is situated at the confluence of Sulphur Creek and the Fremont River, both perennial water sources. The mild temperature in the area and the continuous water supply make the location ideal for growing fruit trees. Nels Johnson recognized this and planted the first fruit and nut trees in Fruita. Soon others settled in Fruita and planted more orchards. From 1880 until 1937, when the area became part of a new national monument, between eight and ten families lived here. By the time Capitol Reef National Park was created in 1971, all of the Fruita residents had sold their land to the federal government and moved on. The last to leave were Dewey and Nell Gifford who moved away in 1969.

Historical sites along this portion of the road include the following:

- **Merin Smith Implement Shed (Blacksmith Shop)** Stop and listen to a recorded audio presentation about life in this Mormon pioneer community.
- **The Mail Tree** Notice the large gnarled cottonwood trees at the bend in the road. According to tradition, the mail carrier delivered the mail to boxes that were attached to the tree nearest the road, and the tree became known as the "mail tree."
- **Nels Johnson Home Site (Chesnut Picnic Area)** Nels Johnson's original homestead was located in what is now the Chesnut Picnic Area.
- **Gifford Homestead** The Gifford farmhouse has been renovated to depict a typical rural Utah farm home of the early 1900s. Inside the farmhouse, employees of the Capitol Reef Natural History Association provide quilting, rug weaving, rug twining and basket weaving demonstrations. They also interpret the history of the homestead and the lifestyle of the early pioneers. In one part of the home, the Natural History Association maintains a store where period reproductions such as pottery, aprons, quilted items, bottled fruits and vegetables are sold. *Don't miss the freshly baked fruit pies and breads that are delivered daily!*
- **Orchards** There are fifteen orchards in the park containing cherry, apricot, peach, pear, apple, plum, mulberry, almond and walnut trees. The National Park Service maintains these orchards that were originally planted by the early residents of Fruita. Park visitors are welcome to walk through any unlocked orchard and sample the fruit. A fee is charged for all fruit that is taken out of the orchards (information at the Park Visitor Center). Fruit from the orchards is also used in the freshly baked pies available in the store at the Gifford Homestead.

The **Ripple Rock Nature Center** is also located on this section of the Scenic Drive. During the summer, the nature center offers fun activities for families and special ranger-led programs.

STOP 1 ROCK FORMATIONS

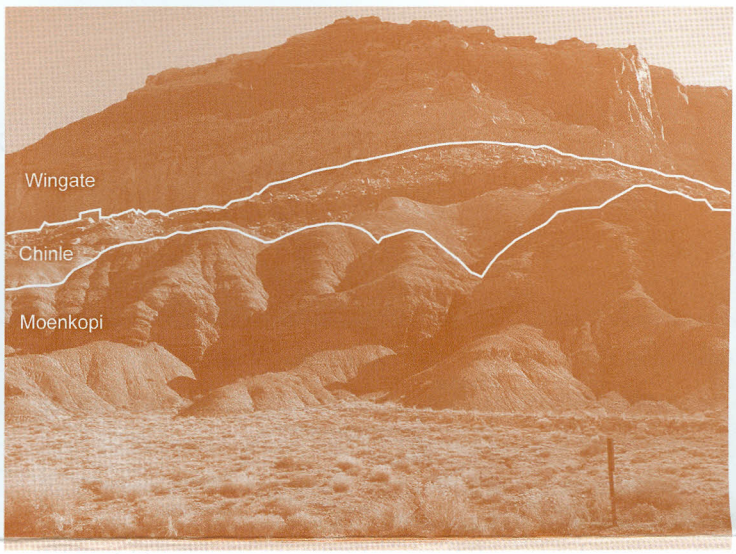
(at the Fee Registration Gate)

Most of the rocks at Capitol Reef National Park are sedimentary. These **sedimentary rocks** are composed of "sediments" (sand, mud, organic materials, etc.) that were transported and subsequently deposited under different environmental conditions. Imagine these sediments in rushing rivers, meandering streams, shallow seaways, marshes and swamps, and blowing, drifting sand dunes. Over time the sediment was buried and groundwater seeped through, its minerals cementing the sediment together to form rock layers.

Sediments deposited under different conditions form different types of rock. Geologists group rock layers into **formations**, units which are distinguished by unique features such as color, age, and rock type. They are generally named for a geographic place and can be traced or mapped for great distances. Several formations are responsible for the spectacular scenery along the Scenic Drive.

The cliff face to your left (east) consists of three formations, **Moenkopi, Chinle,** and **Wingate Sandstone**. The thin layers of mud and shale of the Moenkopi Formation were deposited in quiet lagoons, tidal flats and coastal floodplains when southern Utah was located near the equator, about 225 million years ago. The gray-green rock marks the beginning of the Chinle Formation. It was deposited in an environment of wooded river floodplains, lakes, and tidal flats. It also contains ash from distant volcanoes. Above the Chinle Formation are the red cliffs of the Wingate Sandstone. These cliffs are the remains of the huge windblown sand dunes of an ancient desert.

Looking behind you, to the northwest, you see Johnson Mesa, a gray-green terrace with black boulders on top. This is one of a number of terraces within the park which represent different levels of the Fremont River as it cut through the Waterpocket Fold. The boulders have been carried down from the basalt-covered mountains west of the park. On the flank of the terrace you can see a wall made from the boulders. This was built by the early pioneers to contain their livestock.

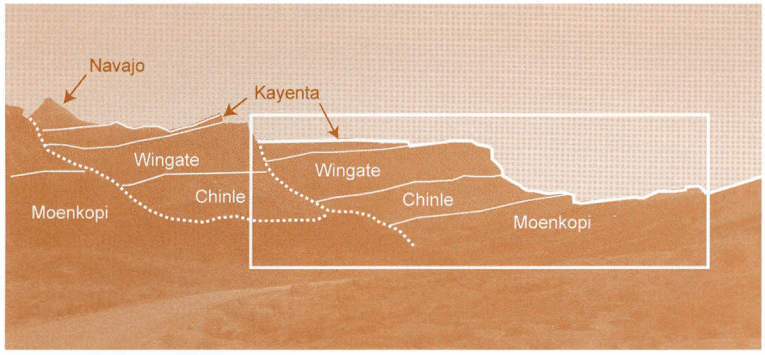


As you travel along the Scenic Drive you may notice the sparkle of gypsum crystals. They were formed as gypsum-saturated groundwater made its way through fractured rock. As the water approached the surface and the pressure dropped, the gypsum crystallized, leaving narrow white veins in the red rocks that sparkle when the light is right.

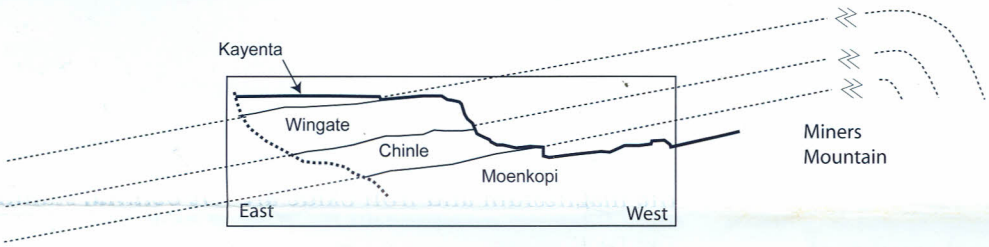
SYSTEM	FORMATION		Member	THICKNESS feet (meters)	LITHOLOGY	ENVIRONMENT
160 my	**Carmel Formation**, Paria River Member			150-200 (45-60)		marine
JURASSIC	**Page Sandstone**			130-150 (40-45)		wind-blown
JURASSIC	Glen Canyon Group	**Navajo Sandstone**	Upper Member	450-550 (135-170)		wind-blown
JURASSIC	Glen Canyon Group	**Navajo Sandstone**	Basal Member	110-150 (35-45)		wind-blown
JURASSIC	Glen Canyon Group	**Kayenta Fm.**		200-300 (60-90)		rivers
208 my	Glen Canyon Group	**Wingate Sandstone**		260-310 (80-95)		wind-blown
TRIASSIC	**Chinle Fm.**		Owl Creek Mbr.	150-200 (45-60)		lakes and rivers
TRIASSIC	**Chinle Fm.**		Petrified Forest Mbr.	110-135 (35-40)		lakes and rivers
TRIASSIC	**Chinle Fm.**		Monitor Butte Mbr.	120-150 (35-45)		lakes and rivers
TRIASSIC	**Chinle Fm.**		Shinarump Cgl. Mbr.	0-30 (0-9)		lakes and rivers
TRIASSIC	**Moenkopi Fm.**		Moody Canyon Mbr.	220-280 (65-85)		coastal plain & tidal flat
TRIASSIC	**Moenkopi Fm.**		Torrey Mbr.	190-210 (60-65)		coastal plain & tidal flat
TRIASSIC	**Moenkopi Fm.**		Sinbad Ls. Mbr.	50-90 (15-25)		marine
245 my	**Moenkopi Fm.**		Black Dragon Mbr.	80-120 (25-35)		marine

STOP 2 CREATION OF THE WATERPOCKET FOLD

The centerpiece of Capitol Reef National Park is the Waterpocket Fold, a nearly 100-mile-long fold in the earth called a **monocline**. After the rock formations were deposited and solidified, enormous compressional forces in the earth caused these sedimentary rock layers (called **strata**) to be uplifted, tilted, and folded.



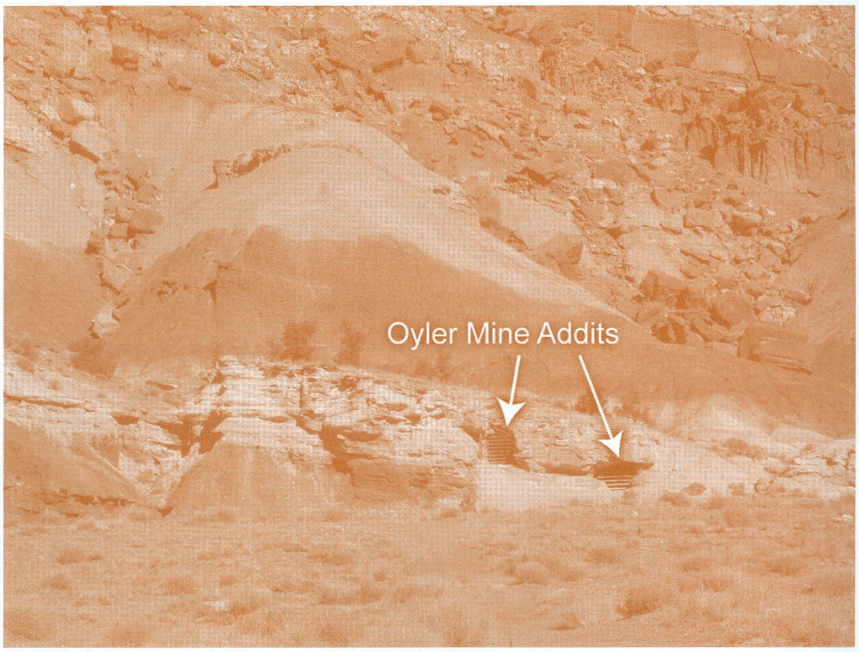
Over time, erosion has exposed these formations. Different types of rocks erode at different rates in a process called **differential erosion**. The mudstone and siltstone of the Moenkopi Formation erode easily. They have eroded away leaving the valley in which the Scenic Drive is located. The vertical cliffs of the Wingate Sandstone are the result of differential erosion. These were formed as the softer rocks of the Chinle and Moenkopi Formations eroded more quickly, thereby undercutting the more resistant Wingate Sandstone. This differential erosion is one reason for the many landforms (cliffs, valleys, domes, ledges, etc.) in the park.



STOPS 3 THROUGH 5 ARE ON THE GRAND WASH SPUR ROAD. GRAND WASH IS A NARROW, STEEP-WALLED CANYON SUBJECT TO DANGEROUS FLASH FLOODS THAT OFTEN ARRIVE WITH LITTLE WARNING. **AVOID THIS ROAD WHEN A STORM IS THREATENING!**

STOP 3 OYLER MINE

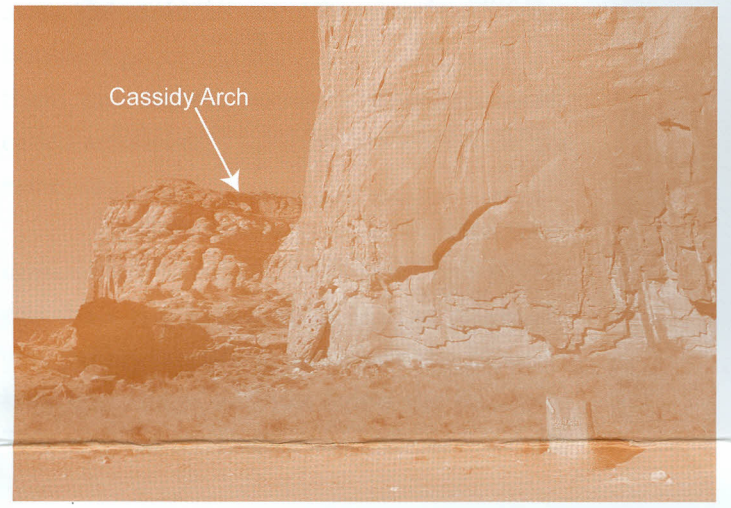
In the yellowish-gray layer of rock, which is the bottom layer of the Chinle Formation, you will notice several entrances to the **Oyler Mine**. The Chinle Formation is renowned for its uranium deposits, and the Oyler Mine produced some of the richest ore in the Capitol Reef area, but its deposits were small. The first claim on the mine was filed in 1901. In the early 1900s the uranium was used for medicinal purposes. Later, it was used for atomic energy. The National Park Service has now closed the mine for both health and safety reasons.



BECAUSE OF THE TILTING OF THE STRATA, YOU WILL NOTICE THAT AS YOU TRAVEL EAST INTO GRAND WASH THE ROAD LEAVES THE MOENKOPI FORMATION, PASSES THROUGH THE CHINLE FORMATION, AND BY THE TIME YOU REACH STOP 4 YOU FIND YOURSELF IN THE WINGATE SANDSTONE.

STOP 4 CASSIDY ARCH

High on the cliff behind you to the west is **Cassidy Arch**. It was named after the outlaw, Butch Cassidy, who is said to have used the area to hide from lawmen. Arches are formed when weakly acidic groundwater is concentrated along fractures or resistant rock layers. These acids dissolve the cement of the sandstone at the base of the arch. Wind and water then remove the sand grains from the face of the rock and the arch develops.



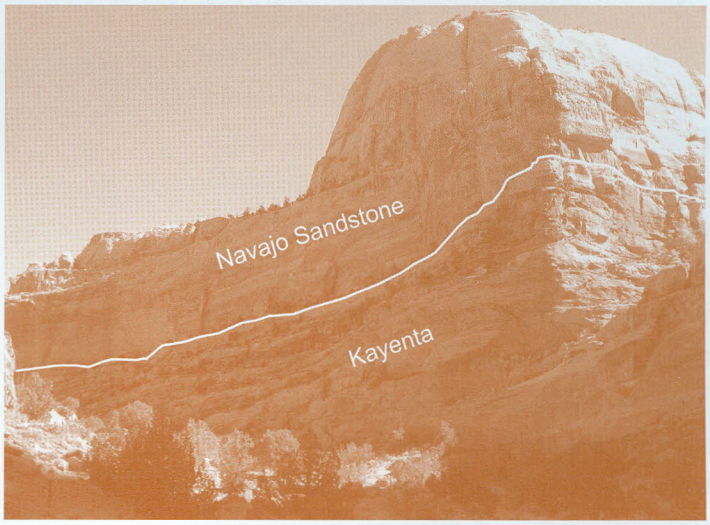
STOP 5 GRAND WASH HABITATS

In Grand Wash you now get a close-up view of the **Kayenta Formation** and **Navajo Sandstone**. The Kayenta Formation was deposited in a braided river environment. It forms ledges, in contrast to the sweeping dunes of the Wingate below and the Navajo above, which form cliffs. The many dome-shaped landforms for which Capitol Reef National Park is known were created by erosion of the Navajo Sandstone.

Conditions deep in Grand Wash are very different from those out in the valley. The steep walls of the canyon provide shade. The streambed is usually dry, but at times it is filled with rushing water. Grand Wash provides several habitats and niches for a variety of plants and animals. Desert Bighorn Sheep are very fond of the ledges of the Kayenta Formation.

In the rocks of the Wingate Sandstone on both sides of the canyon, you can see sweeping lines that intersect one another at varying angles. This is called **crossbedding** and is evidence that these sands were deposited by large, migrating sand dunes.

The black streaks on the canyon walls are called **desert varnish**. Groundwater containing magnesium and iron oxide seeps out of the rocks and evaporates as it runs down the rock face. As the water evaporates, the magnesium and iron oxide are left behind, staining the rock.



The change in elevation (4000 to 11,000 feet), rainfall variance, and the variety of landforms at Capitol Reef National Park all contribute to a variety of habitats that support a great diversity of living things. Information about the plants and animals that are found in the park is available at the park Visitor Center.

STOP 6 DIFFERENTIAL EROSION AND MINERS MOUNTAIN

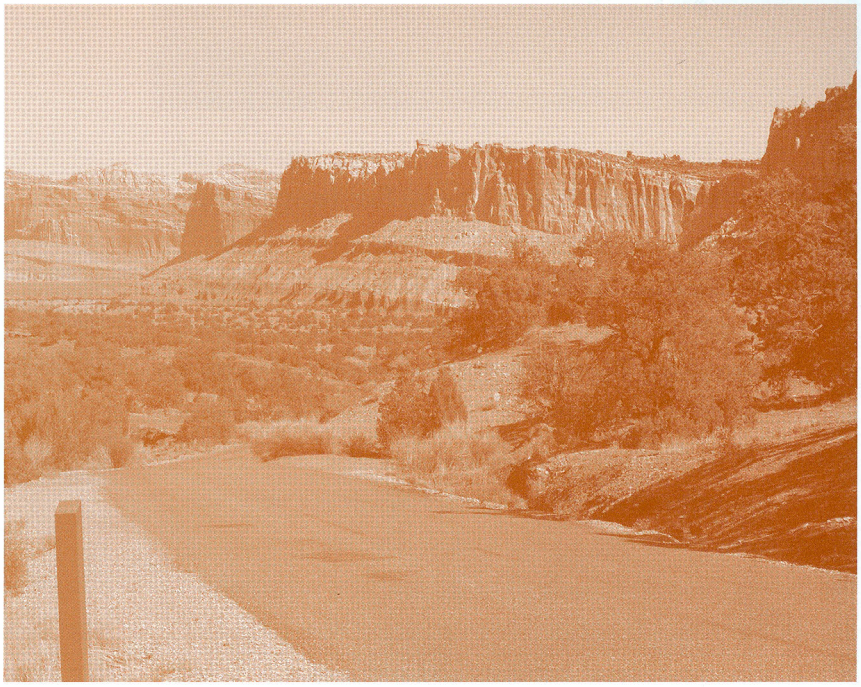
The mountainside to the left, littered with large boulders of Wingate Sandstone, is an example of the effects of **differential erosion**. The softer rocks of the Moenkopi and Chinle Formations eroded, undercutting the more resistant Wingate above. As a result, the Wingate Sandstone broke off the cliff face in huge chunks. This type of erosion is a good reason to stay away from cliff edges, especially overhanging cliffs.

Looking west you see the gently rising slope of Miners Mountain. The slope shows the angle of uplift at this point in the park.

AS YOU DRIVE FROM STOP 6 TO STOP 7 YOU WILL NOTICE RIPPLE MARKS ON MANY OF THE ROCKS SCATTERED ALONG THE ROADSIDE. REMEMBER THAT THE SEDIMENTS OF THE MOENKOPI FORMATION WERE DEPOSITED IN LAGOONS, TIDAL FLATS AND COASTAL FLOODPLAINS. THE **RIPPLE MARKS** ARE EVIDENCE OF THE VERY SHALLOW MARINE AND SHALLOW STREAM ENVIRONMENTS. NOTICE THE RIPPLES IN THE ROCKS AT THE EDGE OF THE PULLOUT AT STOP 7.

STOP 7 SLICKROCK DIVIDE

A "**divide**" describes a high point of ground that divides two water drainages. From this point rain falling to the south drains into Capitol Gorge and rain falling to the north drains into Grand Wash. Although this area gets only six to seven inches of rain per year, it often comes in the form of deluges during thunderstorms. The bare rock absorbs very little of the rainfall, resulting in huge amounts of water pouring off rock faces. Previously dry stream beds quickly fill with churning torrents of muddy, debris-filled water. For this reason, it is very dangerous to be in Capitol Gorge, Grand Wash, and the many narrow canyons in Capitol Reef National Park during a rainstorm. **Please do not enter these areas when storms are threatening.**

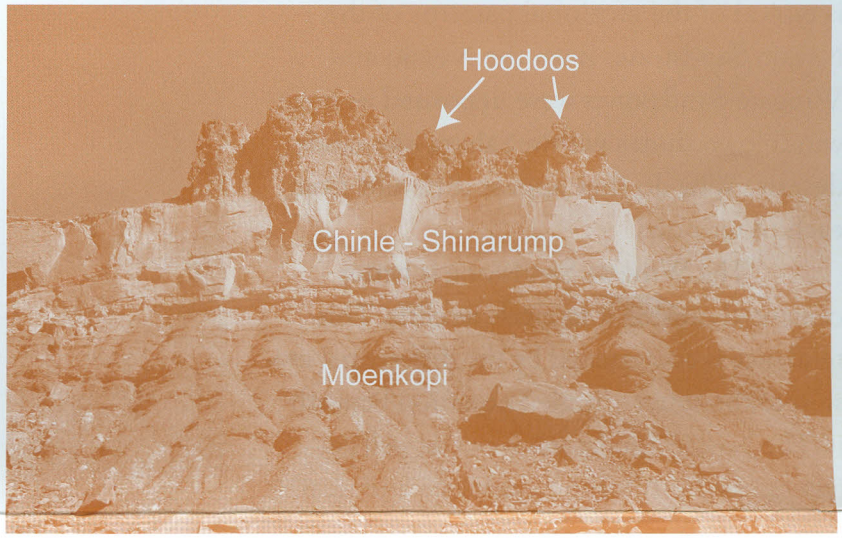


STOP 8 HOODOOS, PINNACLES, AND SHINARUMP

What caused the unusual rock formation at the top of the cliff? These **hoodoos** are another result of differential erosion. The rocks on top of the hoodoos are Wingate Sandstone. But what are they doing near the bottom of the Chinle Formation? Long ago these boulders fell from Wingate Sandstone cliffs and landed on the exposed, less-resistant Chinle rocks far below. As the surrounding strata eroded away, the more resistant Wingate Sandstone boulders protected the rocks underneath them, creating the hoodoos. This process is called **armoring**. Pinnacles are formed in the same way.

Rock formations can be divided into units called **members**. In the cliff face to the east there is a 30 foot thick layer of yellowish-gray pebbly sandstone just above the Moenkopi Formation, and just below the hoodoos. This is called the **Shinarump Member** of the Chinle Formation. The entrances to the Oyler Mine at Stop 3 were located in a thinner layer of the Shinarump Member.

The sediments of the Shinarump Member of the Chinle Formation were deposited by shallow, sand-choked rivers that changed course frequently. This is why the Shinarump Member varies in thickness throughout the park. It is over 30 feet thick at this location, less than 10 feet thick near the Oyler Mine, and nonexistent in other places.

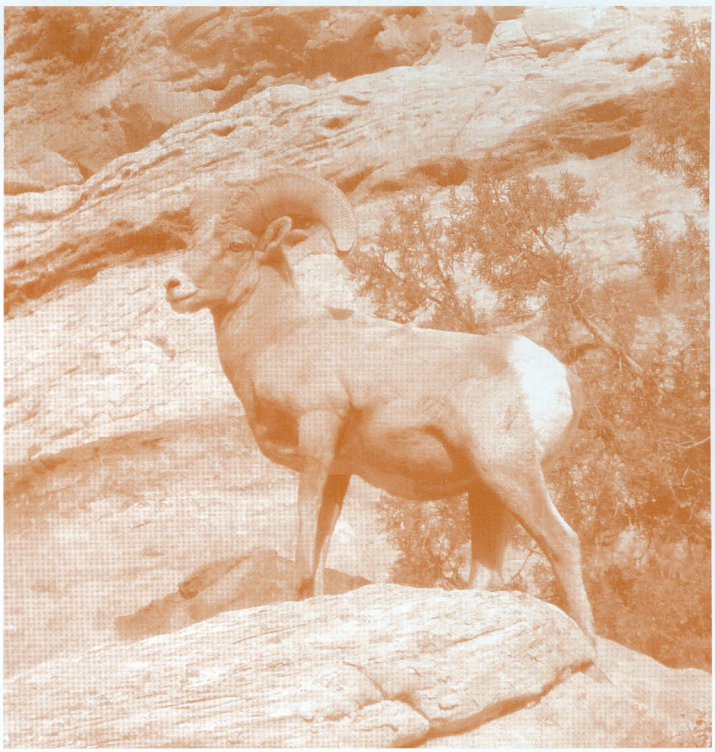


STOP 9 THE OLD ROAD AND DESERT BIGHORN SHEEP

(Parking lot at entrance to Capitol Gorge)

As was mentioned previously, the Scenic Drive and the Capitol Gorge Spur Road are the remains of what was, until 1962, the only road through the Waterpocket Fold. Notice that the road has turned east and Stop 9 is located at the entrance to the sheer canyon walls of the Wingate Sandstone. Can you identify the crossbedding and desert varnish that were explained at Stop 4?

If you look carefully, you may see some Desert Bighorn Sheep, especially on the steep rocky ledges of the Kayenta Formation. At one time Desert Bighorn Sheep were common in the area but, due to hunting and diseases carried by domestic sheep, the whole population was wiped out. They were reintroduced into Capitol Reef National Park in the mid 1990s.



BEWARE OF FLASH-FLOODING. PLEASE DO NOT ENTER CAPITOL GORGE WHEN A STORM IS THREATENING.

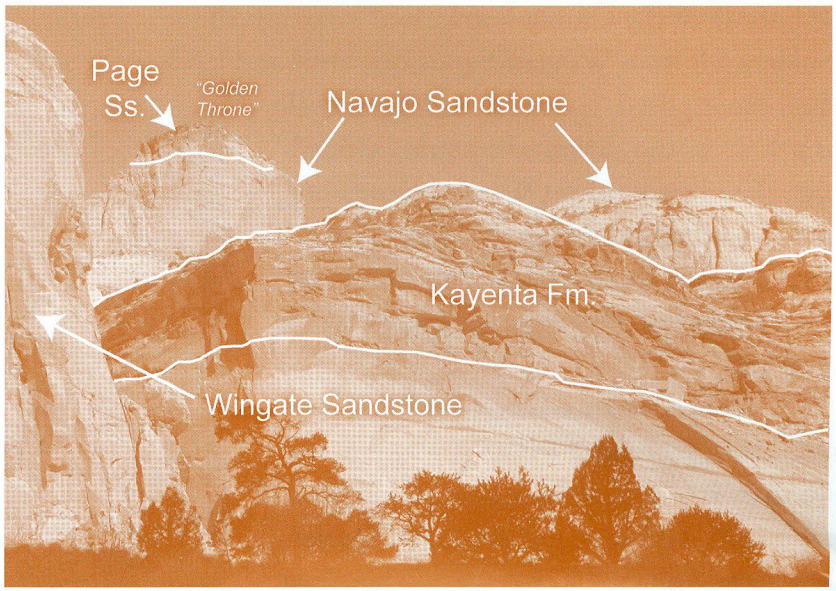
STOP 10 THE NAVAJO SANDSTONE

(no pullout)

Because of the narrowness of the gorge there is not a pullout for stop 10. Please pull to the right as far as possible and be considerate of other vehicles on the road.

The rounded white rock on the left is typical of the erosional patterns of the Navajo Sandstone. Both the Navajo and Wingate Sandstones were deposited as huge windblown dunes within Sahara-like sandy deserts. Why do they appear different from each other now?

The Wingate Sandstone is better cemented causing it to erode as cliffs. This tendency is accentuated by the differential erosion of the softer Chinle Formation beneath it. The Navajo Sandstone is not as well cemented as the Wingate Sandstone and weathers into rounded dome-shapes. The rocks of the Kayenta Formation underlying the Navajo Sandstone are also resistant to erosion. They do not erode and undercut the way the Chinle Formation does. The Navajo Sandstone is white because, when buried in the subsurface, water and petroleum moved through the rock, literally bleaching the color from the sandstone.



STOP 11 PETROGLYPHS, THE PIONEER REGISTER, AND THE TANKS

Stop 11 is located deep in Capitol Gorge at the end of the road. Because the Wingate and Navajo Sandstones are resistant to erosion, the gorge is very narrow with steep, towering walls. A short hike into the gorge along the flat, dry stream bed will take you to petroglyphs, the Pioneer Register, and The Tanks.

The petroglyphs in Capitol Gorge and elsewhere in the park are ancient rock images made by the prehistoric farmers of the Fremont culture. The Fremont people farmed along the streams in Capitol Reef until about 1300 A.D. They used this route through the Waterpocket Fold long before the Mormon settlers arrived.

As you walk between the towering cliffs, keep in mind that this stream bed was the only road through the Waterpocket Fold until 1962. At one spot, early travelers recorded their names on the canyon walls. This is now known as the **Pioneer Register**.

Beyond the Pioneer Register are **The Tanks**. The Tanks are natural cavities in the sandstone that capture rainwater, thereby providing desperately needed water for desert animals. They are similar to the cavities, or "pockets", for which the Waterpocket Fold is named.

WE HOPE YOU ENJOYED THIS SELF-GUIDED DRIVING TOUR OF THE SCENIC DRIVE. WE ENCOURAGE YOU TO BECOME MORE INTIMATELY ACQUAINTED WITH THE BEAUTY OF CAPITOL REEF NATIONAL PARK. MUCH MORE INFORMATION ABOUT THE GEOLOGIC, NATURAL, AND CULTURAL HISTORY OF THE PARK IS AVAILABLE AT THE VISITOR CENTER.

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