Appendix E **Table E.7 column volatile solids (VS) data.**

Location	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate
Inf												
F1		3.219816	0.782272		2.8258799	2.316524		2.366855	0.328317		1.096874	0.34313
F2	53	1.295035	0.06332	113	1.7540908	0.773047	135	2.958177	0.577575	149	1.01145	0.013875
F3		1.481322	0.114611		1.4232042	0.464306		3.158757	0.345248		1.3198	0.142179
F4		#DIV/0!	#DIV/0!		1.7033565	0.27907		2.264678	0.506327		1.54841	0.1183
Eff												

Location	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate	Time (days)	Average VS/ dry sand (mg/g)	s of duplicate
Inf											1.622113	0.234069
F1		3.722287	1.031626		1.3522104	0.043721		1.483439	0.181022		0.98623	0.023619
F2	170	2.73331	1.111289	191	1.589523	0.127954	275	2.247713	0.235632	276	0.655096	0.065526
F3		2.868558	0.360154		1.5965347	0.027361		2.714559	0.805258		0.614971	0.198674
F4		1.682566	0.39482		1.408604	0.477456		2.143041	0.561913		0.75178	0.122693
Eff											0.786068	0.044781

Calculations

s =standard deviation of triplicate analysis

where

x_i = single value

$\bar{x}$ = average of values

n = number of observations

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

Table E.7a-h. Volatile solids (VS) calculations used on raw data.

Calculations:

Volatile Solids (VS) = total biomass weight (g)

$$VS = D - C$$

where

D = weight of pan + sand after 20 min. at 550°C (g)

C = weight of pan + sand after 1 hr at 100°C (g)

Dry Sand Weight

$$E = D - A$$

where

A = weight of pre-burned pan (g)

Biomass Concentration (mg biomass/ g dry sand):

$$\text{Biomass} = \frac{(D - A)}{E} * 1000$$

where

E = dry sand mass (g)

1000 = convertion factor (1000 mg = 1 g)

Fraction of Dry sand:

$$J = 1 - \frac{(B - C)}{(B - A)}$$

where

J = fraction of dry sand (decimal)

B = Pan + wet sand mass (g)

Standard deviation in dry sand fraction:

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}}$$

where

x_i = single value

$\bar{x}$ = average of values

n = number of observations

Note: Fraction dry sand and s of dry sand were used to determine protein and carbohydrates concentrations per dry sand mass.

Appendix E

Table E.7a. PCP flowcell volatile solids (VS) raw data (day 53).

		A	B	C	D	E	VS	G	H	J
Sample Name		**Pan Weight (g)**	**Pan + Sand wt (g)**	**Wt after 100 C (g)**	**VS, Wt after 550 C (g)**	**Dry Sand Wt (g)**	**Volatile Solids Wt (g)**	**Biomass wt/dry sand wt (mg/g)**	**Fraction water in sand sample**	**Fraction dry sand**
PCP day 53	F1a	0.9826	2.3856	2.1858	2.1826	1.2	0.0032	2.666667	0.142409	0.857591
	F1b	0.9839	2.3855	2.2077	2.2031	1.2192	0.0046	3.772966	0.126855	0.873145
	F2a	0.9849	2.4161	2.1807	2.1791	1.1942	0.0016	1.339809	0.164477	0.835523
	F2b	0.9819	3.2532	2.9039	2.9015	1.9196	0.0024	1.25026	0.153789	0.846211
	F3a	0.9817	2.3503	2.1356	2.1338	1.1521	0.0018	1.562364	0.156876	0.843124
	F3b	0.9852	2.742	2.487	2.4849	1.4997	0.0021	1.40028	0.14515	0.85485
	F4a	0.9839	2.2757	2.128	2.129	1.1451	-0.001		0.114337	0.885663
	F4b	0.9865	2.71	2.5536	2.5548	1.5683	-0.0012		0.090746	0.909254

Sample	**Location**	**Average VS/ dry sand (mg/g)**	**s of duplicate**	**average fraction of dry sand**	**s of dry sand fraction**
PCP day 53	1	3.22	0.78	0.865368	0.0109984
	2	1.30	0.06	0.840867	0.0075581
	3	1.48	0.11	0.848987	0.0082911
	4			0.897459	0.0166814

Appendix E **Table E.7b. PCP flowcell volatile solids (VS) raw data (day 113).**

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 113	F1a	0.9874	2.0089	1.9949	1.9931	1.0057	0.0018	1.789798	0.013705	0.986295
	F1b	0.9894	1.9615	1.9489	1.946	0.9566	0.0029	3.03157	0.012962	0.987038
	F2a	0.9873	2.0738	2.0739	2.0715	1.0842	0.0024	2.213614		
	F2b	0.9878	1.8967	1.8965	1.8934	0.9056	0.0031	3.423145	0.00022	0.99978
	F3a	0.9848	1.8168	1.8168	1.8156	0.8308	0.0012	1.444391		
	F3b	0.9854	1.872	1.8717	1.8695	0.8841	0.0022	2.488406	0.000338	0.999662
	F4a	0.9837	2.3955	2.3803	2.3765	1.3928	0.0038	2.72832	0.010766	0.989234
	F4b	0.9865	2.4906	2.4682	2.4641	1.4776	0.0041	2.77477	0.014893	0.985107

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 113	1	2.41	0.88	0.986667	0.0005259
	2	2.82	0.86	0.99978	#DIV/0!
	3	1.97	0.74	0.999662	#DIV/0!
	4	2.75	0.03	0.98717	0.0029177

Appendix E

Table E.7c. PCP flowcell volatile solids (VS) raw data (day 135).

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 135	F1a	0.9864	1.9269	1.9253	1.9233	0.9369	0.002	2.1347	0.001701	0.998299
	F1b	0.9846	2.6785	2.6048	2.6006	1.616	0.0042	2.59901	0.043509	0.956491
	F2a	0.9852	2.0265	2.0075	2.0049	1.0197	0.0026	2.54977	0.018246	0.981754
	F2b	0.9862	1.7913	1.7909	1.7882	0.802	0.0027	3.366584	0.000497	0.999503
	F3a	0.9857	2.0821	2.0524	2.0493	1.0636	0.0031	2.91463	0.027089	0.972911
	F3b	0.9831	2.1429	2.1036	2.0998	1.1167	0.0038	3.402883	0.033885	0.966115
	F4a	0.9826	2.6671	2.5882	2.584	1.6014	0.0042	2.62271	0.046839	0.953161
	F4b	0.9789	2.3214	2.2926	2.2901	1.3112	0.0025	1.90665	0.021453	0.978547

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 135	1	2.37	0.33	0.977395	0.0295626
	2	2.96	0.58	0.990628	0.0125509
	3	3.16	0.35	0.969513	0.0048059
	4	2.26	0.51	0.965854	0.0179508

Appendix E **Table E.7d. PCP flowcell volatile solids (VS) raw data (day 149).**

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 149	F1a	0.9867	1.8115	1.809	1.8079	0.8212	0.0011	1.339503	0.003031	0.996969
	F1b	0.9847	1.9224	1.922	1.9212	0.9365	0.0008	0.854245	0.000427	0.999573
	F2a	0.9854	2.1066	2.0636	2.0625	1.0771	0.0011	1.021261	0.038352	0.961648
	F2b	0.9868	2.1107	2.0861	2.085	1.0982	0.0011	1.001639	0.021888	0.978112
	F3a	0.9869	2.265	2.1855	2.1838	1.1969	0.0017	1.420336	0.062202	0.937798
	F3b	0.9841	1.9787	1.9695	1.9683	0.9842	0.0012	1.219264	0.00925	0.99075
	F4a	0.9838	2.1478	2.1461	2.1444	1.1606	0.0017	1.46476	0.00146	0.99854
	F4b	0.9794	2.0845	2.0841	2.0823	1.1029	0.0018	1.63206	0.000362	0.999638

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 149	1	1.10	0.34	0.998271	0.0018416
	2	1.01	0.01	0.96988	0.0116416
	3	1.32	0.14	0.964274	0.0374425
	4	1.55	0.12	0.999089	0.0007768

Appendix E **Table E.7e. PCP flowcell volatile solids (VS) raw data (day 170).**

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 170	F1a	0.9865	2.5843	2.4946	2.4901	1.5036	0.0045	2.992817	0.05614	0.94386
	F1b	0.9848	2.0437	2.0227	2.0181	1.0333	0.0046	4.451757	0.019832	0.980168
	F2a	0.9855	2.1037	2.0659	2.0638	1.0783	0.0021	1.94751	0.033804	0.966196
	F2b	0.9869	2.2626	2.2131	2.2088	1.2219	0.0043	3.51911	0.038802	0.961198
	F3a	0.9868	2.3935	2.3293	2.3258	1.339	0.0035	2.613891	0.045639	0.954361
	F3b	0.9832	1.6905	1.6898	1.6876	0.7044	0.0022	3.123225	0.00099	0.99901
	F4a	0.9838	2.1615	2.1255	2.1239	1.1401	0.0016	1.40339	0.030568	0.969432
	F4b	0.9795	2.2492	2.2053	2.2029	1.2234	0.0024	1.96175	0.034575	0.965425

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 170	1	3.72	1.03	0.962014	0.0256735
	2	2.73	1.11	0.963697	0.003534
	3	2.87	0.36	0.976686	0.0315716
	4	1.68	0.39	0.967428	0.0028334

Appendix E **Table E.7f. PCP flowcell volatile solids (VS) raw data (day 191).**

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 191	F1a	0.9879	2.404	2.352	2.3502	1.3623	0.0018	1.321295	0.036721	0.963279
	F1b	0.9852	2.1594	2.1436	2.142	1.1568	0.0016	1.383126	0.013456	0.986544
	F2a	0.9858	2.2884	2.2379	2.2358	1.25	0.0021	1.68	0.038769	0.961231
	F2b	0.9898	2.557	2.4596	2.4574	1.4676	0.0022	1.499046	0.062149	0.937851
	F3a	0.9868	2.8635	2.7224	2.7196	1.7328	0.0028	1.615882	0.075185	0.924815
	F3b	0.9833	2.6951	2.5709	2.5684	1.5851	0.0025	1.577188	0.072555	0.927445
	F4a	0.9835	2.3358	2.2921	2.2907	1.3072	0.0014	1.07099	0.032315	0.967685
	F4b	0.9798	2.2308	2.1845	2.1824	1.2026	0.0021	1.74622	0.03701	0.96299

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 191	1	1.35	0.04	0.974912	0.0164506
	2	1.59	0.13	0.949541	0.0165325
	3	1.60	0.03	0.92613	0.0018597
	4	1.41	0.48	0.965337	0.0033199

Appendix E **Table E.7g. PCP flowcell volatile solids (VS) raw data (day 275).**

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 275	F1a	0.988	2.0113	1.9484	1.9471	0.9591	0.0013	1.355437	0.061468	0.938532
	F1b	0.9865	2.0638	1.981	1.9794	0.9929	0.0016	1.611441	0.076859	0.923141
	F2a	0.9876	2.3281	2.2747	2.2716	1.284	0.0031	2.41433	0.039836	0.960164
	F2b	0.9882	2.6089	2.4809	2.4778	1.4896	0.0031	2.081096	0.078978	0.921022
	F3a	0.9877	2.615	2.4847	2.4798	1.4921	0.0049	3.283962	0.080071	0.919929
	F3b	0.9837	2.1616	2.1049	2.1025	1.1188	0.0024	2.145156	0.048137	0.951863
	F4a	0.9834	2.1994	2.0884	2.0856	1.1022	0.0028	2.54037	0.091283	0.908717
	F4b	0.9796	2.1068	2.0125	2.0107	1.0311	0.0018	1.74571	0.083659	0.916341

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 275	1	1.48	0.18	0.930837	0.0108831
	2	2.25	0.24	0.940593	0.0276778
	3	2.71	0.81	0.935896	0.0225813
	4	2.14	0.56	0.912529	0.0053912

Table E.7g. PCP column volatile solids (VS) raw data (day 276).

Sample Name		Pan Weight (g)	Pan + Sand wt (g)	Wt after 100 C (g)	Wt after 550 C (g)	Dry Sand Wt (g)	Volatile Solids Wt (g)	Biomass wt/dry sand wt (mg/g)	Fraction water in sand sample	Fraction dry sand
PCP day 276	Inf a	0.9951	10.5021	8.6726	8.6589	7.6638	0.0137	1.7876	0.192437	0.807563
	Inf b	0.9831	11.0603	9.1647	9.1528	8.1697	0.0119	1.4566	0.188108	0.811892
	F1a	0.9761	12.5511	10.3712	10.3621	9.386	0.0091	0.9695	0.188328	0.811672
	F1b	0.9735	12.0798	9.9562	9.9472	8.9737	0.009	1.0029	0.191207	0.808793
	F2a	0.9679	12.9115	10.6656	10.6597	9.6918	0.0059	0.6088	0.188042	0.811958
	F2b	0.9721	15.878	13.0987	13.0902	12.1181	0.0085	0.7014	0.186456	0.813544
	F3a	0.9888	10.4521	8.6721	8.6663	7.6775	0.0058	0.7555	0.188095	0.811905
	F3b	0.9855	14.4644	11.9499	11.9447	10.9592	0.0052	0.4745	0.186551	0.813449
	F4a	0.9728	10.8749	8.9696	8.9629	7.9901	0.0067	0.8385	0.192414	0.807586
	F4b	0.9914	11.7862	9.7187	9.7129	8.7215	0.0058	0.6650	0.191527	0.808473
	Eff a	0.9738	13.7933	11.2545	11.2461	10.2723	0.0084	0.8177	0.198042	0.801958
	Eff b	0.9758	12.0075	9.8637	9.857	8.8812	0.0067	0.7544	0.194331	0.805669

	Location	Average VS/ wet sand (mg/g)	s of duplicate	average fraction of dry sand	s of dry sand fraction
PCP day 276	Inf	1.6221	0.234069	0.809728	0.0030613
	1	0.99	0.02	0.810232	0.0020354
	2	0.66	0.07	0.812751	0.0011213
	3	0.61	0.20	0.812677	0.0010919
	4	0.75	0.12	0.808029	0.0006267
	Eff	0.7861	0.044781	0.803814	0.0026242

Appendix E **Table E.8. PCP column carbohydrates concentrations.**

Location	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s
Inf												
F1		30.92298	6.770923		87.809075	18.2389		70.30215	17.96731		78.04043	18.44512
F2	53	32.89886	0.549043	113	82.915674	7.380091	135	157.3092		149	157.031	19.18245
F3		36.39805	5.215405		65.861835	5.624795		92.22373	9.577086		102.5799	9.304277
F4		25.06676	2.24937		65.220167	1.167919		148.0595	23.27273		154.5161	22.12659
Eff												

Location	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s	Time (days)	Ave. (ug/g dry sand)	s
Inf											113.0792	5.059237
F1		150.2333	25.95378		95.680043	7.382004		73.88555			52.67577	0.310655
F2	170	122.4149	1.815056	191	124.63993		275	112.555	6.945726	276	39.59811	2.294387
F3		99.1341			175.70254	49.73629		129.6384	15.82331		30.25284	
F4		115.7966	15.00932		129.27633	1.711122		185.9878			28.76467	4.29685
Eff											27.57764	1.228259

Calculations

s =standard deviation of triplicate analysis

where

x_i = single value

$\bar{x}$ = average of values

n = number of observations

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

Appendix E **Table E.8a-g. Calculations used on PCP column carbohydrates raw data.**

Calculation Steps:

1. Convert transmittance to absorbance:

$$Abs = \log\left(\frac{100}{trans}\right)$$

where
Abs = absorbance
trans = transmittance

2. Adjust absorbance reading down using black absorbance.

3. Determine protein mass:
Use standard curve trendline equation, solving for x

4. Determine dry sand mass:
Multiply wet sand mass by fraction dry sand average from VS data.

5. Calculate carbohydrates concentration:

$$[\text{Carbs}] = \frac{\text{carbs mass } (\mu g)}{\text{dry sand mass (g)}}$$

6. Average the two carbohydrates concentrations

$$\bar{x} = \frac{(x_1 + x_2)}{2}$$

$\bar{x}$ ere
= average value
x_1, x_2 = carbohydrates concentration

7. Determine the duplicate sample standard deviation

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

where
x_i = carbohydrates concentration
n = number of observations

3. Trendline equations used for:

days 53 and 113[a]

$$x = \frac{107.53y}{2}$$

day 135
$x = 106.38y$

day 149
$x = 107.53y$

day 170
$x = 103.09y$

day 191
$x = 109.89y$

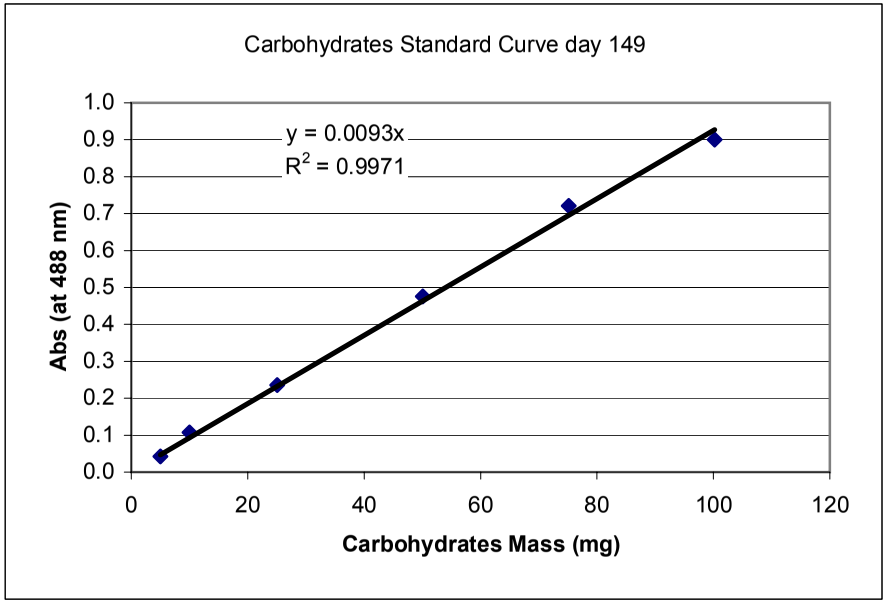
day 275
$x = 102.04y$

day 276
$x = 102.04y$

Analysis Note:
[a]Days 53 and 113 show a trendline equation divided by 2. This trendline was used from day 149 carbohydrates standard curve. It was determined post-analysis on these days that the carbohydrates standards were improperly made, therefore a different standard curve was applied. The sample to reagent ratio was 1:2 on days 53 and 114, whereas the standard to reagent ratio was 1:1 on day 149 (and all other days). The 1:2 sample to reagent ratio effectively doubled the concentration compared to all other carbohydrate analysis groups.

Appendix E **Table E.8a. PCP flowcell carbohydrates raw data day 53.**

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	98	0.009	0.012		
	96.5	0.015			
5 ug	88	0.056	-0.727	-0.728	0.002
	88.5	0.053	-0.729		
10 ug	75.5	0.122	-0.660	-0.663	0.004
	76.5	0.116	-0.666		
25 ug	55.5	0.256	-0.527	-0.534	0.011
	57.5	0.240	-0.542		
50 ug	33	0.481	-0.301	-0.294	0.009
	32	0.495	-0.287		
75 ug	18.5	0.733	-0.049	-0.049	
100 ug	13	0.886	0.104	0.130	0.038
	11.5	0.939	0.157		



Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	65.5	0.184	0.172	9.234	0.4083	0.35333	26.14
PCPFL1b	58	0.237	0.225	12.074	0.3907	0.338099	35.71
PCPFL2a	62	0.208	0.196	10.517	0.3847	0.323482	32.51
PCPFL2b	59	0.229	0.217	11.675	0.4171	0.350726	33.29
PCPFL3a	54	0.268	0.256	13.742	0.4038	0.342821	40.09
PCPFL3b	56.5	0.248	0.236	12.686	0.4568	0.387817	32.71
PCPFL4a	64	0.194	0.182	9.775	0.4086	0.366702	26.66
PCPFL4b	69.5	0.158	0.146	7.850	0.3726	0.334393	23.48

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.865368	0.010998	30.92	6.770923
PCPFL2a	0.840867	0.007558	32.90	0.549043
PCPFL3a	0.848987	0.008291	36.40	5.215405
PCPFL4a	0.897459	0.016681	25.07	2.24937

Table E.8b. PCP column carbohydrates raw data day 113.

Used same standard curve as day 53 and 149.

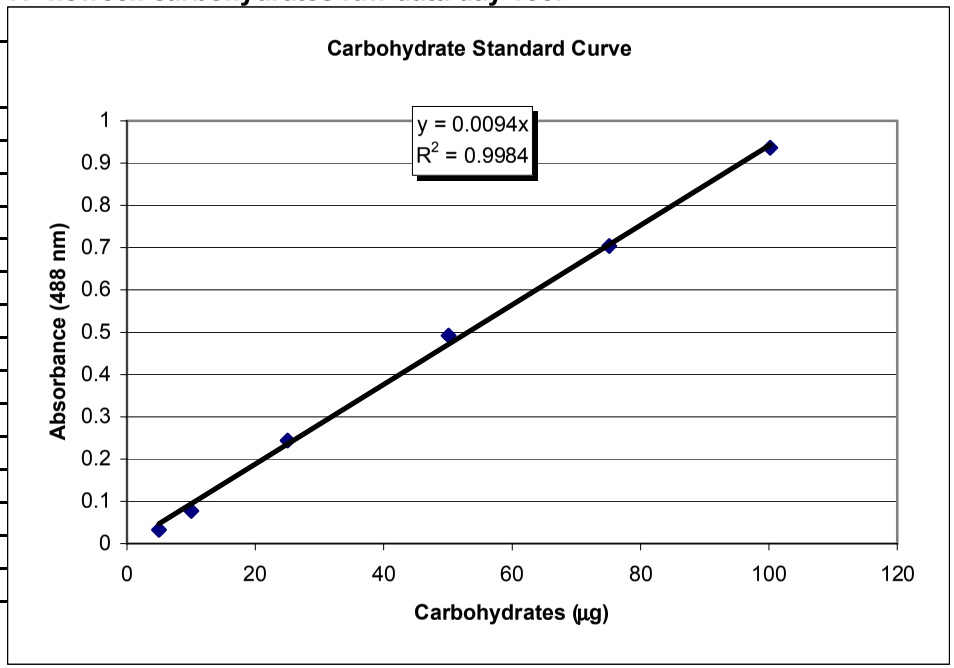
Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	19.5	0.710	0.698	37.525	0.5076	0.500832	74.93
PCPFL1b	13.5	0.870	0.858	46.111	0.464	0.457813	100.72
PCPFL2a	16.5	0.783	0.771	41.426	0.5332	0.533083	77.71
PCPFL2b	11	0.959	0.947	50.893	0.5775	0.577373	88.15
PCPFL3a	18.5	0.733	0.721	38.754	0.555	0.554812	69.85
PCPFL3b	21	0.678	0.666	35.795	0.5785	0.578304	61.90
PCPFL4a	22	0.658	0.646	34.708	0.5459	0.538896	64.41
PCPFL4b	22.5	0.648	0.636	34.184	0.5242	0.517475	66.06

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.986667	0.000526	87.82	18.23978
PCPFL2a	0.99978	#DIV/0!	82.93	7.379416
PCPFL3a	0.999662	#DIV/0!	65.87	5.625139
PCPFL4a	0.98717	0.002918	65.23	1.168279

Appendix E

Table E.8c. PCP flowcell carbohydrates raw data day 135.

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	85.5	0.068	0.053		
	91.5	0.039			
5 ug	82	0.086	-0.696	-0.696	
10 ug	73.5	0.134	-0.649	-0.651	0.004
	74.5	0.128	-0.654		
25 ug	50	0.301	-0.481	-0.486	0.006
	51	0.292	-0.490		
50 ug	28.5	0.545	-0.237	-0.237	
75 ug	18	0.745	-0.038	-0.025	0.018
	17	0.770	-0.013		
100 ug	10	1.000	0.218	0.207	0.015
	10.5	0.979	0.197		



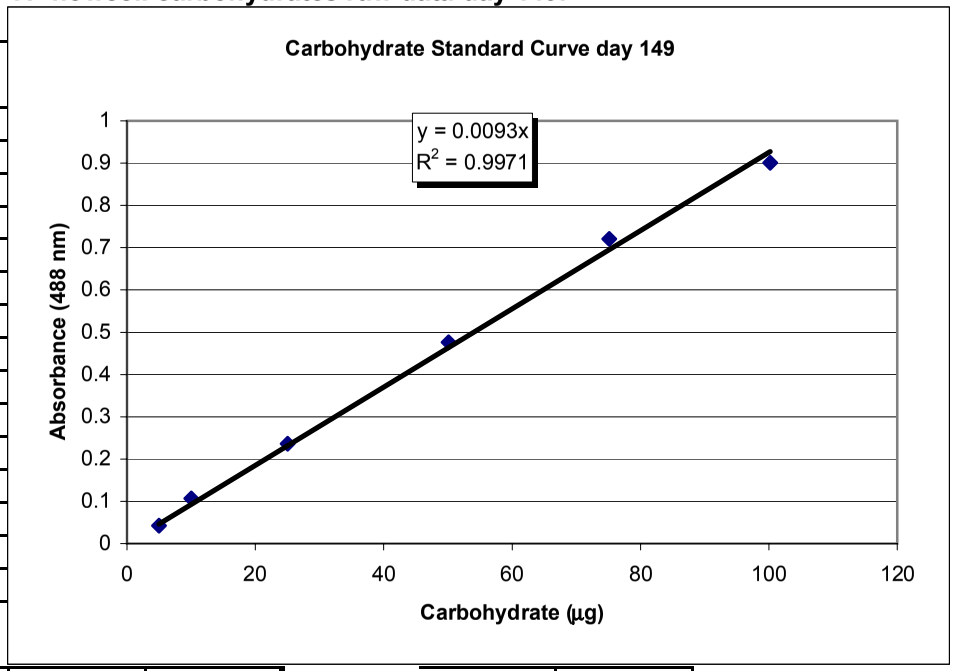
Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	37	0.432	0.379	40.298	0.4963	0.485081	83.07
PCPFL1b	45	0.347	0.294	31.254	0.5546	0.542063	57.66
PCPFL2a	21.5	0.668	0.615	65.379	0.5065	0.501753	130.30
PCPFL2b	13.5	0.870	0.817	86.879	0.5573	0.552077	157.37
PCPFL3a	36	0.444	0.391	41.564	0.5013	0.486017	85.52
PCPFL3b	29	0.538	0.485	51.553	0.5368	0.520435	99.06
PCPFL4a	17.5	0.757	0.704	74.890	0.4711	0.455014	164.59
PCPFL4b	27	0.569	0.516	54.855	0.4313	0.416573	131.68

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.977395	0.029563	70.37	17.9723
PCPFL2a	0.990628	0.012551	157.37	19.13949
PCPFL3a	0.969513	0.004806	92.29	9.57395
PCPFL4a	0.965854	0.017951	148.13	23.26805

Appendix E

Table E.8d. PCP flowcell carbohydrates raw data day 149.

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	98	0.009	0.012		
	96.5	0.015			
5 ug	88	0.056	-0.727	-0.728	0.002
	88.5	0.053	-0.729		
10 ug	75.5	0.122	-0.660	-0.663	0.004
	76.5	0.116	-0.666		
25 ug	55.5	0.256	-0.527	-0.534	0.011
	57.5	0.240	-0.542		
50 ug	33	0.481	-0.301	-0.294	0.009
	32	0.495	-0.287		
75 ug	18.5	0.733	-0.049	-0.049	
100 ug	13	0.886	0.104	0.130	0.038
	11.5	0.939	0.157		



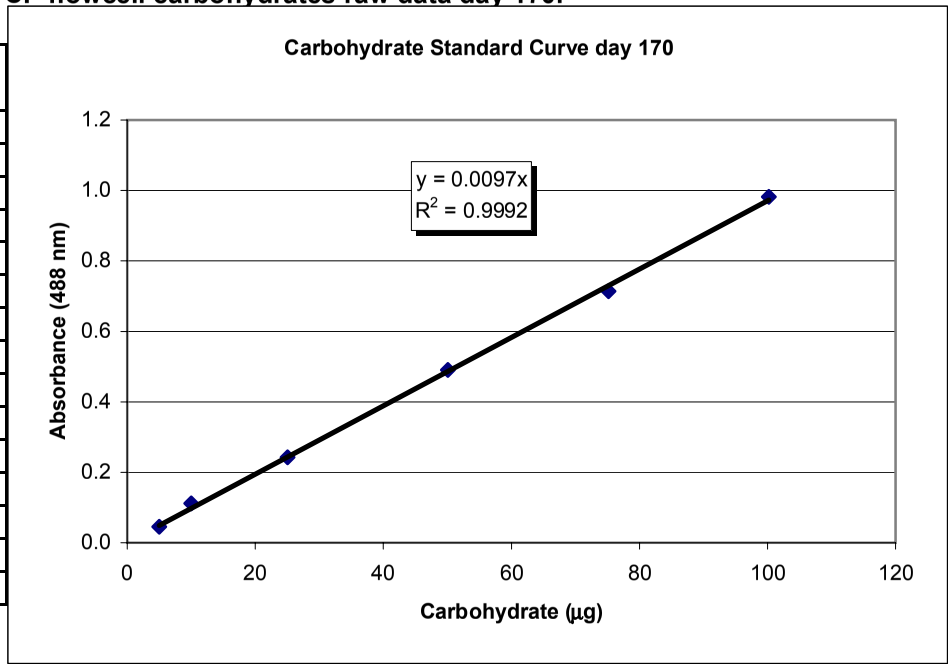
Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	37	0.432	0.420	45.140	0.4963	0.495442	91.11
PCPFL1b	45	0.347	0.335	35.999	0.5546	0.553641	65.02
PCPFL2a	21.5	0.668	0.656	70.491	0.5065	0.491244	143.49
PCPFL2b	13.5	0.870	0.858	92.222	0.5573	0.540514	170.62
PCPFL3a	36	0.444	0.432	46.419	0.5013	0.483391	96.03
PCPFL3b	29	0.538	0.526	56.516	0.5368	0.517622	109.18
PCPFL4a	17.5	0.757	0.745	80.104	0.4711	0.470671	170.19
PCPFL4b	27	0.569	0.557	59.853	0.4313	0.430907	138.90

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.998271	0.001842	78.07	18.44711
PCPFL2a	0.96988	0.011642	157.06	19.18071
PCPFL3a	0.964274	0.037443	102.61	9.302994
PCPFL4a	0.999089	0.000777	154.55	22.12475

Appendix E

Table E.8e. PCP flowcell carbohydrates raw data day 170.

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	98	0.009	0.008		
	98.5	0.007			
5 ug	90	0.046	-0.737	-0.729	0.010
	87	0.060	-0.722		
10 ug	76	0.119	-0.663	-0.663	0.000
	76	0.119	-0.663		
25 ug	55.5	0.256	-0.527	-0.532	0.008
	57	0.244	-0.538		
50 ug	31.5	0.502	-0.281	-0.284	0.005
	32	0.495	-0.287		
75 ug	19	0.721	-0.061	-0.061	
	19	0.721	-0.061		
100 ug	10.5	0.979	0.197	0.207	0.015
	10	1.000	0.218		

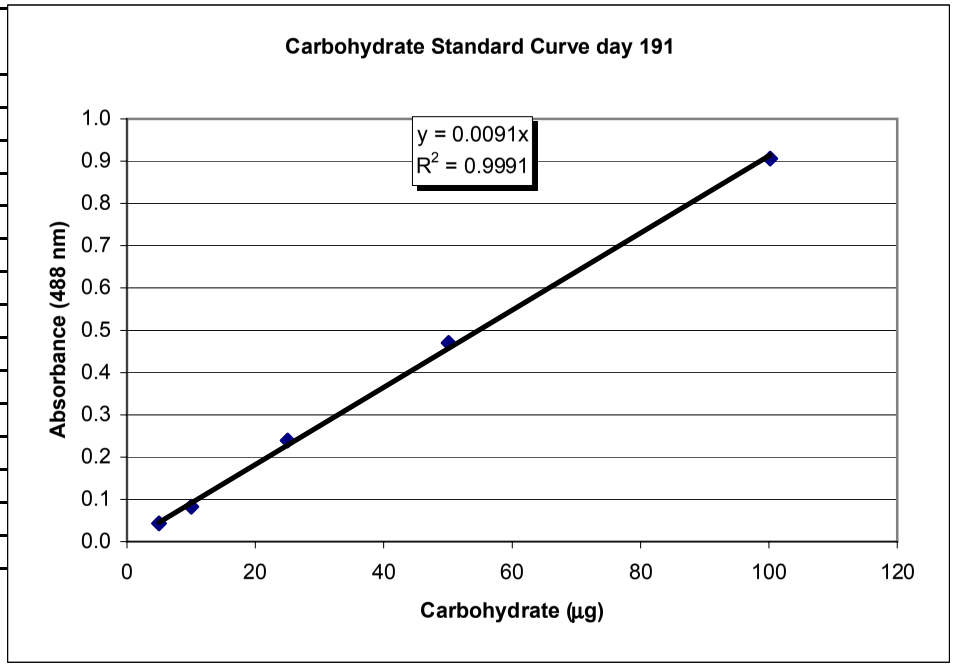


Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	14	0.854	0.846	87.203	0.5379	0.517467	168.52
PCPFL1b	22	0.658	0.650	66.967	0.5281	0.50804	131.81
PCPFL2a	33.5	0.475	0.467	48.140	0.4171	0.401958	119.76
PCPFL2b	29	0.538	0.530	54.598	0.4631	0.446288	122.34
PCPFL3a	33	0.481	0.473	48.813	0.5045	0.492738	99.06
PCPFL3b					0.4702	0.459238	0.00
PCPFL4a	23	0.638	0.630	64.977	0.5316	0.514285	126.34
PCPFL4b	34	0.469	0.461	47.476	0.4669	0.451692	105.11

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.962014	0.025673	150.17	25.95464
PCPFL2a	0.963697	0.003534	122.34	1.821022
PCPFL3a	0.976686	0.031572	99.06	
PCPFL4a	0.967428	0.002833	115.73	15.01582

Appendix E **Table E.8f. PCP flowcell carbohydrates raw data day 191.**

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	98	0.009	0.015		
	95	0.022			
	97	0.013			
5 ug	87.5	0.058	-0.724	-0.724	0.000
	87.5	0.058	-0.724		
10 ug	80	0.097	-0.685	-0.685	0.000
	80	0.097	-0.685		
25 ug	55.5	0.256	-0.527	-0.529	0.003
	56	0.252	-0.530		
50 ug	33.5	0.475	-0.307	-0.297	0.014
	32	0.495	-0.287		
75 ug	12	0.921	0.139	0.148	0.013
	11.5	0.939	0.157		
100 ug	12	0.921	0.139	0.139	0.000
	12	0.921	0.139		



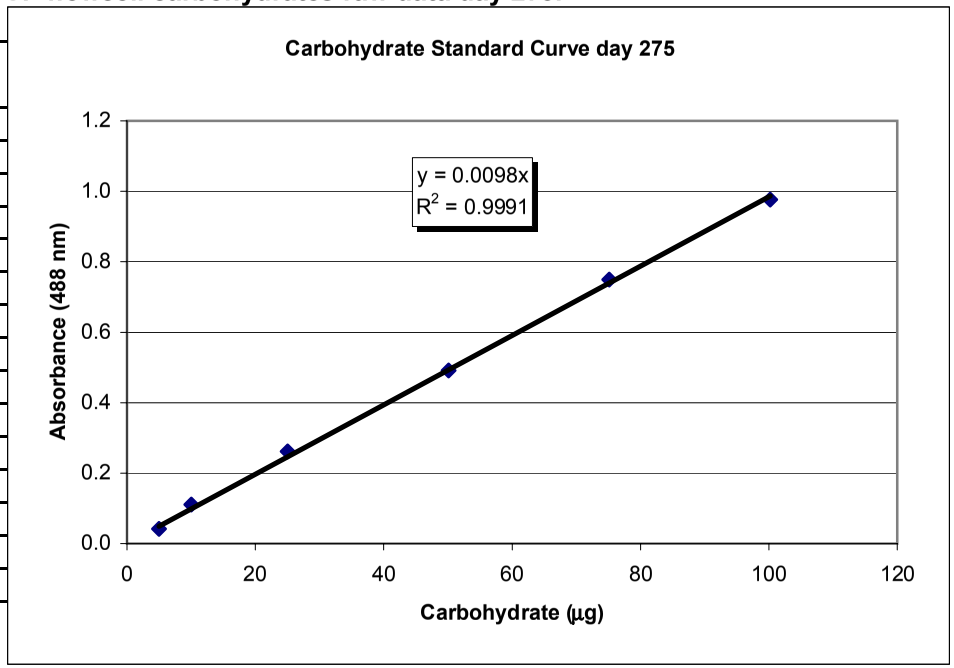
Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	32.5	0.488	0.473	51.991	0.5288	0.515533	100.85
PCPFL1b	41	0.387	0.372	40.903	0.4641	0.452457	90.40
PCPFL2a	21.5	0.668	0.653	71.710	0.546	0.518449	138.32
PCPFL2b	26	0.585	0.570	62.640	0.5295	0.502782	124.59
PCPFL3a	15	0.824	0.809	88.891	0.4553	0.421667	210.81
PCPFL3b	19	0.721	0.706	77.609	0.5965	0.552436	140.49
PCPFL4a	26	0.585	0.570	62.640	0.4975	0.480255	130.43
PCPFL4b	24	0.620	0.605	66.460	0.5378	0.519158	128.02

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.974912	0.016451	95.63	7.387057
PCPFL2a	0.949541	0.016532	124.59	9.707884
PCPFL3a	0.92613	0.00186	175.65	49.7258
PCPFL4a	0.965337	0.00332	129.22	1.708207

Appendix E

Table E.8g. PCP flowcell carbohydrates raw data day 275.

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	95	0.022	0.014		
	97.5	0.011			
	98	0.009			
5 ug		#DIV/0!	#DIV/0!	-0.727	#DIV/0!
	88	0.056	-0.727		
10 ug	77	0.114	-0.669	-0.657	0.016
	73	0.137	-0.646		
25 ug	54	0.268	-0.515	-0.506	
	52	0.284	-0.498		
50 ug	30.5	0.516	-0.267	-0.277	0.015
	32	0.495	-0.287		
75 ug	17	0.770	-0.013	-0.019	0.009
	17.5	0.757	-0.025		
100 ug	9.5	1.022	0.240	0.208	0.045
	11	0.959	0.176		



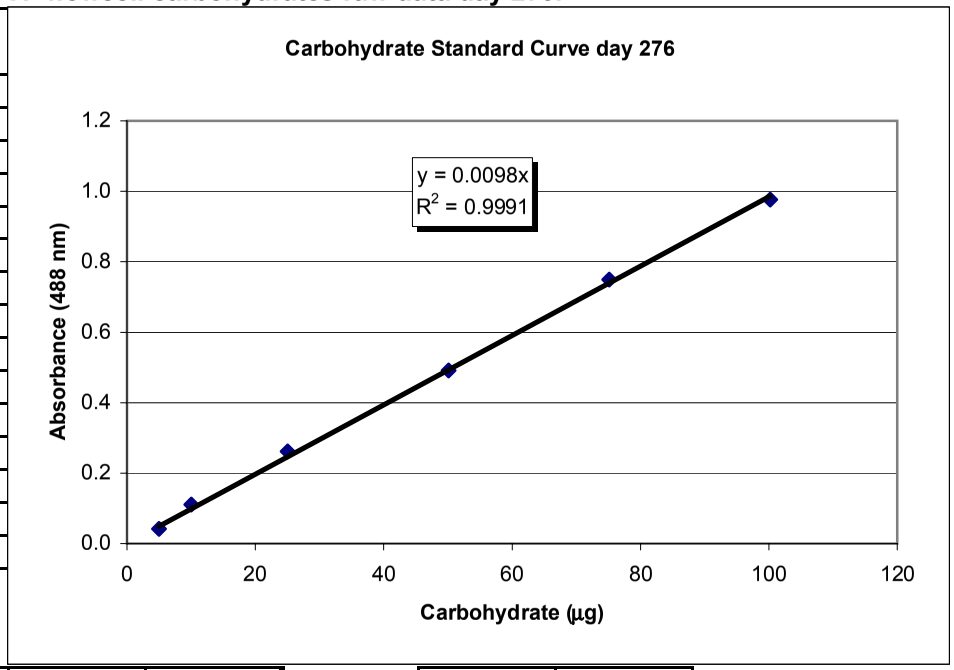
Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCPFL1a	46.5	0.333	0.319	32.505	0.4726	0.439913	73.89
PCPFL1b					0.5236	0.487386	0.00
PCPFL2a	29.5	0.530	0.516	52.671	0.5202	0.489296	107.65
PCPFL2b	29.5	0.530	0.516	52.671	0.4767	0.448381	117.47
PCPFL3a	24	0.620	0.606	61.815	0.5576	0.521856	118.45
PCPFL3b	20	0.699	0.685	69.895	0.5303	0.496306	140.83
PCPFL4a					0.5544	0.505906	0.00
PCPFL4b	12	0.921	0.907	92.533	0.5452	0.497511	185.99

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCPFL1a	0.930837	0.010883	73.89	
PCPFL2a	0.940593	0.027678	112.56	6.945931
PCPFL3a	0.935896	0.022581	129.64	15.82342
PCPFL4a	0.912529	0.005391	185.99	

Appendix E

Table E.8g. PCP flowcell carbohydrates raw data day 276.

Standard	% Trans.	Abs.	Adjust	Ave.	Std Dev.
0 ug	95	0.022	0.014		
	97.5	0.011			
	98	0.009			
5 ug		#DIV/0!	#DIV/0!	-0.727	#DIV/0!
	88	0.056	-0.727		
10 ug	77	0.114	-0.669	-0.657	0.016
	73	0.137	-0.646		
25 ug	54	0.268	-0.515	-0.506	0.012
	52	0.284	-0.498		
50 ug	30.5	0.516	-0.267	-0.277	0.015
	32	0.495	-0.287		
75 ug	17	0.770	-0.013	-0.019	0.009
	17.5	0.757	-0.025		
100 ug	9.5	1.022	0.240	0.208	0.045
	11	0.959	0.176		



Sample Name	%Trans	Abs.	Adjust	Mass carbs mass, µg	Mass wet sand, g	Mass dry sand, g	Conc. µg/g dry sand
PCP Inf a	38	0.420	0.406	41.451	0.4388	0.355308	116.66
PCP Inf b	37	0.432	0.418	42.632	0.4808	0.389317	109.51
PCPFL1a	60	0.222	0.208	21.209	0.4969	0.402605	52.68
PCPFL1b	58	0.237	0.223	22.711	0.5277	0.42756	53.12
PCPFL2a	70.5	0.152	0.138	14.062	0.4197	0.341111	41.23
PCPFL2b	68	0.167	0.153	15.662	0.5074	0.41239	37.98
PCPFL3a	75.5	0.122	0.108	11.026	0.4484	0.364404	30.26
PCPFL3b					0.4475	0.363673	0.00
PCPFL4a	80	0.097	0.083	8.460	0.4614	0.372825	22.69
PCPFL4b	71.5	0.146	0.132	13.438	0.5781	0.467122	28.77
PCP Eff a	73	0.137	0.123	12.518	0.583	0.468623	26.71
PCP Eff b	73	0.137	0.123	12.518	0.5474	0.440008	28.45

Location	average fraction of dry sand	s dry sand fraction	Ave. (µg/g sand)	s
PCP Inf	0.809728	0.003061	113.08	5.059507
PCPFL1a	0.810232	0.002035	52.68	0.310496
PCPFL2a	0.812751	0.001121	39.60	2.294944
PCPFL3a	0.812677	0.001092	30.26	
PCPFL4a	0.808029	0.000627	28.77	4.296254
PCP Eff	0.803814	0.002624	27.58	1.228412

Appendix E

Table E.9. PCP column protein concentrations.

Location	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)
Inf												
F1		267.2336	24.69319		197.71381	42.98932		335.0683	4.523667		302.9193	12.0908
F2	53	120.0521	43.91432	113	223.44214	20.59248	135	342.1429	24.81703	149	363.124	20.55424
F3		506.2259	40.7433		219.9559	7.892036		375.4566	20.97017		281.8634	56.54165
F4		201.0469	6.909767		163.79965	17.96779		193.3141	17.08134		229.5248	24.09822
Eff												

Location	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)	Time (days)	Average of Duplicate (µg/g dry sand)	s (of duplicate)
Inf											474.8408	5.353862
F1		290.4108	58.45411		519.97621	14.15237		401.7921	20.75919		177.599	19.52451
F2	170	230.4998	0.420676	191	341.04715	82.08831	275	822.4792	109.8981	276	87.17294	9.02437
F3		468.3633	10.71897		252.69218	10.96271		366.0096	98.01684		84.93179	22.46813
F4		363.0444	13.55222		426.64723	5.907557		639.8551	233.3953		64.51496	22.6445
Eff											47.54593	6.540744

Calculations:

Average of duplicate:

$$\bar{x} = \frac{(x_1 + x_2)}{2}$$

where

$\bar{x}$ = average value

x_1, x_2 = carbohydrates concentration

s =standard deviation of triplicate analysis

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

where

x_i = single value

$\bar{x}$ = average of values

n = number of observations

Table E.9a-g. PCP column protein concentrations calculations.

Calculation Steps:

1. Use trendline equation from calibration curve to determine protein mass.

2. Account for 50 µL of sample transferred to one of reagent mixture:

$$= \text{protein mass} * \frac{50}{1000}$$

3. Using the fraction of dry sand obtained from VS calculations determine the dry sand mass.

$$\text{Dry sand mass} = \text{wet sand mass} * \text{dry fraction}$$

4. Determine the protein concentration by dividing the protein mass by dry sand mass (µg protein/g dry sand)

5. Average the two protein concentration samples.

$$\bar{x} = \frac{(x_1 + x_2)}{2}$$

where

$\bar{x}$ = average value

x_1, x_2 = carbohydrates concentration

6. Determine standard deviation of 2 samples

s =standard deviation of triplicate analysis

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

where

$\bar{x}$ = single value

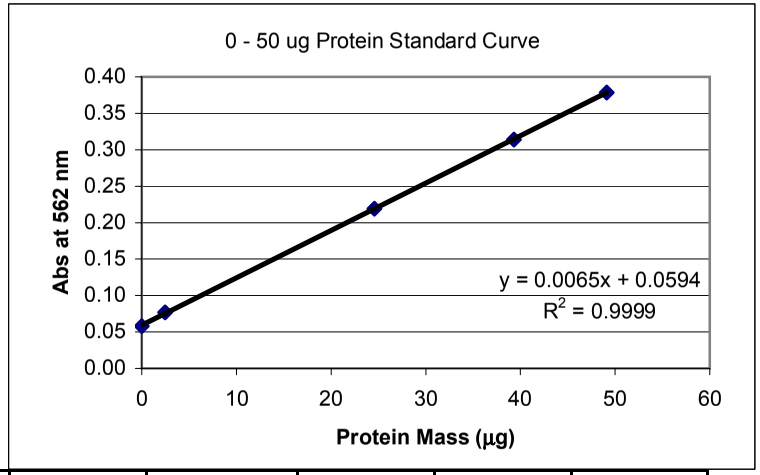
= average of values

n = number of observations

Appendix E

Table E.9a. PCP flowcell protein concentrations raw data for day 53.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.058045
0.05	2.456342	0.076697
0.5	24.56342	0.219199
0.8	39.30148	0.313863
1	49.12685	0.378665



Trendline Equations Used:
day 53:

$$P = \frac{Abs - 0.0594}{0.0065}$$

where
P = protein mass (µg)
Abs = absorbance reading

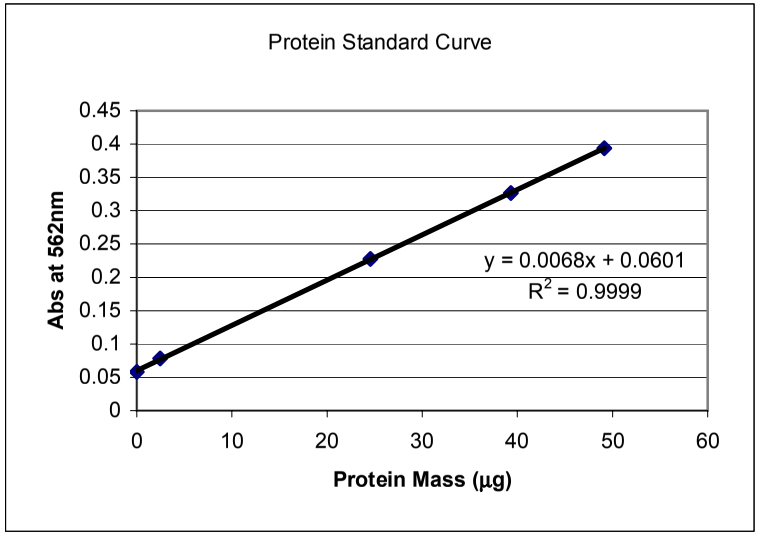
Location (day 53)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.07884	2.991472	59.82944	0.2703	0.233909	255.7809	0.865368	0.010998
F1b	0.07460	2.338522	46.77045	0.2616	0.2263802	206.6013	0.840867	0.007558
F2a	0.08585	4.068641	81.37283	0.4626	0.3889851	209.1927	0.848987	0.008291
F2b	0.08620	4.12268	82.4536	0.4116	0.3461009	238.2357	0.897459	0.016681
F3a	0.09146	4.931925	98.6385	0.4081	0.3464716	284.6943		
F3b	0.09017	4.734104	94.68208	0.4465	0.3790727	249.7729		
F4a	0.07821	2.894591	57.89183	0.4269	0.3831252	151.1042		
F4b	0.06916	1.501628	30.03256	0.376	0.3374446	88.99997		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
F1	231.1911	34.77525
F2	223.7142	20.53656
F3	267.2336	24.69319
F4	120.0521	43.91432

Appendix E

Table E.9b. PCP flowcell protein concentrations raw data for day 113.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.05832
0.05	2.456342	0.078318
0.1	4.912685	
0.5	24.56342	0.227666
0.8	39.30148	0.326716
1	49.12685	0.393911



Trendline Equations Used:
day 113:

$$P = \frac{Abs - 0.0601}{0.0068}$$

where
P = protein mass (µg)
Abs = absorbance reading

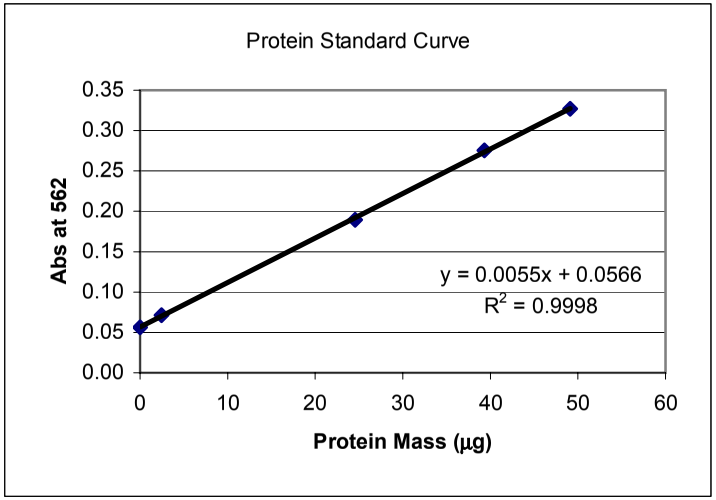
Location (day 113)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.14258	12.12966	242.5932	0.5727	0.5650639	429.3199	0.986667	0.000526
F1b	0.13362	10.81238	216.2475	0.5615	0.5540132	390.3292	0.99978	
F2a	0.11448	7.997455	159.9491	0.5396	0.5394813	296.4868	0.999662	
F2b	0.10754	6.976784	139.5357	0.571	0.5708744	244.4245	0.98717	0.002918
F3a	0.09034	4.446585	88.93169	0.5317	0.5315201	167.3158		
F3b	0.10025	5.904958	118.0992	0.5179	0.5177248	228.1118		
F4a	0.10404	6.462293	129.2459	0.5501	0.5430425	238.0032		
F4b	0.09895	5.713836	114.2767	0.5542	0.5470899	208.8811		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	409.8246	27.5706
2	270.4557	36.81362
3	197.7138	42.98932
4	223.4421	20.59248

Appendix E

Table E.9c. PCP flowcell protein concentrations raw data for day 135.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.056335
0.05	2.456342	0.071328
0.1	4.912685	
0.5	24.56342	0.189567
0.8	39.30148	0.275375
1	49.12685	0.327206



Trendline Equations Used:
day 135:

$$P = \frac{Abs - 0.0566}{0.0055}$$

where
P = protein mass (µg)
Abs = absorbance reading

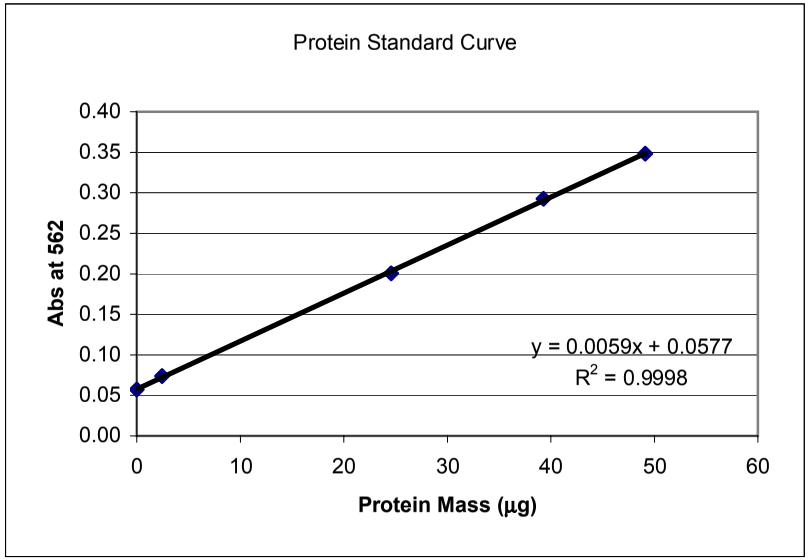
Location (day 135)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.07889	4.05325	81.06501	0.4842	0.4732546	171.2926	0.977395	0.029563
F1b	0.07177	2.757372	55.14743	0.5363	0.5241769	105.2077	0.990628	0.012551
F2a	0.10938	9.597194	191.9439	0.5734	0.5680263	337.9137	0.969513	0.004806
F2b	0.11197	10.06811	201.3623	0.5694	0.5640638	356.985	0.965854	0.017951
F3a	0.09526	7.02867	140.5734	0.4369	0.4235803	331.8696		
F3b	0.10030	7.946333	158.9267	0.4846	0.469826	338.267		
F4a	0.09325	6.663678	133.2736	0.4251	0.4105847	324.5946		
F4b	0.10720	9.199397	183.9879	0.5296	0.5115165	359.6911		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	138.2501	46.72909
2	347.4493	13.48539
3	335.0683	4.523667
4	342.1429	24.81703

Appendix E

Table E.9d. PCP flowcell protein concentrations raw data for day 149.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.057202
0.05	2.456342	0.073815
0.1	4.912685	
0.5	24.56342	0.2006
0.8	39.30148	0.292748
1	49.12685	0.348443



Trendline Equations Used:
day 149:

$$P = \frac{Abs - 0.0577}{0.0059}$$

where
P = protein mass (µg)
Abs = absorbance reading

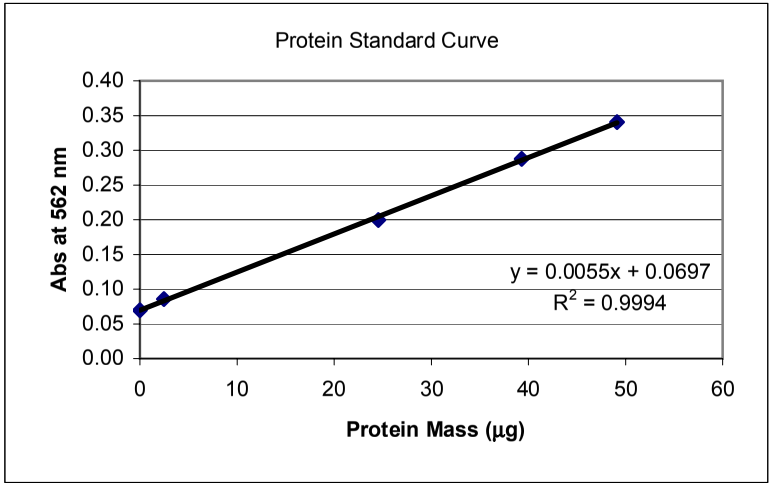
Location (day 149)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.07797	3.435022	68.70044	0.4482	0.4474251	153.5462	0.998271	0.001842
F1b	0.08146	4.026489	80.52978	0.5407	0.5397652	149.1941	0.96988	0.011642
F2a	0.08047	3.85947	77.1894	0.5484	0.5318822	145.125	0.964274	0.037443
F2b	0.07523	2.971037	59.42075	0.4977	0.4827093	123.0984	0.999089	0.000777
F3a	0.09500	6.322831	126.4566	0.4455	0.4295841	294.3698		
F3b	0.09931	7.052015	141.0403	0.4696	0.4528232	311.4688		
F4a	0.11095	9.025348	180.507	0.4784	0.4779641	377.658		
F4b	0.10856	8.619739	172.3948	0.495	0.4945489	348.5899		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	151.3702	3.077434
2	134.1117	15.57514
3	302.9193	12.0908
4	363.124	20.55424

Appendix E

Table E.9e. PCP flowcell protein concentrations raw data for day 170.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.069503
0.05	2.456342	0.085721
0.1	4.912685	
0.5	24.56342	0.199673
0.8	39.30148	0.287689
1	49.12685	0.340629



Trendline Equations Used:
day 170:

$$P = \frac{Abs - 0.0697}{0.0055}$$

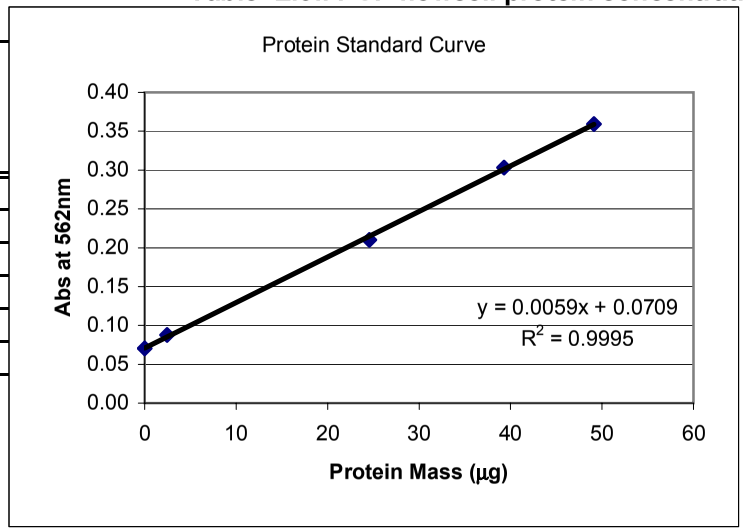
where
P = protein mass (µg)
Abs = absorbance reading

Location (day 170)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.12953	10.87736	217.5471	0.5078	0.4885108	445.3272	0.962014	0.025673
F1b	0.12269	9.635099	192.702	0.5805	0.5584492	345.0663	0.963697	0.003534
F2a	0.11795	8.772619	175.4524	0.5666	0.5460306	321.3234	0.976686	0.031572
F2b	0.11988	9.124099	182.482	0.5834	0.5622207	324.5736	0.967428	0.002833
F3a	0.10297	6.04892	120.9784	0.4973	0.4857058	249.0775		
F3b	0.11411	8.074322	161.4864	0.4984	0.4867802	331.7441		
F4a	0.09882	5.294794	105.8959	0.4755	0.4600122	230.2023		
F4b	0.10518	6.450553	129.0111	0.5778	0.5589801	230.7972		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	395.1967	70.89517
2	322.9485	2.298241
3	290.4108	58.45411
4	230.4998	0.420676

Table E.9f. PCP flowcell protein concentrations raw data for day 191.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.070443
0.05	2.456342	0.08789
0.1	4.912685	
0.5	24.56342	0.21002
0.8	39.30148	0.303302
1	49.12685	0.359301



Trendline Equations Used:
day 191:

$$P = \frac{Abs - 0.0709}{0.0059}$$

where
P = protein mass (µg)
Abs = absorbance reading

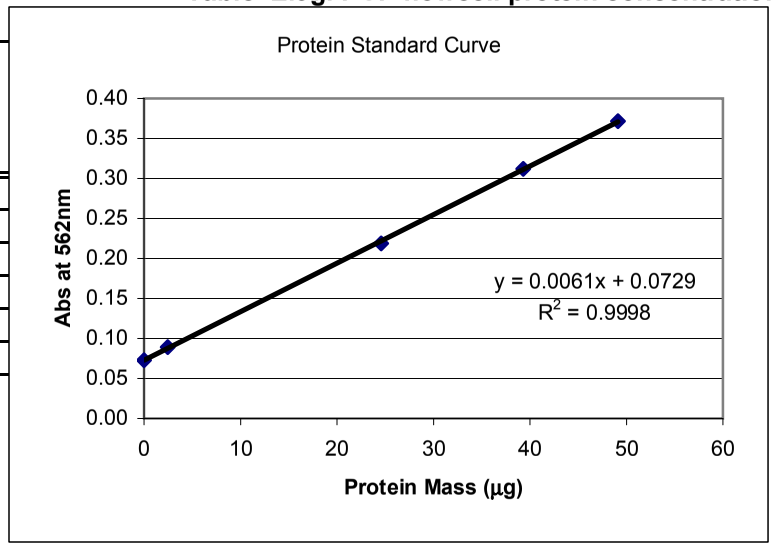
Location (day 191)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.09855	4.685947	93.71894	0.5486	0.5348366	175.2291	0.974912	0.016451
F1b	0.11528	7.521935	150.4387	0.5262	0.5129986	293.2537	0.949541	0.016532
F2a	0.09951	4.848782	96.97563	0.465	0.4415366	219.6321	0.92613	0.00186
F2b	0.10242	5.341595	106.8319	0.4834	0.4590082	232.7451	0.965337	0.00332
F3a	0.13924	11.58367	231.6734	0.472	0.4371333	529.9834		
F3b	0.14851	13.15348	263.0697	0.557	0.5158543	509.969		
F4a	0.10622	5.987009	119.7402	0.4383	0.4231073	283.002		
F4b	0.13780	11.33816	226.7633	0.5886	0.5681974	399.0924		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	234.2414	83.45594
2	226.1886	9.272244
3	519.9762	14.15237
4	341.0472	82.08831

Appendix E

Table E.9g. PCP flowcell protein concentrations raw data for day 275.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.072858
0.05	2.456342	0.0893
0.1	4.912685	
0.5	24.56342	0.218696
0.8	39.30148	0.3118
1	49.12685	0.371752



Trendline Equations Used:
day 275:

$$P = \frac{Abs - 0.0729}{0.0061}$$

where
P = protein mass (µg)
Abs = absorbance reading

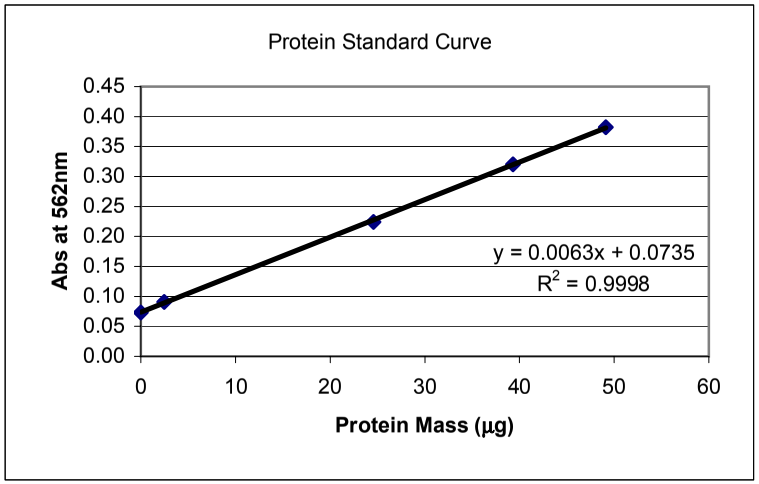
Location (day 275)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
F1a	0.10889	5.899469	117.9894	0.5668	0.5275982	223.6349	0.930837	0.010883
F1b	0.10398	5.094636	101.8927	0.506	0.4710034	216.3312	0.940593	0.027678
F2a	0.12001	7.723638	154.4728	0.5018	0.4719895	327.28	0.935896	0.022581
F2b	0.11136	6.3048	126.096	0.4677	0.4399153	286.637	0.912529	0.005391
F3a	0.12990	9.343656	186.8731	0.5158	0.4827352	387.1131		
F3b	0.13902	10.8396	216.7921	0.5562	0.5205454	416.471		
F4a	0.19827	20.55265	411.0529	0.5004	0.4566296	900.1888		
F4b	0.18809	18.88335	377.667	0.5557	0.5070925	744.7695		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
1	219.9831	5.16451
2	306.9585	28.73899
3	401.7921	20.75919
4	822.4792	109.8981

Appendix E

Table E.9h. PCP column protein concentrations raw data for day 276.

Standard Conc. (g/ml)	Protein Mass in Standard (µg)	Abs at 562nm
0	0	0.073252
0.05	2.456342	0.090621
0.1	4.912685	
0.5	24.56342	0.224276
0.8	39.30148	0.320337
1	49.12685	0.382189



Trendline Equations Used:
day 276:

$$P = \frac{Abs - 0.0735}{0.0063}$$

where
P = protein mass (µg)
Abs = absorbance reading

Location (day 275)	Average Abs at 562nm	Protein Mass (µg)	Account for 50µL transfer of 1 ml NaOH added	Wet Sand Mass (g)	Dry Sand Mass (g)	Protein conc. (µg protein/g wet sand)	average fraction of dry sand	s (in dry sand fraction)
Inf a	0.1379	10.22985	204.597	0.5364	0.4343378	471.055	0.809728	0.003061
Inf b	0.1320	9.287805	185.7561	0.4793	0.3881024	478.6265	0.810232	0.002035
F1a	0.0920	2.929584	58.59169	0.4415	0.3577176	163.7931	0.812751	0.001121
F1b	0.0971	3.743692	74.87383	0.4828	0.3911802	191.405	0.812677	0.001092
F2a	0.0863	2.026745	40.5349	0.5331	0.4332774	93.55414	0.808029	0.000627
F2b	0.0832	1.542437	30.84874	0.4698	0.3818303	80.79175	0.803814	0.002624
F3a	0.0825	1.422129	28.44257	0.5069	0.411946	69.04442		
F3b	0.0860	1.987295	39.7459	0.4851	0.3942296	100.8192		
F4a	0.0875	2.223351	44.46703	0.5522	0.4461939	80.52703		
F4b	0.0819	1.326796	26.53592	0.5471	0.4420729	48.50288		
Eff a	0.0820	1.349662	26.99324	0.5174	0.4158931	52.17093		
Eff b	0.0812	1.223032	24.46063	0.5699	0.4580933	42.92092		

Flowcell	Avg. Protein conc. (µg protein/g wet sand)	s (of duplicate)
inf	474.8408	5.353862
1	177.599	19.52451
2	87.17294	9.02437
3	84.93179	22.46813
4	64.51496	22.6445
eff	47.54593	6.540744