

16/02/12 Analysis of shellfish digest samples																							
Analysis performed by Ashley Townsend (CSL) using Element 2 HR-ICP-MS																							
Sample preparations were analysed as received from Nicola and following further dilution 10x and 100x. Indium was added as IS (100 ppb).																							
Sample Mass (g): - 0.9996 1.0004 1.0027 - 0.9996 1.0004 1.0027 - 0.9996 1.0004 1.0027																							
Following digestion in 6ml nitric/1 ml peroxide, sample diluted to (ml): 50 50 50 50 50 50 50 50 50																							
Further Nicola dilution: 100 100 100 100 100 100 100 100 100																							
Further CSL dilution: 100 100 100 100 10 10 1 1 1																							
Therefore, sample dilution factor: 500200 498800 498654 50020 49980 49865 5002 4998 4987																							
RAW DATA - Concentrations in the analysed samples (as ppb)																							
Isotope	QC1	Rinse1	DI 2x		Rinse1b	Rinse1c	Blk 100x			Blk 10x			Blk neat			Rinse2	QC2	Rinse2a					
Concentration AVG	Concentration AVG	Concentration AVG	NIST 1640a	Dilution factor adjust	Concentration AVG	Concentration AVG	1 100x	2 100x	3 100x	1 10x	2 10x	3 10x	1 neat	2 neat	3 neat	Concentration AVG	Concentration AVG	Concentration AVG					
Rb85(LR)	99.71	0.02	0.59		0.00	0.00	0.01	0.01	0.01	0.02	0.11	0.11	0.11	0.11	0.20	1.29	1.34	1.30	0.00	99.42	0.01		
Sr88(LR)	100.35	0.06	59.83	119.67	125.03	0.05	0.57	0.15	0.14	0.11	5.24	1.13	0.87	0.90	65.67	13.42	10.33	0.03	99.91	0.05			
Mo95(LR)	101.61	1.04	22.24	44.49	45.24	0.39	0.09	0.08	0.08	0.09	0.06	0.06	0.06	0.40	0.15	0.19	0.12	0.04	101.52	0.77			
Cd111(LR)	100.21	0.01	1.97	3.94	3.96	0.00	0.01	0.02	0.04	0.02	0.16	0.20	0.22	0.20	1.69	2.14	2.26	0.00	100.08	0.01			
Cs133(LR)	100.12	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.01	0.03	0.00	99.60	0.01			
Ba137(LR)	99.85	0.08	72.76	145.52	150.60	0.07	0.06	0.13	0.25	8.01	1.45	0.24	1.17	107.52	17.37	2.59	14.55	0.03	99.63	0.06			
Tl205(LR)	101.80	0.01	0.79	1.58	1.61	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	101.89	0.00			
Pb208(LR)	100.63	0.01	5.94	11.89	12.00	0.01	0.00	0.21	0.34	13.74	1.29	2.04	3.23	175.22	14.54	23.67	37.66	0.01	102.07	0.01			
Bi209(LR)	100.23	0.08	0.04			0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.78	0.07			
Th232(LR)	100.53	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.96	0.00			
U238(LR)	100.83	0.00	12.05	24.09	25.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	102.66	0.00			
Na23(MR)	115.47	15.53	1545.34	3090.68	3112.00	9.68	8.00	7371.22	4576.25	6130.36	6315.16	72852.93	43886.71	58082.99	56122.79	748065.10	487887.52	627751.29	598417.05	24.46	123.53	12.83	
Mg24(MR)	103.32	0.31	504.25	1008.51	1050.00	0.40	0.36	0.34	7.32	7.15	7.44	0.89	71.02	62.44	67.40	1.72	699.94	623.67	669.10	0.28	97.30	0.28	
Al27(MR)	100.01	0.66	27.01	54.01	52.60	0.46	0.49	0.55	1.09	0.85	0.69	2.57	7.20	4.95	4.59	9.06	57.79	38.37	33.01	0.59	96.51	0.55	
P31(MR)	97.26	0.20	1.75	3.50		0.32	0.06	0.30	16.65	20.63	14.83	1.50	153.89	215.55	149.70	13.74	1688.58	2249.33	1493.72	0.25	101.47	0.18	
S32(MR)	111.77	13.81	825.94	1651.89		12.58	11.88	35.03	37.97	41.87	42.64	250.84	266.16	317.81	303.90	2602.21	2841.20	3259.16	3295.34	12.03	111.99	12.38	
Ca42(MR)	105.14	3.80	2706.88	5413.76	5570.00	6.11	1.84	3.53	129.09	20.29	10.42	31.70	1235.75	177.38	108.68	41.44	13100.78	1540.83	880.58	6.02	111.01	4.32	
Sc45(MR)	97.52	0.01	0.02			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	95.76	0.00		
Ti47(MR)	98.68	0.00	0.15			0.04	0.00	0.00	0.04	0.02	0.00	0.00	0.04	0.26	0.37	0.16	0.13	1.95	3.04	2.51	0.00	101.36	0.04
V51(MR)	96.09	0.03	7.56	15.12	14.93	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.06	0.02	0.03	0.10	0.41	0.22	0.55	0.01	99.28	0.03	
Cr52(MR)	101.10	0.01	20.19	40.38	40.22	0.47	0.41	0.08	1.17	0.41	0.08	1.17	4.38	4.16	0.55	11.67	44.38	42.82	5.44	119.55	0.01	100.48	0.03
Mn55(MR)	102.01	0.03	19.42	38.85	40.07	0.02	0.01	0.04	0.18	0.05	0.13	0.33	1.43	0.52	1.24	3.21	14.32	4.34	12.44	0.02	101.80	0.02	
Fe56(MR)	101.72	0.18	29.84	41.69	36.50	0.19	0.13	2.90	0.31	0.32	0.28	28.37	2.36	2.32	2.03	223.20	19.68	19.21	15.89	0.13	99.21	0.16	
Co59(MR)	99.41	0.02	9.12	18.24	20.06	0.01	0.01	0.01	0.01	0.02	0.04	0.02	0.04	0.14	0.34	0.13	0.40	0.01	93.74	0.00			
Ni60(MR)	97.54	0.04	12.20	24.40	25.12	0.03	0.02	0.01	0.07	0.30	0.20	0.28	0.49	1.95	2.26	1.59	4.14	0.01	97.40	0.00			
Cu63(MR)	94.90	0.06	42.63	85.27	85.07	0.11	0.05	0.04	0.06	0.41	0.37	0.29	0.29	2.63	1.67	1.62	2.18	0.04	102.15	0.02			
Zn66(MR)	99.01	0.03	28.56	57.11	55.20	0.08	0.10	0.11	1.67	0.47	0.74	0.28	15.69	5.17	5.49	1.36	142.59	46.68	51.72	0.07	102.20	0.03	
K39(HR)	101.07	0.37	286.46	572.93	575.00	0.43	0.31	3.99	23.78	25.36	24.72	42.02	240.83	265.99	250.98	401.29	2327.09	2635.88	2590.23	0.36	100.06	0.35	
As75(HR)	102.27	0.00	4.65	9.29	8.01	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.17	0.22	0.29	0.29	2.28	3.59	2.86	0.00	101.15	0.04	
BLANK SUBTRACTED AND DILUTION FACTOR ADJUSTED DATA - Concentrations sample digests supplied (as ppm)																							
Isotope							Blk 100x			Blk 10x			Blk neat										
Rb85(LR)							3.10 4.25 2.79			4.42 4.52 4.51			5.45 5.70 5.51										
Sr88(LR)							260.25 45.98 42.44			256.63 51.01 37.74			323.99 62.60 47.02										
Mo95(LR)							-14.26 -22.54 -21.44			-1.33 -1.24 -1.49			-1.24 -1.05 -1.38										
Cd111(LR)							5.20 7.70 15.81			7.02 8.93 9.97			7.45 9.71 10.29										
Cs133(LR)							-0.45 -0.25 -0.60			-0.01 -0.07 -0.02			0.01 -0.12 -0.02										
Ba137(LR)							-369.15 -387.89 -327.42			-327.82 -388.04 -341.10			-450.94 -524.43 -463.61										
Tl205(LR)							0.60 1.30 0.85			0.90 0.93 0.84			-0.05 -0.07 -0.08										
Pb208(LR)							-633.00 -597.16 -530.27			-622.97 -584.71 -524.35			-803.69 -757.46 -685.92										
Bi209(LR)							-0.20 -1.40 -1.15			0.01 0.02 0.00			-0.01 0.00 -0.00										
Th232(LR)							-0.05 -0.10 -0.10			-0.01 0.00 0.00			0.00 0.00 0.00										
U238(LR)							0.05 0.20 0.00			0.07 0.07 0.01			0.06 0.07 0.01										
Na23(MR)							-1398043.37 -620179.03 -526806.36			-1448890.41 -738201.50 -834284.39			-1301408.48 -601328.52 -746225.44										
Mg24(MR)							3491.65 3404.09 3543.23			3507.46 3076.00 3316.19			3492.48 3108.51 3327.94										
Al27(MR)							272.71 151.34 71.86			231.18 118.87 100.74			243.76 146.50 119.45										
P31(MR)							8178.92 10163.98 7244.09			7622.35 10697.92 7389.82			8377.58 11173.48 7379.98										
S32(MR)							1467.19 3415.53 3793.01			766.11 3346.97 2645.77			1195.42 3283.41 3476.22										
Ca42(MR)							62804.22 8373.30 3432.68			60226.75 7281.23 3838.77			65322.84 7493.98 4184.41										
Sc45(MR)							1.35 0.00 1.99			0.00 -0.07 0.00			-0.03 -0.01 -0.02										
Ti47(MR)							19.46 9.65 0.00			11.04 16.46 5.55			9.11 14.51 11.86										
V51(MR)							0.60 -0.65 -6.18			2.53 0.62 1.13			1.57 0.61 2.23										
Cr52(MR)							-29.41 -193.72 350.65			-11.26 -191.66 363.13			-7.84 -194.66 374.83										
Mn55(MR)							67.93 2.25 43.43			54.91 9.35 45.48			55.57 5.65 46.01										
Fe56(MR)							-1294.42 -1286.39 -1303.73			-1301.04 -1301.69 -1313.43			-1048.01 -1049.54 -1063.67										
Co59(MR)							-2.15 -1.10 1.55			1.06 -0.13 1.13			1.04 -0.02 1.33										
Ni60(MR)							-6.80 -9.05 18.25			-5.04 -1.21 9.58			1.59 -1.76 10.93										
Cu63(MR)							-31.76 -37.04 -27.33			-1.90 -6.01 -5.83			-4.76 -5.01 -2.21										
Zn66(MR)							782.36 181.78 315.90			770.64 244.23 259.80			706.44 226.51 251.09										
K39(HR)							9899.31 10677.78 10335.89			9944.40 11193.74 10419.69			9632.82 11166.46 10915.23										
As75(HR)							21.76 0.00 10.42			8.63 11.06 14.71			9.95 16.49 12.78										



	Zn ICPMS			Cd ICPMS			Mn ICPMS										
RPT	s1 (0-5 cm)	s2 (5-8 cm)	s3 (8-10 cm)				s1	s2	s3				s1	s2	s3		
1	843.6	310.9	354.1				5.6	13.6	11.3				52.4	8.8	55.8		
2	730.1	231.4	267.3				7.7	10.8	8.1				48.3	5.9	50.8		
3	782.4	181.8	315.9				5.2	7.7	15.8				67.9	2.3	43.4		
4	770.6	244.2	259.8				7	8.9	10				54.9	9.4	45.5		
5	706.4	226.5	251.1				7.5	9.7	10.3				55.6	5.7	46		
	3833.1	1194.8	1448.2				33	50.7	55.5				279.1	32.1	241.5		
Average	766.62	238.96	289.64	1295.22	431.74		6.6	10.14	18.5				55.82	6.42	48.3	110.54	36.84667
STDEV	52.79898	46.58995	43.93038				1.133578	2.241205	2.871411				7.332598	2.842006	4.990992		
%RSD	6.887242	19.49696	15.16723	41.55144	13.85048		17.17543	22.10261	15.52114	54.79918	18.26639		13.13615	44.26801	10.33332	22.57916	