APPENDIX DR1: FORAMINIFERAL TRANSFER FUNCTION METHODS

The basic principle of quantitative environmental reconstruction using transfer functions is to express an environmental variable (X) as a function of biological data (Y) consisting of m species in t samples. The first step is development of a modern training set. In studies aiming to reconstruct relative sea-level (RSL) using salt-marsh sediments and microfossils, this involves collecting surface samples along transects from which X and Y are directly measured and enumerated, respectively. This modern training set forms the basis for developing a transfer function to quantify the relationship between X and Y. Through cross-validation, transfer function performance (estimated accuracy and precision) is assessed. A range of specific methods are available to generate the transfer function (Birks, 1995). The most commonly used method in RSL reconstruction is Weighted-Average Partial Least Squares because it has rigorous underlying statistical theory and works well in species-rich, noisy data with long environmental gradients (e.g., Birks, 1995). The aim of paleoenvironmental reconstruction is to provide a proxy-based estimate of the environmental variable of interest at some point in the past (Xo). It is not possible to measure this variable directly, but microfossil assemblages of the same age preserved in core material (Yo) can be observed and enumerated. Using the relationships developed from modern samples, transfer functions transform the fossil data (Yo) into quantitative estimates of the past environmental variable (Xo).

The modern foraminiferal training set used consists of published data from Hawkes et al. (2011) and Engelhart et al. (2013). The dataset contains 158 samples taken from six estuaries along the coast of Oregon. Sample elevations were converted to a standardized water level index (SWLI), because of differing tidal ranges among sites (Horton et al., 1999). To calculate each sample specific SWLI, the great diurnal range was used (mean lower low water (MLLW) to mean higher high water (MHHW)), where a SWLI value of 0 equals MLLW and 100 equals MHHW.

The transfer function was developed using C2 (Juggins, 2011) and employed relative abundance (%) foraminiferal data. Organic linings and broken/unidentifiable individuals were excluded from the transfer function. To choose the appropriate transfer function method, it is necessary to understand whether the species response is primarily linear or unimodal. Detrended correspondence analysis (DCA) performed in the Vegan package for R (Oksanen et al., 2013), returned a first DCA axis length of >4 standard deviation units, indicating almost complete turnover of species and supporting use of a unimodal model. We used weighted averaging partial least squares (WA-PLS). To assess the performance of the model, we cross-validated by bootstrapping 1000 times. After the development of an initial transfer function with WA-PLS, the dataset was screened to remove six outliers (4% of the initial dataset). The final modern foraminiferal training set consists of 152 samples. We used used component one of WA-PLS, as greater components did not produce significant improvements in r^2 or root mean square error of

prediction (RMSEP) (e.g., Barlow et al., 2013). Transfer function summary statistics indicate a strong relationship between observed and predicted elevations (r^2_{boot}=0.85) and a low error term (RMSEP=7 SWLI units). This strong relationship is demonstrated in a plot of observed versus predicted elevations (Supplementary Figure 1); although transfer function performance is degraded below 60 SWLI units due to high abundances of *Miliammina fusca* (e.g., Hawkes et al, 2011).

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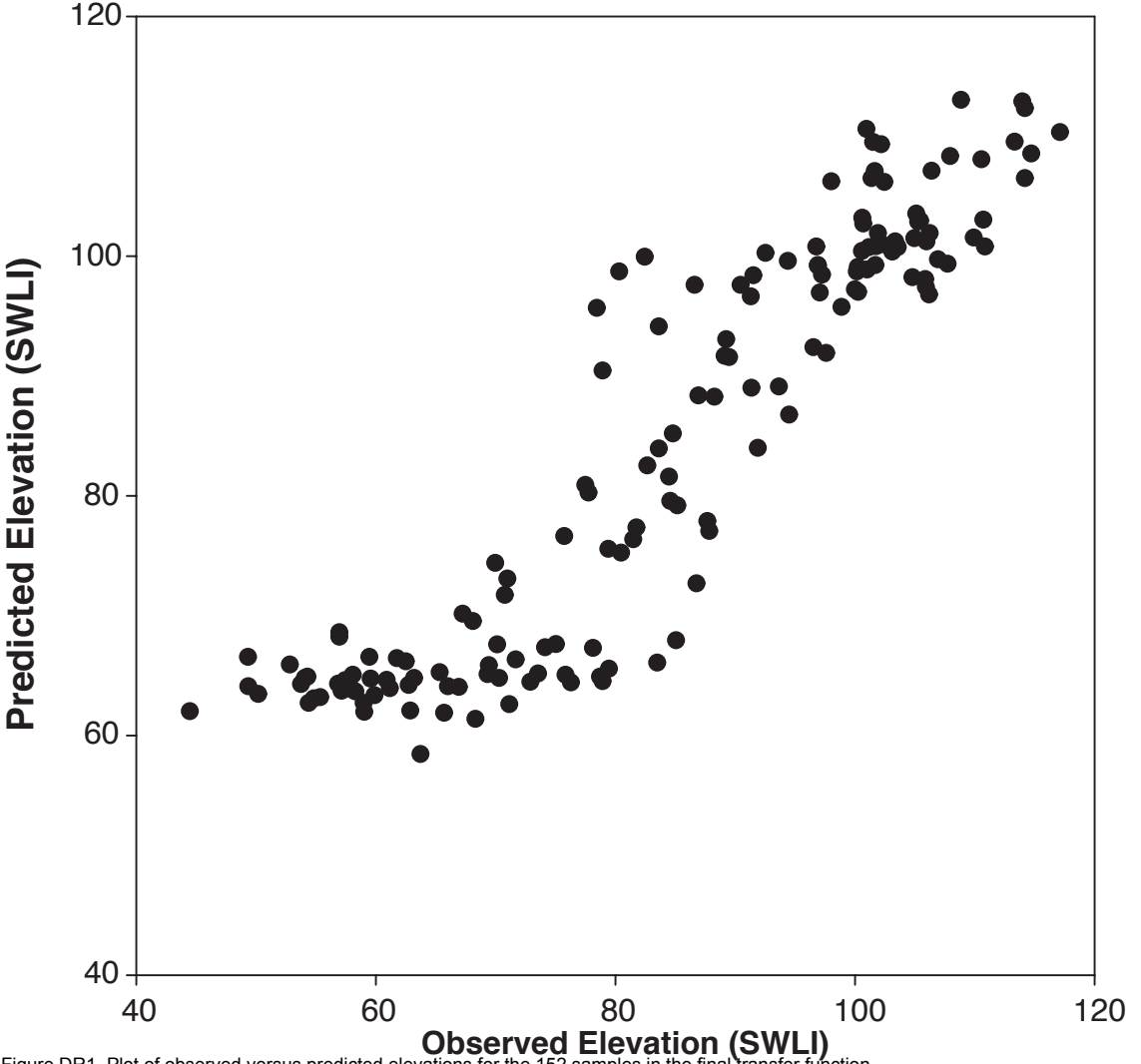

Figure DR1. Plot of observed versus predicted elevations for the 152 samples in the final transfer function.
SWLI = standardized water level index

Plate 1. Location of the high-marsh transplant site 2.36m above mean lower low water. Stakes mark the location of the removed transplant block.

Plate 2. The transplanted block one year after the experiment began at an elevation of 1.74m above mean lower low water. The station was remarked at this time with more permanent white PVC pipe before sampling with a Russian corer. One centimeter of new muddy sediment is visible on top of the transplanted block. The PVC pipe was still clearly visible when sampled again after five years.

Sheet	Explanation
Modern Forams (%)	Dead foraminiferal abundances expressed as percentages for 158 modern samples. Broken/unidentifiable and organic lining species categories are excluded.
Modern Elevations	Elevations, expressed in standardized water level index units and relative to mean lower low water (MLLW), for the 158 modern samples
Transplant (%)	Foraminiferal abundances expressed as percentages for transplant samples taken from the core with 5 years of post transplant sedimentation. Broken/unidentifiable species categories are excluded.

Modern Forams (%)

Sample Name	Ac	Am	As	Bp	Ca	Hc	Hm	Hw	Jm	Mf	Re	Ro	Th	Tc	Ti	Tr	Hb	Hh	Mp
TH1	16.25	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.40	75.00	0.00	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.00
TH2	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TH4	5.22	0.00	0.00	0.00	0.00	0.00	4.30	0.11	0.11	67.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TH5	3.50	0.00	0.00	0.00	0.00	0.00	2.87	2.55	0.98	46.30	0.00	0.00	0.00	0.00	2.55	0.00	0.00	0.00	0.00
TH6	0.00	0.00	0.00	0.00	0.00	0.00	27.10	32.50	14.40	18.07	0.00	0.00	0.00	0.00	7.80	0.00	0.00	0.00	0.00
TH7	0.00	0.00	0.00	1.57	0.00	0.00	3.07	4.10	30.00	37.90	0.00	0.00	0.00	0.00	5.10	0.00	0.00	0.00	0.00
TH8	0.00	0.00	0.00	2.80	0.00	0.00	14.96	8.66	40.00	19.68	0.00	0.00	0.00	0.00	14.17	0.00	0.00	0.00	0.00
TH9	0.00	0.00	0.00	7.50	0.00	0.00	16.30	19.30	35.00	8.10	0.00	0.00	0.00	0.00	13.56	0.00	0.00	0.00	0.00
TH10	0.00	0.00	0.00	16.60	0.00	0.00	27.70	12.20	25.90	2.80	0.00	0.00	0.00	0.00	14.80	0.00	0.00	0.00	0.00
TH11	0.00	0.00	0.00	12.00	0.00	0.00	35.50	1.34	17.00	16.10	0.00	0.00	0.00	0.00	17.90	0.00	0.00	0.00	0.00
TH12	0.00	0.00	0.00	13.40	0.00	0.00	37.50	0.00	10.40	20.70	0.00	0.00	1.83	0.00	16.16	0.00	0.00	0.00	0.00
TH13	0.00	0.00	0.00	34.20	0.00	0.00	16.00	7.70	12.00	4.90	0.00	0.00	5.20	0.00	20.00	0.00	0.00	0.00	0.00
TH14	0.00	0.00	0.00	23.00	0.00	0.00	12.42	1.86	16.15	1.24	0.00	0.00	8.70	0.00	36.60	0.00	0.00	0.00	0.00
TH15	0.00	0.00	0.00	28.90	0.00	0.00	0.00	3.00	11.17	0.00	0.00	0.00	8.60	0.50	47.70	0.00	0.00	0.00	0.00
TH16	0.00	0.00	0.00	70.00	0.00	0.00	0.78	8.46	10.77	0.00	0.00	0.00	0.00	3.80	6.20	0.00	0.00	0.00	0.00
CI1	2.19	0.00	0.00	0.00	0.00	0.00	1.46	0.00	5.11	91.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CI2	4.74	0.00	0.00	0.00	0.00	0.00	2.59	0.00	15.52	75.40	0.00	0.00	0.00	0.00	0.00	1.72	0.00	0.00	0.00
CI3	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	14.34	76.56	0.00	0.00	0.00	0.74	0.74	1.70	0.00	0.00	0.00
CI4	1.17	0.00	0.29	0.00	0.00	0.00	8.48	0.58	18.42	61.70	0.00	0.00	0.00	0.00	5.30	3.80	0.00	0.00	0.00
CI5	0.00	0.00	1.90	0.00	0.00	0.00	1.44	7.92	18.30	59.35	0.00	0.00	0.00	0.00	9.78	1.08	0.00	0.00	0.00
CI6	0.00	0.00	5.11	0.00	0.00	0.00	9.98	11.90	14.35	44.80	0.00	0.00	0.00	0.97	12.90	0.00	0.00	0.00	0.00
CI7	0.00	0.00	0.43	0.00	0.00	0.00	0.00	5.40	11.64	73.00	0.00	0.00	0.00	1.73	7.76	0.00	0.00	0.00	0.00
CI8	0.63	0.00	0.00	13.40	0.00	0.00	4.40	20.80	6.72	27.30	0.00	0.00	0.00	0.00	25.60	0.84	0.00	0.00	0.00
CI9	0.00	0.00	0.00	9.30	0.00	2.70	8.60	37.80	10.41	9.05	0.00	0.00	0.00	0.00	22.20	0.00	0.00	0.00	0.00
CI10	0.00	0.00	0.00	22.20	0.00	0.00	1.96	36.60	12.64	8.93	0.00	0.00	0.00	0.00	17.43	0.22	0.00	0.00	0.00
CI11	0.00	0.00	1.66	7.20	0.00	4.71	7.76	49.00	10.81	0.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00	0.00
CI12	0.00	0.00	0.00	21.60	0.00	2.59	1.15	34.60	11.82	0.00	0.00	0.00	6.05	0.00	22.20	0.00	0.00	0.00	0.00
HC1	21.15	0.00	0.64	0.00	0.00	0.00	0.00	0.00	1.28	76.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC2	9.71	0.00	0.00	0.00	0.00	0.00	0.00	0.65	2.59	84.47	0.32	0.65	0.00	0.65	0.32	0.00	0.00	0.00	0.00
HC3	10.86	0.00	0.57	0.00	0.00	0.00	0.00	0.00	3.43	79.43	2.86	0.00	0.00	2.86	0.00	0.00	0.00	0.00	0.00
HC4	28.85	0.00	3.61	0.00	0.00	0.00	0.00	0.00	0.66	66.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC5	29.80	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.82	68.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC6	33.81	0.00	2.56	0.00	0.00	0.00	0.00	0.00	1.42	61.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC7	30.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC8	23.43	0.00	0.66	0.00	0.00	0.00	0.00	0.00	1.32	74.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HC9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.19	88.47	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00
HC10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.36	89.75	0.00	0.00	0.00	1.06	2.83	0.00	0.00	0.00	0.00
HC11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	33.13	62.27	0.00	0.00	0.00	0.00	3.99	0.00	0.00	0.00	0.00
HC12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60	51.20	34.00	0.00	0.00	0.00	0.00	11.20	0.00	0.00	0.00	0.00
HC13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	41.60	49.35	0.00	0.00	0.00	0.00	6.46	0.26	0.00	0.00	0.00
HC14	0.00	0.00	0.00	0.00	0.00	0.00	7.53	2.28	52.05	21.46	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	0.00
HC15	0.00	0.00	0.00	0.00	0.00	0.00	7.38	0.00	50.89	18.58	0.00	0.00	0.00	0.00	20.10	0.00	0.00	0.00	0.00
HC16	0.00	0.00	0.00	0.00	0.00	0.00	12.79	7.87	32.79	31.15	0.00	0.00	0.00	0.00	13.44	1.97	0.00	0.00	0.00
HC17	0.00	0.00	0.00	0.00	0.00	0.00	10.46	14.29	27.36	19.32	0.00	0.00	0.00	0.00	26.96	1.61	0.00	0.00	0.00
HC18	0.00	0.00	0.00	0.00	0.00	0.00	18.18	26.23	12.73	4.94	0.00	0.00	0.00	0.00	37.14	0.78	0.00	0.00	0.00
HC19	0.00	0.00	0.00	1.96	0.00	0.65	13.70	16.96	15.22	9.57	0.00	0.00	0.00	0.00	41.09	0.87	0.00	0.00	0.00
HC20	0.00	0.00	0.00	2.14	0.00	2.45	14.07	18.04	14.98	1.22	0.00	0.00	0.00	0.00	38.53	7.03	0.00	0.00	0.00
HC21	0.00	0.00	0.00	8.05	0.00	3.38	19.48	14.03	11.17	0.00	0.00	0.00	0.00	0.00	22.60	21.30	0.00	0.00	0.00
HC22	0.00	0.00	0.00	14.56	0.00	0.00	11.65	2.27	7.12	0.00	0.00	0.00	0.32	0.00	9.39	54.69	0.00	0.00	0.00
HC23	0.00	0.00	0.00	20.86	0.00	0.00	6.62	0.99	5.63	0.00	0.00	0.00	2.98	0.00	12.91	50.00	0.00	0.00	0.00
SR1	3.82	1.53	0.00	0.00	2.29	0.00	0.00	0.00	1.53	89.31	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00
SR2	1.31	0.44	0.00	0.00	0.00	0.00	1.75	0.00	0.44	96.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SR3	2.16	5.04	0.00	0.00	0.00	0.00	0.00	11.87	6.83	60.43	0.00	0.00	0.00	0.00	13.67	0.00	0.00	0.00	0.00
SR4	0.00	0.00	0.00	0.00	0.00	0.00	8.59	27.91	4.60	36.20	0.00	0.00	0.00	0.00	20.86	1.84	0.00	0.00	0.00
SR5	0.00	0.00	0.00	0.65	0.00	0.00	7.79	56.49	5.19	7.14	0.00	0.00	0.00	0.00	20.78	1.95	0.00	0.00	0.00
SR6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	16.67	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	0.00
SR7	0.00	0.00	0.00	1.40	0.00	0.00	5.61	36.45	2.80	14.49	0.00	0.00	0.00	0.00	36.92	2.34	0.00	0.00	0.00
SR8	0.00	0.00	0.00	0.00	0.00	0.00	9.01	52.79	1.29	6.87	0.00	0.00	0.00	0.00	27.90	2.15	0.00	0.00	0.00
SR9	0.00	0.00	0.00	4.51	0.00	0.00	6.56	34.02	2.05	11.89	0.00	0.00	0.00	0.00	37.30	3.69	0.00	0.00	0.00
SR10	0.00	0.00	0.00	5.13	0.00	0.00	9.94	32.05	1.28	12.82	0.00	0.00	0.00	0.00	37.50	1.28	0.00	0.00	0.00
SR11	0.00	0.00	0.00	5.18	0.00	0.00	30.42	20.71	1.29	7.12	0.00	0.00	0.00	0.00	30.42	4.85	0.00	0.00	0.00
SR12	0.00	0.00	0.00	6.62	0.00	0.00	21.85	31.79	0.66	1.99	0.00	0.00	0.00	0.00	21.85	15.23	0.00	0.00	0.00
SR13	0.00	0.00	0.00	7.80	0.00	0.00	2.13	46.10	0.00	1.42	0.00	0.00	0.00	0.00	4.96	37.59	0.00	0.00	0.00
SR14	0.00	0.00	0.00	14.10	0.00	0.00	1.28	35.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.36	0.00	0.00	0.00
SR15	0.00	0.00	0.00	0.00	0.00	0.00	7.14	21.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.43	0.00	0.00	0.00
CQ3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.74	9.68	22.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ4	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00	13.74	3.45	0.00	0.00	0.00	0.00
CQ5	0.71	0.00	0.00	0.00	0.00	0.00	2.13	1.79	4.29	89.30	0.71	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00
CQ6	0.00	0.00	0.00	2.74	0.00	0.00	3.38	1.82	3.38	77.37	0.00	0.00	0.00	0.00	8.97	2.34	0.00	0.00	0.00
CQ7	0.00	0.00	0.00	5.12	0.00	0.00	14.92	18.49	18.04	8.68	0.00	0.00	0.00	0.00	30.07	4.68	0.00	0.00	0.00
CQ8	0.00	0.00	0.00	5.74	0.00	0.00	11.48	22.08	9.26	13.84	0.00	0.00	0.00	0.00	31.67	5.93	0.00	0.00	0.00
CQ9	0.00	4.63	0.00	12.11	0.00	0.00	0.00	18.50	32.38	0.00	0.00	0.00	0.00	0.00	17.18	15.20	0.00	0.00	0.00
CQ10	0.00	5.24	0.00	1.24	0.00	0.00	0.00	15.79	22.57	48.80	0.00	0.00	0.00	0.00	6.36	0.00	0.00	0.00	0.00
CQ11	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	4.20	94.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ13	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.32	71.50	8.98	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00
CQ14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ15	16.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.85	8.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ16	35.55	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	46.35	17.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CQ17	1.80	0.00	0.00	0.00	0.00	0.00	8.32	10.36	2.93	68.30	2.23	0.00	0.00	0.00	3.83	2.23	0.00	0.00	0.00
CQ18	0.00	0.00	0.00	8.78	0.00	0.00	8.54	24.94	3.46	21.02	0.00	0.00	4.16	0.00	11.78	17.32	0.00	0.00	0.00
CQ19	0.00	0.00	0.00	16.20	0.00	0.00	6.06	19.20	4.38	2.03	0.00	0.00	4.70	0.00	2.03	45.40	0.00	0.00	0.00
SE17A	1.98	0.00	0.00	0.00	1.98	0.00	0.00	5.94	2.97	82.18	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00
SE17	0.00	0.00	0.00	0.00	2.63	0.00	0.00	1.97	0.00	90.13	0.00	0.00	0.00	0.00	1.97	0.00	0.00	0.00	0.00
SE15	0.00	0.00	0.00	0.00	3.65	0.00	0.00	1.46	1.46	91.97	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00
SE14	0.00	0.00	0.00	0.00	5.50	0.00	0.00	1.83	4.59	87.16	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00
SE13	0.00	0.00	0.00	0.00	1.50	0.00	0.75	0.00	3.76	93.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE12	0.00	0.00	0.00	0.00	7.02	0.00	0.00	0.00	2.63	87.72	0.00	0.00	0.00	0.00	0.88	0.00	0.88	0.00	0.00
SE11	1.96	0.00	0.00	0.00	0.98	0.00	0.98	0.00	1.96	92.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE10	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.92	0.00	94.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.00
SE9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	96.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00
SE8	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	97.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00
SE7	0.76	0.00	0.00	0.00	3.03	0.00	0.00	3.03	1.52	90.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE6	1.18	0.00	0.00	0.59	3.53	0.00	0.00	3.53	0.59	88.82	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00
SE5	0.00	0.00	0.00	0.00	1.22	0.00	0.00	3.66	6.10	87.20	0.00	0.00	0.00	0.00	1.83	0.00	0.00	0.00	0.00
SE4	0.00	0.00	0.00	12.09	0.55	0.00	2.75	2.75	18.68	59.34	0.00	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00
SE3	0.00	0.00	0.00	2.94	0.00	0.00	1.47	53.31	17.28	4.04	0.00	0.00	0.00	0.00	19.12	0.00	0.00	0.00	0.00
SE2	0.00	0.00	0.00	28.11	0.00	0.00	0.92	7.83	53.46	1.38	0.00	0.00	0.00	0.00	3.69	0.46	0.00	3.23	0.00
SE1	0.00	0.00	0.00	23.08	0.00	0.00	15.38	11.24	15.98	4.73	0.00	0.00	0.00	0.00	29.59	0.00	0.00	0.00	0.00
MS11	0.00	0.00	0.00	13.94	0.00	0.00	1.44	26.92	14.42	0.00	0.00	0.00	0.00	0.00	0.00	37.50	0.00	0.00	2.88
MS10	0.00	0.00	0.00	15.50	0.00	0.00	7.50	2.00	31.00	0.00	0.00	0.00	0.00	0.00	0.00	26.00	0.00	0.00	14.50
MS9	0.00	0.00	0.00	16.85	0.00	0.00	24.16	2.81	3.93	0.00	0.00	0.00	0.00	0.00	0.00	34.27	0.00	0.00	17.98
MS8	0.00	0.00	0.00	8.50	0.00	0.00	3.00	2.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	51.00	0.00	0.50	25.00
MS7	0.00	0.00	0.00	1.90	0.00	0.00	8.10	19.05	7.14	0.00	0.00	0.00	0.00	0.00	0.48	60.95	0.00	0.00	0.48
MS6	0.00	0.00	0.00	23.79	0.00	0.00	17.48	14.56	4.37	0.00	0.00	0.00	0.00	0.00	3.88	29.61	0.00	0.00	3.40
MS5	0.00	0.00	0.00	1.20	0.00	0.00	19.28	34.94	3.01	0.00	0.00	0.00	0.00	0.00	0.00	34.94	0.00	0.00	5.42

MS3	0.00	0.00	0.00	1.47	0.00	0.00	0.49	17.16	19.61	46.08	0.00	0.00	0.00	0.00	12.25	0.00	0.49	0.00	0.98
MS2	0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.92	10.09	88.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MS1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	93.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-27	1.37	0.00	0.00	0.00	4.11	0.00	0.00	0.68	0.68	90.41	2.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-26	1.00	0.00	0.00	0.00	5.00	0.00	0.00	1.00	0.00	92.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-25	0.00	0.00	0.00	0.00	0.93	0.00	0.00	0.00	0.00	91.67	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-24	0.00	0.00	0.00	0.00	12.07	0.00	0.86	0.86	0.00	86.21	2.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-23	13.86	0.00	0.00	0.00	0.99	0.00	0.00	0.00	1.98	79.21	1.98	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00
SS2-22	6.78	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.85	91.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-21	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.71	1.42	87.23	6.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94	89.11	0.00	0.00	0.00	0.00	0.00	0.00	2.97	0.00	0.00
SS2-19	0.00	0.00	0.00	0.00	0.00	0.00	3.80	6.84	1.90	68.44	0.38	0.00	0.00	0.00	16.73	0.00	0.00	0.00	0.00
SS2-18	0.00	0.00	0.00	1.98	0.00	0.00	6.35	15.87	15.48	40.48	0.00	0.00	0.00	0.00	19.05	0.00	0.00	0.00	0.00
SS2-17	0.00	0.00	0.00	2.17	0.00	0.00	4.35	17.39	6.52	64.13	0.00	0.00	0.00	0.00	3.80	0.00	0.00	0.00	0.00
SS2-16	0.00	0.00	0.00	2.08	0.00	0.00	5.56	13.19	9.72	9.72	0.00	0.00	0.00	0.00	59.72	0.00	0.00	0.00	0.00
SS2-15	0.00	0.00	0.00	2.11	0.00	0.00	10.13	10.55	13.08	44.30	0.00	0.00	0.00	0.00	18.14	0.00	0.00	0.00	1.27
SS2-14	0.00	0.00	0.00	2.48	0.00	0.00	0.00	26.73	23.27	1.98	0.00	0.00	0.00	0.00	41.58	0.00	0.00	0.00	1.49
SS2-13	0.00	0.00	0.00	13.57	0.00	0.00	11.76	17.65	23.08	1.81	0.00	0.00	0.00	0.00	29.86	0.90	0.00	0.00	0.00
SS2-12	0.00	0.00	0.00	0.00	0.00	0.00	0.45	40.63	3.13	13.39	0.00	0.00	0.00	0.00	35.71	0.00	0.00	0.00	4.46
SS2-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.64	3.77	0.00	0.00	0.00	0.00	0.00	62.26	0.00	0.00	0.00	0.00
SS2-10	0.00	0.00	0.00	0.95	0.00	0.00	9.48	10.43	6.16	0.95	0.00	0.00	0.00	0.00	57.82	0.47	0.00	0.00	11.37
SS2-9	0.00	0.00	0.00	11.03	0.00	0.00	5.52	9.66	16.55	9.66	0.00	0.00	0.00	0.00	43.45	0.69	0.00	0.00	1.38
SS2-8	0.00	0.00	0.00	1.79	0.00	0.00	14.35	19.28	11.66	1.35	0.00	0.00	0.00	0.00	47.98	0.00	0.00	0.00	3.14
SS2-7	0.00	0.00	0.00	2.97	0.00	0.00	8.42	35.15	12.87	1.98	0.00	0.00	0.00	0.00	26.24	2.97	0.00	0.00	5.94
SS2-6	0.00	0.00	0.00	3.79	0.00	0.00	2.84	10.43	14.22	0.47	0.00	0.00	0.00	0.00	65.88	0.00	0.00	0.00	0.95
SS2-5	0.00	0.00	0.00	6.62	0.00	0.00	14.34	14.71	2.21	0.00	0.00	0.00	0.00	0.00	50.74	5.51	0.00	0.00	2.94
SS2-4	0.00	0.00	0.00	18.47	0.00	0.00	8.56	2.70	0.90	0.00	0.00	0.00	0.00	0.00	2.70	58.56	0.00	0.00	4.95
SS24	0.00	0.00	0.00	0.00	0.00	0.00	2.94	2.94	2.94	0.00	0.00	0.00	0.00	0.00	0.00	91.18	0.00	0.00	0.00
SS23	0.00	0.00	0.00	4.03	0.00	0.00	10.07	0.67	4.70	0.00	0.00	0.00	0.00	0.00	10.74	65.77	0.00	0.00	0.67
SS22	0.00	0.00	0.00	4.21	0.00	0.00	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11	86.32	0.00	0.00	0.00
SS21	0.00	0.00	0.00	2.94	0.00	0.00	2.94	4.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.25	0.00	0.00	0.98
SS20	0.00	0.00	0.00	7.22	0.00	0.00	17.87	9.51	4.94	0.00	0.00	0.00	0.00	0.00	44.49	9.89	0.00	0.00	4.56
SS19	0.00	0.00	0.00	1.49	0.00	0.00	16.34	12.87	8.42	0.00	0.00	0.00	0.00	0.00	54.46	1.49	0.00	0.00	2.97
SS18	0.00	0.00	0.00	19.91	0.00	0.00	12.83	7.96	6.19	1.33	0.00	0.00	0.00	0.00	36.73	11.95	0.00	0.00	2.65
SS17	0.00	0.00	0.00	3.37	0.00	0.00	17.31	8.17	6.73	8.17	0.00	0.00	0.00	0.00	52.40	0.48	0.00	0.00	3.37
SS16	0.00	0.00	0.00	23.19	0.00	0.00	16.91	7.73	11.11	0.48	0.00	0.00	0.00	0.00	36.23	0.00	0.00	0.00	2.42
SS15	0.00	0.00	0.00	5.88	0.00	0.00	11.76	9.95	19.46	2.71	0.00	0.00	0.00	0.00	46.15	0.00	0.00	0.00	0.45
SS14	0.00	0.00	0.00	1.99	0.00	0.00	16.42	10.95	9.45	22.39	0.00	0.00	0.00	0.00	37.31	0.00	0.00	0.00	0.50
SS13	0.00	0.00	0.00	0.40	0.00	0.00	8.03	17.27	10.04	31.33	0.00	0.00	0.00	0.00	32.13	0.00	0.00	0.00	0.00
SS12	0.00	0.00	0.00	0.45	0.00	0.00	15.38	9.95	14.03	22.62	0.00	0.00	0.00	0.00	34.39	0.45	0.00	0.00	0.00
SS11	0.00	0.00	0.00	0.00	0.00	0.00	7.08	3.33	6.25	57.50	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
SS10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	99.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS9	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.04	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SS7	3.47	0.00	0.00	0.00	1.73	0.00	0.00	0.00	0.00	91.33	1.73	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00
SS6	4.27	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	94.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS5	2.80	0.00	0.00	0.00	6.54	0.00	0.00	0.00	0.00	88.79	1.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS4	1.89	0.00	0.00	0.00	2.83	0.00	0.00	0.00	0.94	88.68	5.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS3	2.88	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.96	82.69	4.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS2	0.78	0.00	0.00	0.00	6.20	0.00	0.00	0.00	0.00	86.82	6.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS1	3.45	0.00	0.00	0.00	2.07	0.00	0.00	0.00	0.00	84.14	10.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sample Name	SWLI	**MLLW (m)**
TH1	43.7037	1.18
TH2	49.3296	1.33
TH3	54.0333	1.46
TH4	62.4815	1.69
TH5	68.1074	1.84
TH6	73.5167	1.98
TH7	77.4963	2.09
TH8	78.9074	2.13
TH9	78.437	2.12
TH10	80.3185	2.17
TH11	83.6111	2.26
TH12	89.237	2.41
TH13	92.5296	2.50
TH14	96.763	2.61
TH15	101.919	2.75
TH16	110.837	2.99
CI1	61.7402	1.57
CI2	67.2402	1.71
CI3	70.7402	1.80
CI4	75.7402	1.92
CI5	81.7402	2.08
CI6	84.4902	2.15
CI7	86.7402	2.20
CI8	89.4902	2.27
CI9	91.4902	2.32
CI10	97.2402	2.47
CI11	102.24	2.60
CI12	106.24	2.70
HC1	50.151	1.16
HC2	54.298	1.26
HC3	57.4082	1.33
HC4	58.9633	1.37
HC5	62.851	1.46
HC6	65.702	1.52
HC7	68.2939	1.58
HC8	71.1449	1.65
HC9	75.0327	1.74
HC10	78.1429	1.81
HC11	80.4755	1.87
HC12	83.5857	1.94

HC13	85.1408	1.98
HC14	88.251	2.05
HC15	91.3612	2.12
HC16	94.4714	2.19
HC17	97.582	2.26
HC18	100.173	2.32
HC19	97.063	2.25
HC20	101.729	2.36
HC21	105.098	2.44
HC22	107.949	2.50
HC23	110.541	2.56
SR1	69.3068	1.83
SR2	73.5076	1.94
SR3	81.5	2.15
SR4	86.9432	2.30
SR5	94.3712	2.49
SR6	101.17	2.67
SR7	106.167	2.80
SR8	106.913	2.82
SR9	105.841	2.79
SR10	105.913	2.80
SR11	107.716	2.84
SR12	110.701	2.92
SR13	114.189	3.01
SR14	114.693	3.03
SR15	117.091	3.09
CQ3	44.4467	1.09
CQ4	56.9385	1.40
CQ5	74.1148	1.82
CQ6	70.9918	1.75
CQ7	86.6066	2.13
CQ8	76.1967	1.87
CQ9	82.4426	2.03
CQ10	77.7582	1.91
CQ11	69.4303	1.71
CQ12	63.1844	1.55
CQ13	56.9385	1.40
CQ14	59.541	1.46
CQ15	59.0205	1.45
CQ16	63.7049	1.57
CQ17	69.9508	1.72

CQ18	91.291	2.25
CQ19	106.385	2.62
SE17A	41.8939	1.11
SE17	37.0076	0.98
SE15	45.7197	1.21
SE14	49.3182	1.30
SE13	52.803	1.39
SE12	58.0682	1.53
SE11	65.3409	1.72
SE10	70.303	1.86
SE9	75.8333	2.00
SE8	78.7121	2.08
SE7	79.4318	2.10
SE6	83.4848	2.20
SE5	85.0379	2.25
SE4	87.6894	2.32
SE3	96.8939	2.56
SE2	98.8636	2.61
SE1	100.227	2.65
MS11	98.0303	2.59
MS10	100.606	2.66
MS9	101.629	2.68
MS8	101.515	2.68
MS7	102.159	2.70
MS6	102.462	2.70
MS5	101.364	2.68
MS3	82.6515	2.18
MS2	70.1136	1.85
MS1	59.4318	1.57
SS2-27	53.75	1.42
SS2-26	56.8561	1.50
SS2-25	57.9924	1.53
SS2-24	58.2576	1.54
SS2-23	61.1364	1.61
SS2-22	60.8712	1.61
SS2-21	65.9848	1.74
SS2-20	71.6667	1.89
SS2-19	79.3939	2.10
SS2-18	84.7727	2.24
SS2-17	87.8409	2.32
SS2-16	90.4545	2.39

SS2-15	91.8939	2.43
SS2-14	96.8939	2.56
SS2-13	101.667	2.68
SS2-12	100	2.64
SS2-11	109.924	2.90
SS2-10	104.962	2.77
SS2-9	100.265	2.65
SS2-8	103.106	2.72
SS2-7	103.561	2.73
SS2-6	100.568	2.65
SS2-5	100.682	2.66
SS2-4	100.947	2.67
SS24	114.167	3.01
SS23	113.333	2.99
SS22	113.939	3.01
SS21	108.826	2.87
SS20	105.265	2.78
SS19	105.947	2.80
SS18	105.455	2.78
SS17	104.811	2.77
SS16	103.333	2.73
SS15	100.985	2.67
SS14	96.5152	2.55
SS13	93.6364	2.47
SS12	89.1288	2.35
SS11	84.5455	2.23
SS10	78.9394	2.08
SS9	76.2879	2.01
SS8	72.8788	1.92
SS7	66.9318	1.77
SS6	62.7273	1.66
SS5	59.8864	1.58
SS4	57.1212	1.51
SS3	55.3409	1.46
SS2	54.8106	1.45
SS1	54.3939	1.44

Sample Depth (cm)	Mf	Hw	Tr	Re	Ti	Jm	Ac	Hm
4-5	73.86	7.20	0.38	0.00	7.58	9.47	1.14	0.00
5-6	71.80	11.80	0.33	0.00	7.87	7.21	0.66	0.00
6-7	86.28	5.42	0.36	0.36	3.61	3.25	0.72	0.00
7-8	63.90	15.12	0.00	1.46	10.73	7.80	0.00	0.00
8-9	44.44	21.76	1.39	0.00	16.20	13.89	1.39	0.46
9-10	17.73	26.11	3.94	0.00	23.15	27.09	0.00	0.99
10-11	9.82	25.30	11.61	0.30	19.64	30.06	0.60	1.79
11-12	10.29	32.84	6.37	0.49	18.14	30.88	0.00	0.00
12-13	7.35	28.53	2.35	0.00	46.76	14.41	0.00	0.00