TABLE DR1. GRAIN SIZE DISTRIBUTIONS AND STATISTICS FOR MODELED HILLSLOPE-SUPPLIED SEDIMENT[*]

Transect Number	Distance Downstream	d_{10}	d_{50}	d_{90}	Fraction coarser than in each sieve size									
	(m)	(mm)	(mm)	(mm)	0.5mm	1mm	2mm	4mm	8mm	16mm	32mm	64mm	128mm	256mm
1	0.00	0.89	13.92	90.49	12.12	12.12	0.00	0.00	32.22	26.35	0.00	14.37	2.81	0.00
2	816.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	980.00	0.89	16.15	100.73	12.12	12.12	0.00	0.00	25.44	23.66	0.00	25.47	1.20	0.00
4	2220.00	0.89	35.54	86.96	12.12	12.12	0.00	0.00	11.00	8.95	38.27	17.03	0.50	0.00
5	2580.00	0.89	12.36	30.04	12.12	12.12	0.00	0.00	41.08	27.16	0.00	2.26	5.27	0.00
7[#]	2803.00	0.89	12.28	26.55	12.12	12.12	0.00	0.00	41.66	32.99	0.00	0.00	1.11	0.00
8	3198.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	3738.00	0.89	41.88	67.81	12.12	12.12	0.00	0.00	0.80	0.13	63.96	10.48	0.40	0.00
10	4513.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	4947.00	0.89	24.54	57.67	12.12	12.12	0.00	0.00	5.22	33.29	32.08	5.03	0.15	0.00
12	5307.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	6287.00	0.89	36.19	63.50	12.12	12.12	0.00	0.00	0.04	16.97	49.31	9.19	0.24	0.00
14	6695.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	7401.00	0.89	46.39	101.23	12.12	12.12	0.00	0.00	0.07	0.00	47.97	26.79	0.93	0.00
16	7936.00	0.89	25.57	58.78	12.12	12.12	0.00	0.00	5.78	29.54	34.70	5.58	0.16	0.00
17	8944.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	9579.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	10126.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	10673.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	10913.00	0.89	32.24	65.78	12.12	12.12	0.00	0.00	12.76	12.58	40.02	10.10	0.30	0.00
22	11216.00	0.89	21.88	96.68	12.12	12.12	0.00	0.00	18.23	16.68	17.13	23.05	0.67	0.00
23	11585.00	0.89	22.10	62.20	12.12	12.12	0.00	0.00	6.10	42.17	18.24	8.98	0.27	0.00
24	11865.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	12457.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	12905.00	0.89	14.78	94.44	12.12	12.12	0.00	0.00	29.09	25.84	0.00	19.28	1.55	0.00
27	13231.00	0.89	32.94	61.49	12.12	12.12	0.00	0.00	7.55	16.35	44.42	7.21	0.23	0.00
28	13845.00	0.89	34.32	85.41	12.12	12.12	0.00	0.00	12.13	9.88	37.06	16.06	0.63	0.00
29	14235.00	0.89	12.16	25.96	12.12	12.12	0.00	0.00	42.64	33.12	0.00	0.00	0.00	0.00
30	14705.00	0.89	34.32	85.41	12.12	12.12	0.00	0.00	12.13	9.88	37.06	16.06	0.63	0.00

[*]These values are derived from modeling presented in Michaelides and Singer, 2014, which contains other relevant information on parameters used in the hillslope model.

[#]Note: There is no transect 6.

TABLE DR2. STATISTICS OF LONGITUDINAL GRAVEL FLUX[#], CHANGE IN SEDIMENT STORAGE, AND HYDRAULICS[&]

Experiment	mean Q_s ($t\ s^{-1}$)	Q_s S.D. ($t\ s^{-1}$)	Q_s CV	$\Sigma\Delta Q_s$ ($t\ s^{-1}$)	$\Delta Q_s/\Delta x$ CV	h CV	U CV	τ CV	τ* CV
control -- uniformQ = 50 $m^3\ s^{-1}$	1.60E+00	1.17E+00	0.73	2.9E-01	1.85	0.36	0.31	0.38	0.73
monotonically increasing Q to 50 $m^3\ s^{-1}$	4.69E-01	3.30E-01	0.70	-9.6E-01	1.32	0.33	0.26	0.30	0.53
monotonically decreasing Q to 50 $m^3\ s^{-1}$	7.53E-01	1.04E+00	1.38	1.3E+00	2.38	0.59	0.49	0.60	0.96
mid-reach peaking Q at 50 $m^3\ s^{-1}$	5.42E-01	5.63E-01	1.04	0.0E+00	1.48	0.52	0.41	0.48	0.67
uniformQ = 25 $m^3\ s^{-1}$	4.83E-01	3.72E-01	0.77	6.4E-02	1.99	0.37	0.31	0.37	0.72
uniformQ = 75 $m^3\ s^{-1}$	3.27E+00	2.35E+00	0.72	6.2E-01	1.85	0.33	0.26	0.33	0.65
uniformQ = 100 $m^3\ s^{-1}$	5.39E+00	3.86E+00	0.72	1.1E+00	1.84	0.31	0.25	0.33	0.62
uniformQ = 200 $m^3\ s^{-1}$	1.59E+01	9.32E+00	0.59	5.2E+00	1.61	0.23	0.18	0.25	0.47
uniformQ = 2000 $m^3\ s^{-1}$	8.64E+02	5.67E+02	0.66	5.1E+02	1.71	0.27	0.18	0.28	0.44

[#] *The control run yielded reach means of τ*=1.1 and Q_s=20kgm^{-1} s^{-1}; the latter represents an upper value of measured dryland Q_s from Israel (Fig.9 in Powell et al. (2003)), for smaller, coarser channels and lower values of Q.*

[&] *Statistics are derived from calculations in Tab.A3.*

TABLE DR3. MODELED HYDRAULICS, FLUX, AND STORAGE

Run: control -- uniformQ = 50 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.62	1.51	109.85	1.49	1.26E+00	1.19E-03	1.19E-03	9.71E-01
816	0.85	1.25	79.91	0.36	2.89E-01	2.46E-02	-2.46E-02	-4.03E+00
980	1.02	2.94	230.83	3.57	4.32E+00	2.49E-03	2.49E-03	3.09E+00
2220	0.74	1.56	130.04	0.50	1.23E+00	5.06E-03	-5.06E-03	-1.82E+00
2580	1.11	2.41	196.56	3.63	3.05E+00	1.07E-02	-1.07E-02	-2.39E+00
2803	0.56	1.88	182.86	0.87	5.44E+00	7.34E-03	7.34E-03	2.90E+00
3198	0.32	1.09	86.41	0.89	2.54E+00	3.52E-03	3.52E-03	1.90E+00
3738	0.64	1.38	97.12	1.03	6.37E-01	1.17E-03	-1.17E-03	-9.03E-01
4513	0.63	1.64	124.09	0.91	1.54E+00	2.94E-03	-2.94E-03	-1.28E+00
4947	0.68	1.64	120.49	0.85	2.82E+00	4.10E-03	4.10E-03	1.48E+00
5307	0.59	1.30	104.98	0.71	1.34E+00	4.85E-04	4.85E-04	4.75E-01
6287	0.64	1.54	113.92	1.43	8.66E-01	4.15E-03	-4.15E-03	-1.69E+00
6695	1.13	2.06	170.30	1.21	2.56E+00	3.18E-03	3.18E-03	2.24E+00
7401	0.31	0.87	54.36	0.62	3.17E-01	2.14E-03	-2.14E-03	-1.14E+00
7936	0.69	1.59	119.79	1.33	1.46E+00	5.61E-04	-5.61E-04	-5.65E-01
8944	0.54	1.39	95.81	0.68	2.03E+00	1.65E-04	-1.65E-04	-1.04E-01
9579	0.51	1.40	90.24	1.13	2.13E+00	1.71E-03	1.71E-03	9.36E-01
10126	0.41	1.25	89.11	0.79	1.19E+00	2.61E-04	2.61E-04	1.43E-01
10673	0.58	1.36	101.67	0.54	1.05E+00	1.35E-03	1.35E-03	3.23E-01
10913	0.41	1.00	72.02	0.52	7.28E-01	1.06E-03	-1.06E-03	-3.20E-01
11216	0.43	1.17	75.56	0.59	1.05E+00	1.44E-04	1.44E-04	5.32E-02
11585	0.40	0.97	70.43	0.82	9.95E-01	2.67E-03	-2.67E-03	-7.47E-01
11865	0.53	1.34	104.08	1.23	1.74E+00	2.61E-04	2.61E-04	1.54E-01
12457	0.63	1.35	112.14	0.87	1.59E+00	1.63E-03	1.63E-03	7.32E-01
12905	0.40	1.08	70.09	0.44	8.56E-01	3.32E-04	3.32E-04	1.08E-01
13231	0.43	1.07	76.24	0.69	7.48E-01	5.10E-04	-5.10E-04	-3.13E-01
13845	0.57	1.47	94.81	1.44	1.06E+00	1.23E-03	1.23E-03	4.80E-01
14235	0.41	1.08	71.68	0.43	5.81E-01	8.19E-04	-8.19E-04	-3.85E-01
14705	0.46	1.15	80.64	1.03	9.66E-01			
mean	0.59	1.44	107.79	1.06	1.60E+00	3.06E-03		$\Sigma \Delta Q_s$
standard deviation	0.21	0.44	41.01	0.77	1.17E+00	5.67E-03		**2.9E-01**
coefficient of variation	0.36	0.31	0.38	0.73	0.73	1.85		

Run: monotonically increasing Q to 50 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.10	0.35	16.87	0.23	0.0025	1.09E-07	1.09E-07	8.92E-05
816	0.28	0.54	26.65	0.12	0.0024	8.34E-04	-8.34E-04	-1.37E-01
980	0.35	1.41	78.65	1.21	0.1391	9.11E-05	9.11E-05	1.13E-01
2220	0.24	0.67	43.09	0.17	0.0262	3.87E-04	-3.87E-04	-1.39E-01
2580	0.48	1.33	84.42	1.56	0.1655	6.84E-04	-6.84E-04	-1.53E-01
2803	0.24	0.98	76.98	0.37	0.3180	2.88E-04	-2.88E-04	-1.14E-01
3198	0.25	0.90	67.27	0.69	0.4319	6.18E-04	6.18E-04	3.34E-01
3738	0.43	1.02	64.80	0.69	0.0980	1.72E-04	-1.72E-04	-1.33E-01
4513	0.38	1.14	75.58	0.56	0.2313	3.81E-04	-3.81E-04	-1.65E-01
4947	0.37	1.05	65.58	0.46	0.3967	4.64E-04	4.64E-04	1.67E-01
5307	0.35	0.86	61.07	0.42	0.2296	5.37E-05	5.37E-05	5.27E-02
6287	0.39	1.07	69.02	0.86	0.1770	1.11E-03	-1.11E-03	-4.53E-01
6695	0.74	1.53	111.59	0.79	0.6300	7.76E-04	7.76E-04	5.48E-01
7401	0.20	0.63	36.16	0.41	0.0818	1.02E-03	-1.02E-03	-5.44E-01
7936	0.60	1.44	104.80	1.17	0.6257	5.12E-05	-5.12E-05	-5.17E-02
8944	0.39	1.08	68.26	0.48	0.6773	2.02E-04	-2.02E-04	-1.28E-01
9579	0.38	1.12	66.31	0.83	0.8054	4.87E-04	4.87E-04	2.66E-01
10126	0.33	1.06	71.57	0.63	0.5390	1.14E-04	1.14E-04	6.21E-02
10673	0.45	1.13	79.96	0.43	0.4769	4.46E-04	4.46E-04	1.07E-01
10913	0.33	0.85	58.65	0.42	0.3699	6.83E-04	-6.83E-04	-2.07E-01
11216	0.36	1.02	62.91	0.49	0.5768	7.11E-05	-7.11E-05	-2.62E-02
11585	0.34	0.86	60.22	0.70	0.6030	1.97E-03	-1.97E-03	-5.53E-01
11865	0.47	1.21	91.36	1.08	1.1556	3.33E-05	3.33E-05	1.97E-02
12457	0.57	1.25	100.95	0.78	1.1359	1.10E-03	1.10E-03	4.93E-01
12905	0.36	1.01	64.29	0.41	0.6427	9.13E-05	9.13E-05	2.98E-02
13231	0.41	1.02	71.68	0.65	0.6129	5.30E-04	-5.30E-04	-3.25E-01
13845	0.54	1.43	91.31	1.39	0.9380	1.01E-03	1.01E-03	3.94E-01
14235	0.40	1.07	70.27	0.42	0.5443	8.98E-04	-8.98E-04	-4.22E-01
14705	0.46	1.15	80.64	1.03	0.9664			
mean	0.39	1.04	69.69	0.67	4.69E-01	5.20E-04		$\Sigma \Delta Q_s$
standard deviation	0.13	0.27	21.06	0.36	3.30E-01	6.85E-04		**-9.6E-01**
coefficient of variation	0.33	0.26	0.30	0.53	0.70	1.32		

Run: monotonically decreasing Q to 50 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.62	1.51	109.85	1.49	1.2603	1.21E-03	1.21E-03	9.88E-01
816	0.84	1.23	78.74	0.35	0.2726	2.15E-02	-2.15E-02	-3.53E+00
980	0.77	2.44	174.06	2.69	3.8052	2.26E-03	2.26E-03	2.80E+00
2220	0.69	1.49	122.27	0.47	1.0037	3.91E-03	-3.91E-03	-1.41E+00
2580	1.04	2.30	184.39	3.40	2.4115	6.58E-03	-6.58E-03	-1.47E+00
2803	0.51	1.74	164.53	0.79	3.8781	5.48E-03	5.48E-03	2.16E+00
3198	0.29	1.00	77.00	0.79	1.7146	2.44E-03	2.44E-03	1.32E+00
3738	0.56	1.25	84.88	0.90	0.3988	5.89E-04	-5.89E-04	-4.56E-01
4513	0.52	1.43	103.21	0.76	0.8551	1.33E-03	-1.33E-03	-5.77E-01
4947	0.55	1.40	97.45	0.69	1.4324	2.25E-03	2.25E-03	8.09E-01
5307	0.47	1.09	82.76	0.56	0.6233	2.62E-04	2.62E-04	2.57E-01
6287	0.49	1.26	86.75	1.09	0.3666	1.58E-03	-1.58E-03	-6.45E-01
6695	0.85	1.69	128.78	0.91	1.0114	1.39E-03	1.39E-03	9.79E-01
7401	0.16	0.51	27.67	0.32	0.0324	1.11E-03	-1.11E-03	-5.93E-01
7936	0.60	1.44	104.80	1.17	0.6257	9.94E-05	9.94E-05	1.00E-01
8944	0.36	1.02	63.17	0.45	0.5255	5.25E-05	5.25E-05	3.33E-02
9579	0.32	1.00	56.83	0.71	0.4921	3.23E-04	3.23E-04	1.77E-01
10126	0.30	1.00	65.63	0.58	0.3154	2.69E-04	2.69E-04	1.47E-01
10673	0.33	0.90	58.79	0.31	0.1684	2.86E-04	2.86E-04	6.86E-02
10913	0.23	0.63	39.94	0.29	0.0998	5.40E-05	-5.40E-05	-1.64E-02
11216	0.22	0.71	39.09	0.30	0.1162	5.01E-05	5.01E-05	1.85E-02
11585	0.20	0.55	34.62	0.40	0.0977	2.58E-04	-2.58E-04	-7.22E-02
11865	0.28	0.82	54.58	0.65	0.1699	1.34E-04	1.34E-04	7.92E-02
12457	0.26	0.68	46.67	0.36	0.0907	1.42E-04	1.42E-04	6.38E-02
12905	0.15	0.50	26.31	0.17	0.0269	2.58E-05	2.58E-05	8.43E-03
13231	0.14	0.44	25.61	0.23	0.0185	9.74E-06	-9.74E-06	-5.98E-03
13845	0.20	0.68	33.48	0.51	0.0244	5.70E-05	5.70E-05	2.22E-02
14235	0.09	0.33	16.55	0.10	0.0022	8.62E-06	-8.62E-06	-4.05E-03
14705	0.15	0.47	26.08	0.33	0.0063			
mean	0.42	1.09	76.36	0.75	7.53E-01	1.92E-03		$\Sigma \Delta Q_s$
standard deviation	0.25	0.54	46.04	0.72	1.04E+00	4.57E-03		**1.3E+00**
coefficient of variation	0.59	0.49	0.60	0.96	1.38	2.38		

Run: mid-reach peaking Q at 50 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0					0.0000	3.22E-06	-3.22E-06	-2.63E-03
816	0.29	0.55	27.29	0.12	0.0026	1.42E-03	-1.42E-03	-2.34E-01
980	0.40	1.56	90.87	1.40	0.2362	1.39E-04	1.39E-04	1.72E-01
2220	0.31	0.81	54.90	0.21	0.0643	9.11E-04	-9.11E-04	-3.28E-01
2580	0.62	1.60	109.38	2.02	0.3924	2.08E-03	-2.08E-03	-4.64E-01
2803	0.32	1.23	103.34	0.49	0.8564	6.25E-04	6.25E-04	2.47E-01
3198	0.21	0.79	57.12	0.59	0.6095	7.54E-04	7.54E-04	4.07E-01
3738	0.47	1.09	70.80	0.75	0.2025	4.55E-04	-4.55E-04	-3.53E-01
4513	0.46	1.30	90.26	0.66	0.5552	1.61E-03	-1.61E-03	-6.99E-01
4947	0.53	1.36	93.49	0.66	1.2542	1.45E-03	1.45E-03	5.23E-01
5307	0.49	1.13	86.94	0.59	0.7312	1.72E-04	1.72E-04	1.68E-01
6287	0.56	1.40	99.35	1.24	0.5627	3.42E-03	-3.42E-03	-1.39E+00
6695	1.04	1.95	157.11	1.12	1.9565	2.37E-03	2.37E-03	1.68E+00
7401	0.30	0.85	52.42	0.60	0.2812	2.20E-03	-2.20E-03	-1.18E+00
7936	0.69	1.59	119.79	1.33	1.4602	3.05E-04	-3.05E-04	-3.07E-01
8944	0.52	1.35	91.81	0.65	1.7673	2.45E-04	2.45E-04	1.56E-01
9579	0.47	1.31	82.57	1.03	1.6116	1.48E-03	1.48E-03	8.11E-01
10126	0.37	1.15	79.88	0.71	0.8010	4.39E-04	4.39E-04	2.40E-01
10673	0.48	1.18	83.97	0.45	0.5609	9.88E-04	9.88E-04	2.37E-01
10913	0.32	0.82	56.35	0.41	0.3238	1.51E-04	-1.51E-04	-4.58E-02
11216	0.31	0.92	54.98	0.43	0.3696	2.25E-04	2.25E-04	8.29E-02
11585	0.27	0.71	47.88	0.56	0.2868	4.51E-04	-4.51E-04	-1.26E-01
11865	0.35	0.97	67.86	0.80	0.4131	2.80E-04	2.80E-04	1.66E-01
12457	0.36	0.87	63.03	0.49	0.2473	3.84E-04	3.84E-04	1.72E-01
12905	0.20	0.63	34.64	0.22	0.0754	1.00E-04	1.00E-04	3.27E-02
13231	0.18	0.54	32.35	0.29	0.0427	1.19E-06	-1.19E-06	-7.33E-04
13845	0.24	0.78	39.79	0.61	0.0434	1.05E-04	1.05E-04	4.09E-02
14235	0.10	0.34	16.91	0.10	0.0025	5.23E-06	5.23E-06	2.46E-03
14705	0.00	0.02	0.83	0.01	0.0000			
mean	0.39	1.03	70.21	0.66	5.42E-01	8.14E-04		$\Sigma \Delta Q_s$
standard deviation	0.20	0.42	33.81	0.45	5.63E-01	1.20E-03		**0.0E+00**
coefficient of variation	0.52	0.41	0.48	0.67	1.04	1.48		

Run: uniformQ = 25 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.42	1.13	73.89	1.00	0.3619	3.40E-04	3.40E-04	2.78E-01
816	0.62	0.99	57.98	0.26	0.0841	8.93E-03	-8.93E-03	-1.46E+00
980	0.63	2.12	142.00	2.19	1.5480	9.77E-04	9.77E-04	1.21E+00
2220	0.50	1.17	88.12	0.34	0.3365	1.83E-03	-1.83E-03	-6.59E-01
2580	0.81	1.94	143.71	2.65	0.9959	2.56E-03	-2.56E-03	-5.71E-01
2803	0.38	1.41	124.24	0.59	1.5665	1.96E-03	1.96E-03	7.73E-01
3198	0.23	0.84	61.57	0.64	0.7936	1.09E-03	1.09E-03	5.91E-01
3738	0.47	1.09	70.80	0.75	0.2025	2.99E-04	-2.99E-04	-2.31E-01
4513	0.42	1.23	83.69	0.62	0.4340	8.25E-04	-8.25E-04	-3.58E-01
4947	0.46	1.23	81.06	0.57	0.7918	1.14E-03	1.14E-03	4.10E-01
5307	0.40	0.97	71.24	0.48	0.3820	1.35E-04	1.35E-04	1.32E-01
6287	0.43	1.16	76.86	0.96	0.2495	1.26E-03	-1.26E-03	-5.16E-01
6695	0.79	1.59	118.37	0.84	0.7655	9.61E-04	9.61E-04	6.78E-01
7401	0.21	0.64	36.87	0.42	0.0873	9.36E-04	-9.36E-04	-5.01E-01
7936	0.59	1.42	102.81	1.14	0.5883	2.83E-05	2.83E-05	2.85E-02
8944	0.36	1.04	64.40	0.45	0.5598	6.64E-05	-6.64E-05	-4.21E-02
9579	0.34	1.05	60.52	0.76	0.6019	3.74E-04	3.74E-04	2.04E-01
10126	0.31	1.02	67.44	0.60	0.3976	2.01E-04	2.01E-04	1.10E-01
10673	0.39	1.01	68.78	0.37	0.2878	3.60E-04	3.60E-04	8.65E-02
10913	0.28	0.74	48.95	0.35	0.2013	2.80E-04	-2.80E-04	-8.49E-02
11216	0.29	0.87	50.93	0.40	0.2862	1.56E-06	-1.56E-06	-5.75E-04
11585	0.27	0.71	47.88	0.56	0.2868	7.91E-04	-7.91E-04	-2.21E-01
11865	0.36	1.00	70.51	0.83	0.5082	8.37E-05	8.37E-05	4.96E-02
12457	0.43	1.01	76.14	0.59	0.4586	5.14E-04	5.14E-04	2.30E-01
12905	0.27	0.80	47.37	0.30	0.2283	5.75E-05	5.75E-05	1.88E-02
13231	0.29	0.79	51.62	0.47	0.2096	2.19E-04	-2.19E-04	-1.35E-01
13845	0.41	1.18	69.64	1.06	0.3443	4.89E-04	4.89E-04	1.91E-01
14235	0.27	0.80	48.43	0.29	0.1537	3.08E-04	-3.08E-04	-1.45E-01
14705	0.32	0.89	57.25	0.73	0.2982			
mean	0.41	1.10	74.59	0.73	4.83E-01	9.65E-04		$\Sigma \Delta Q_s$
standard deviation	0.15	0.34	27.60	0.53	3.72E-01	1.92E-03		**6.4E-02**
coefficient of variation	0.37	0.31	0.37	0.72	0.77	1.99		

Run: uniformQ = 75 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.78	1.78	138.48	1.87	2.5952	2.48E-03	2.48E-03	2.03E+00
816	1.00	1.41	94.53	0.42	0.5675	4.87E-02	-4.87E-02	-7.99E+00
980	0.98	2.86	221.58	3.42	8.5605	4.81E-03	4.81E-03	5.97E+00
2220	0.93	1.84	163.56	0.63	2.5929	8.69E-03	-8.69E-03	-3.13E+00
2580	1.31	2.69	231.91	4.28	5.7229	2.47E-02	-2.47E-02	-5.50E+00
2803	0.71	2.22	229.37	1.10	11.2253	1.54E-02	1.54E-02	6.10E+00
3198	0.40	1.29	107.03	1.10	5.1249	7.10E-03	7.10E-03	3.83E+00
3738	0.80	1.61	120.26	1.28	1.2916	2.47E-03	-2.47E-03	-1.91E+00
4513	0.79	1.93	156.35	1.15	3.2063	6.14E-03	-6.14E-03	-2.66E+00
4947	0.86	1.93	151.95	1.07	5.8709	8.56E-03	8.56E-03	3.08E+00
5307	0.75	1.54	132.15	0.90	2.7896	1.02E-03	1.02E-03	9.96E-01
6287	0.81	1.82	143.78	1.80	1.7937	8.11E-03	-8.11E-03	-3.31E+00
6695	1.39	2.38	208.99	1.48	5.1046	6.29E-03	6.29E-03	4.44E+00
7401	0.39	1.04	68.29	0.78	0.6618	4.27E-03	-4.27E-03	-2.28E+00
7936	0.85	1.85	148.60	1.65	2.9443	1.28E-03	-1.28E-03	-1.29E+00
8944	0.68	1.64	120.85	0.85	4.2387	2.84E-04	-2.84E-04	-1.80E-01
9579	0.64	1.65	113.97	1.43	4.4189	3.55E-03	3.55E-03	1.94E+00
10126	0.52	1.48	111.81	0.99	2.4765	4.59E-04	4.59E-04	2.51E-01
10673	0.73	1.61	128.17	0.68	2.2253	2.88E-03	2.88E-03	6.92E-01
10913	0.51	1.19	90.62	0.66	1.5333	2.28E-03	-2.28E-03	-6.92E-01
11216	0.54	1.38	95.51	0.74	2.2256	5.08E-04	5.08E-04	1.88E-01
11585	0.50	1.15	88.34	1.03	2.0380	5.50E-03	-5.50E-03	-1.54E+00
11865	0.67	1.59	130.97	1.55	3.5780	4.90E-04	4.90E-04	2.90E-01
12457	0.80	1.60	141.17	1.09	3.2878	3.27E-03	3.27E-03	1.46E+00
12905	0.50	1.28	88.34	0.56	1.8237	8.32E-04	8.32E-04	2.71E-01
13231	0.54	1.27	95.85	0.87	1.5525	9.33E-04	-9.33E-04	-5.73E-01
13845	0.70	1.71	116.76	1.78	2.1251	2.25E-03	2.25E-03	8.77E-01
14235	0.51	1.29	90.44	0.54	1.2479	1.54E-03	-1.54E-03	-7.23E-01
14705	0.57	1.36	100.74	1.29	1.9709			
mean	0.73	1.67	132.08	1.28	3.27E+00	6.25E-03		$\Sigma \Delta Q_s$
standard deviation	0.24	0.44	43.97	0.82	2.35E+00	1.15E-02		**6.2E-01**
coefficient of variation	0.33	0.26	0.33	0.65	0.72	1.85		

Run: uniformQ = 100 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	0.92	2.01	163.40	2.21	4.3403	4.23E-03	4.23E-03	3.45E+00
816	1.11	1.52	104.78	0.47	0.8897	7.89E-02	-7.89E-02	-1.29E+01
980	1.13	3.14	254.72	3.93	13.8267	7.61E-03	7.61E-03	9.44E+00
2220	1.09	2.07	192.57	0.74	4.3901	1.19E-02	-1.19E-02	-4.29E+00
2580	1.44	2.87	254.93	4.71	8.6821	4.49E-02	-4.49E-02	-1.00E+01
2803	0.83	2.49	269.15	1.29	18.6938	2.58E-02	2.58E-02	1.02E+01
3198	0.47	1.45	125.78	1.30	8.5137	1.18E-02	1.18E-02	6.39E+00
3738	0.93	1.79	139.61	1.49	2.1214	4.22E-03	-4.22E-03	-3.27E+00
4513	0.94	2.17	184.35	1.36	5.3930	1.03E-02	-1.03E-02	-4.46E+00
4947	1.01	2.16	179.11	1.26	9.8521	1.44E-02	1.44E-02	5.17E+00
5307	0.88	1.74	155.66	1.06	4.6787	1.71E-03	1.71E-03	1.68E+00
6287	0.96	2.05	169.56	2.12	3.0000	1.31E-02	-1.31E-02	-5.34E+00
6695	1.60	2.63	241.22	1.71	8.3445	1.02E-02	1.02E-02	7.23E+00
7401	0.46	1.17	80.44	0.92	1.1155	6.97E-03	-6.97E-03	-3.73E+00
7936	0.99	2.06	173.01	1.93	4.8442	2.31E-03	-2.31E-03	-2.33E+00
8944	0.81	1.85	142.78	1.01	7.1716	4.27E-04	-4.27E-04	-2.71E-01
9579	0.76	1.86	134.77	1.69	7.4425	6.04E-03	6.04E-03	3.30E+00
10126	0.61	1.66	131.45	1.16	4.1394	6.89E-04	6.89E-04	3.77E-01
10673	0.85	1.81	151.02	0.81	3.7623	4.90E-03	4.90E-03	1.18E+00
10913	0.60	1.34	106.70	0.77	2.5862	3.85E-03	-3.85E-03	-1.17E+00
11216	0.64	1.56	112.59	0.88	3.7533	2.00E-03	2.00E-03	7.39E-01
11585	0.57	1.27	100.07	1.17	3.0147	1.05E-02	-1.05E-02	-2.94E+00
11865	0.79	1.78	154.22	1.82	5.9553	7.89E-04	7.89E-04	4.67E-01
12457	0.94	1.81	166.16	1.28	5.4881	5.31E-03	5.31E-03	2.38E+00
12905	0.59	1.45	104.25	0.66	3.1095	1.54E-03	1.54E-03	5.02E-01
13231	0.64	1.43	112.94	1.03	2.6074	9.10E-04	-9.10E-04	-5.59E-01
13845	0.75	1.81	126.56	1.93	3.1664	2.66E-03	2.66E-03	1.04E+00
14235	0.60	1.45	106.68	0.64	2.1295	2.43E-03	-2.43E-03	-1.14E+00
14705	0.67	1.53	118.08	1.51	3.2737			
mean	0.85	1.86	153.67	1.48	5.39E+00	1.04E-02		$\Sigma \Delta Q_s$
standard deviation	0.27	0.47	50.08	0.92	3.86E+00	1.91E-02		**1.1E+00**
coefficient of variation	0.31	0.25	0.33	0.62	0.72	1.84		

Run: uniformQ = 200 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	1.38	2.65	243.27	3.29	14.9185	1.55E-02	1.55E-02	1.27E+01
816	1.29	1.69	121.78	0.54	2.2428	9.70E-02	-9.70E-02	-1.59E+01
980	0.83	2.56	187.78	2.90	18.1498	2.27E-03	2.27E-03	2.81E+00
2220	1.61	2.73	284.66	1.10	15.3370	7.31E-03	-7.31E-03	-2.63E+00
2580	1.48	2.92	261.64	4.83	17.9697	1.26E-01	-1.26E-01	-2.82E+01
2803	0.97	2.77	314.00	1.50	46.1315	4.55E-02	4.55E-02	1.80E+01
3198	0.68	1.91	182.75	1.89	28.1611	4.35E-02	4.35E-02	2.35E+01
3738	0.99	1.88	149.41	1.59	4.6631	1.58E-02	-1.58E-02	-1.22E+01
4513	1.29	2.71	254.42	1.87	16.9095	3.98E-02	-3.98E-02	-1.73E+01
4947	1.51	2.84	266.26	1.88	34.1934	5.02E-02	5.02E-02	1.81E+01
5307	1.31	2.31	230.94	1.57	16.1137	5.93E-03	5.93E-03	5.81E+00
6287	1.43	2.69	252.04	3.15	10.3028	1.73E-02	-1.73E-02	-7.06E+00
6695	1.10	1.60	165.75	1.18	17.3621	1.90E-02	1.90E-02	1.34E+01
7401	0.68	1.57	120.10	1.37	3.9352	2.20E-02	-2.20E-02	-1.18E+01
7936	1.41	2.64	246.42	2.74	15.7127	9.43E-03	-9.43E-03	-9.51E+00
8944	1.21	2.44	213.38	1.51	25.2183	1.09E-03	-1.09E-03	-6.91E-01
9579	1.14	2.46	201.67	2.52	25.9098	2.12E-02	2.12E-02	1.16E+01
10126	0.90	2.20	194.64	1.72	14.2957	1.82E-03	1.82E-03	9.94E-01
10673	1.27	2.40	225.02	1.20	13.3022	1.76E-02	1.76E-02	4.23E+00
10913	0.90	1.80	158.81	1.15	9.0707	1.39E-02	-1.39E-02	-4.22E+00
11216	0.95	2.07	168.39	1.31	13.2879	4.32E-03	4.32E-03	1.59E+00
11585	0.88	1.75	154.72	1.81	11.6935	3.09E-02	-3.09E-02	-8.65E+00
11865	1.17	2.36	228.94	2.71	20.3389	2.69E-03	2.69E-03	1.59E+00
12457	1.39	2.39	246.12	1.90	18.7470	1.70E-02	1.70E-02	7.62E+00
12905	0.88	1.93	155.82	0.98	11.1281	6.37E-03	6.37E-03	2.08E+00
13231	0.95	1.91	168.14	1.53	9.0501	1.24E-03	1.24E-03	7.59E-01
13845	0.92	2.07	153.89	2.34	8.2915	1.73E-03	1.73E-03	6.74E-01
14235	0.90	1.94	159.24	0.96	7.6177	4.48E-03	-4.48E-03	-2.10E+00
14705	0.89	1.88	157.77	2.01	9.7218			
mean	1.11	2.24	202.34	1.90	1.59E+01	2.29E-02		$\Sigma \Delta Q_s$
standard deviation	0.26	0.41	50.92	0.89	9.32E+00	3.70E-02		**5.2E+00**
coefficient of variation	0.23	0.18	0.25	0.47	0.59	1.61		

Run: uniformQ = 2000 $m^3 s^{-1}$

Distance Downstream (x) (m)	h (m)	U (m/s)	τ (Pa)	τ^*	Q_s (t/s)	$\lvert \Delta Q_s/\Delta x \rvert$ (t/s/m)	$\Delta Q_s/\Delta x$ (t/s/m)	ΔQ_s t/s
0	5.18	6.41	915.69	12.39	902.0346	9.09E-01	9.09E-01	7.41E+02
816	5.08	4.30	478.06	2.13	160.6140	5.73E+00	-5.73E+00	-9.40E+02
980	3.08	6.04	696.64	10.76	1100.3392	1.24E-01	1.24E-01	1.53E+02
2220	6.00	6.63	1060.68	4.10	947.0318	5.47E-01	5.47E-01	1.97E+02
2580	4.24	5.86	748.99	13.83	750.2366	8.45E+00	-8.45E+00	-1.88E+03
2803	3.48	6.62	1127.11	5.39	2634.4506	2.94E+00	2.94E+00	1.16E+03
3198	2.35	4.53	627.84	6.48	1474.3769	2.23E+00	2.23E+00	1.21E+03
3738	3.57	4.51	538.02	5.73	269.2181	3.01E-01	-3.01E-01	-2.33E+02
4513	2.86	4.63	563.15	4.14	502.6560	3.68E+00	-3.68E+00	-1.60E+03
4947	5.66	6.84	1000.02	7.06	2097.8006	3.13E+00	3.13E+00	1.13E+03
5307	4.89	5.71	864.58	5.89	970.0381	3.53E-01	3.53E-01	3.46E+02
6287	5.36	6.52	947.24	11.86	623.7650	7.37E-01	7.37E-01	3.01E+02
6695	2.60	3.65	391.49	2.78	323.0089	1.09E-01	1.09E-01	7.68E+01
7401	2.61	4.00	460.59	5.24	246.2446	4.58E-01	-4.58E-01	-2.45E+02
7936	3.26	4.65	570.07	6.35	491.1925	1.06E+00	-1.06E+00	-1.07E+03
8944	4.56	5.95	806.53	5.69	1562.9430	5.95E-02	-5.95E-02	-3.78E+01
9579	4.34	5.97	766.46	9.59	1600.7336	1.57E+00	1.57E+00	8.59E+02
10126	3.02	5.00	651.26	5.75	742.1028	1.55E-01	-1.55E-01	-8.47E+01
10673	4.78	5.87	845.39	4.51	826.8218	1.11E+00	1.11E+00	2.67E+02
10913	3.40	4.54	601.46	4.35	559.9291	9.23E-01	-9.23E-01	-2.80E+02
11216	3.63	5.12	642.18	5.00	839.5829	3.77E-01	3.77E-01	1.39E+02
11585	3.32	4.43	585.98	6.85	700.5840	1.50E+00	-1.50E+00	-4.20E+02
11865	4.16	5.60	811.91	9.60	1120.1115	9.24E-03	9.24E-03	5.47E+00
12457	5.20	5.90	918.58	7.09	1114.6388	8.96E-01	8.96E-01	4.02E+02
12905	3.37	4.82	595.21	3.76	713.0329	4.89E-01	4.89E-01	1.59E+02
13231	3.60	4.79	636.72	5.78	553.5489	3.20E-01	3.20E-01	1.97E+02
13845	2.67	4.25	448.61	6.83	357.0254	3.40E-01	-3.40E-01	-1.33E+02
14235	3.44	4.83	607.45	3.64	489.7997	2.00E-01	2.00E-01	9.40E+01
14705	2.52	3.86	445.85	5.69	395.7993			
mean	3.87	5.24	701.85	6.49	8.64E+02	1.38E+00		$\Sigma \Delta Q_s$
standard deviation	1.04	0.93	196.88	2.88	5.67E+02	2.37E+00		**5.1E+02**
coefficient of variation	0.27	0.18	0.28	0.44	0.66	1.71		

TABLE DR4. RELATIONSHIPS BETWEEN SEDIMENT STORAGE AND DOWNSTREAM VARYING ROUGHNESS AND WIDTH

Experiment	**$\Sigma\Delta Q_s/\Delta x$ versus $\Delta d_{90}/\Delta x$[#]**		**$\Sigma\Delta Q_s/\Delta x$ versus $\Delta w/\Delta x$[&]**	
	R^2 [*]	**RMSE**	**R^2**	**RMSE**
control -- uniformQ = 50 $m^3 s^{-1}$	0.53	0.004	0.18	0.017
monotonically increasing Q to 50 $m^3 s^{-1}$	0.09	0.001	0.42	0.001
monotonically decreasing Q to 50 $m^3 s^{-1}$	0.60	0.003	0.14	0.004
mid-reach peaking Q at 50 $m^3 s^{-1}$	0.06	0.001	0.25	0.001
uniformQ = 25 $m^3 s^{-1}$	0.62	0.001	0.21	0.002
uniformQ = 75 $m^3 s^{-1}$	0.49	0.008	0.17	0.107
uniformQ = 100 $m^3 s^{-1}$	0.45	0.014	0.15	0.018
uniformQ = 200 $m^3 s^{-1}$	0.19	0.034	0.05	0.036
uniformQ = 2000 $m^3 s^{-1}$	0.01	2.241	0.02	2.383

[#] *Changes sediment storage computed as change in sediment flux per distance downstream versus longitudinal difference in grain roughness (d_{90}).*

[&] *Changes sediment storage computed as change in sediment flux per distance downstream versus longitudinal difference in channel width (w).*

[*] *Statistics generated by 1st order polynomial fits*