

Benthic Parameter Relationships:

bulk density, g/mL_{env}

$$\tilde{n}_B = \tilde{n}_W \cdot n + \tilde{n}_S \cdot (1 - n)$$

$$\tilde{n}_B = n + \tilde{n}_D \text{ (for } \tilde{n}_W \text{ of 1.0)}$$

dry density, g_{solid}/mL_{env}

$$\tilde{n}_D = \tilde{n}_S \cdot (1 - n)$$

percent water, $100 \frac{g_{solid+water}}{g_{solid}}$ (sediment fresh weight/dry weight)

$$PCTWAG = 100 \cdot (1 + n / \tilde{n}_D) = 100 \cdot \tilde{n}_B / \tilde{n}_D$$

where n is porosity (L_{water}/L_{env}), \tilde{n}_W is water density (about 1.0 g_{water}/mL_{water}), and \tilde{n}_S is particle density (about 2.7 g_{solid}/mL_{solid}).

n	\tilde{n}_D	\tilde{n}_B	PCTWA
0.1	2.43	2.53	104
0.2	2.16	2.36	109
0.3	1.89	2.19	116
0.4	1.62	2.02	125
0.5	1.35	1.85	137
0.6	1.08	1.68	156
0.7	0.81	1.51	186
0.8	0.54	1.34	248
0.9	0.27	1.17	433
0.95	0.135	1.085	804
0.99	0.027	1.017	3767
0.995	0.0135	1.0085	7470

percent dry weight, $100 \frac{g_{\text{solid}}}{g_{\text{solid+water}}}$ (sediment dry weight/fresh weight)

$$\%DW = 100 \cdot \tilde{n}_D / \tilde{n}_B$$

%DW	n	\tilde{n}_D	\tilde{n}_B
99	.027	2.628	2.655
95	.124	2.364	2.488
90	.231	2.077	2.308
80	.403	1.612	2.015
70	.536	1.252	1.788
60	.643	0.964	1.607
50	.730	0.730	1.460
40	.802	0.535	1.337
30	.863	0.370	1.233
20	.915	0.229	1.144
10	.960	0.107	1.067
5	.981	0.052	1.033
1	.996	0.010	1.006