

Table 1--Columnar stratigraphic section of rocks underlying the Paria Plateau-House Rock Valley area, Coconino County, Arizona.

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Age	Group, Formation, Member	Thickness	Description	Land forms		
Quaternary		15+ m	Terrace-gravel, landslide, alluvial-fan, and talus debris; windblown sand and stream gravel	Benches, lobate tongues, cones, dunes, valley bottoms		
Late Cretaceous	Dakota Sandstone	30+ m	Ripple-bedded sandstone and laminated siltstone underlain by conglomerate and coarse-grained sandstone	Ledges and short slopes		
Late Jurassic	San Rafael Group	Entrada Sandstone	200 m	Sandstone, pale-gray, medium- to fine-grained, cross-bedded	Bluffs	
Late and Middle Jurassic		Carmel Formation	0-120 m	Siltstone, silty limestone, and interbedded sandstone; siltstone, red, calcareous; sandstone, red, white, and brown	Ledges and slopes	
Jurassic and Late Triassic (?)	Glen Canyon Group	Navajo Sandstone	510-560 m	Sandstone, white to reddish-brown and orange, massive, cross-bedded; contains a few lenses of dark-brown chert	Nipples, buttes and sheer cliffs	
Late Triassic (?)		Kayenta Formation	35-90 m	Sandstone and alternating sandstone and siltstones; red to pale reddish-brown; sandstone, massive; locally is cross stratified and ripple marked	Benches and ledges	
Late Triassic (?)	Moenave Formation	Springdale Ss Member	50-70 m	Sandstone; red and massive	Cliffs	
		Uniosaur Canyon Ss Member	40-70 m	Sandstone and siltstone; sandstone reddish-orange and flat-bedded; siltstone varicolored	Ledges and steep slopes	
Late Triassic	Chinle Formation	Wingate (?) Sandstone	12-20 m	Sandstone, light brown to reddish-orange, crossbedded and planar bedded, fine-grained	Ledges	
		Owl Rock Member	15-60 m	Siltstone, clayey siltstone, limestone, cherty limestone, limestone conglomerate, and sandstone; siltstone dark red and nonbentonitic; limestones, nodular	Smooth rounded slopes	
		Petrified Forest Member	180-240 m	Siltstone, claystone, silty sandstone, sandstone, and limestone pebble conglomerate; siltstone, varicolored, mainly reds, green, and blue, and bentonitic	Smooth rounded slopes	
		Shinarump Member	0-45 m	Conglomeratic sandstone, pale brown, white, to light gray	Benches and ledges	
Middle (?) and Early Triassic	Moenkopi Formation	100-220 m	Gypsiferous siltstone, clayey siltstone, and silty limestone, pale to dark reddish-brown and grayish-green, thin-bedded; pale-brown sandstone marker bed at top of formation	Concave slopes		
Permian	Kaibab Limestone	Upper part	40+ m	Cherty dolomitic limestone, dolomite, siltstone, and calcareous sandstone, tan and light gray, fossiliferous		
		Lower part	80+ m	Cherty dolomite, dolomitic limestone, and sandstone, fossiliferous, alternating sequence, white to grayish yellow; sandstone generally white		
	Toroweap Formation	35-70 m	Dolomitic limestone, cherty limestone, gypsum, anhydrite, siltstone, and white to yellowish-white sandstone			
	Coconino Sandstone	0-20 m	Sandstone, light yellowish-gray, massive			
	Hermit Shale	150+ m	Siltstone and shale, reddish-brown and grayish-green, massive			
Pennsylvanian	Esplanade Sandstone		140+ m	Sandstone, fine-grained; and interbedded siltstone and gypsum; mainly reddish-orange		
		Wescosage Formation ¹	60+ m	Sandstone, reddish-brown, fine-grained, calcareous, and cross-stratified, moderate reddish-orange, fossiliferous		
		Manakacha Formation ¹	75+ m	Sandstone, limy, cross-bedded, and sandy limestone, reddish-orange to reddish-gray, fossiliferous		
Mississippian	Watahomigi Formation ¹		60+ m	Limestone and mudstone, conglomeratic at base, multi-colored, fossiliferous		
		Mooney Falls Member	60-105 m	Limestone and dolomitic limestone; thick bedded, medium gray, fossiliferous		
		Thunder Springs Member	25+ m	Dolomite, limestone and, interbedded chert; medium-gray and white chert; fossiliferous		
Late and Middle (?)	Whitmore Wash Member		25-30 m	Dolomite and limestone, thick bedded, medium gray, fossiliferous		
		Temple Butte Limestone	0-30 m	Limestone, purplish-gray to pinkish-gray, medium bedded, conglomeratic at base, fills channels at top of Muav Limestone; fossiliferous		
		Cambrian	Muav Limestone		45-240 m	Limestone, gray, and siltstone, greenish-gray, calcareous; fossiliferous
Bright Angel Shale	105-120 m			Shale, silty, greenish-gray, thin bedded, fossiliferous		
Tapeats Sandstone	60-90 m			Sandstone, coarse-grained, quartzose, light brown, horizontally bedded; small-scale internal cross-stratification; fossiliferous		
SUPERGROUP	Chuar Group	Sixtymile Formation ²	35+ m	Breccia and coarse pebbly sandstone and minor amounts of cherty siltstone		
		Kwaqunt Formation ²	Walcott Member ²	240+ m	Shale, dolomite, and limestone and interbeds of silicified cherty pisolite; micro-fossiliferous	
			Awatubi Member ²	335+ m	Shale and mudstone with interbeds of ferruginous siltstone, multicolored; contains bioherms and stromatolites composed of crystalline dolomite	
			Carbon Butte Member ²	75+ m	Mudstone and sandstone, red to purple, micaceous; ripple marks; mudcracks	
		Gaiheros Formation ²	Duppa Member ²	160+ m	Mudstone, siltstone, and shale with interbedded limestone and sandstone locally	
			Carbon Canyon Member ²	470+ m	Limestone, shale, sandstone, interbedded; limestone is dolomitic micrite; grades into calcareous siltstone; shales, blue to black, micaceous; sandstone green-gray; stromatolites	
			Jupiter Member ²	470+ m	Mudstone, siltstone, and shale in upper part; stromatolitic limestone in lower part; multicolored; abundant ripple marks, rain-drop impressions, and mudcrack in argillaceous sediments	
		Tanner Member ²	200+ m	Dolomite and shale; dolomite in lower part and shale in upper part; sparsely fossiliferous		
Younger Precambrian	GRAND CANYON GROUP	Nankowap Formation	?	Sandstone and interbedded siltstone, purple and white; sandstone cross stratified; mildly metamorphosed		
		Box Sandstone	Cardenas Lavas	300+ m	Basaltic lavas and interbedded sandstones	
			Upper member	50-90 m	Mudstone, micaceous, and sandstone, silty and quartzose; mudcracks, small-scale crossbeds, and ripple marks	
			Upper-middle member	120-180 m	Siltstone, mudstone, and interbedded quartz sandstone, red, leached intervals (white); stromatolites, salt crystal casts; irregular beddings; and abundant ripple marks and mudcracks	
			Lower-middle member	60-275 m	Mudstone, siltstone, and sandstone in alternating sequence, red to reddish-brown, fine-grained; wide variety of sedimentary structures; sandstones are arkosic	
Lower member	290-670 m	Sandstone, light-tan to greenish-brown, quartzose and siliceous; and sandstone, calcareous, lithic, and arkosic; 244 m thick Shale and mudstone, dark brown to green; 122 m				
Older Precambrian	Shinarump Group	Shinumo Quartzite	340-410 m	Sandstone, red or purple; quartz, and subarkosic, siliceous cement; conglomeratic at base to fine grained higher in unit; abundant sedimentary structures including cross-bedding, ripple marks, channel and-fill, deformation structures, and rare mudcracks		
		Hakatai Shale	170-290 m	Shale, bright orange to purple; sandstone, coarse-grained and thin-bedded; mudstone, red and conglomeratic; sandstones are arkosic and conglomerates are composed of clasts of metamorphic and volcanic rocks		
Older Precambrian	Shinarump Group	Bass Limestone ³	60-100 m	Dolomite, arkosic sandstone, sandy dolomite, shale, argillite, and intraformational breccias or conglomerates, red to brown; ripple marks, mudcracks, and graded bedding. Includes a basal conglomerate recognized as the Hotauta Conglomerate Member		
		Includes the Vishnu Schist, Zoroaster Plutonic Complex ⁴ , and the Trinity and Elves Chasm Gneisses ⁴ . Rocks are of predominantly metasedimentary and intrusive igneous origin				

Outcrops in northern part of Marble Canyon

Outcrops in the Grand Canyon of the Colorado River (not exposed)

Formations present in the subsurface within the Paria Plateau-House Rock Valley area

1. McKee (1975) 2. Ford (1972) 3. Beus (1974) 4. Brown (1974) 5