UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources
in cooperation with
National Park Service
and Brigham Young University Department of Geological Sciences

Plate 1
Utah Geological Survey Miscellaneous Publication 07-2
Geologic Map of the Fruita Quadrangle

Base map from U.S. Geological Survey
Fruita 7.5' quadrangle, 1987
Geologic data and base map in NAD 1927
Shaded topography generated from digital elevation data

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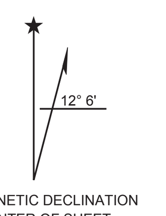

2007 MAGNETIC DECLINATION
AT CENTER OF SHEET

SCALE 1:24,000

1 — 1/2 — 0 — 1 MILE

1000 — 0 — 1000 — 2000 — 3000 — 4000 — 5000 — 6000 — 7000 FEET

1 — .5 — 0 — 1 KILOMETER

CONTOUR INTERVAL 40 FEET

GEOLOGIC MAP OF THE FRUITA QUADRANGLE, WAYNE COUNTY, UTAH

by

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2007

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Field mapping by authors, 2005
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Key access roads, selected trails, and prominent features in and near Capitol Reef National Park shown in brown. Condition and status of roads and trails may change over time. Some not shown. From data provided by National Park Service.

QUADRANGLE LOCATION

1	2	3	1 Cathedral Mountain 2 Fruita NW 3 Caine Springs 4 Twin Rocks 5 Caineville 6 Grover 7 Golden Throne 8 Notom
4		5	
6	7	8	

ADJOINING 7.5' QUADRANGLE NAMES

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DESCRIPTION OF MAP UNITS

QUATERNARY DEPOSITS

Qal — **Alluvial and floodplain deposits** – Poorly to moderately sorted material in modern streams and rivers. Includes clay- to boulder-size sediments composed of mudstone, siltstone, sandstone, and limestone. Includes low terrace deposits up to 10 feet (3m) above the active channel. 0-10 feet (0-3 m) thick.

Qal_2 — **Alluvial and floodplain deposits of a former river level** – Located 10-20 feet (3-6 m) above current floodplain. Clay- to boulder-size sediments composed of mudstone, siltstone, sandstone, and limestone. 0-20 feet (0-6 m) thick.

Qae — **Alluvial-eolian deposits** – Alluvium that has been subsequently reworked by eolian processes to form small surficial eolian deposits (dunes and ripples). Commonly associated with exposed point bars of Deep Creek. Eolian sediments are well sorted and composed of silt to medium-grained sand. 0-10 feet (0-3 m) thick.

Qe — **Eolian deposits** – Very well sorted, well-rounded, very fine to fine wind-blown sand. Occurs between domes of the Navajo Sandstone. 0-10 feet (0-3 m) thick.

Qmt — **Talus deposits** – Mass-movement talus deposits of rockfalls, rockslides, and slumps. Composed of clay- to boulder-size particles. Commonly found where an easily erodable rock layer is located directly under a more resistant rock layer. For example, talus deposits composed of resistant Wingate Sandstone and Kayenta Formation sandstones overly the softer Owl Rock Member of the Chinle Formation. 0-30 feet (0-9 m) thick.

Qmtv — **Volcanic boulder colluvial deposits** – Predominantly composed of talus and colluvial material weathering from nearby volcanic alluvial terrace deposits. Commonly includes large extrusive (basaltic to andesitic) igneous boulders. These deposits may form pediments when overlying softer bedrock such as the Moenkopi Formation, Chinle Formation, Carmel Formation, Entrada Sandstone, and Morrison Formation. 0-5 feet (0-1.5 m) thick.

Qat, Qatf, $Qatf_1$, $Qatf_2$, $Qatf_3$, $Qatf_4$, $Qatf_5$, Qatfu, $Qatd_1$, Qatdu, Qatpu — **Old alluvial terrace deposits** – Bedded sand- to boulder-size sediments overlying river-cut strath terraces. Consists of two main types of material of which one or both may be present. One type is composed mainly of large igneous boulders (basaltic to andesitic composition) with smaller amounts of lighter colored sand- to silt-size sediment. The other type of terrace material is made of light peach-colored sand- to cobble-size sediment from locally derived bedrock. Where both of these deposits are present, the igneous boulder material is found below the locally derived material. Each terrace has been designated as follows:

Qatf - Terraces associated with the Fremont River drainage. $Qatf_1$ represents the youngest terraces, with $Qatf_2$, $Qatf_3$, $Qatf_4$, and $Qatf_5$ representing consecutively older terraces at higher elevations above the present riverbed. $Qatf_1$ represents deposits 0-60 feet (0-18 m) above the present stream level, $Qatf_2$ - 60-120 feet (18-37 m), $Qatf_3$ - 120-180 feet (37-55 m), $Qatf_4$ - 180-240 feet (55-73 m), and $Qatf_5$ - 240-320 feet (73-98 m). (Eddleman, 2005). Qatfu are sparse undifferentiated terraces associated with the Fremont River drainage, and are older and higher in elevation than $Qatf_5$.

$Qatd_1$, Qatdu - Terraces associated with Deep Creek drainage. The numbering for these terraces uses the same method as mentioned above for the Fremont River terraces. However, the data for these terraces suggest only two different terrace names: $Qatd_1$ and Qatdu (undifferentiated terraces associated with Deep Creek). The Qatdu terraces are sparse, much higher in elevation, and older than the $Qatd_1$ terraces.

Qatpu - Undivided terraces associated with Pleasant Creek drainage. These terraces are associated with the Pleasant Creek drainage because of their proximity to it.

Qatlo — **Old locally derived terrace deposits** – Terrace deposits not clearly associated with any of the present perennial drainages. Clay- to boulder-size particles of mudstone, siltstone, sandstone, and limestone derived from local, non-volcanic sources. Deposits are elevated significantly above present streambeds. Located in the southwest corner of the quadrangle. 5-30 feet (1.5-9 m) thick.

TERTIARY ROCKS

Ti — **Intrusive igneous dikes** – Dark-gray, near-vertical dikes of trachybasalt and basanite composition. Some are locally brecciated, containing a mixture of igneous material and host rock. The average dike width is approximately 3 feet (1 m). The width of the dikes is slightly exaggerated on the map, and may contain adjacent host rock that has been altered by the intrusion. Dikes are generally wider in the middle and thin on the ends. Ages of the intrusions range from 3.4 ± 0.2 Ma to 4.7 ± 0.3 Ma (Delaney and Gartner, 1997; Nelson and Tingey, 1997). Doelling and Kuehne (2005) dated dikes at 4.35 ± 0.04 Ma ($^{40}Ar/^{39}Ar$).

CRETACEOUS ROCKS

Kmt — **Tununk Member of the Mancos Shale** (Upper Cretaceous) – Medium- to dark-gray to bluish bentonitic shale. Near the base and top, the shale may be yellowish- to greenish-gray and may include mudstone, siltstone, and very fine grained sandstone. The pelecypod *Mytiloides mytiloides* is found in the lower middle part of the Tununk Member. Forms a broad slope. Exposed in the Fruita quadrangle in the center of the doubly plunging syncline in North Blue Flats. 330-500 feet (100-150 m) thick.

Kd — **Dakota Sandstone** (Lower Cretaceous) – Tan to brownish-gray, very fine to fine-grained, quartz-rich sandstone to siltstone/mudstone. May contain thin units of weathered interbedded coal, carbonaceous shale, and conglomerate. Thick sandstone beds may contain oysters. Channel sandstones look similar to those in the Mussentuchit Member of the Cedar Mountain Formation. Forms ledges and slopes. 0-10 feet (0-3 m) thick.

Kcm — **Mussentuchit Member of the Cedar Mountain Formation** (Lower Cretaceous) – Light-gray to greenish-gray smectitic mudstone and siltstone. A few thin discontinuous sandstones may be present. In North Blue Flats the Mussentuchit is discontinuous. Forms slopes. 0-30 feet (0-10 m) thick.

Kcr — **Ruby Ranch Member of the Cedar Mountain Formation** (Lower Cretaceous) – Variegated purple, brown, and red mudstone with minor limestone and sandstone beds. Drab colors are more pastel than the Brushy Basin Member of the Morrison Formation (below), and may help distinguish the two where the Buckhorn is missing, although color is not necessarily diagnostic. Consists of thin-bedded, laminated, slope-forming mudstone and shale with carbonate nodules. Contains a few sandstone beds and lenses of light-gray to light-brown cross-bedded sandstone to conglomerate. 0-60 feet (0-20 m) thick.

Kcb — **Buckhorn Conglomerate Member of the Cedar Mountain Formation** (Lower Cretaceous) – Gray to brown conglomerate to conglomeratic sandstone that is commonly cross-bedded. Pebbles consist of white, gray, brown, and red chert, light-gray quartzite, clear quartz, and light-gray limestone. Minor beds of light-gray, light-green, or purple mudstone, silty sandstone, light-gray limestone, and light-gray conglomeratic limestone. Unit is missing locally due to non-deposition and/or erosion. Forms ledges and cliffs. 0-50 feet (0-15 m) thick.

JURASSIC ROCKS

Jmb — **Brushy Basin Member of the Morrison Formation** (Upper Jurassic) – Reddish-brown and light-greenish-gray laminated to thin-bedded mudstone, claystone, and siltstone. The mudstone contains significant quantities of swelling clays and weathers to produce a popcorn-like texture on the surface. Contains local gray to buff sandstone. Forms badlands-type topography. 200-360 feet (60-110) thick.

Jms — **Salt Wash Member of the Morrison Formation** (Upper Jurassic) – Light-grayish-brown to light-gray, fine- to very coarse grained, cliff-forming sandstone and colored, chert-rich pebble conglomerate. Contains minor amounts of interbedded, very thin, laminated beds of red and grayish-green mudstone. Forms ledges and slopes. 100-200 feet (30-60 m) thick.

Jmt — **Tidwell Member of the Morrison Formation** (Upper Jurassic) – Predominantly gray, green, and red, crinkly, thin-bedded mudstone. Thin beds of gray, dense limestone are interbedded with the mudstone locally. Small amounts of gypsum may be present. Forms a slope. 15-30 feet (5-10 m) thick.

Js — **Summerville Formation** (Upper Jurassic) – Thin-bedded red-brown mudstone and siltstone with thin interbeds of limestone, sandstone, and gypsum. "Coconut" gypsum stringers may be found as fracture and fault fill. Forms cliffs, ledges, and slopes. 130 feet (40 m) thick.

Jcs — **Curtis Formation** (Upper Jurassic) – Light-grayish-green, glauconitic, calcite-cemented sandstone and siltstone with thin interbeds of sandy limestone. Forms steep slopes and ledges. 80 feet (25 m) thick.

Je — **Entrada Sandstone** (Middle Jurassic) – Grayish-red to moderate-red mudstone interbedded with moderate-reddish-orange fine-grained sandstone. Grayish-orange cross-bedded eolian sandstone of varying thickness are locally present. Upper portion may contain thin beds of nodular gypsum and "coconut" gypsum fracture-filling veins. The vast majority of the Entrada Sandstone in this quadrangle is referred to as the "earthy" facies (tidal-influenced mudflats) as opposed to the "slick rock" (eolian) facies (Morris and others, 2005). Forms a slope. 430-490 feet (130-150 m) thick.

Jcwb — **Upper Winsor (Banded) Member of the Carmel Formation** (Middle Jurassic) – Pale-reddish-brown siltstone and mudstone with gypsum stringers that are interbedded with pale-olive mudstone. Slope-forming unit contains deformed beds due to gypsum movement. Locally gypsum diapirs cut unit. 180-200 feet (55-60 m) thick.

Jcwg — **Lower Winsor (Gypsum) Member of the Carmel Formation** (Middle Jurassic) – Light-gray to white gypsum, pale-reddish-brown siltstone and mudstone beds with gypsum stringers, and light-gray to greenish-gray mudstone. Forms slopes and ledges. Ledges are composed of up to 40-foot (13 m) thick layers of gypsum. Bedding is commonly deformed due to movement of gypsum beds. 180-200 feet (55-60 m) thick.

Jcpr — **Paria River Member of the Carmel Formation** (Middle Jurassic) – Moderate-reddish-brown mudstone and siltstone, yellowish-gray siltstone, and a bed of light-gray to white gypsum. Forms ledges. Gypsum bed is locally discontinuous due to gypsum flow. 150-200 feet (45-60 m) thick.

Jpc — **Page Sandstone** (Middle Jurassic) – The Page Sandstone is composed of two members: the Harris Wash Member (lower) and the Thousand Pockets Member (upper) (Martin and others, 2007). These are separated by the Judd Hollow Tongue, a member of the overlying Carmel Formation that is included in the Page map unit. The Harris Wash Member is very-pale-orange to pale-yellowish-orange, fine- to medium-grained, cross-bedded sandstone. It is 90-110 feet thick (30-34 m). Based on pollen assemblages and ages, the upper part of the Judd Hollow Tongue correlates with the Crystal Creek Member of the Carmel Formation as mapped in southwestern Utah, and the Judd Hollow Tongue as mapped in south-central Utah (Douglas A. Sprinkel and Hellmut H. Doelling, personal communication, 2005). It is composed of slope-forming, ripple-laminated, moderate-reddish-brown to dark-reddish-brown mudstone and sandstone with locally interbedded limestone and is 10-17 feet (3-5 m) thick. The Thousand Pockets Member is very-pale-orange to pale-yellowish-orange, fine- to medium-grained, cross-bedded, planar-bedded, and contorted sandstone. It is 17-32 feet thick (5-10 m). The Page Sandstone can be distinguished from the underlying Navajo Sandstone by the abrupt change in weathering style. The lower portion of the Page Sandstone forms sheer cliffs above the rounded Navajo Sandstone. Total thickness of the Page Sandstone map unit ranges from 130-150 feet (40-45 m) thick.

Jn — **Navajo Sandstone** (Lower Jurassic) – Very-pale-orange to pale-gray, large-scale, high-angle, trough cross-bedded, very fine to fine-grained sandstone. Localized soft-sediment deformation observable in the upper few hundred feet may be associated with cataclysmic failure of interdune lakes within the Navajo erg (Eisenberg, 2003). Forms cliffs and rounded domes. The basal map contact in the transitional zone with the underlying Kayenta Formation has been chosen as the last prominent but slope-forming red shale bed beneath uniform cross-bedded eolian sandstone. Sandstones beneath this red shale bed are both eolian and fluvial in nature and have been placed within the Kayenta Formation. 900-1300 feet (275-395 m) thick.

Jk — **Kayenta Formation** (Lower Jurassic) – Moderate-reddish-brown to moderate-reddish-orange, irregularly bedded, very fine to coarse-grained sandstone and siltstone. Forms stepped topography composed of ledges (locally cliffs) and slopes. The upper approximately 100 feet (30 m) was mapped by Sorber and others (2006) and Doelling and Kuehne (2005) as the basal member of the Navajo Sandstone within the adjacent Twin Rocks quadrangle where the eolian nature is more prominent. 300-400 feet (90-120 m) thick.

JURASSIC - TRIASSIC ROCKS

JTRw — **Wingate Sandstone** (Lower Jurassic to Triassic[?]) – Light brown to moderate reddish-brown, cross-bedded to apparently massive, very fine to fine-grained sandstone. Forms the sheer cliffs of the western escarpment of the Waterpocket Fold. Walls are highly fractured and commonly covered with black to dark-brown desert varnish. 350-400 feet (105-120 m) thick.

TRIASSIC ROCKS

TRco — **Owl Rock Member of the Chinle Formation** (Upper Triassic) – Orange and purple mudstone, siltstone, and sandstone with 1-3 foot (0.3-1 m) thick interbeds of mottled dusky-red to pale-yellowish-green limestone (interpreted to represent paleosols) containing abundant rhizoliths and bioturbated horizons. Forms a steep slope. Unit is commonly covered by talus deposits of the overlying Wingate and Kayenta Sandstones. 180-220 feet (55-65 m) thick.

TRcp — **Petrified Forest Member of the Chinle Formation** (Upper Triassic) – Moderate-reddish-brown mudstone and siltstone interbedded with carbonate nodule horizons, 2 feet (0.6 m) thick, interpreted to be paleosols. Contains petrified wood. The upper bed of the member consists of a locally extensive, dark-reddish-brown, ledge-forming, medium- to coarse-grained, cross-bedded sandstone called the "Capitol Reef Bed." Most of the unit forms slopes. 180-200 feet (55-60 m) thick.

TRcm — **Monitor Butte Member of the Chinle Formation** (Upper Triassic) – Light-olive-gray to greenish-gray, bentonitic claystone with thin dusky-brown todark-yellowish-orange,medium-tocoarse-grained,cross-bedded, channelized sandstone beds. Forms a slope. 150-200 feet (45-60 m) thick.

TRcs — **Shinarump Member of the Chinle Formation** (Upper Triassic) – Grayish-orange to very-pale-orange, medium- to very coarse grained, cross-bedded conglomeratic sandstone. Contains petrified wood. Shinarump beds are discontinuous due to its braided fluvial depositional history. The basal unconformable contact is scoured with 0-5 feet (0-1.5 m) of relief. The member contains uranium and has been historically prospected within the quadrangle. Forms ledges and cliffs. 0-20 feet (0-6 m) thick.

TRmm — **Moody Canyon Member of the Moenkopi Formation** (Lower Triassic) – Moderate-reddish-brown to moderate-reddish-orange, laminated mudstone and siltstone with sparse, fine-grained, ripple-laminated sandstone beds. Gypsum-filled fractures and bedding-parallel stringers are common. Commonly forms a slope. Can be cliff-forming where overlain by the Shinarump Conglomerate. 250-300 feet (75-90 m) thick.

TRmt — **Torrey Member of the Moenkopi Formation** (Lower Triassic) – Moderate-reddish-brown to moderate-reddish-orange mudstone, siltstone, and very fine to medium-grained sandstone. Bedding thickness ranges from 1-15 feet (0.5-5 m). Contains "ripple rock" and reptilian trackways. Forms ledges and slopes. 200-220 feet (60-65 m) thick.

TRms — **Sinbad Limestone Member of the Moenkopi Formation** (Lower Triassic) – Very-pale-orange to grayish-orange limestone and dolostone with interbeds of calcareous siltstone, sandstone, and algal boundstones. Upper bed commonly contains oolitic grains with rare bivalves. Forms a cliff. 40-70 feet (12-20 m) thick.

TRmb — **Black Dragon Member of the Moenkopi Formation** (Lower Triassic) – Shown in cross-section only.

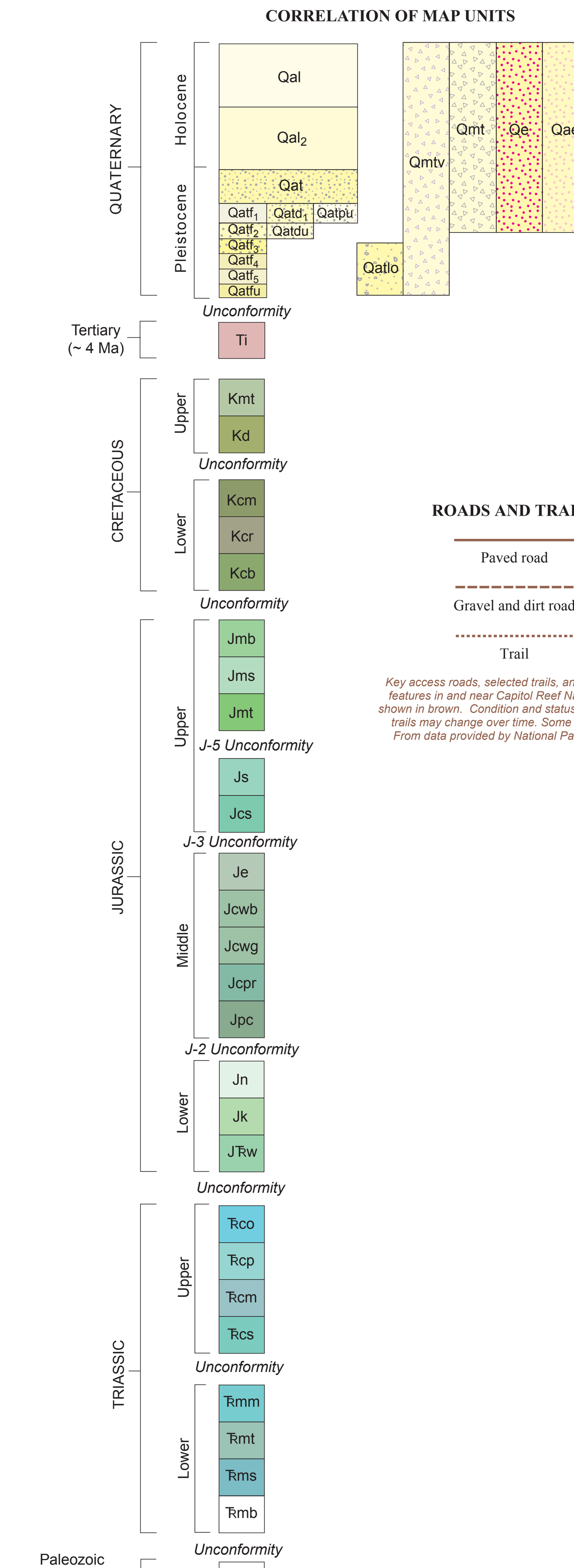
PALEOZOIC ROCKS

Pu — **Paleozoic rocks undifferentiated.** (cross section)

SYMBOLS

- Contacts
- Fault - bar and ball on downthrown block; dashed where approximate, dotted where covered
- Anticline - showing anticlinal axis and direction of plunge
- Syncline - showing synclinal axis and direction of plunge
- 10 — Strike and dip of bedding
- A —— A' — Line of cross section
- 5000 — Structural contours - drawn on the top of the Wingate Sandstone; dashed where projected; units are feet above sea level; contour interval: 500 feet
- Joints (only prominent shown)

CORRELATION OF MAP UNITS



ROADS AND TRAILS

- Paved road
- Gravel and dirt road
- Trail

Key access roads, selected trails, and prominent features in and near Capitol Reef National Park shown in brown. Condition and status of roads and trails may change over time. Some not shown. From data provided by National Park Service.

Volcanic Boulder-Covered Strath Terraces and Landscape Evolution

Volcanic Boulder-covered Strath Terraces within the Glen Canyon Group Section of the Fremont River Canyon - from Eddleman (2005)

Boulder-covered strath terraces are dominant landforms carved into the relatively resistant bedrock of the Fremont River drainage. These fluvial terraces and their associated boulder deposits at one time represented the active river floor, but have since been abandoned. These terraces help to preserve stream bed histories and create an ideal surface with which to characterize overall drainage development.

Glacial influence on landscape and drainage morphology has been significant within the Fremont River and surrounding drainages. Research suggests that strath terrace development (widening of the floodplain) and deposition occurred as the Fremont River responded to dramatic increases in discharge and sediment flux during glacial maxima/deglacial climate phases. Incision and subsequent abandonment of strath terraces began as drainages responded to continued waning discharge (due to glacial retreat) and an overall decrease in sediment during deglacial/interglacial climate phases.

Strath terrace populations were analyzed in an attempt to understand landscape evolution. Terraces were placed into 20-foot. bins and then grouped into larger terrace levels based on natural breaks in population data (occurring in intervals of approximately 60-80 feet) that display multiple modes. Results for the Fremont River were plotted (figure A) and six terrace levels, labeled $Qatf_1$ through $Qatf_5$ and Qatfu respectively, were interpreted. An identical analysis for the Pleasant Creek drainage (approximately 10 miles [16 km] to the south in the Golden Throne 7.5' quadrangle, Martin and others, 2006) yields similar results and was used in a comparative analysis between drainages (figure B).

A Schmidt Hammer is a piston impact device designed to measure the hardness of a surface. Surface hardness can provide a valuable measure of rock surface weathering and therefore relative terrain age. A Schmidt Hammer was used to obtain quantitative data (Schmidt Hammer rebound or R-values) on the hardness of basalt boulder deposits on strath terraces. Schmidt Hammer results indicate that elevation change between strath terraces is accompanied by a coincident change in mean R-values wherein the higher the elevation of the terrace above the present stream bed, the lower the mean R-values become. Mean Schmidt Hammer data (table 1) confirms terrace level designations (figures A and B) for both the Fremont River and Pleasant Creek drainages. Schmidt Hammer data also highlight very similar mean R-values for the most recent terrace levels of both drainages (table 1).

Results, based on terrace populations and Schmidt Hammer analysis, indicate that the larger Fremont River drainage is likely much older than the Pleasant Creek drainage. Data, also supports the conclusion that correlation exists between the two lowest (most recent) terrace levels within the Fremont River ($Qatf_1$ and $Qatf_2$) and the Pleasant Creek terraces ($Qatv_1$ and $Qatv_2$). This correlation is significant and illustrates that the root cause of drainage development and incision may be a forcing mechanism that is extrabasinal in nature. We suggest that the most probable forcing mechanism was regional Pleistocene glacial-interglacial climate cycles.

Figure A

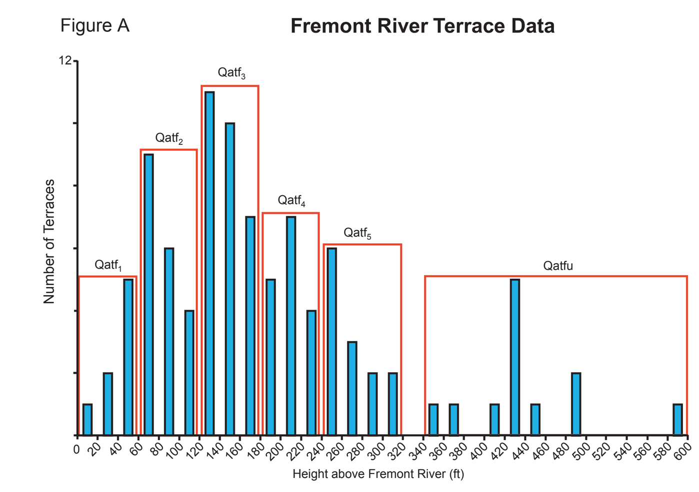


Figure B

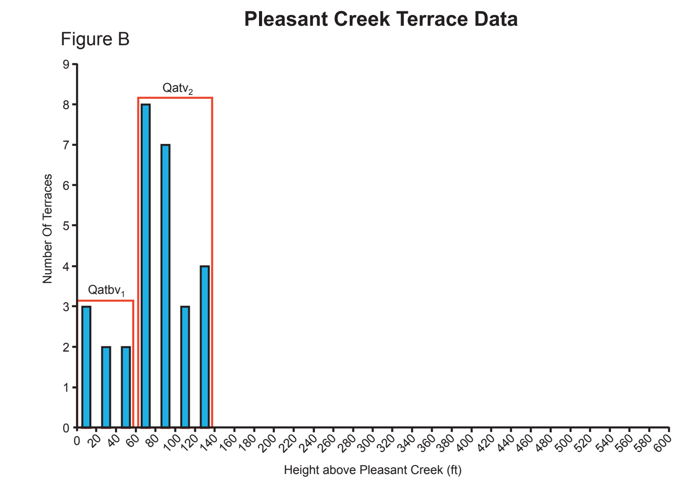
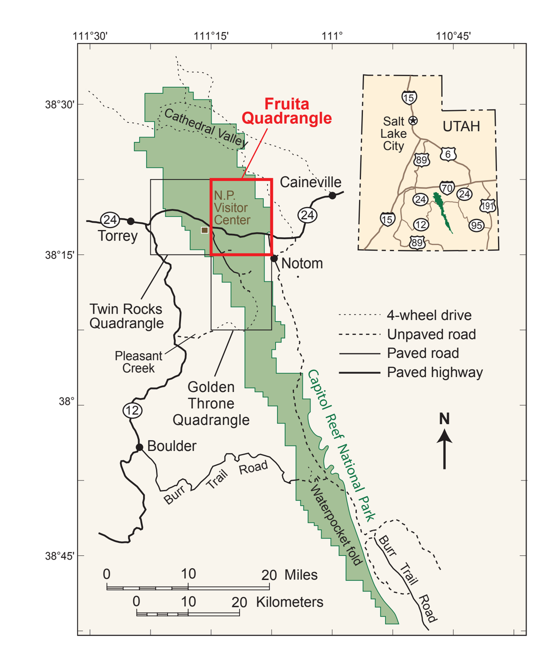


Table 1. Summary of strath terrace elevation and Schmidt hammer data for both the Pleasant Creek and Fremont River drainages.

Fremont Terrace Profiles	Elevation Above Current Stream Bed	Mean Schmit Hammer R-Values	Pleasant Creek Profiles	Elevation Above Current Stream Bed	Mean Schmidt Hammer R-Values
Qatfu	>381 ft.	33.59			
Qatfu	340-380 ft.	37.66			
$Qatf_5$	241-320 ft.	39.22			
$Qatf_4$	181-240 ft.	39.30			
$Qatf_3$	121-180 ft.	44.87			
$Qatf_2$	61-120 ft.	46.55	$Qatv_2$	61-140 ft.	45.01
$Qatf_1$	<60 ft.	52.46	$Qatv_1$	<60 ft.	50.02
Present			Present		

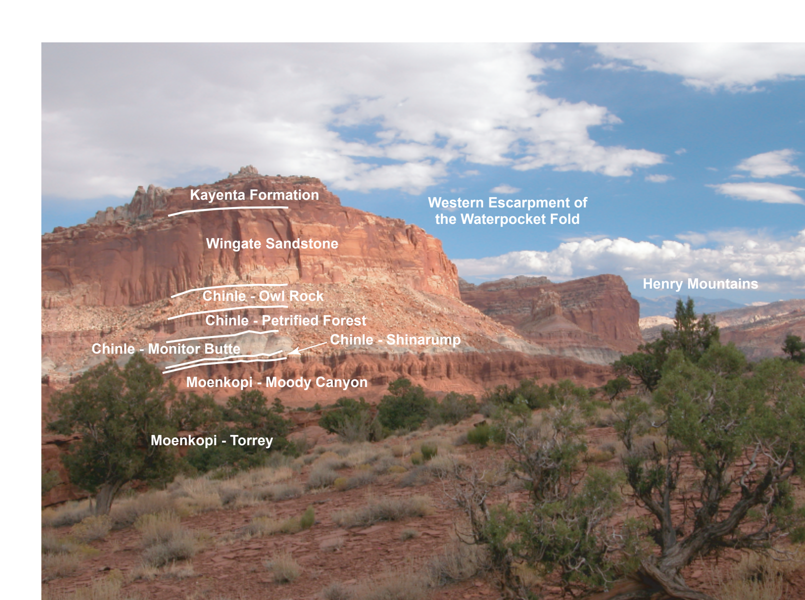


Location of Fruita Quadrangle in Capitol Reef National Park.

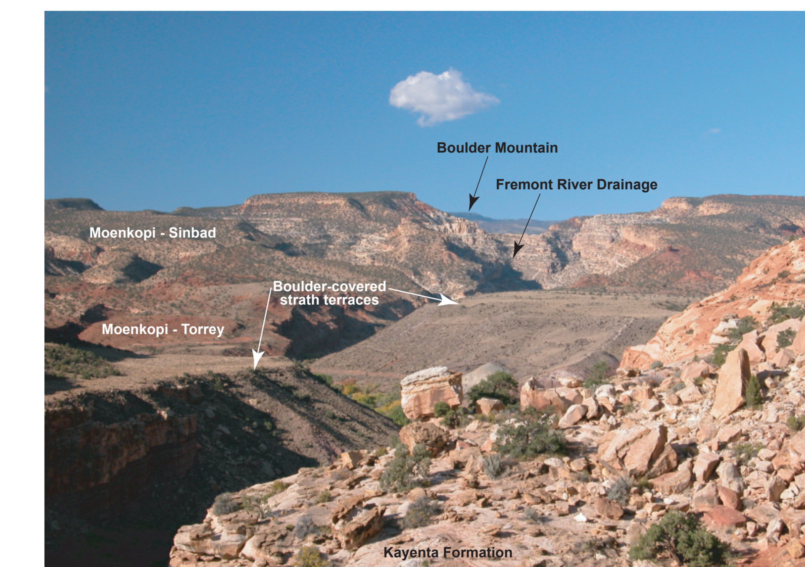
LITHOLOGIC COLUMN

SYSTEM	FORMATION		THICKNESS feet (m)	MAP SYMBOL	ENVIRONMENT
CRETACEOUS	Mancos Shale	Tununk Member	330-500 (100-150)	Kmt	marine
CRETACEOUS	Dakota Sandstone		0-10 (0-3)	Kd	fluvial/marine
CRETACEOUS	Cedar Mtn. Fm.	Mussentuchit Member	0-30 (0-10)	Kcm	lacustrine/fluvial
CRETACEOUS	Cedar Mtn. Fm.	Ruby Ranch Member	0-60 (0-20)	Kcr	
CRETACEOUS	Cedar Mtn. Fm.	Buckhorn Cg. Member	0-50 (0-15)	Kcb	fluvial
JURASSIC	Morrison Formation	Brushy Basin Member	200-360 (60-110)	Jmb	lacustrine/ fluvial
JURASSIC	Morrison Formation	Salt Wash Member	100-200 (30-60)	Jms	fluvial
JURASSIC	Morrison Formation	Tidwell Member	15-30 (5-10)	Jmt	
JURASSIC	San Rafael Group	Summerville Formation	130 (40)	Js	tidal flat
JURASSIC	San Rafael Group	Curtis Formation	80 (25)	Jcs	marine
JURASSIC	San Rafael Group	Entrada Sandstone	430-490 (130-150)	Je	erg margin tidal flat
JURASSIC	San Rafael Group, Carmel Fm.	Upper Winsor Mbr.	180-200 (55-60)	Jcwb	
JURASSIC	San Rafael Group, Carmel Fm.	Lower Winsor Mbr.	180-200 (55-60)	Jcwg	marine
JURASSIC	San Rafael Group, Carmel Fm.	Paria River Mbr.	150-200 (45-60)	Jcpr	
JURASSIC	San Rafael Group	Page Sandstone	130-150 (40-45)	Jpc	eolian
JURASSIC	Glen Canyon Group	Navajo Sandstone	900-1300 (275-395)	Jn	eolian
JURASSIC	Glen Canyon Group	Kayenta Formation	300-400 (90-120)	Jk	fluvial
JURASSIC	Glen Canyon Group	Wingate Sandstone	350-400 (105-120)	JTRw	eolian
TRIASSIC	Chinle Formation	Owl Rock Member	180-220 (55-65)	TRco	
TRIASSIC	Chinle Formation	Petrified Forest Member	180-200 (55-60)	TRcp	lacustrine/ fluvial
TRIASSIC	Chinle Formation	Monitor Butte Member	150-200 (45-60)	TRcm	
TRIASSIC	Chinle Formation	Shinarump Cg. Mbr.	0-20 (0-6)	TRcs	
TRIASSIC	Moenkopi Formation	Moody Canyon Member	250-300 (75-90)	TRmm	coastal plain & tidal flat
TRIASSIC	Moenkopi Formation	Torrey Member	200-220 (60-65)	TRmt	marine
TRIASSIC	Moenkopi Formation	Sinbad Ls. Member	40-70 (12-20)	TRms	

Eastward view of Capitol Dome looking down the Fremont River. Capitol Dome is composed of Jurassic Navajo Sandstone (Jn). It may be viewed at the Hickman Bridge parking area along Highway 24. In this photo the canyon walls are composed primarily of Jurassic/Triassic Wingate Sandstone with the Jurassic Kayenta Formation capping the left cliff face on the skyline.



Southeastward view of the western escarpment of the Waterpocket Fold. The near cliff exposes Triassic Moenkopi Formation at the base, Chinle Formation in middle, Wingate Sandstone as the vertical cliff face, and the Kayneta Formation capping the cliff. Note the distal Henry Mountains in background.



Westward view of the Fremont River drainage as seen from the Hickman Bridge area. Flat surfaces represent stream-cut strath terraces. The distal dark sliver (beneath cloud) is Boulder Mountain - part of the headwaters of the Fremont River.

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