Addendum to "Use of Periphytic Chlorophyll a in Application of AQUATOX in the Lower Boise River TMDL Analysis"

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On 4/29/2013 Tom Dupuis wrote:

"Attached is the pebble count data that was used to normalize the measured periphyton data, this is the same data that showed on the screen in the last modeling meeting. On the "Overall Summary" sheet I've added an example of how the pebble counts were used to normalized measured data, namely, the fraction of the reach that was greater than sand and silt was simply multiplied by the measured data. For example, at Eckert, the measured value for this example event was 94 mg/m2, and 81% of the site was greater than sand and gravel, and so the normalized value was 81% of the measured value, or 76 mg/m2."

Table 1

Pebble Count		Eckert Rd	Glenwood	Middleton	Ft Boise WMA
Mean % size class		11/18/1997	2/27/1995	11/24/1997	1/26/1998
Mean % very large boulders	4096-2048 mm	0.00	0.00	0.98	0.00
Mean % large boulders	2047-1024 mm	0.00	0.00	0.00	0.00
Mean % medium boulders	1023-512 mm	0.00	0.00	0.00	0.00
Mean % small boulders	511-256 mm	1.68	0.62	0.00	0.00
Mean % large cobbles	255-128 mm	36.44	14.27	2.00	0.69
Mean % small cobbles	127-64 mm	29.10	33.91	14.43	7.59
Mean % very coarse gravel	63-32 mm	8.88	20.25	17.54	19.07
Mean % coarse gravel	31-16 mm	3.34	4.11	9.13	16.96
Mean % medium gravel	15-8 mm	1.45	5.83	5.36	8.70
Mean % fine gravel	7.9-4 mm	0.27	0.00	2.08	0.79
Mean % very fine gravel	3.9-2 mm	0.00	0.00	5.48	0.00
Mean % sand	1.9-0.062 mm	18.84	21.03	38.40	29.80
Mean % silt	<.062	0.00	0.00	4.61	16.41
% substrate greater than sand and silt		81	79	57	54
chl a (mg/m2) measured in Oct. 2005 in *riffles*		94	158	93	162
chl a (mg/m2) for *reach* (normalized by pebble count)		76	125	53	87
deconstructed chl a (mg/m2) for riffles		94	158	93	162

Examination of the **Pebble Count** worksheet (pebble count normalization example.xls) shows that the pebble counts were averaged across riffle, pool, and run habitats. Therefore, they represent the suitable substrate for periphyton. Unless a transect was in water too deep for sampling, all three habitats were sampled and all pebble counts were used. Furthermore, in the linked study that I have examined, the model was set up (arbitrarily?) with 80% riffle and 20% run, and the periphyton were assigned an equal preference for riffle and for run. I believe the deconstruction based just on pebble counts is correct in this application.

Table 2. Pebble Count worksheet in pebble count normalization example.xls

	Notes		deep run	riffle	run/pool	run/pool-too dee	riffle	riffle	
18	**Notes**		deep run	riffle	run/pool	run/pool-too dee	riffle	riffle	
19									
20	Total		132	210	52	0	74	111	
21	% very large boulders	4096-2048 mm	0	0	0		0	0	0
22	% large boulders	2047-1024 mm	0	0	0		0	0	0
23	% medium boulders	1023-512 mm	0	0	0		0	0	0
24	% small boulders	511-256 mm	0	0.4761905	3.846154		1.351351	2.702703	1.675279675
25	% large cobbles	255-128 mm	19.69697	33.809524	48.07692		33.78378	46.84685	36.44280944
26	% small cobbles	127-64 mm	26.51515	43.333333	21.15385		25.67568	28.82883	29.1013671
27	% very coarse gravel	63-32 mm	9.848485	12.380952	1.923077		12.16216	8.108108	8.884556885
28	% coarse gravel	31-16 mm	1.515152	3.8095238	1.923077		4.054054	5.405405	3.341442341
29	% medium gravel	15-8 mm	0	0.4761905	0		6.756757	0	1.446589447
30	% fine gravel	7.9-4 mm	0	0	0		1.351351	0	0.27027027
31	% very fine gravel	3.9-2 mm	0	0	0		0	0	0
32	% sand	1.9-0.062 mm	42.42424	5.7142857	23.07692		14.86486	8.108108	=AVERAGE(C32:H32)
33	% silt	<.062	0	0	0		0	0	0
34									
35	SUMMARY								
36			Eckert Rd	Glenwood	Middleton	Ft Boise WMA			
37			11/18/1997	2/27/1995	11/24/1997	1/26/1998			
38	Mean % very large boulders	4096-2048 mm	0.00	0.00	0.98	0.00			
39	Mean % large boulders	2047-1024 mm	0.00	0.00	0.00	0.00			
40	Mean % medium boulders	1023-512 mm	0.00	0.00	0.00	0.00			
41	Mean % small boulders	511-256 mm	1.68	0.62	0.00	0.00			
42	Mean % large cobbles	255-128 mm	36.44	14.27	2.00	0.69			
43	Mean % small cobbles	127-64 mm	29.10	33.91	14.43	7.59			
44	Mean % very coarse gravel	63-32 mm	8.88	20.25	17.54	19.07			
45	Mean % coarse gravel	31-16 mm	3.34	4.11	9.13	16.96			
46	Mean % medium gravel	15-8 mm	1.45	5.83	5.36	8.70			
47	Mean % fine gravel	7.9-4 mm	0.27	0.00	2.08	0.79			
48	Mean % very fine gravel	3.9-2 mm	0.00	0.00	5.48	0.00			
49	Mean % sand	1.9-0.062 mm	18.84	21.03	38.40	29.80			
50	Mean % silt	<.062	0.00	0.00	4.61	16.41			