

# **Particle Size Analysis (PSA)**

## **NIEA Methodology**

Mike Allen

# R. V. Capitella

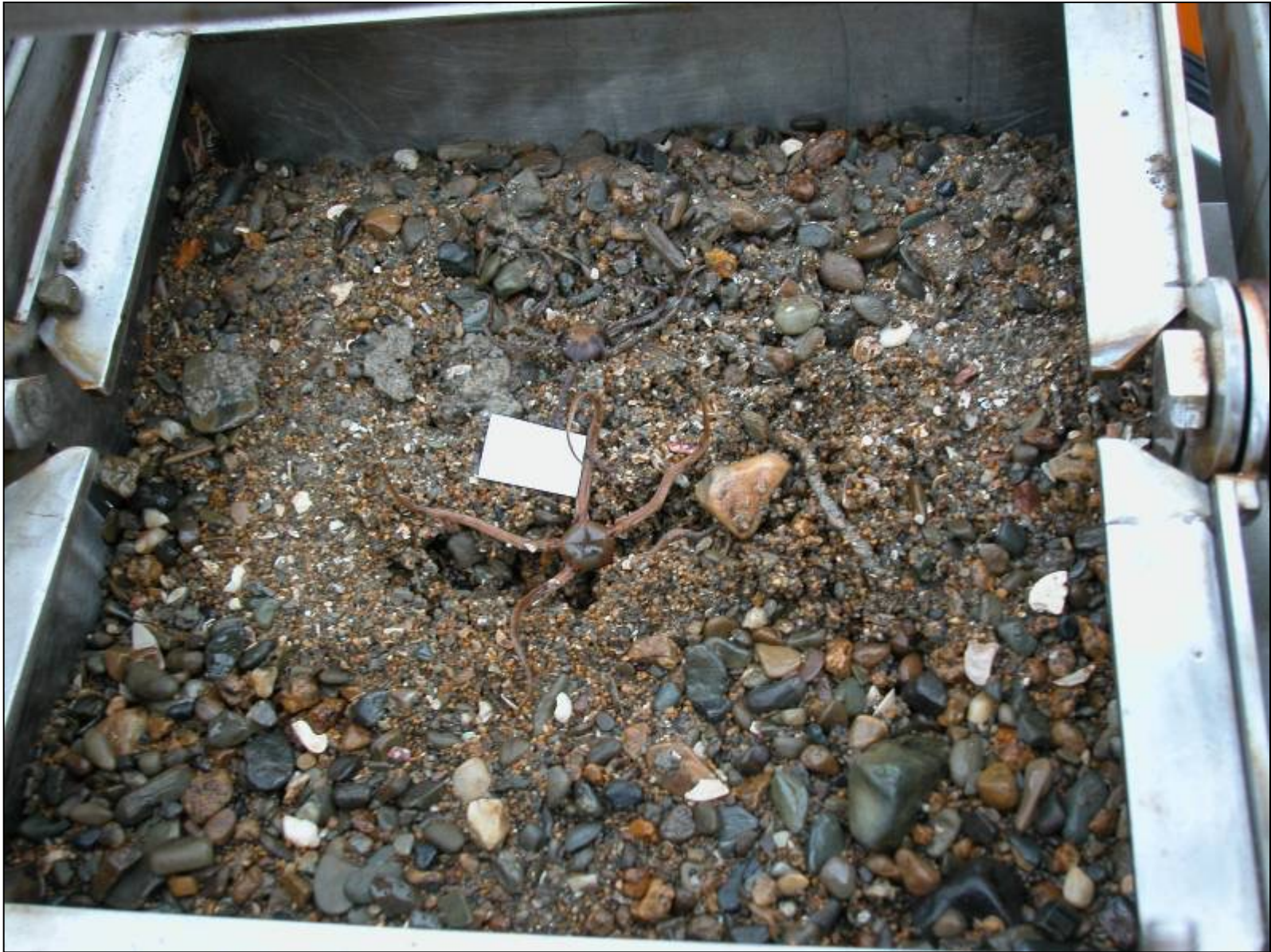


## Day Grab 0.1m<sup>2</sup>



# Sediment Sample in Grab















# Freezer – Freeze Drier



## Dry Sieve at

- 16mm
- 8mm
- 4mm
- 2mm
- 1mm

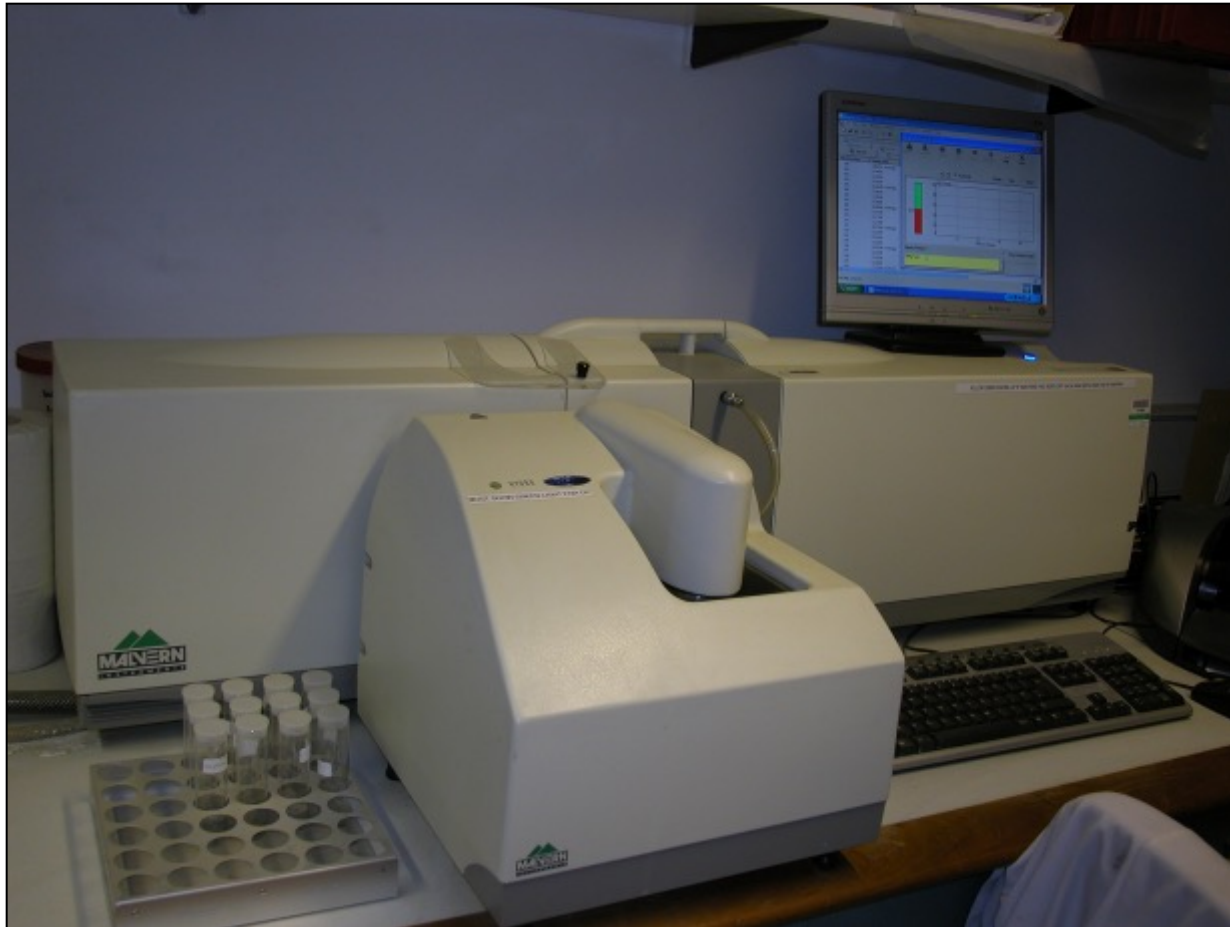
20 min cycle



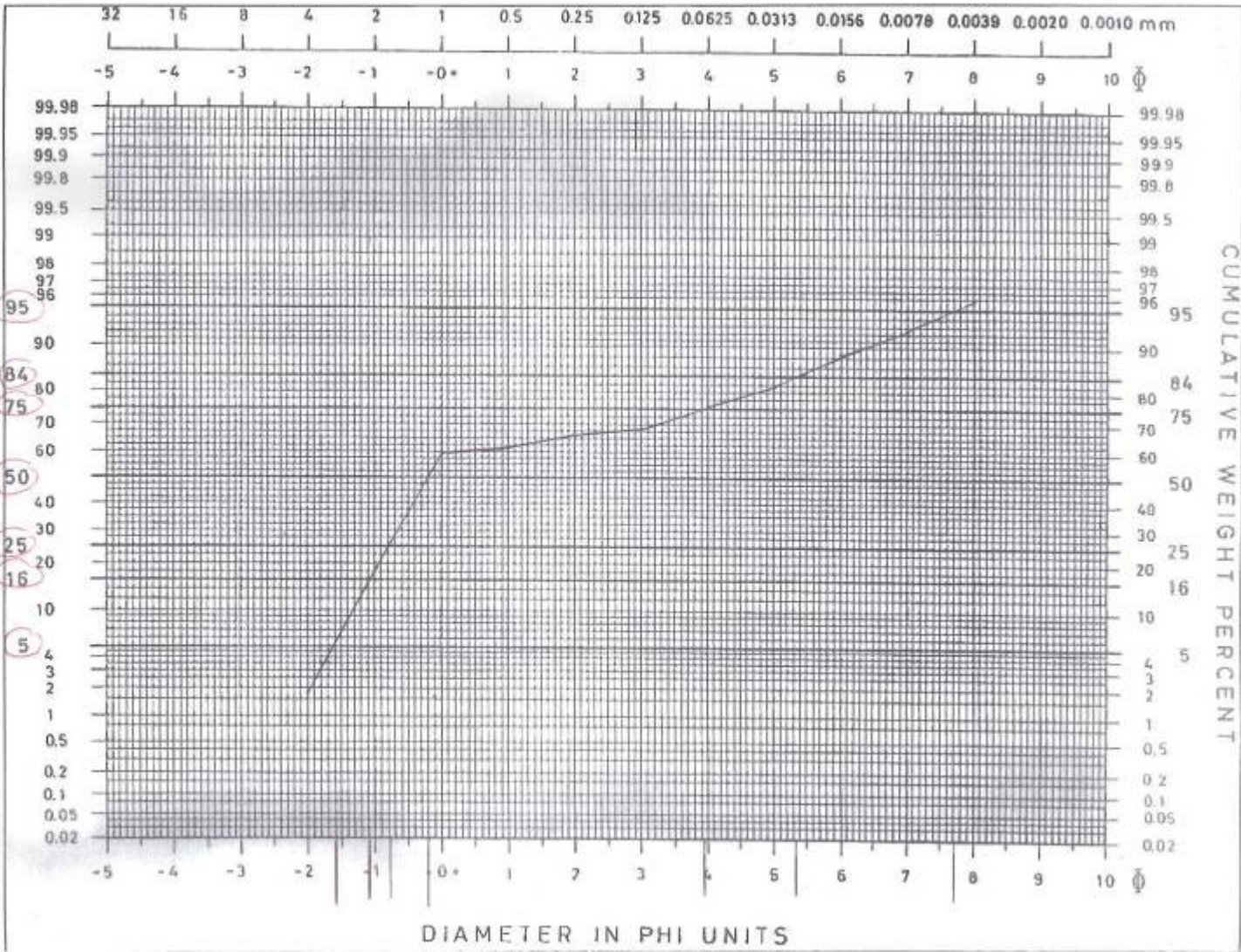
Dry Sieving  
Star 2000  
Retain  
<1mm  
Fraction for  
Laser  
Analysis



- Malvern 2000 & Hydro G



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2		2008													
3		BL5E													
4		size	%	normalised	cumulative %	Phi									
5		16000	0.00	0.00	0.00	-4									
6		8000	0.00	0.00	0.00	-3			Merman Required						
7		4000	1.87	1.87	1.87	-2									
8		2000	16.48	16.48	18.35	-1				BL5E					
9		1000	41.23	41.23	59.58	0			>8000	0.00					
10		500	6.18	2.50	62.08	1			4000 - 8000	1.87					
11		250	10.70	4.32	66.40	2			2000 - 4000	16.48		%	BL5		
12		125	6.19	2.50	68.90	3			1000 - 2000	41.23		Coarse	18.35		
13		63	15.63	6.32	75.22	4			500 - 1000	2.50		Sand	56.87		
14		31	18.81	7.60	82.83	5			250 - 500	4.32		Silt/clay	24.77		
15		16	14.13	5.71	88.54	6			125 - 250	2.50					
16		8	10.17	4.11	92.65	7			63 - 125	6.32					
17		4	7.94	3.21	95.86	8			<63	24.77					
18		2	5.36	2.17	98.02	8+			<20	1.97					
19		1	2.83	1.14	99.17										
20		0.5	2.05	0.83	100.00										
21															
22		Dry Sieve													
23		mm	BL5E												
24		16	0												
25		8	0												
26		4	1.87												
27		2	16.48												
28		1	41.23												
29		<1	40.42												
30		sum	100												
31															
32															
33															
34	BL5 E 08	LASER													
35															
36		Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
37		0.010	0.20	1.950	5.36	15.600	14.13	125.000	6.19	1000.000	0.00	10000.000	0.00		
38		0.490	1.85	3.900	7.94	31.300	18.81	250.000	10.70	2000.000	0.00	8000.000	0.00		
39		0.980	2.83	7.800	10.17	62.500	15.63	500.000	6.18	8000.000	0.00	10000.000	0.00		
40		1.950		15.600		125.000		1000.000							
41															
42															



Sample No: SLSE/08  
 Plotted by: POU  
 Tester Ref: F0203  
 Author: Mike Allen  
 Lab Id No: 13110108  
 Checked By:  
 Revision: 1.00  
 Date Issued: 22/11/2006  
 T1 No:  
 Date: 23/10/08  
 Status: ISSUED  
 Page 1 of 1

# Derived Stats

Microsoft Excel - derived stats eg

File Edit View Insert Format Tools Data Window Help

fx =((H5-D5)/4)+((I5-C5)/6.6)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2	Combined normalised dry sieve & laser data															
3	CSEG 2008															
	PSA CHECK SHEET															
4	Site	%<63	5	16	25	50	75	84	95	Site	Median	Mean	Sorting	Skewness	Kurtosis	
5	BL5A	32.08	-1.40	-0.45	0.00	1.00	4.80	5.80	6.70	BL5A	1	2.12	2.79	0.47	0.69	
6	BL5B	35.83	-1.1	-0.65	-0.4	1.3	4.9	5.9	8.05	BL5B	1.3	2.18	3.02	0.44	0.71	
7	BL5C	27.91	-1.25	-0.95	-0.7	-0.1	4.3	5.5	7.8	BL5C	-0.1	1.48	2.98	0.74	0.74	
8	BL5D	29.41	-1.1	-0.7	-0.5	0	4.4	5.6	7.8	BL5D	0	1.63	2.92	0.77	0.74	
9	BL5E	24.77	-1.6	-1.1	-0.8	-0.2	3.9	5.35	7.7	BL5E	-0.2	1.35	3.02	0.71	0.81	
10																
11																
12																



Sample date	BL5A	BL5B	BL5C	BL5D	BL5E	MERMAN REQUIRED	BL5A	BL5B	BL5C	BL5D	BL5E	
06/02/2008												
>8000	2.02	0.00	0.00	0.00	0.00	GSKURT	0.7	0.7	0.7	0.7	0.8	
4000 - 8000	0.00	0.00	0.00	0.00	1.87	GSMEA	2.1	2.2	1.5	1.6	1.4	PHI
2000 - 4000	6.56	6.77	15.74	8.72	16.48	GSMEA	0.2	0.2	0.4	0.3	0.4	mm
1000 - 2000	41.62	39.45	39.97	43.33	41.23	GSSKEW	0.5	0.4	0.7	0.8	0.7	
500 - 1000	1.57	2.21	3.21	4.83	2.50	GSSORT	2.8	3.0	3.0	2.9	3.0	
250 - 500	4.47	5.52	4.69	4.90	4.32	GSMED	1.0	1.3	-0.1	0.0	-0.2	PHI
125 - 250	3.90	2.75	2.34	2.44	2.50		0.5	0.4	1.1	1.0	1.1	mm
63 -125	7.76	7.48	6.14	6.36	6.32							
<63	32.08	35.83	27.91	29.41	24.77							
<20	2.27	2.44	2.07	2.15	1.97							

mean % 5 reps		BL5
>2mm	Coarse	11.63
63-1000µ	Sand	58.36
<63µ	Silt/clay	30.00



# Quality Assurance

1. Endecott annual sieve inspection
2. Malvern obscuration check (13-18%)
3. Malvern Quality Standards - glass microspheres (15-120 $\mu$ m)
4. NMBAQC PS participation

Our aim is to protect, conserve  
and promote our natural and built  
environment for the benefit of  
present and future generations.

