

Abbrev	Spring Name	Table DR1-- Colorado Plateau Hydrochemistry				Occurrence Rim
		River Mile	Aquifer Unit	Discharge (L/s)	Elevation (m)	
BS	Blue Spring	61.4	RM	2810.0	970	S
B	Bridge			2		S
Cl	Clear Creek	84	RM	100.0	1561 & 1731	N
Co	Columbine Creek	274.3	RM	9.7	479	S
Ct	Cottonwood Spring	80.5	RM	1.7	1210	S
Cr	Crystal Creek (mouth)	98		42.5		N
De	Deer Creek	136.3	RM	113.4	756 & 841	N
DiS	Diamond Springs	225	RM	51.9	1110	S
F	Fence Springs-L	30.5	RM	442.0	884	S
G	Grapevine Spring	81.5	RM	12.5	1110	S
Hn	Hance Spring	78.7	RM	1.1		S
Hav	Havasus Springs east	157	RM	1838.3	993	S
Hv	Havasus Springs below Hav falls	157	RM	282.0	808	S
He	Hermit Springs	95	RM	21.9	915 & 1720	S
H	Hindu			8	1049	S
I	Indian Gardens Springs	89	RM	27.9	1155	S
K	Kanab Creek (at mouth)	143.5		113.6		N
Kw	Kwagunt Spring	56	T	15.0	1162	N
L	Lava Warm Spring	178	RM	189.3	518	S
Sa	LCR- lower spring	61.4	T	1	866	S
Sa	LCR-Salt Spring	61.4	RM	3420.0	887	S
Ma	Matkatamiba Spring	148	RM	3.8		S
M	Milkweed			11	1439	S
Mh	Mohawk Canyon Spring	171.3	RM	1.6	701	S
Mn	Monument Spring	93.5	T	7		S
Nn	Nankoweap Spring	53		17.0	1830 & 1860	N
Na	National Canyon Springs	166.4	RM	5.1		S
O	Olo Canyon	145.5	RM	1.6		S
Pe	Peach Spring			3	1280	S
Pi	Pipe Creek	89	RM	1.1	1122	S
Q	Quartermaster Spring	260		41.6	500	S
RS	Roaring Spring	88	RM	160.6	1585	N
Ry	Royal Arch/ Elves	116.5	RM	14.1	927	S
S	Shinumo Creek (mouth)	108.6		190.0		N
Sp	Spencer			109.0		S
	Spencer Spring	246		63	549	S
St	Stone Spring	131.7		1.3	1119	N
Su	Surprise Canyon	248.5		12.7		N
Th	Three Springs	215.5		9.7	457	S
TR	Thunder River	134	RM	920.1	1037 & 1138	N
Tf	Traverine Falls	230.6	T	5.7	512	S
Tg	Travertine Grotto Spring	229	T	57	659	S
V	Vaseys Spring	32	RM	157.8	976	N

Incision Animation (ppt)

Incision Animation (zip)

Table DR2. Incision rate constraints from Grand Canyon

Incision point	Sample name	river mile downstream from Lees Ferry	age (Ma)	error (2s)	elevation of sample (m)	elev above river (m)	elev above side stream (s) (m)	distance from river (km)	incision rate (this paper) m/Ma	geologic interpretation of this paper
Caves outside Grand Canyon										
4	Grand Canyon Cavern	na	16.96	0.83	1530-1630	1130-1230		28.9	na	water table at 1286 m(409 m below surface), lowering of 244-346 m in 17 Ma (14-20 m/Ma) is not relatable to inc
1	Grand Wash	na	7.55	0.34				38.6	na	water table lowering not related to incision rates-- possibly related to 7 Ma faulting and volcanism in Shivwits Plat
Eastern Grand Canyon										
5	Gavain Abyss	93	2.19	0.47		900		5.5		"surface mamillary", no geologic context, elevated sample, not considered reliable incision point
6	Tsean Bida	80	3.43	0.43	1488	726		4.6	212	Horseshoe Mesa/ Cottonwood Creek possible incision rate
7	Butte Fault Cave Kwagunt Canyon	57	2.68	0.49	1290	445	266	2.6	166/100	incision rate calculated relative to side stream is 100 m/Ma
8	Bedrock Canyon	32	0.83	0.05	1188	310	150	2.1	na	"surface mamillary", no geologic context, elevated sample, not considered reliable incision point
9	Shinumo Creek Cave	94	3.72	0.8	1590	920	600	6.6	247/160	incision rate calculated relative to sidestream is 160 m/Ma
10	Mother Cave	90	1.6	0.5		605		2.2	na	elevated sample, not considered reliable
A	Kwagunt Travertines	57	0.385	0.01		36		0	150	incision rates 127-166 m/Ma depending on depth to bedrock, 172 based on strath to strath calculation
B	177- mile basalt	177	0.35	0.03		32		0	162	incision rates 123-171 m/Ma depending on depth to bedrock, 172 based on strath to strath calculation
Western Grand Canyon										
2	cave B	266	3.87	0.1		290	na	0.5	75	cave in river corridor used as an incision point
3	Dry Canyon	265	2.17	0.34		120	na	1.6	55	cave in river corridor used as an incision point
C	Granite Park basalts	208	0.61	0.01		25		0	76	assumes 20 m depth to bedrock; 55 m/Ma is based on strath to strath calculations (12)
D	Spencer Canyon basa	246	0.72	0.03		30		0	75	assumes 12 m depth to bedrock; 55 m/Ma is based on strath to strath calculations (12)
Lake Mead region										
E	Sandy Point	290	4.41	0.1		105		0	27	basalt overlies CR gravels 105 m above pre-Dam Colorado River lowered incision due to hangingwall flexure on Wheeler
F	Hualapi Limestone	320	5.97	0.07	700	450		0	75	river gravels overlie 6 Ma Hualapi Limestone at elevation of 700 m

Incision Animation (ppt)

Incision Animation (zip)