

Table 1: Single Aliquot Regeneration, optically-stimulated luminescence (SAR-OSL) ages on quartz grains from sand-rich colluvial and alluvial deposits Gowanada Quadrangle, and Broadway and Slocum alluvium, Colorado (5/26/2020)

Field number/ Depth (m)	Lab number	Aliquots <sup>a</sup>	Grain size ( $\mu\text{m}$ )	Equivalent Dose ( $D_e$ ) (Gy) <sup>b</sup>	Over- dispersion (%) <sup>c</sup>	U (ppm) <sup>d</sup>	Th (ppm) <sup>d</sup>	K <sub>2</sub> O (%) <sup>d</sup>	H <sub>2</sub> O (%)	Cosmic Dose rate (mGray/yr) <sup>e</sup>	Dose Rate (mGray/yr)	SAR-OSL age (yr) <sup>f</sup>
	<b>Gowanda</b>	<b>Quad.</b>										
G067D/9.75	BG4788	27/40	250-150	>250	35 $\pm$ 5	3.00 $\pm$ 0.01	8.55 $\pm$ 0.01	3.87 $\pm$ 0.01	15 $\pm$ 3	0.11 $\pm$ 0.010	4.44 $\pm$ 0.10	>56,305
G067E/7.92	BG4787	32/40	250-150	181.73 $\pm$ 17.91	30 $\pm$ 4	2.44 $\pm$ 0.01	13.50 $\pm$ 0.01	2.31 $\pm$ 0.01	15 $\pm$ 3	0.12 $\pm$ 0.010	3.34 $\pm$ 0.10	54,480 $\pm$ 5540
G067F/4.57	BG4786	37/40	250-355	191.37 $\pm$ 16.18	35 $\pm$ 5	3.07 $\pm$ 0.01	15.35 $\pm$ 0.01	3.28 $\pm$ 0.01	10 $\pm$ 2	0.17 $\pm$ 0.017	4.53 $\pm$ 0.10	42,285 $\pm$ 3730
G072A/1.49	BG4790	37/39	355-450	1.19 $\pm$ 0.08	49 $\pm$ 6	2.28 $\pm$ 0.01	14.50 $\pm$ 0.01	4.52 $\pm$ 0.01	10 $\pm$ 2	0.23 $\pm$ 0.023	5.28 $\pm$ 0.12	215 $\pm$ 15
G179A/1.13	BG4791	35/41	250-355	11.71 $\pm$ 0.50	22 $\pm$ 3	1.99 $\pm$ 0.01	15.35 $\pm$ 0.01	3.82 $\pm$ 0.01	10 $\pm$ 2	0.23 $\pm$ 0.023	5.28 $\pm$ 0.12	1975 $\pm$ 140
	<b>Broadway</b>	<b>Alluvium</b>										
LR-1/1.45	BG4807	38/47	355-450	37.74 $\pm$ 4.51	23 $\pm$ 3	1.23 $\pm$ 0.01	4.30 $\pm$ 0.01	3.44 $\pm$ 0.01	10 $\pm$ 2	0.23 $\pm$ 0.023	3.08 $\pm$ 0.07	12,245 $\pm$ 1225
LR-2 /2.22	BG4808	30/38	250-355	53.32 $\pm$ 3.80	21 $\pm$ 3	1.41 $\pm$ 0.01	5.33 $\pm$ 0.01	4.39 $\pm$ 0.01	10 $\pm$ 2	0.22 $\pm$ 0.022	3.94 $\pm$ 0.09	13,530 $\pm$ 1005
LR-3/3.49	BG4799	37/40	250-150	48.46 $\pm$ 1.25	22 $\pm$ 2	1.28 $\pm$ 0.01	6.60 $\pm$ 0.01	3.85 $\pm$ 0.01	15 $\pm$ 3	0.20 $\pm$ 0.020	3.51 $\pm$ 0.11	13,790 $\pm$ 575
	<b>Slocum</b>	<b>Alluvium</b>										
SL-1/3.35	BG4801	34/45	250-150	165.67 $\pm$ 7.93	23 $\pm$ 3	2.14 $\pm$ 0.01	7.00 $\pm$ 0.01	4.20 $\pm$ 0.01	15 $\pm$ 3	0.20 $\pm$ 0.020	4.55 $\pm$ 0.15	36,440 $\pm$ 2105
SL-2/2.13	BG4800	35/40	250-150	179.95 $\pm$ 7.67	21 $\pm$ 3	3.81 $\pm$ 0.01	14.25 $\pm$ 0.01	3.78 $\pm$ 0.01	10 $\pm$ 2	0.23 $\pm$ 0.023	4.68 $\pm$ 0.11	38,475 $\pm$ 1820
SL-3/1.52	BG4806	34/40	250-150	177.52 $\pm$ 16.44	26 $\pm$ 3	5.30 $\pm$ 0.01	19.25 $\pm$ 0.01	3.30 $\pm$ 0.01	10 $\pm$ 2	0.24 $\pm$ 0.024	4.98 $\pm$ 0.11	35,635 $\pm$ 3390
SL-4/1.83	BG4809	44/55	250-150	111.82 $\pm$ 11.33	30 $\pm$ 4	2.15 $\pm$ 0.01	8.88 $\pm$ 0.01	3.02 $\pm$ 0.01	10 $\pm$ 2	0.23 $\pm$ 0.023	3.28 $\pm$ 0.08	34,030 $\pm$ 3485
	<b>Agate</b>	<b>Mountain</b>										
AG OSL1/0.98	BG4850	46/52	250-150	43.11 $\pm$ 4.26	41 $\pm$ 4	2.02 $\pm$ 0.01	8.90 $\pm$ 0.01	2.82 $\pm$ 0.01	10 $\pm$ 2	0.32 $\pm$ 0.032	3.78 $\pm$ 0.09	11,395 $\pm$ 1230
AG OSL2/0.91	BG4851	35/48	250-355	35.83 $\pm$ 3.44	46 $\pm$ 6	2.24 $\pm$ 0.01	9.56 $\pm$ 0.01	3.97 $\pm$ 0.01	10 $\pm$ 2	0.32 $\pm$ 0.032	4.16 $\pm$ 0.09	8595 $\pm$ 840

<sup>a</sup>Aliquots measured, used to define  $D_e$  population by Central or Minimum age models (Galbraith and Roberts, 2012)

<sup>b</sup>Equivalent dose calculated on a pure quartz fraction with ultra-small aliquots with 20-80 grains/aliquot and analyzed under blue-light excitation ( $470 \pm 20$  nm) by Single Aliquot Regeneration protocols (SAR; Murray and Wintle, 2003; Wintle and Murray, 2006). Equivalent dose ( $D_e$ ) was calculated by Central or Minimum age models (Galbraith and Roberts, 2012)

<sup>c</sup>Overdispersion values reflects precision beyond instrumental errors; values of  $\leq 20\%$  (at 1 sigma limit) indicate low dispersion in equivalent dose values and defines a unimodal distribution. Values  $> 20\%$  are associated with mixed equivalent dose signature reflecting multiple grain populations or partial solar resetting.

<sup>d</sup>U, Th, Rb and K content analyzed by inductively-coupled plasma-mass spectrometry by ALS Laboratories, Reno, NV; and includes dose contribution from Rb.

<sup>e</sup>includes also a cosmic dose rate calculated from parameters in Prescott and Hutton (1994) and includes soft components (Peng and Forman, 2019).

<sup>f</sup>Systematic and random errors calculated in a quadrature at one standard deviation by the Luminescence Dating and Age Calculator (LDAC) at <https://www.baylor.edu/geosciences/index.php?id=962356> (Peng and Forman, 2019) Datum year is AD 2010.