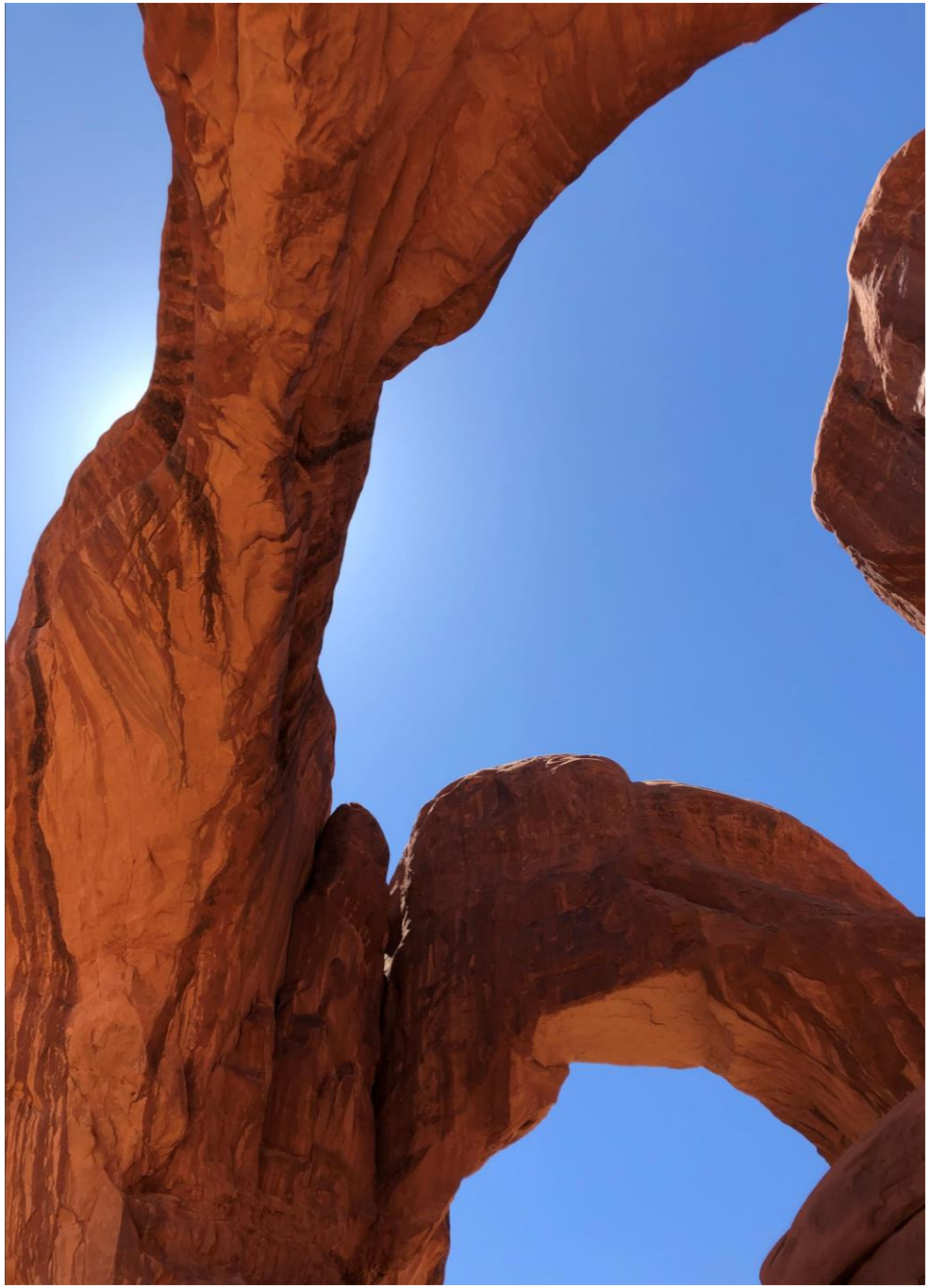
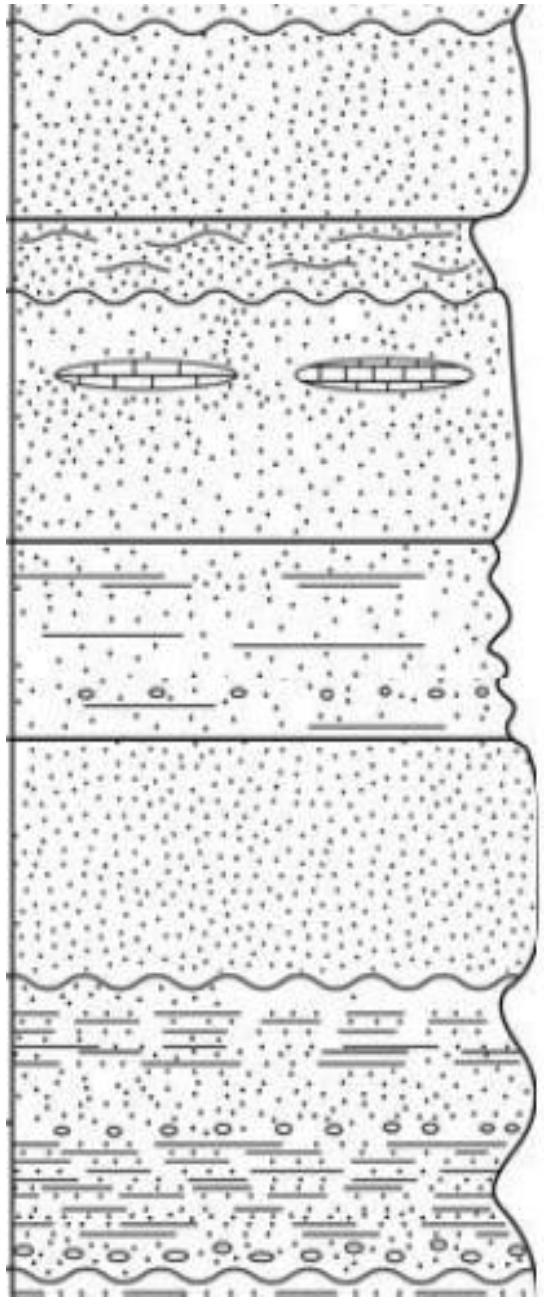
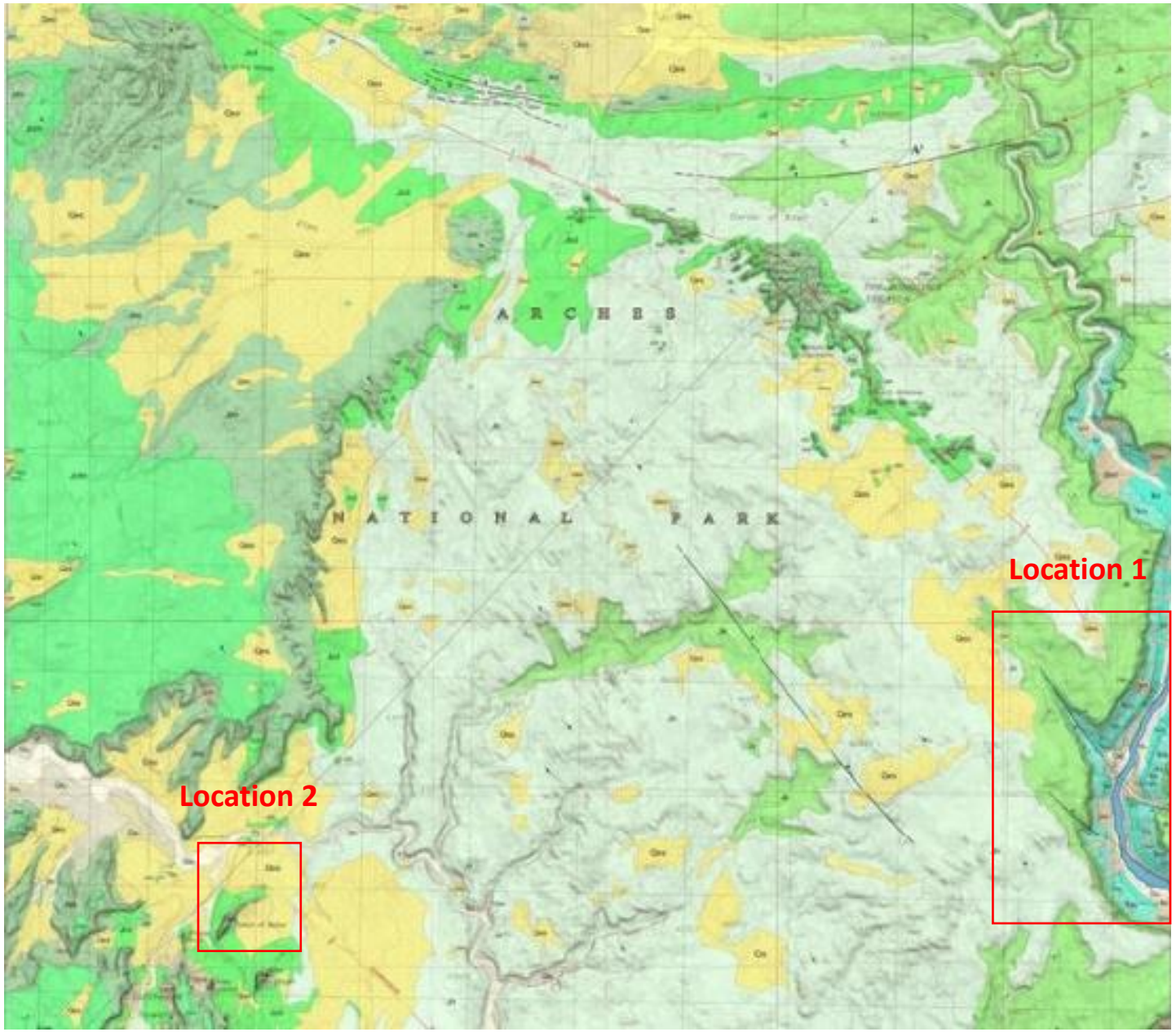
Lithostratigraphy of Arches National Park in Moab, Utah

By Laura Budrow



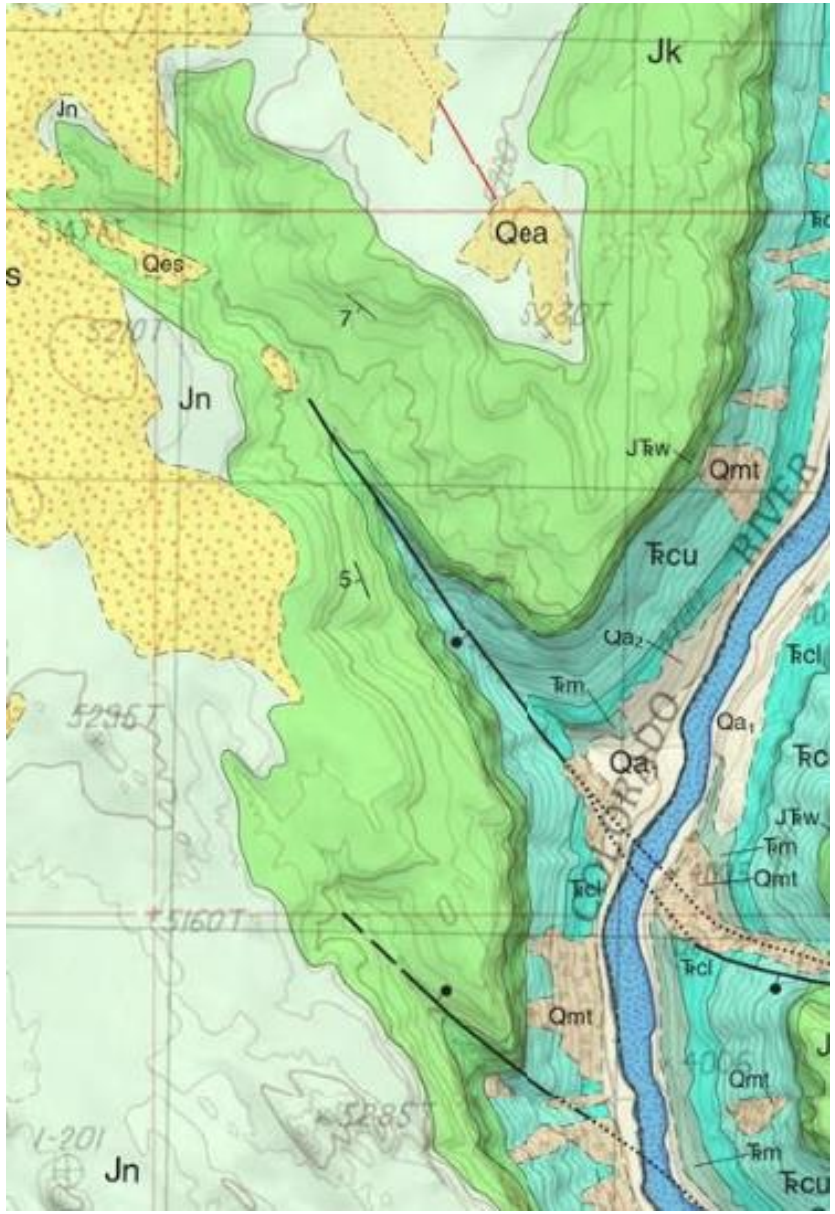


Jurassic J	Entrada Sandstone	Slick Rock Sandstone Member	Jes		Sandstone, quartzose, red-orange to brown, very fine to fine grained with sparse medium to coarse grains along the distinct high-angle cross beds, well-sorted, well-rounded, calcareous and iron-oxide cement, well indurated, weathering to highly fractured smooth banded cliffs with thick beds. High angle cross-bedding, planar bedding, and desert varnish staining are present. Sharp lower contact and unconformable upper contact with the Moab Member of the Curtis Formation. At least 250 ft thick. Eolian depositional environment
	Carmel Formation	Dewey Bridge Member	Jcd		Sandstone, red-brown, muddy to silty, mostly fine to medium grained, calcareous and iron-oxide cementing agents, weathering to irregular contorted rounded ledges with angular white and gray chert fragments embedded immediately above the lower contact. 90-110 ft thick (104 in Arches). Shallow marine to sabkha environment
	Glen Canyon Group	Navajo Sandstone	JTRgc	Jn	Sandstone, quartzose, light-gray, white, pale-orange to tan, fine grained, well sorted, subrounded to very well rounded, commonly calcareous cement but locally siliceous, friable to moderately indurated, weathering to smooth vertical cliffs, rounded domes, and arches with large tangential cross-bedding that may dip more than 30 degrees and sparse thin beds or lenses of gray to pink-gray silty to sandy micritic limestone. Regional unconformity with the Dewey Bridge Member of the Carmel Formation 300-700 ft thick. Eolian depositional environment reworked in a sabkha environment.
		Kayenta Formation		JK	Sandstone, lithic arksose to feldspathic litharenite, orange-pink to red-purple, very fine to medium grained, moderately to well sorted, subangular to sub rounded, mainly calcareous but also siliceous, iron-oxide and clay cementing agents, moderately to well indurated, weathering to irregular step-like ledges with thin laminae to thick beds with small scale cross-beds, horizontal laminae, and current ripple marks. Thinly interbedded to laminated with dark-red-brown to gray-red calcareous mudstone. Poorly sorted, angular to subrounded conglomeratic sandstone and conglomerate lenses are present at the soles of the beds. Upper contact is at the top of a gray-pink massive ledge of friable to well indurated sandstone, interfingering is sometimes also seen. 250-400 ft thick. Sandy fluvial depositional environment.
		Wingate Sandstone		JTRw	Sandstone, subarkose, gray-orange-pink to pale-red-brown, very fine to fine grained, moderately to well sorted, subangular to rounded, siliceous and calcareous cement. Moderately to well indurated, weathering to massive ledges and cliffs with thin to massive bedding. Horizontal stratification, planar-tabular, wedge-planar and trough cross-bedding and asymmetrical ripple laminations are present. Stained dark brown or black by desert varnish and/or iron oxide. Unconformable lower contact and irregular sharp upper contact with scour and cut-and-fill features. 250-400 ft thick. Eolian depositional environment
Triassic TR	Chinle Formation	Upper Member	TRC	TRcu	Siltstone and mudstone, gray-red to red-brown, fissile to blocky, interbedded with fine to medium grained quartzose sandstone with ripple laminations forming ledges and a steep slope. Total thickness of the Chinle is 100-700 ft thick in this area. Alluvial-channel and floodplain depositional environments, eolian towards the end of deposition.
		Lower Member		TRcl	Siltstone and mudstone, gray-red to red-brown, blocky to granular, weathering to ledge-forming slopes covered with rubble from the Wingate Sandstone. Angular unconformity with Moenkopi Formation.

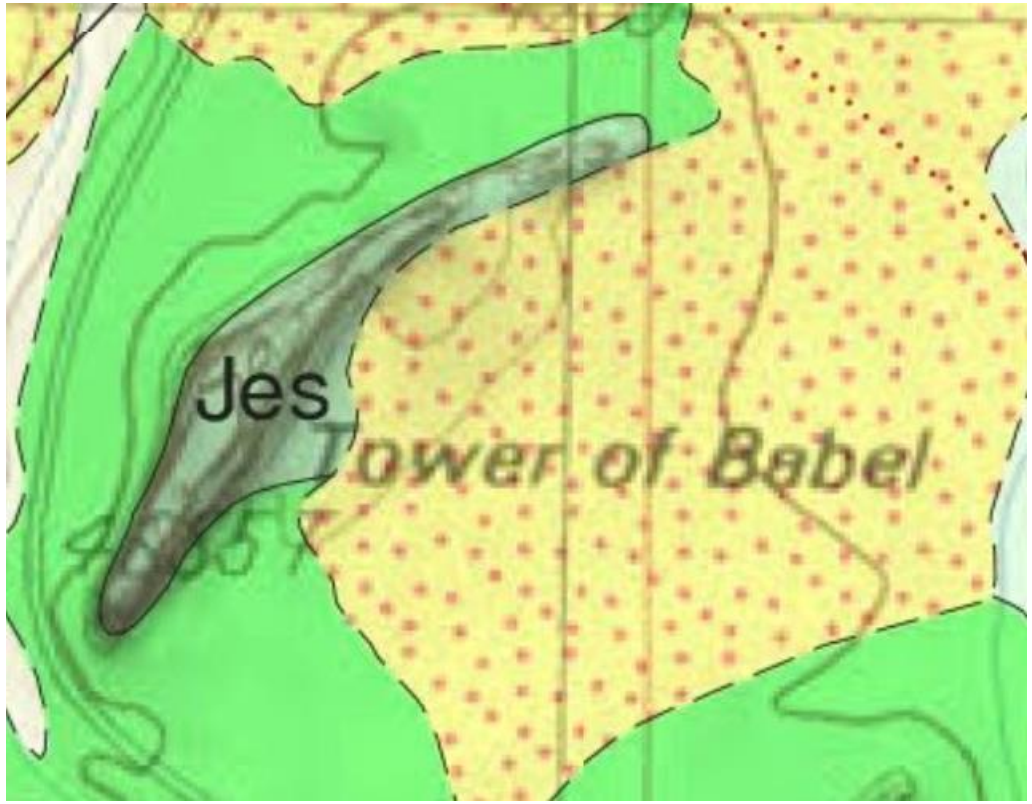


Map by Hellmut H. Doelling and Paul A. Kuehne (2013)

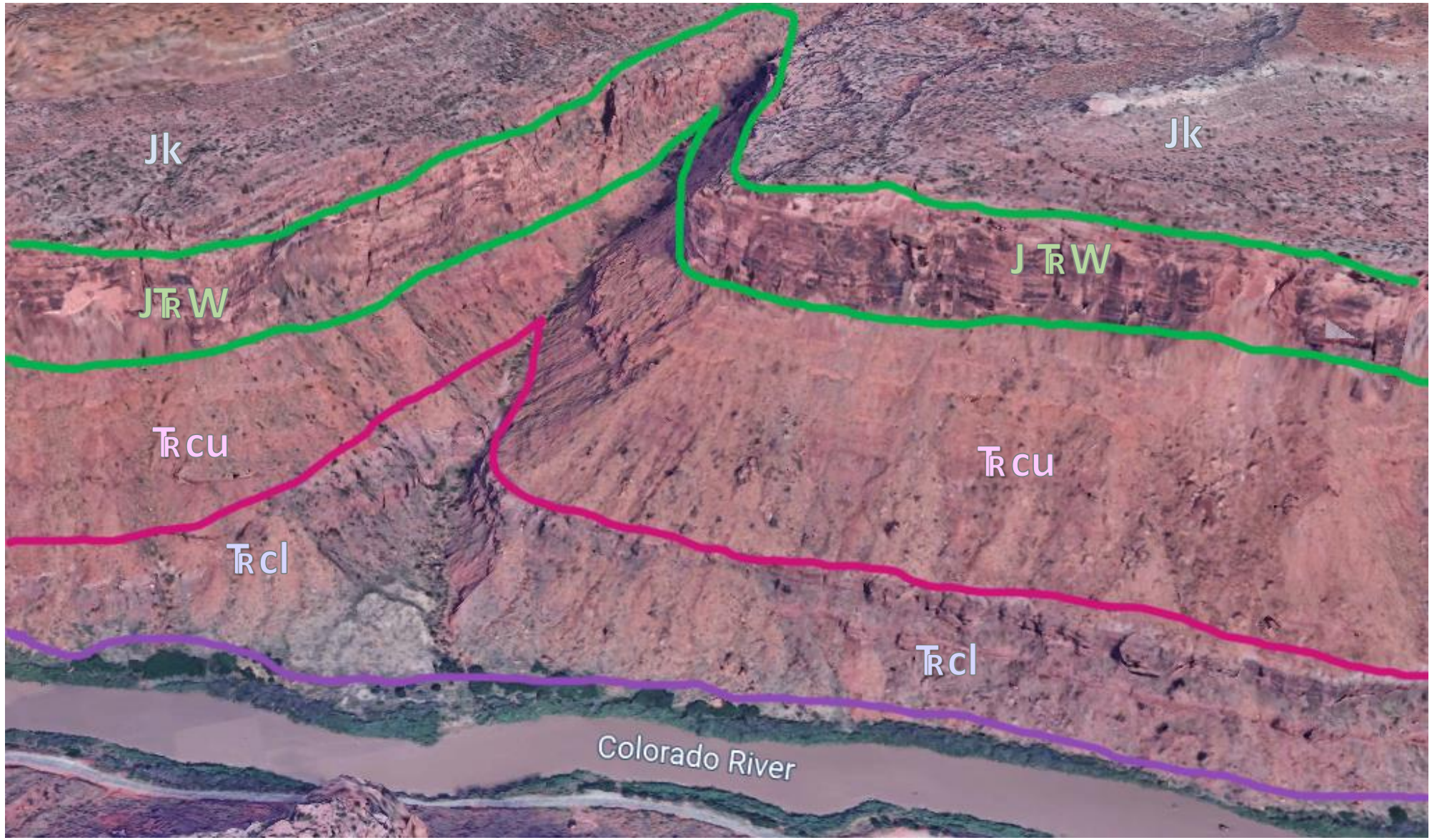
Location 1: Colorado River



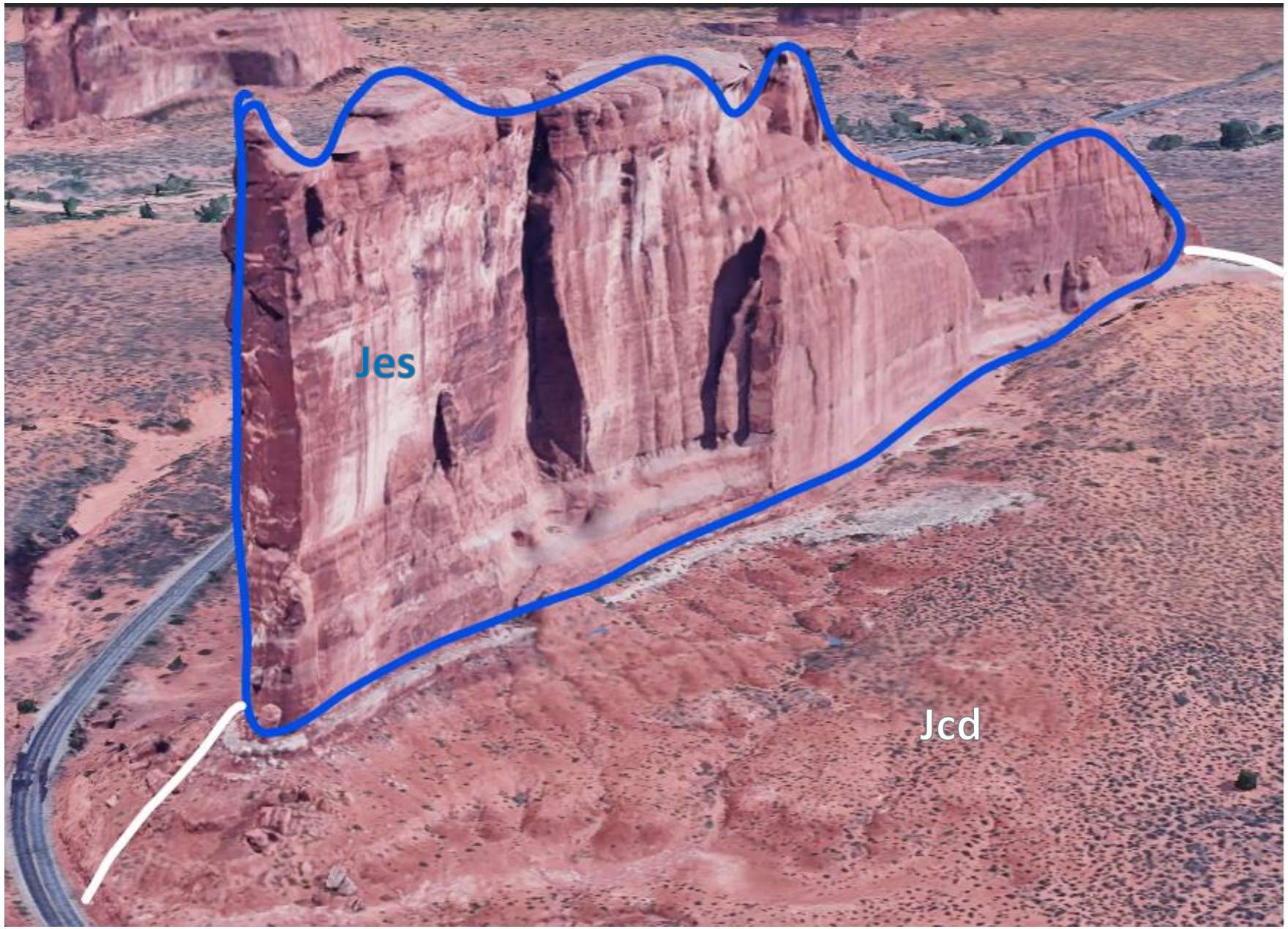
Location 2: Tower of Babel



Colorado River



Tower of Babel



Tower of Babel in Arches National Park

Photo by Ron Wolf in 2010

Heavily stained Sandstone Slick Rock Member of the Entrada Formation overlying the Dewey Bridge Member of the Carmel Formation

Photo by Ron Wolf in 2010

Tangential crossbedding in the Navajo Sandstone

Photo by Ron Wolf in 2010

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