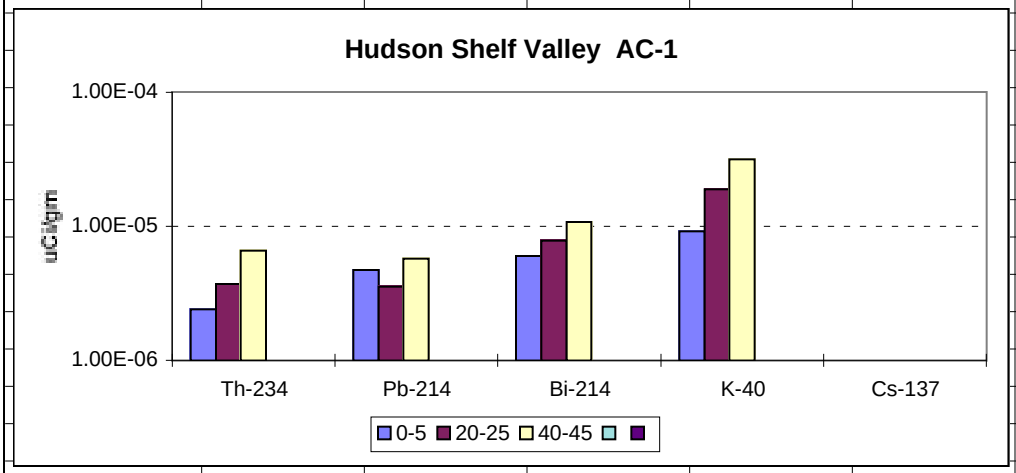
DR2004020

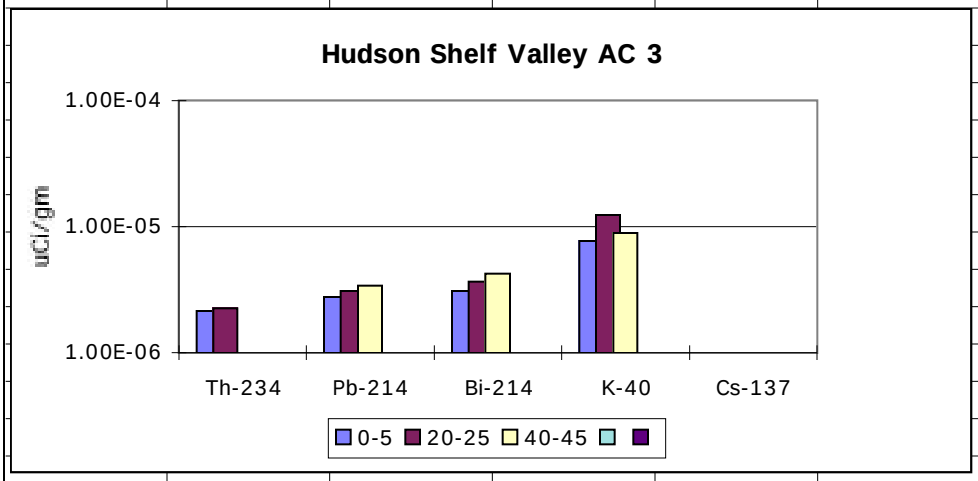
Supplemental Material 1 . Hudson Shelf Valley and Sandy Hook Bay Core Locations

CORE #	LAT (N)	LONG (W	SECT.#	ECT. LENGT	VATER DEPTH
				(cm)	(m)
Hudson Shelf Valley					
AC97-1	40°23'44"	73°44'26"	I	45	24
AC97-3	40°24'26"	73°45'42"	I	58	29
AC97-4	40°24'56"	73°46'42"	I	93	35
			II	74	
AC97-6	40°25'45"	73°48'10"	I	96	34
			II	81	
AC97-7	40°26'21"	73°49'27"	I	94	30
			II	53.5	
AC97-9	40°26'54"	73°51'23"	I	95.5	25
			II	56	
AC97-11	40°27'08"	73°52'23"	I	69.5	22
			II	51	
V97-1	40°25'50"	73°46'44"	I	100	34
			II	54	34
V97-2	40°24'15"	73°47'01"	I	105.5	37
H97V-3	40°26'15"	73°44'11"	I	103.5	30
HV	40° 27'	73° 45.5'	I-II	145	30
HV-2	40° 28'	73° 47.7'	I	94	30
HV-5	40° 29.0'	73° 49.5'	I-II	137	25
Sandy Hook					
SH-1	40° 25.2'	74° 00'	I	32.5	3
SH-3	40° 26.31	74° 00.5'	I-II	196.5	6
SH-5	40° 27.5'	74° 01.0'	I-II	168.5	6
SH-6	40° 28.5'	74° 01.8'	I	99	9
SH-9	40° 26.01	74° 02.5'	I-II	215	6
SH-10	40° 25.5'	74° 01.5'	I-II	151	7
T97-1	40°27'58"	74°01'20"	I	40	7
			II	98	
			Total Core Lengt	2600	

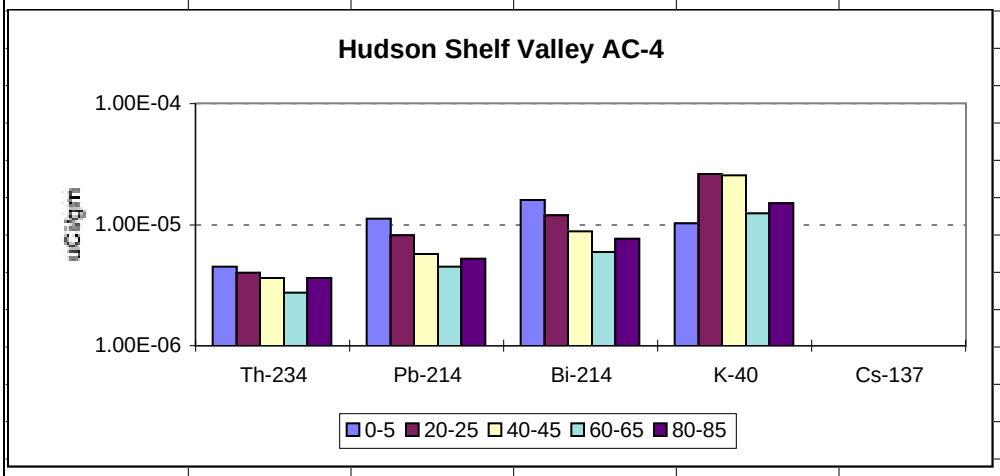
	Hudson Shelf Valley		AC-1		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	2.39E-06	4.70E-06	5.94E-06	9.08E-06	
20-25	3.69E-06	3.51E-06	7.78E-06	1.88E-05	
40-45	6.54E-06	5.73E-06	1.07E-05	3.14E-05	



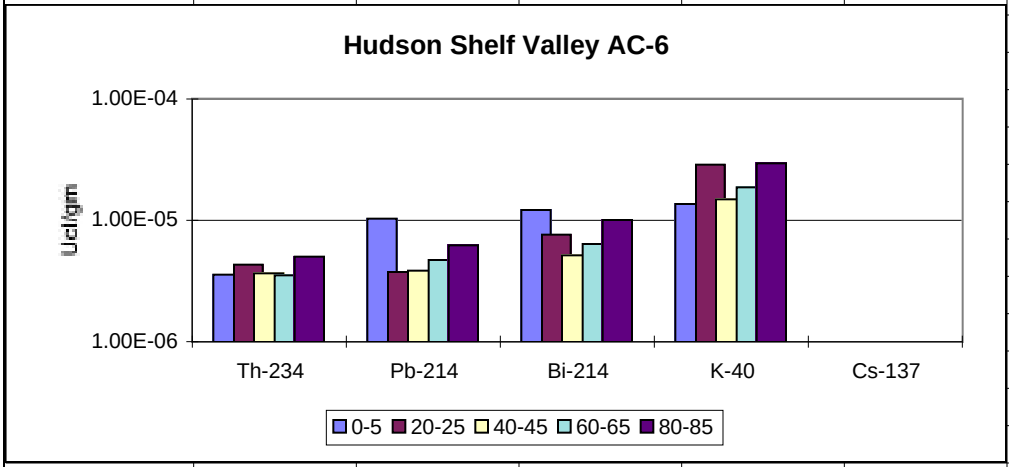
	Hudson Shelf Valley		AC-3		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	2.12E-06	2.75E-06	3.07E-06	7.63E-06	
20-25	2.23E-06	3.07E-06	3.63E-06	1.23E-05	
40-45	2.62E-66	3.40E-06	4.21E-06	8.86E-06	



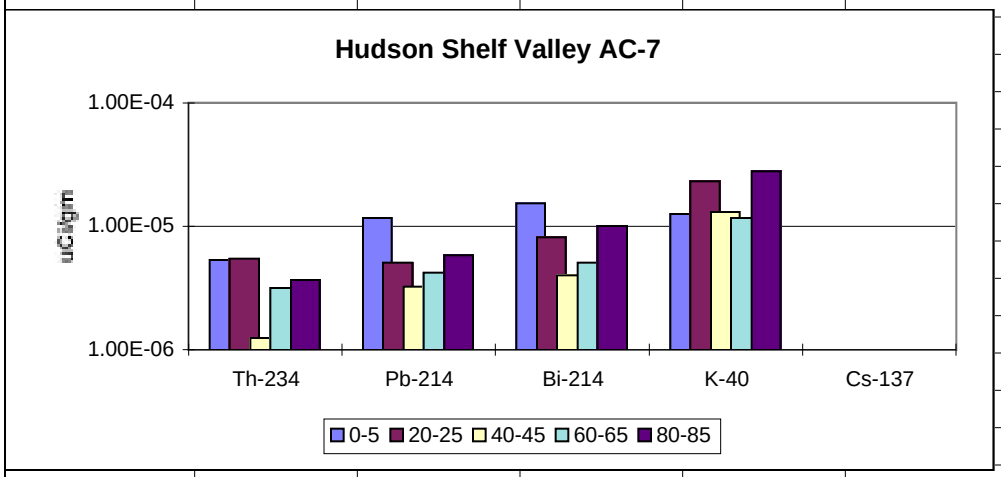
	Hudson Shelf Valley		AC-4		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	4.44E-06	1.11E-05	1.59E-05	1.02E-05	3.57E-08
20-25	4.00E-06	8.11E-06	1.18E-05	2.61E-05	
40-45	3.58E-06	5.66E-06	8.70E-06	2.55E-05	
60-65	2.71E-06	4.47E-06	5.93E-06	1.24E-05	
80-85	3.58E-06	5.22E-06	7.63E-06	1.50E-05	



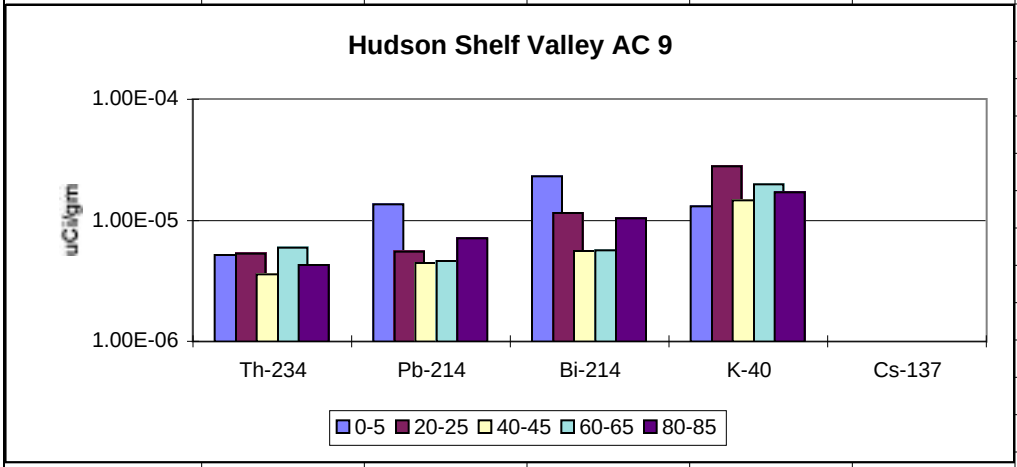
	Hudson Shelf Valley		**AC-6**		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	3.56E-06	1.02E-05	1.21E-05	1.35E-05	7.91E-08
20-25	4.28E-06	3.74E-06	7.61E-06	2.85E-05	
40-45	3.62E-06	3.81E-06	5.13E-06	1.48E-05	
60-65	3.48E-06	4.69E-06	6.32E-06	1.85E-05	
80-85	5.01E-06	6.21E-06	9.97E-06	2.93E-05	1.17E-07



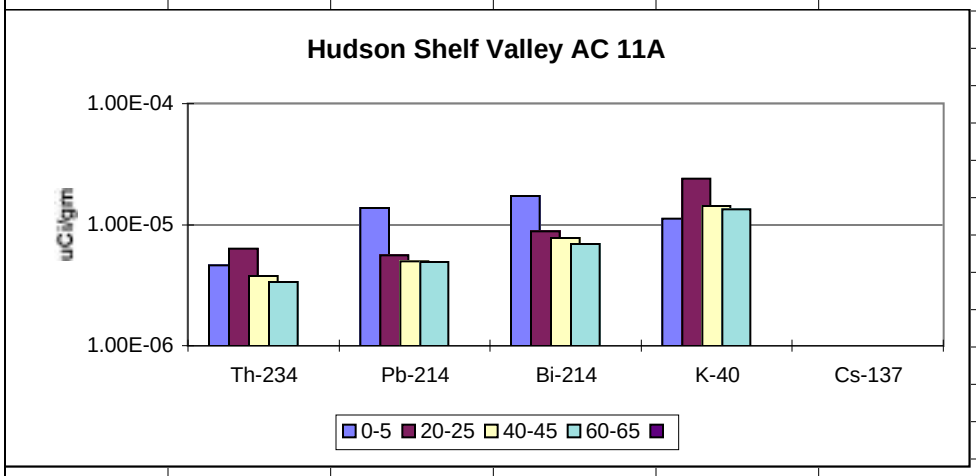
	Hudson Shelf Valley		**AC 7**		
		units of uCi/gm			
Depth(cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	5.30E-06	1.16E-05	1.53E-05	1.25E-05	4.10E-08
20-25	5.44E-06	5.03E-06	8.05E-06	2.31E-05	
40-45	1.24E-06	3.24E-06	4.00E-06	1.30E-05	
60-65	3.14E-06	4.20E-06	5.02E-06	1.16E-05	
80-85	3.67E-06	5.76E-06	9.99E-06	2.76E-05	



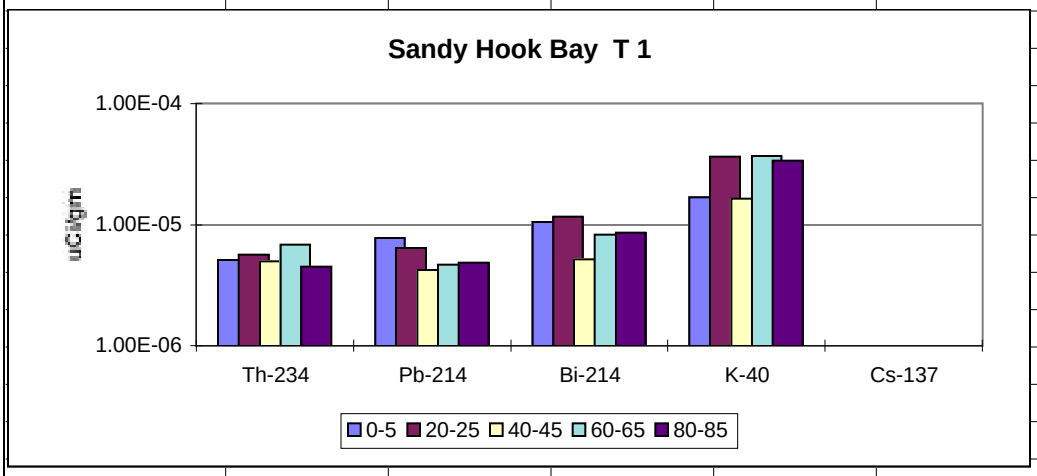
	Hudson Shelf Valley		**AC 9**		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	5.17E-06	1.35E-05	2.30E-05	1.30E-05	6.95E-08
20-25	5.27E-06	5.48E-06	1.14E-05	2.79E-05	
40-45	3.56E-06	4.43E-06	5.54E-06	1.46E-05	
60-65	5.89E-06	4.60E-06	5.59E-06	1.98E-05	
80-85	4.26E-06	7.04E-06	1.03E-05	1.70E-05	



	Hudson Shelf Valley		AC 11A		
		units of uCi/gm			
Depth	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	4.57E-06	1.36E-05	1.71E-05	1.12E-05	
20-25	6.28E-06	5.55E-06	8.78E-06	2.37E-05	
40-45	3.72E-06	4.93E-06	7.70E-06	1.42E-05	
60-65	3.34E-06	4.89E-06	6.87E-06	1.33E-05	



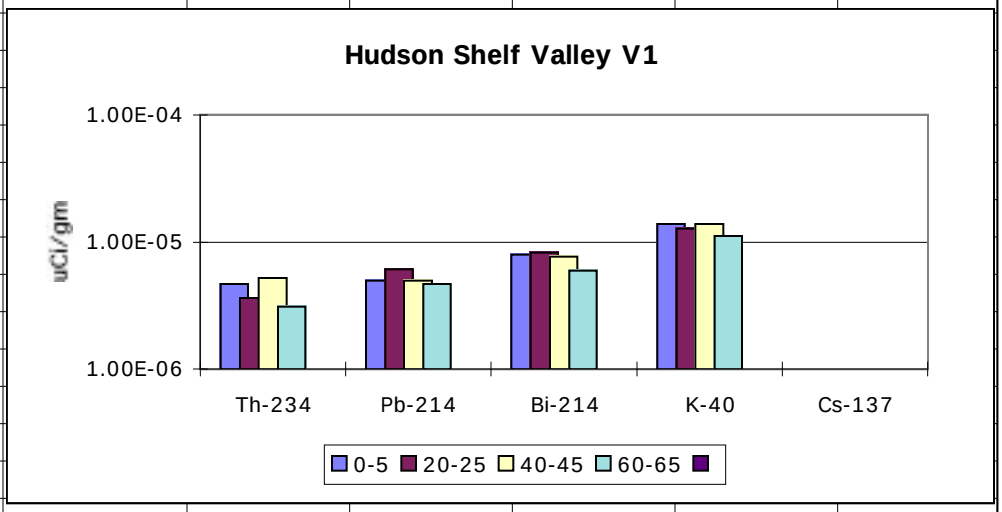
	Sandy Hook Bay		T1		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	5.09E-06	7.69E-06	1.05E-05	1.67E-05	1.17E-07
20-25	5.61E-06	6.35E-06	1.15E-05	3.62E-05	2.00E-07
40-45	4.92E-06	4.21E-06	5.15E-06	1.62E-05	
60-65	6.78E-06	4.63E-06	8.20E-06	3.65E-05	
80-85	4.46E-06	4.81E-06	8.56E-06	3.35E-05	



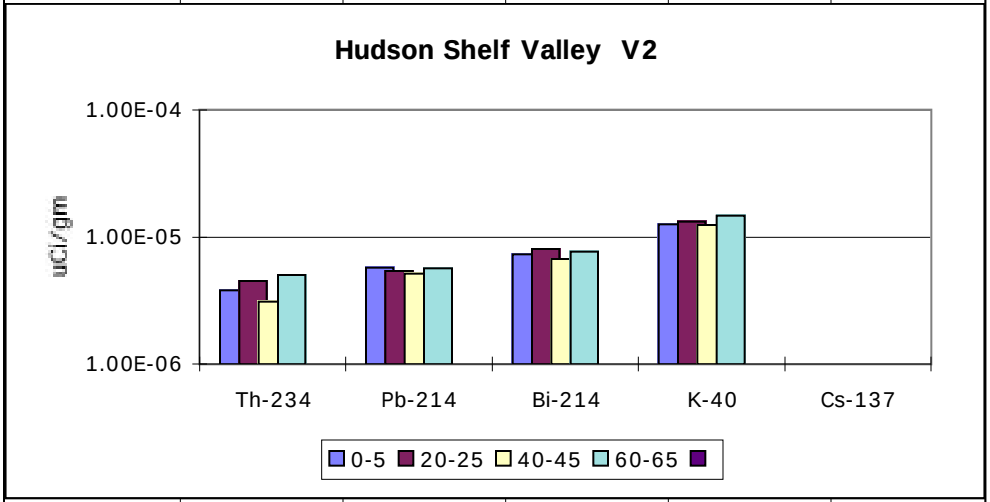
Hudson Shelf Valley **V1**

units of uCi/gm

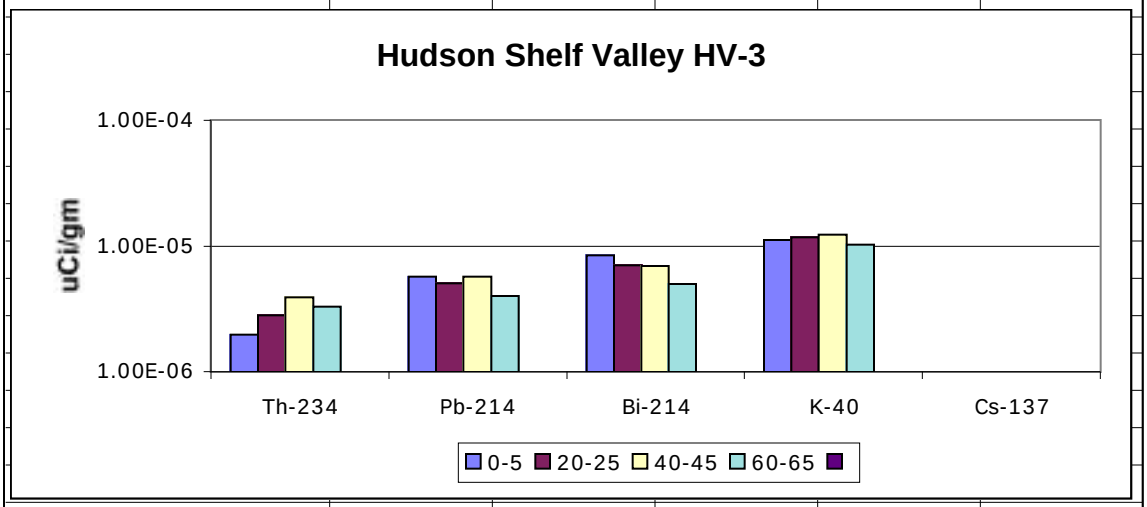
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	4.64E-06	4.96E-06	7.88E-06	1.37E-05	4.38E-08
20-25	3.60E-06	6.06E-06	8.22E-06	1.26E-05	
40-45	5.15E-06	4.91E-06	7.58E-06	1.37E-05	
60-65	3.08E-06	4.63E-06	5.91E-06	1.11E-05	



	Hudson Shelf Valley		**V2**		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	3.77E-06	5.72E-06	7.29E-06	1.25E-05	
20-25	4.50E-06	5.39E-06	7.95E-06	1.32E-05	
40-45	3.06E-06	5.13E-06	6.71E-06	1.23E-05	
60-65	5.01E-06	5.60E-06	7.62E-06	1.47E-05	



	Hudson Shelf Valley		HV 3		
		units of uCi/gm			
Depth (cm)	Th-234	Pb-214	Bi-214	K-40	Cs-137
0-5	1.96E-06	5.69E-06	8.37E-06	1.11E-05	
20-25	2.78E-06	5.02E-06	6.96E-06	1.16E-05	
40-45	3.87E-06	5.64E-06	6.92E-06	1.22E-05	
60-65	3.28E-06	3.99E-06	4.97E-06	1.02E-05	



Core Name	upper depth	lower depth	av depth	Sample date	Count date	Canning date	mass counted	Detector	Pb-210
LW1-1	0	4	2	1999121	2002276	1999333	39.910	ortec	634.558
LW1-12	0	2	1	99166	99312	99298	5.855	pwell	-1441.036
LW1-19	0	4	2	99166	99309	99298	28.014	tracor	1712.272
LW1-33	0	2	1	1999121	2002282	1999320	5.027	tracor	-1591.938
LW1-41	0	2	1	99166	99320	99298	13.656		3288.463
LW1-45	0	2	1	1999121	2002277	1999320	7.563	tracor	-380.916
LW1-60	0	2	1	1999121	2002277	1999320	9.010	ortec	1940.264
LW1-55	0	2	1	99166	99306	99294	6.978	ortec	118.268
LW1-72	0	2	1	1999121	2002280	1999320	14.731	ortec	1776.629
LW1-73	0	2	1	99166	99312	99293	14.973	ortec	335.718
LW1-80	0	2	1	99166	99302	99294	16.243	tracor	130.383
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-11	8	12	10	1999166	2000097	2000047	23.841		1792.163
	18	22	20	1999166	2000097	2000047	28.64		-15.8234
	28	32	30	1999166	2000097	2000047	26.319		917.4996
	38	42	40	1999166	2000097	2000047	33.634		323.3567
	48	52	50	1999166	2000097	2000047	30.148		-90.90469
	58	62	60	1999166	2000124	2000039	29.819		353.3797
	68	72	70	1999166	2000123	2000047	24.741		-469.5867
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-16	0	4	3	1999121	2001262	2001256	37.324		1702.16
LW1-16	4	8	6	1999121	2001262	2001256	45.37		1826.155
LW1-16	8	12	10	1999121	2001263	2001256	44.27		1750.948
LW1-16	12	16	14	1999121	2001263	2001256	55.49		526.5754
LW1-16	16	20	18	1999121	2001263	2001256	59.25		957.2777
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
lw1-22	0	4	2	1999166	1999326	1999295	37.75099945	pwell	1926.8760
lw1-22	4	5.5	4.75	1999166	2001233	2001219	20.65500069	ortec	1061.3410
lw1-22	5.5	7	6.25	1999166	2001233	2001220	13.08199978	pwell	1122.6030
lw1-22	7	8.5	7.75	1999166	2001233	2001219	14.78499985	tracor	1146.3080
lw1-22	8.5	10	9.25	1999166	2001235	2001219	18.98800087	ortec	833.8486
lw1-22	10	11.5	10.75	1999166	2001240	2001220	8.517000198	ortec	2039.7060
lw1-22	11.5	13	12.25	1999166	2001235	2001220	15.20400047	pwell	1542.9320
lw1-22	13	14.5	13.75	1999166	2001240	2001220	15.85099983	pwell	1096.2150
lw1-22	14.5	16	15.25	1999166	2001235	1999220	17.55400085	tracor	2017.8910
lw1-22	16	17.5	16.75	1999166	2001236	2001220	15.79699993	ortec	1470.2720
lw1-22	17.5	19	18.25	1999166	2001235	2001219	18.50300026	pwell	587.2006
lw1-22	19	20.5	19.75	1999166	2001235	2001220	13.30200005	tracor	971.3183
lw1-22	20.5	23.5	22	1999166	2001240	2001220	46.43999863	tracor	1350.8850
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-30	0	2	1	99166	99306	99294	17.428	tracor	126.569
LW1-30	8	12	10	1999166	2000019	2000019	27.233	pwell	495.590
LW1-30	18	22	20	1999166	2000046	2000039	25.766	ortec	-198.913
LW1-30	28	32	30	1999166	2000039	2000032	29.990	ortec	871.868
LW1-30	38	42	40	1999166	2000067	2000032	26.595	tracor	627.666
LW1-30	48	52	50	1999166	2000039	2000032	34.514	pwell	533.536
LW1-30	58	62	60	1999166	2000032	2000018	29.938	tracor	1558.142
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-36	0	4.5	2.25	1999121	2001299	2001242	43.899	ortec	2184.777
LW1-36	4.5	8.5	6.5	1999121	2001302	2001243	36.812	tracor	3140.725
LW1-36	8.5	10	9.25	1999121	2001302	2001242	36.151	ortec	2223.374
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-78	8	12	10	1999166	2000129	2000097	19.296		716.1187
LW1-78	18	22	20	1999166	2000129	2000097	19.795		485.4018
LW1-78	38	42	40	1999166	2000129	2000097	26.141		839.1886
LW1-78	48	52	50	1999166	2000129	2000097			744.7297
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW1-79	0	3	1	1999121	2001257	2001243	28.461		2000.658

LW1-79	3	4.5	3.5	1999121	2001257	2001257	23.814		1083.907
LW1-79	4.5	6	5	1999121	2001260	2001260	18.755		1108.241
LW1-79	8.5	10	9	1999121	2001260	2001243	26.989		475.952

1 SIG ER	Th-234	1 SIG ER	Ra-226	1 SIG ER	Pb-212	1 SIG ER	Pb 214-1	1 SIG ER	Pb 214-2	1 SIG ER
445.422	Sample too old for Th-234 and Be		1493.841	355.0234	58.0861	3.373021	960.103	92.0851	852.866	64.6946
1252.966	1466.881	1542.491	1089.528	1052.882	763.3486	93.23868	501.3783	227.6736	469.4068	141.0306
733.9298	2164.797	917.6083	1689.348	309.5603	57.12628	3.242363	915.1688	84.23463	958.5098	66.015
3644.183	Sample too old for Th-234 and Be		1829.952	1378.292	70.39169	6.963469	684.115	315.0172	933.321	190.033
1078.404	1341.408	1277.922	1533.363	431.937	61.94344	3.651737	1273.091	115.3005	1082.879	80.13975
2557.932	Sample too old for Th-234 and Be		2337.122	946.4613	71.83823	5.872643	1151.56	228.754	1066.384	144.5891
1051.55	Sample too old for Th-234 and Be		1755.184	1019.83	67.04067	6.807883	906.9948	245.608	849.6492	151.7167
879.9957	2608.904	1077.625	478.3898	946.6425	69.14934	6.110688	968.4353	210.3453	1135.213	137.8526
612.7053	Sample too old for Th-234 and Be		898.0081	547.5788	60.03186	4.101268	734.1292	125.0648	877.1465	85.6637
508.7843	1717.929	623.3348	1105.577	507.0764	59.95326	3.932677	804.4839	115.9595	811.0654	78.20603
1227.646	3232.882	1547.57	1598.556	520.8227	55.71046	3.709876	1126.048	132.4355	930.312	88.10886
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
972.7606	Sample too old for Th-234 and Be-7 calc		1736.568	407.1184	57.44761	3.411292	921.4341	101.3602	804.0618	70.11138
568.8997	Sample too old for Th-234 and Be-7 calc		1517.274	495.7554	56.34955	3.604059	821.4262	114.127	849.6762	77.5064
642.941	Sample too old for Th-234 and Be-7 calc		1312.219	458.3969	1056.266	66.90656	717.9429	98.56728	674.7933	68.64719
774.3188	Sample too old for Th-234 and Be-7 calc		1492.662	329.8433	45.14256	2.678502	726.3977	80.95004	700.358	57.04147
803.2911	Sample too old for Th-234 and Be-7 calc		1263.82	340.1544	47.35175	2.784819	601.292	80.31315	683.4642	57.64367
527.2648	Sample too old for Th-234 and Be-7 calc		1763.758	395.2405	1033.139	62.37966	682.7089	85.92876	718.66	61.45745
535.9233	Sample too old for Th-234 and Be-7 calc		1195.146	480.3819	55.22961	3.650293	689.3134	111.9494	770.4002	75.6212
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
419.7027	Sample too old for Th-234 and Be-7 calc		1317.659	342.7847	52.16361	3.127682	759.6721	85.94505	793.2031	61.58772
453.6285			1850.336	296.0301	1020.129	57.88248	727.5942	70.40296	725.155	52.3005
679.2883			1660.211	273.9573	53.32111	2.944937	1077.619	82.28372	1033.993	65.43608
338.9677			1838.042	280.1826	51.98613	2.908876	797.4575	71.576	783.5714	53.79258
373.0763			1810.301	246.6255	964.9108	53.55621	718.771	60.93971	741.1249	48.76852
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
307.9434	2220.952	377.5186	1698.999	235.4725	902.1012	48.6828	799.2473	59.2185	854.2800	51.05502
530.2106	Sample too old for Th-234 and Be-7 calc		1787.88	501.3114	56.31939	3.989908	755.4708	123.1475	800.8493	81.11905
856.0144	Sample too old for Th-234 and Be-7 calc		1520.889	647.486	1073.599	79.38313	633.2120	149.3455	715.1862	98.24158
1386.231	Sample too old for Th-234 and Be-7 calc		1628.375	523.6714	56.06062	3.843922	945.6105	136.0629	920.4712	90.70274
579.0041	Sample too old for Th-234 and Be-7 calc		852.6401	540.5219	62.03347	4.405508	903.9155	136.4468	932.3105	91.04611
1110.543	Sample too old for Th-234 and Be-7 calc		951.4586	1098.682	66.47327	7.151672	873.7186	261.8545	1177.4200	168.1075
746.5504	Sample too old for Th-234 and Be-7 calc		1721.787	571.8698	1102.696	76.57388	569.7256	131.6316	899.2179	93.88501
728.1472	Sample too old for Th-234 and Be-7 calc		1475.914	551.5542	988.3375	70.84969	717.8488	128.9028	960.2136	92.89621
1212.132	Sample too old for Th-234 and Be-7 calc		2080.003	479.2762	57.27488	3.71063	917.6553	121.0117	919.2388	82.48159
665.9767	Sample too old for Th-234 and Be-7 calc		2051.3	635.7648	89.08947	5.876556	1269.5430	163.4913	1333.1520	115.4206
665.0435	Sample too old for Th-234 and Be-7 calc		1369.956	500.9629	1153.438	74.74583	828.7130	118.8292	1010.7840	88.55175
1518.275	Sample too old for Th-234 and Be-7 calc		1419.947	570.3034	70.15793	4.632102	1022.1490	145.3789	983.7925	99.30044
598.5038	Sample too old for Th-234 and Be-7 calc		1985.896	254.1786	49.58856	2.727087	908.7753	71.0863	797.1730	53.25583
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
787.6846	3141.195	975.6799	1665.99	340.4796	56.27501	3.127614	1023.986	86.92177	960.7935	64.24357
615.2987	Sample too old for Th-234 and Be-7 calc		1610.13	446.1829	968.0148	62.32898	686.793	98.43404	848.5398	72.20304
499.0795	Sample too old for Th-234 and Be-7 calc		1465.456	459.3448	62.47858	3.928202	761.8534	109.8002	933.8206	78.84482
488.8477	Sample too old for Th-234 and Be-7 calc		1831.949	434.2541	67.21523	3.973674	975.2315	106.9613	936.8237	75.36671
893.5184	Sample too old for Th-234 and Be-7 calc		1618.182	380.3083	53.26005	3.149589	1105.288	101.4705	849.5114	68.08512
535.629	Sample too old for Th-234 and Be-7 calc		1565.468	364.5334	1099.578	64.69318	778.2935	83.98901	810.9529	62.99377
949.5795	Sample too old for Th-234 and Be-7 calc		2083.578	400.483	58.53622	3.325474	1182.261	101.6147	999.4189	73.16411
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
296.3882	Sample too old for Th-234 and Be-7 calc		1530.547	237.1592	51.45961	2.77643	691.0392	58.87977	741.3937	47.36258
545.497	Sample too old for Th-234 and Be-7 calc		1909.996	225.5773	49.18448	2.602472	822.2518	60.10564	804.9745	48.61424
312.4438	Sample too old for Th-234 and Be-7 calc		1476.517	258.2154	55.7663	3.0413	740.6156	65.31189	769.7764	50.58351
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
618.5641	Sample too old for Th-234 and Be-7 calc		1298.85	575.7963	55.32238	4.048556	643.7098	132.4343	489.2249	81.63678
669.8779	Sample too old for Th-234 and Be-7 calc		503.4552	602.2147	56.05045	4.064831	812.6841	141.7105	878.507	93.04223
603.9945	Sample too old for Th-234 and Be-7 calc		1577.133	442.7439	1142.614	69.80483	891.1906	103.0522	830.8704	71.43196
940.1854	Sample too old for Th-234 and Be-7 calc		1642.027	395.8637	57.97087	3.368695	903.4679	97.47081	957.9205	72.89058
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**	**1 SIG ER**
887.8582	Sample too old for Th-234 and Be-7 calc		1389.505	339.5667	60.30397	3.50203	1074.106	98.3576	1158.651	78.81901

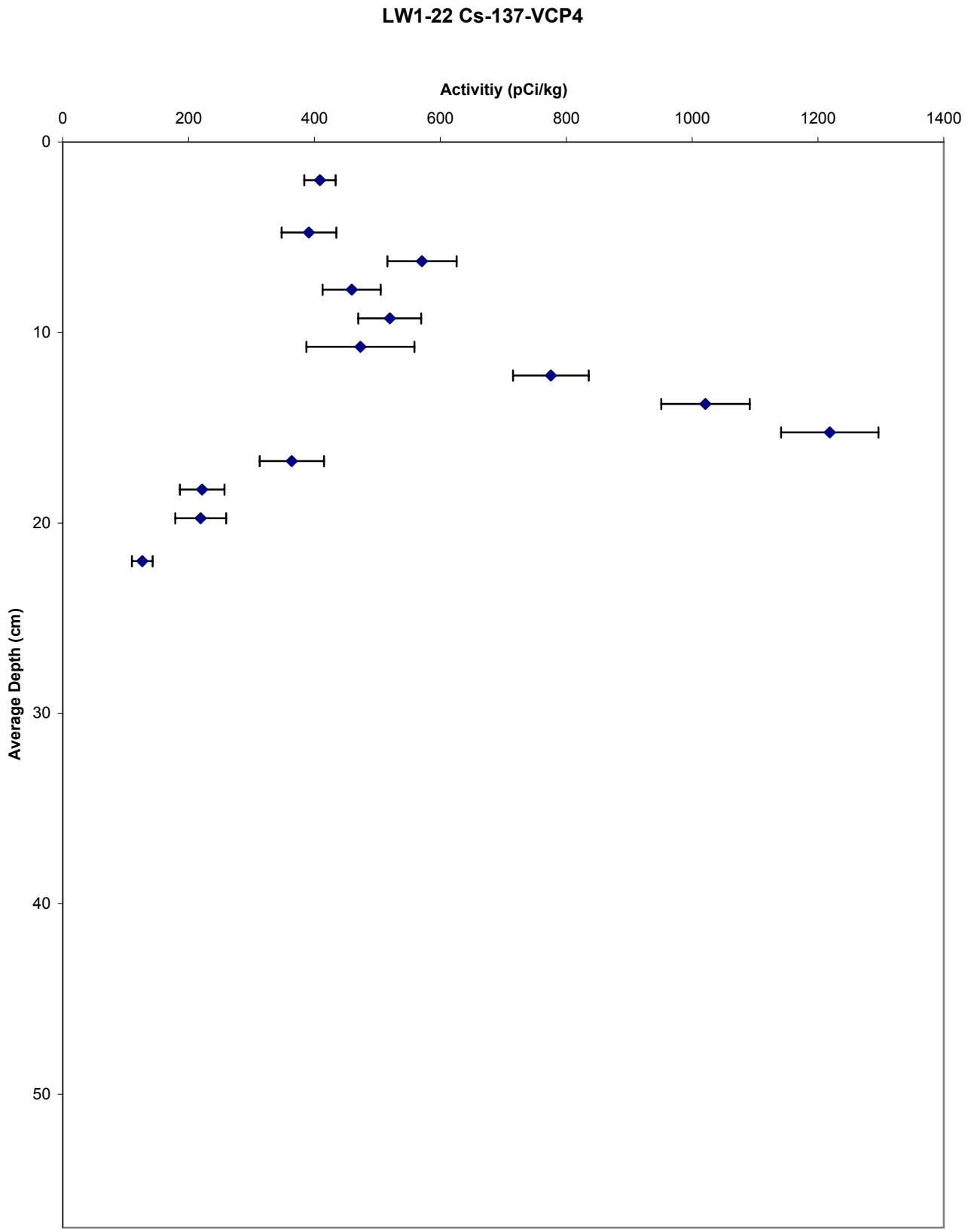
502.378	Sample too old for Th-234 and Be-7 calc	1167.325	461.7069	75.20847	4.708856	916.4471	119.2226	1010.13	85.25397
855.6083	Sample too old for Th-234 and Be-7 calc	2185.319	345.2198	65.77508	3.627123	1155.007	93.80441	1124.803	72.51683
312.604	Sample too old for Th-234 and Be-7 calc	69.02801	3.81283	69.02801	3.81283	781.8578	76.24142	828.4332	57.95821

Be-7	1 SIG ER	Cs-134	1 SIG ER	Bi-214	1 SIG ER	Cs-137	1 SIG ER	Ac-228	1 SIG ER	Co-60-1
Sample too old for Th-234 an		48.60954	67.96681	1629.749	125.5718	24.02505	24.62429	1332.384	130.3753	-109.9435
-4797.979	3876.617	-63.1692	73.20337	412.8784	140.2862	27.70263	57.13245	1195.666	292.3073	8.30992
-743.8773	936.2401	1.630548	18.75453	1121.935	85.82966	25.13084	16.57845	1131.271	110.0145	-27.08439
Sample too old for Th-234 an		11.8575	248.7103	1058.872	266.6321	426.2231	88.85735	436.3705	373.3762	34.25367
-1897.557	1654.661	-21.42555	28.18446	1105.488	98.97047	371.8759	31.20355	1077.304	134.0112	13.2296
Sample too old for Th-234 an		-7.957926	173.037	1262.232	199.8371	53.79727	58.03604	1287.205	289.6623	-79.72543
Sample too old for Th-234 an		35.72905	214.4361	1753.953	251.9227	23.80909	72.51189	1305.937	328.3755	-188.1309
-4005.677	3157.713	52.55898	69.50154	1027.567	206.3218	-31.26517	60.93908	670.7689	290.5277	-134.8971
Sample too old for Th-234 an		62.9805	112.208	1155.362	136.8482	211.2156	41.04745	1081.028	177.5414	-133.5758
36.28224	1751.6	54.74603	37.19661	1048.095	124.0371	-0.2812048	32.91413	1100.225	165.7714	-49.14305
-1914.206	1458.633	-15.69755	32.39846	1200.214	122.6966	163.4604	32.81805	1123.152	165.0088	-24.70909
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
Sample too old for Th-234 and Be-		22.52182	27.8352	1067.177	97.38711	38.18491	22.0664	1015.404	128.1476	-13.96257
Sample too old for Th-234 and Be-		67.68202	41.09284	1033.952	137.2402	-70.33054	32.39187	1107.904	161.0338	-65.17529
Sample too old for Th-234 and Be-		-29.65282	34.34543	662.2172	72.27038	-67.51656	25.33394	1286.43	148.5608	-11.1275
Sample too old for Th-234 and Be-		-31.60794	22.2205	850.095	80.15273	22.77649	17.59237	1060.596	111.0982	-41.71064
Sample too old for Th-234 and Be-		-6.348449	23.38188	829.2366	80.74431	0.840825	17.48207	1007.372	109.6967	-4.910581
Sample too old for Th-234 and Be-		5.121568	28.71164	627.7525	62.73764	-29.88202	20.78922	1118.345	126.4085	-28.74118
Sample too old for Th-234 and Be-		-21.38715	41.01802	1105.664	133.2355	-2.096799	31.87936	1002.419	158.8063	-27.5085
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
Sample too old for Th-234 and Be-		23.10694	47.02899	1115.898	102.6816	975.3545	58.87991	1179.846	123.6054	12.52322
		-31.21971	34.69873	623.1622	51.21	1053.622	60.4725	1125.506	101.9891	31.65785
		12.74961	29.40101	1290.644	87.61569	369.4092	27.77383	1210.915	101.4855	-51.03135
		84.55144	36.56882	1159.954	92.00366	83.874	19.27793	1153.711	104.5753	-27.50291
		-5.955157	27.88654	729.8743	51.33042	47.03555	14.44385	1135.029	92.3442	5.080291
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
-1012.198	808.5073	21.84816	14.03267	731.8211	47.10933	408.7408	24.87152	1136.372	83.00375	13.60136
Sample too old for Th-234 and Be-		57.26867	68.47534	1074.3200	129.1317	391.1394	43.43752	855.3117	162.1705	9.021981
Sample too old for Th-234 and Be-		-41.062	81.61147	743.5981	99.75829	570.9152	54.92392	1251.499	198.9741	-2.042593
Sample too old for Th-234 and Be-		-49.86993	62.44516	1007.9110	118.2426	459.1414	46.23574	1079.377	169.5214	-49.46195
Sample too old for Th-234 and Be-		29.0692	74.71466	1262.2850	144.1937	519.5898	50.11767	1043.279	180.1049	-113.8661
Sample too old for Th-234 and Be-		90.05423	156.3192	1439.2410	265.1855	473.1726	85.78797	962.8364	344.504	-184.0159
Sample too old for Th-234 and Be-		8.599059	69.61868	752.9060	90.15542	775.5135	60.18673	1135.658	175.2948	-37.60783
Sample too old for Th-234 and Be-		93.84445	68.25545	849.7727	90.84487	1021.287	70.32796	1235.862	171.298	-67.02975
Sample too old for Th-234 and Be-		73.23235	55.62813	1106.1230	112.0339	1218.65	77.37402	906.3688	149.0826	23.58001
Sample too old for Th-234 and Be-		138.1724	87.55802	1900.3010	183.0559	363.9523	51.16151	1583.619	217.9245	-117.5685
Sample too old for Th-234 and Be-		23.49068	60.88223	752.0365	81.78643	221.5815	35.44221	1417.7	167.2396	5.070099
Sample too old for Th-234 and Be-		21.76314	67.93074	1135.3180	131.8714	219.2553	40.42309	1174.743	187.0028	-46.22137
Sample too old for Th-234 and Be-		12.49245	24.5358	1000.0280	72.3288	126.3362	16.52392	1130.075	93.81012	-28.28964
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
-1656.274	1029.333	-13.78422	20.3827	1177.433	84.91125	-1.541569	14.92614	1041.099	104.4549	-36.74969
Sample too old for Th-234 and Be-		-8.722767	30.20243	659.2815	71.8484	-24.57029	24.28654	1215.065	142.8081	-3.506326
Sample too old for Th-234 and Be-		38.76924	37.21237	1274.914	131.0244	9.00915	30.60589	1159.644	156.4352	-52.42692
Sample too old for Th-234 and Be-		-2.571813	33.74137	1309.533	129.4863	17.12635	27.87824	1378.238	152.3588	-59.07614
Sample too old for Th-234 and Be-		-15.88996	24.51023	983.7312	92.67592	-4.748141	19.45476	909.0903	116.0205	-58.90841
Sample too old for Th-234 and Be-		21.27246	24.81322	783.4011	65.78728	15.8567	20.53929	1337.387	128.1526	-19.93609
Sample too old for Th-234 and Be-		-12.50865	23.63799	1365.777	108.5752	-8.052494	20.63054	1313.578	129.8883	-23.78123
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
Sample too old for Th-234 and Be-		23.29447	32.00401	1152.68	79.68542	445.0482	28.43471	1076.558	88.22523	2.073225
Sample too old for Th-234 and Be-		-3.20551	24.2084	983.0439	63.42817	634.8223	35.27279	1059.41	78.33464	10.38565
Sample too old for Th-234 and Be-		29.04326	36.17322	1123.92	81.59931	655.5914	38.53958	1160.767	97.10608	-11.76988
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
Sample too old for Th-234 and Be-		5.311222	50.51764	1048.058	147.5067	86.09512	40.07226	1100.454	189.1394	-64.15107
Sample too old for Th-234 and Be-		37.20475	51.91603	1017.193	160.8305	-41.30902	40.51785	1130.908	196.648	-62.92661
Sample too old for Th-234 and Be-		-34.63035	32.61492	742.6973	71.74452	26.03314	24.90673	1332.87	143.494	-42.95337
Sample too old for Th-234 and Be-		-7.674751	27.65593	1061.112	96.18695	-10.18323	20.51477	1287.772	133.2203	-31.01247
Be-7	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**	**1 SIG ER**	**Co-60-1**
Sample too old for Th-234 and Be-		-0.5721417	39.11354	1182.469	96.18598	170.1206	24.46707	1264.11	125.0696	-28.48588

Sample too old for Th-234 and Be-	23.37205	69.66767	1244.649	129.8847	52.95825	33.46691	1309.035	166.3082	-93.92529
Sample too old for Th-234 and Be-	-23.76945	40.11249	1185.151	87.46659	50.77064	17.86995	1156.019	111.4056	-36.73318
Sample too old for Th-234 and Be-	-7.127745	41.9269	1149.914	88.26389	-13.09586	20.01597	1191.871	110.6991	-52.24004

1 SIG ER	Co-60-2	1 SIG ER	Co-60-Av	1 SIG ER	K-40	1 SIG ER
43.85405	-85.14839	39.72644	-97.54594	29.58618	18037.28	1080.732
77.51402	64.14845	80.4261	36.22919	55.84975	11809.92	1169.577
24.08059	-34.45294	22.53433	-30.76867	16.48993	19017.26	1079.505
164.6466	-267.7712	167.5563	-116.7588	117.456	15748.32	1685.403
35.54437	19.31899	35.15342	16.2743	24.99582	19527.61	1113.725
113.4279	29.17209	116.9681	-25.27667	81.46692	20625.14	1597.262
131.207	-283.4522	122.6979	-235.7915	89.81931	18861.62	1810.854
81.93723	-134.7486	79.06194	-134.8228	56.93088	11985.37	1406.837
70.5978	-48.76484	67.81654	-91.17031	48.94674	18717.05	1233.86
43.92249	-87.55326	41.9289	-68.34815	30.36123	15551.76	1057.809
40.84391	-63.53434	39.58478	-44.12172	28.43932	19411.56	1240.154
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
32.80463	40.10801	30.97513	13.07272	22.55883	20419.44	1215.239
42.93314	-7.797278	40.0471	-36.48628	29.35568	19107.81	1252.196
34.96074	25.12706	34.36617	6.999783	24.51167	19811.36	1213.195
25.38768	-10.04523	24.10094	-25.87793	17.50278	19761.48	1144.878
27.424	7.005875	26.14446	1.047647	18.94471	17525.18	1036.77
28.6656	17.86148	29.20559	-5.439851	20.46145	20050.32	1172.826
43.22465	18.04663	41.15362	-4.730933	29.84121	17931.55	1195.909
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
38.11156	34.7663	35.57933	23.64476	26.06904	18242.79	1083.646
26.95441	38.32831	26.27876	34.99308	18.82228	20865.62	1154.74
25.29225	16.29243	23.81489	-17.36946	17.36985	17612.07	993.8216
29.30962	-34.20018	26.14712	-30.85154	19.63877	19167.71	1073.647
22.0366	10.89228	20.72505	7.986286	15.12563	18716.28	1027.227
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
15.65	16.21428	15.45068	14.90782	10.99598	20011.36	1045.925
54.38473	-82.07394	50.32745	-36.52598	37.04913	17490.65	1189.453
60.78739	17.73444	60.24773	7.845922	42.7928	18119.65	1237.092
54.35805	5.744491	53.15823	-21.85873	38.01511	21217.76	1340.543
59.20187	-17.78356	55.56236	-65.82481	40.59568	19641.6	1326.617
120.2064	-169.409	114.7112	-176.7125	83.07864	18267.95	1885.777
53.13758	4.665883	53.39326	-16.47097	37.66445	19642.09	1262.597
51.65171	95.45573	53.74949	14.21299	37.27233	17234.42	1131.828
48.10894	25.31849	48.39139	24.44925	34.11816	19640.14	1225.245
68.91473	-110.4125	64.20261	-113.9905	47.09356	16723.95	1294.214
45.62409	59.99891	47.03225	32.5345	32.76274	18158.27	1147.722
59.43461	-23.62022	58.53068	-34.9208	41.70825	19499.71	1295.109
22.52562	-7.615375	21.47322	-17.95251	15.56039	18935.25	1044.218
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
25.94885	-7.065795	26.31207	-21.90774	18.47747	18238.88	989.4299
31.22655	-42.80902	30.74174	-23.15767	21.90977	18169.29	1118.181
40.55742	-17.20232	38.13741	-34.81462	27.83597	18137.79	1181.685
37.1975	6.928456	34.94844	-26.07384	25.51983	19470.02	1207.898
29.2257	-28.7485	27.0927	-43.82845	19.92584	19429.63	1149.265
26.6788	-9.001449	24.93001	-14.46877	18.25694	19707.58	1142.923
29.701	3.248571	27.68358	-10.26633	20.30105	23061.62	1326.294
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
25.34081	5.433238	23.78728	3.753232	17.37808	18670.1	999.8412
20.49122	-3.465813	20.03259	3.45992	14.32825	20802.53	1086.242
28.22147	-11.46249	26.48117	-11.61618	19.35009	18512.21	1004.07
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
52.89943	-104.2784	50.1933	-84.21472	36.46134	13389.84	1115.971
53.67015	-85.9164	51.3572	-74.42151	37.14178	16936.33	1282.127
32.1669	21.0697	32.94775	-10.94184	23.02316	21602.11	1277.122
31.381	26.68034	31.15574	-2.166066	22.11022	22113.37	1285.053
1 SIG ER	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
33.69992	8.857249	32.3518	-9.814316	23.35767	16037.77	975.1295

51.21946	-39.25579	47.0439	-66.59054	34.7727	15513.49	1083.14
34.23984	-43.39999	34.31496	-40.06658	24.2378	18921.55	1042.104
33.05043	-50.61395	31.38718	-51.42699	22.78972	17629.6	989.9178


LW1-22 Cs-137-VCP4
Activitiy (pCi/kg)
0
200
400
600
800
1000
1200
1400
Average Depth (cm)
0
10
20
30
40
50

Core Name	upper depth	lower depth	av depth	Sample date	Count date	Canning date	mass counted	Detector	Pb-210
LW2-1	0	2	1	1999149	1999309	1999298	11.38		1864.898
LW2-6	0	2	1	1999121	2002268	1999333	8.69299984	ortec	-56.83991
LW2-11	0	2	1	1999121	2002268	1999333	10.922	tracor	640.394
LW2-14	0	2	1	1999157	1999308	1999294	8.849		-187.2082
LW2-16	0	2	1	1999157	1999301	1999294	14.173	ortec	1372.305
LW2-17	0	2	1	1999121	1999315	1999298	9.722	pwell	1133.140
LW2-18	0	2	1	1999121	2002270	1999333	8.742	tracor	2139.992
LW2-19	0	2	1	1999157	1999306	1999294	17.205		1550.861
LW2-21	0	2	1	1999121	2002270	1999320	14.083	ortec	433.087
ON2-53	0	4	2	1998335	2001299	2001256	41.660	tracor	1312.984
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-2	0	4	2	1999149	1999323	1999298	38.55199814	tracor	4260.567
LW2-2	4	8	6	1999121	2001267	2001249	68.350	pwell	1286.709
LW2-2	8	12	10	1999149	2000060	2000032	24.39999962	tracor	3357.054
LW2-2	12	15	13.5	1999121	2001268	2001249	34.252	tracor	2961.180
LW2-2	15	18	16.5	1999121	2001268	2001249	38.098	ortec	850.758
LW2-2	18	22	20	1999149	2000048	2000032	23.87199974	ortec	1317.865
LW2-2	22	25	23.5	1999121	2001268	2001249	30.800	pwell	1112.046
LW2-2	25	28	26.5	1999121	2001270	2001249	31.611	tracor	1450.545
LW2-2	28	32	30	1999149	2000048	2000032	25.98900032	pwell	1734.053
LW2-2	32	35	33.5	1999121	2001270	2001249	40.308	ortec	1055.271
LW2-2	35	38	36.5	1999121	2001276	2001249	31.986	tracor	1751.079
LW2-2	38	41	39.5	1999121	2001270	2001249	40.484	pwell	1293.078
LW2-2	41	44	42.5	1999121	2001276	2001249	38.992	ortec	1343.216
LW2-2	44	47	45.5	1999121	2001277	2001249	38.324	tracor	1370.332
LW2-2	47	50	48.5	1999121	2001277	2001256	37.610	ortec	1513.234
LW2-2	50	53	51.5	1999121	2001273	2001256	40.780	tracor	1088.111
LW2-2	53	56	54.5	1999121	2001273	2001256	44.54000092	ortec	1189.421
LW2-2	56	59	57.5	1999121	2001273	2001256	39.17300034	pwell	819.0568
LW2-2	58	62	60	1999149	2000060	2000039	18.41300011	ortec	522.1213
LW2-2	68	72	70	1999149	2000061	2000032	21.07900047	ortec	892.454
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-3	0	4	2	1999149	2000019	1999320	35.50999832	ortec	2003.175
LW2-3	5	8	6.5	1999121	2001262	2001242	35.82300186	tracor	1961.167
LW2-3	8	12	10	1999149	2000082	2000018	14.98200035	pwell	51.14523
LW2-3	12	15	13.5	1999121	2001260	2001249	38.68999863	pwell	958.2603
LW2-3	18	22	20	1999149	2000088	2000059	12.01500034	pwell	180.1506
LW2-3	38	42	40	1999149	2000088	2000059	11.66399956	tracor	246.0429
LW2-3	48	52	50	1999149	2000087	2000059	9.975000381	ortec	-534.5977
LW2-3	58	62	60	1999149	2000103	2000097	11.13799953	pwell	-936.0154
LW2-3	68	72	70	1999149	2000103	2000097	9.734999657	ortec	870.501
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-12	0	2	1	1999121	2001267	2001256	23.243	tracor	2433.369
LW2-12	2	6	4	1999121	2001267	2001256	65.680	ortec	819.664
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-16	0	2	1	1999121	2001276	2001249	1.562000036	well	1659.3580
LW2-16	2	4	3	1999121	2001277	2001249	1.414000034	well	1796.8090
LW2-16	4	6	5	1999121	2001288	2001249	1.527999997	well	1344.6970
LW2-16	6	8	7	1999121	2001289	2001249	1.496000051	well	1472.416
LW2-16	8	10	9	1999121	2001290	2001249	1.680999994	well	1808.783
LW2-16	10	12	11	1999121	2001292	2001249	1.366999984	well	1992.933
LW2-16	12	14	13	1999121	2001294	2001249	1.488000035	well	1651.169
LW2-16	14	16	15	1999121	2001295	2001249	1.481999993	well	986.0195
LW2-16	16	18	17	1999121	2001296	2001249	1.567000031	well	1528.194
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**

ON2-25	0	4	2	1998335	2001264	2001256	41.970	tracor	1753.358
ON2-25	4	8	6	1998335	2001264	2001256	53.870	ortec	1383.467
ON2-25	8	12	10	1998335	2001264	2001256	54.790	pwell	965.759
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
ON2-42	0	4	2	1998335	2001289	2001260	49.88999939	tracor	1667.565
ON2-42	4	8	6	1998335	2001289	2001260	47.29999924	ortec	1119.303
ON2-42	8	12	10	1998335	2001290	2001260	42.40999985	tracor	3049.434
ON2-42	12	16	14	1998335	2001290	2001260	45.66999817	tracor	3268.774
ON2-42	16	20	18	1998335	2001292	2001260	48.33000183	tracor	2432.638
ON2-42	20	24	22	1998335	2001292	2001260	51.86000061	ortec	960.082
ON2-42	24	28	26	1998335	2001296	2001256	51.54999924	tracor	1136.472
ON2-42	28	32	30	1998335	2001296	2001266	52.36000061	ortec	949.4041
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-4	0	4	2	99149	99319	99298	31.61899948	ortec	-47.71819
LW2-4	18	22	20	1999149	2000032	2000005	21.8920002	ortec	799.8317
LW2-4	28	32	30	1999149	2000032	2000005	19.22999954	pwell	-127.9688
LW2-4	38	42	40	1999149	2000046	2000005	21.35000038	tracor	1161.356
LW2-4	48	52	50	1999149	2000047	2000005	21.25	pwell	-323.1361
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-10	0	4	2	1999149	1999309	1999298	30.69499969	pwell	868.49
LW2-10	8	12	10	1999149	2000047	2000005	31.18700027	tracor	41.33095
LW2-10	18	22	20	1999149	2000060	2000005	24.54199982	tracor	1796.526
LW2-10	28	32	30	1999149	2000061	2000005	26.56299973	pwell	433.4014
LW2-10	38	42	40	1999149	2000083	2000059	23.71899986	tracor	1334.198
LW2-10	48	52	50	1999149	2000061	2000059	28.86800003	tracor	1545.155
LW2-10	58	62	60	1999149	2000083	2000059	24.85899925	ortec	-50.31031
LW2-10	68	72	70	1999149	2000061	2000059	24.347	ortec	-77.519
Core Name	**upper depth**	**lower depth**	**av depth**	**Sample date**	**Count date**	**Canning date**	**mass counted**	**Detector**	**Pb-210**
LW2-13	0	2	1	99157	99308	99294	10.73499966	ortec	1257.954
LW2-13	8	12	10	1999157	2000097	1999341	19.47699928	ortec	678.9233
LW2-13	18	22	20	1999157	2000096	1999341	23.36300087	ortec	2099.775
LW2-13	28	32	30	1999157	2000096	1999341	20.26499939	pwell	1481.168
LW2-13	38	42	40	1999157	2000096	1999341	19.39100075	tracor	3106.243
LW2-13	48	52	50	1999157	2000097	1999341	18.04700089	pwell	1588.324
LW2-13	58	62	60	1999157	2000109	2000097	13.73700047	tracor	2028.563
LW2-13	68	72	70	1999157	2000101	2000097	21.79599953	tracor	1379.042

1 SIG ER	Th-234	1 SIG ER	Ra-226	1 SIG ER	Pb-212	1 SIG ER	Pb 214-1	1 SIG ER	Pb 214-2
1265.704	2727.221	1546.557	1695.264	509.0948	68.70989	4.177053	1138.284	128.0437	1015.775
1126.496	Sample too old for Th-234 and I		1550.771	1070.612	62.54467	6.739806	1093.682	255.6451	1006.53
1816.853	Sample too old for Th-234 and I		740.0596	683.376	56.0965	4.248346	700.817	163.0343	924.5349
918.4149	1067.933	1137.499	1388.748	764.7718	965.8271	82.03947	844.0816	176.1149	832.856
752.5288	2308.382	922.7179	1669.113	732.7308	79.7448	5.683082	1268.430	183.574	1327.600
826.4843	895.7527	1014.907	1722.984	689.1256	908.6337	73.77018	871.912	157.331	786.2552
2100.204	Sample too old for Th-234 and I		1410.006	807.359	66.84126	4.725923	1378.929	190.2362	1199.396
992.2549	2089.077	1203.756	1060.381	409.539	54.27748	3.269533	1116.444	108.0131	1072.46
768.2608	Sample too old for Th-234 and I		1707.373	678.121	69.80556	4.816688	1265.17	161.7	1190.957
449.4132	Sample too old for Th-234 and I		1345.291	183.9961	38.29282	2.055004	787.716	54.76446	746.895
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
666.6213	4065.269	801.298	1915.472	284.3332	61.2895	3.281018	1398.641	94.91085	1344.39
258.6791	Sample too old for Th-234 and I		1563.864	164.6736	939.283	48.90025	746.795	48.05043	808.643
1036.06	Sample too old for Th-234 and I		1760.699	431.938	49.90519	3.074119	1064.139	110.3505	939.6018
808.7048	Sample too old for Th-234 and I		1882.822	321.2366	52.66121	3.018149	889.600	84.18179	999.748
415.2798	Sample too old for Th-234 and I		1717.229	350.0775	54.51715	3.248405	681.8015	85.61372	857.3846
575.4644	Sample too old for Th-234 and I		1416.681	505.0762	66.17906	4.171853	1064.789	125.4824	906.9585
547.7063	Sample too old for Th-234 and I		1934.308	394.5161	1111.028	66.03272	694.6981	88.63157	847.0103
648.6609	Sample too old for Th-234 and I		1621.667	265.6415	54.14328	2.931142	879.8759	71.67381	962.2468
637.4598	Sample too old for Th-234 and I		1981.058	454.2192	1109.013	68.17713	817.327	101.0508	873.6608
326.2855	Sample too old for Th-234 and I		1576.584	276.1996	60.57324	3.286048	923.8223	74.3222	897.5287
583.9097	Sample too old for Th-234 and I		2157.821	254.2966	54.96189	2.916964	1010.525	71.26209	979.1937
375.7272	Sample too old for Th-234 and I		2137.249	271.3129	1123.198	60.39236	964.6421	70.30924	971.4998
310.2395	Sample too old for Th-234 and I		1519.465	262.0293	65.28605	3.469253	1043.104	74.84048	1047.86
786.5085	Sample too old for Th-234 and I		2145.856	324.9554	54.71741	3.089901	1226.629	94.97016	1197.608
468.5604	Sample too old for Th-234 and I		1630.484	377.6353	61.96307	3.644943	1033.003	99.52955	990.1566
511.3795	Sample too old for Th-234 and I		2066.053	227.315	52.19515	2.734822	1041.884	67.59355	996.8884
300.412	Sample too old for Th-234 and I		1743.506	253.9209	54.5075	2.916557	843.7729	64.88303	891.9349
340.1897	Sample too old for Th-234 and I		2003.003	252.1273	1081.143	57.58779	756.8528	58.68673	836.9229
661.8258	Sample too old for Th-234 and I		1027.229	613.9069	72.24952	4.858849	1000.666	150.7309	1166.561
600.9793	Sample too old for Th-234 and I		1662.426	549.7896	68.8196	4.431819	1156.104	139.5927	1330.913
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
441.0369	Sample too old for Th-234 and I		1329.835	367.7831	54.45774	3.28728	771.0605	92.20287	987.8966
743.5262	Sample too old for Th-234 and I		1769.099	297.9084	50.47426	2.878168	1112.73	88.35484	1045.218
745.7495	Sample too old for Th-234 and I		486.1908	596.9783	931.748	71.44932	819.5658	140.0332	888.3172
321.334	Sample too old for Th-234 and I		1622.573	238.5048	995.6958	53.31857	800.6587	59.87523	882.7679
816.0074	Sample too old for Th-234 and I		905.7778	667.7238	1021.619	80.33656	991.9666	163.9892	498.3531
1620.158	Sample too old for Th-234 and I		1264.389	656.8118	55.31053	4.207475	756.1957	152.5238	791.5426
886.7342	Sample too old for Th-234 and I		1246.473	938.8591	65.68671	6.37745	592.7599	219.5753	507.4134
861.2698	Sample too old for Th-234 and I		1085.441	713.1597	913.4339	79.32555	677.0287	168.8338	669.9269
888.6266	Sample too old for Th-234 and I		359.8605	921.2146	81.32123	6.953104	1182.647	225.0886	747.9249
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
738.0823	Sample too old for Th-234 and I		1965.614	303.4602	51.30823	2.848929	1011.551	80.53204	1009.322
228.1369	Sample too old for Th-234 and I		1637.225	195.4031	47.11646	2.467461	791.0067	53.53159	819.7516
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
342.6401	Sample too old for Th-234 and I		1576.366	527.4274	2130.493	141.7688	1412.6390	231.6770	1562.6630
532.4476	Sample too old for Th-234 and I		2387.182	819.3005	2213.384	189.3612	1734.5710	356.2611	2108.0250
339.7201	Sample too old for Th-234 and I		2160.94	537.8221	2115.73	141.1128	1717.4300	238.2408	1813.1820
476.1751	Sample too old for Th-234 and I		2387.432	733.0978	2243.997	177.557	1883.83	328.7525	1698.687
436.8428	Sample too old for Th-234 and I		2418.424	663.942	1963.997	158.6643	1967.409	301.1876	1678.527
443.9234	Sample too old for Th-234 and I		2072.336	680.3482	2300.183	167.8993	1610.415	295.7661	1526.691
383.0587	Sample too old for Th-234 and I		1970.812	593.6298	2163.896	151.6388	1466.966	260.3753	1699.832
458.4319	Sample too old for Th-234 and I		2343.343	719.1419	2159.51	170.6589	1445.097	316.9654	1843.771
455.4779	Sample too old for Th-234 and I		2922.653	706.2819	2090.099	166.4534	1452.881	305.687	1703.899
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**

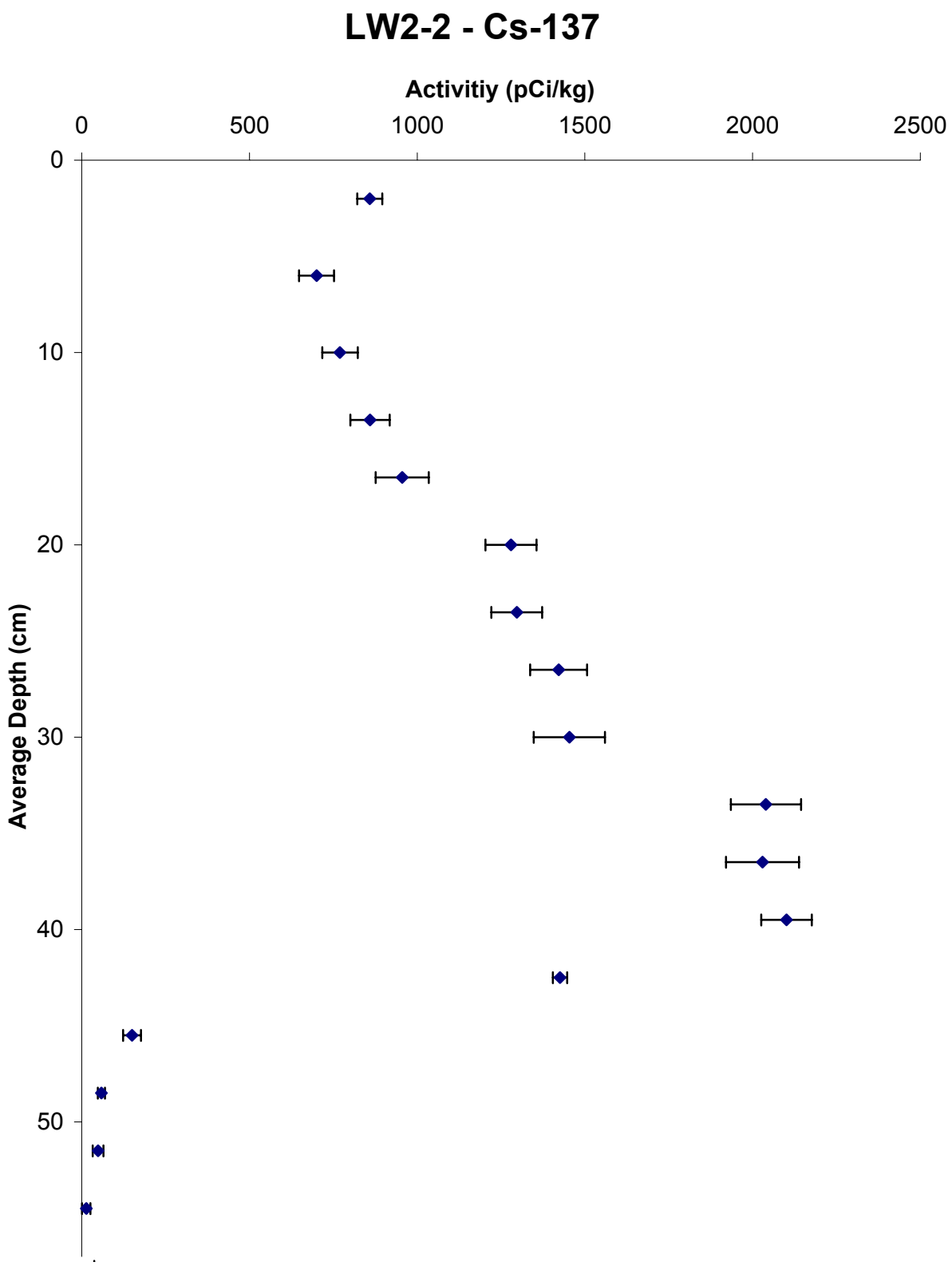
659.6066	Sample too old for Th-234 and E		1726.68	263.9233	55.35415	3.012035	1062.095	78.99656	1078.116
339.2088	Sample too old for Th-234 and E		2123.819	277.5035	57.90751	3.153553	877.9232	71.85876	926.8011
377.4179	Sample too old for Th-234 and E		1698.637	243.3529	1091.075	59.21032	885.0337	66.36608	883.9384
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
397.2964	Sample too old for Th-234 and E		1431.575	167.9484	37.83727	1.976633	784.9421	50.20543	741.137
266.5628	Sample too old for Th-234 and E		1613.226	224.4751	50.83418	2.688608	846.3889	60.18788	919.1644
754.8593	Sample too old for Th-234 and E		2494.636	308.5117	53.62154	2.96601	991.1415	80.96024	1066.527
902.9424	Sample too old for Th-234 and E		1979.403	364.8858	58.84486	3.277191	1181.37	100.203	1326.577
554.4517	Sample too old for Th-234 and E		1805.962	223.2764	49.92067	2.64428	944.3465	65.46218	963.7719
301.2934	Sample too old for Th-234 and E		1893.532	251.4174	52.61075	2.839838	868.3174	66.55721	949.1466
401.3414	Sample too old for Th-234 and E		2036.495	185.3464	46.62337	2.403242	992.4208	59.07613	1057.668
241.017	Sample too old for Th-234 and E		1646.929	206.8652	53.46495	2.792704	862.3756	57.90505	905.0581
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
418.451	1729.07	524.4579	2218.965	394.1661	66.87613	3.92496	855.0866	97.44989	876.1077
648.5677	Sample too old for Th-234 and E		1668.487	578.073	71.86208	4.535323	1040.497	137.3354	954.451
816.6032	Sample too old for Th-234 and E		2021.622	600.3231	1159.966	77.66119	728.3767	127.4622	961.8442
1115.728	Sample too old for Th-234 and E		1967.254	481.4842	49.72045	3.152539	914.2139	112.4033	869.0248
742.8454	Sample too old for Th-234 and E		2062.435	545.914	1182.441	75.5972	652.0644	112.115	808.3705
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
453.3087	1660.261	577.1546	1830.332	355.0245	1015.078	59.60804	940.4857	86.67485	939.2044
900.4714	Sample too old for Th-234 and E		1857.822	380.3888	51.63227	2.97346	1050.725	95.84599	954.1337
1047.932	Sample too old for Th-234 and E		2762.056	458.8578	56.80909	3.355978	1062.088	108.0599	949.9775
692.4782	Sample too old for Th-234 and E		1675.293	473.3827	1171.048	72.61469	897.309	105.9549	911.1086
973.5425	Sample too old for Th-234 and E		1319.878	410.6968	45.35807	2.895715	810.1974	100.0598	775.0193
844.1642	Sample too old for Th-234 and E		1488.131	359.6862	44.93195	2.737341	828.9307	89.22353	826.6072
519.1727	Sample too old for Th-234 and E		1331.261	475.3986	59.40181	3.867209	836.4468	116.0554	901.7793
539.5569	Sample too old for Th-234 and E		463.1184	486.5788	60.81371	3.977518	930.2151	121.034	835.6089
1 SIG ER	**Th-234**	**1 SIG ER**	**Ra-226**	**1 SIG ER**	**Pb-212**	**1 SIG ER**	**Pb 214-1**	**1 SIG ER**	**Pb 214-2**
815.7837	2439.197	996.8772	2002.181	812.9131	73.15499	5.559914	1043.537	188.6228	1274.415
727.8264	Sample too old for Th-234 and E		957.4521	638.0749	63.26094	4.345991	1094.907	153.5811	1263.153
693.7086	Sample too old for Th-234 and E		2393.612	588.977	63.40393	4.089735	1235.01	140.6746	1262.416
716.993	Sample too old for Th-234 and E		2633.772	556.4495	1105.11	72.15183	956.4117	122.3864	1179.736
1244.44	Sample too old for Th-234 and E		2387.592	531.2984	55.6045	3.520835	1325.874	135.0728	1127.546
809.4689	Sample too old for Th-234 and E		1528.286	603.2881	1239.164	81.45313	1035.404	135.8851	1162.57
1396.751	Sample too old for Th-234 and E		1204.555	551.0203	58.10766	4.060607	1004.79	139.5119	912.7415
1023.534	Sample too old for Th-234 and E		1185.049	417.2775	59.03518	3.54682	1137.569	113.0312	1014.909

1 SIG ER	Be-7	1 SIG ER	Cs-134	1 SIG ER	Bi-214	1 SIG ER	Cs-137	1 SIG ER	Ac-228
86.34818	-3089.003	2127.067	-0.1179083	33.83601	1371.402	120.2737	104.5691	27.55839	1049.307
157.3019	Sample too old for Th-234 and E		113.5767	223.003	969.834	246.6204	225.0271	80.08625	678.2505
108.1316	Sample too old for Th-234 and E		-91.58868	125.1878	959.9079	147.4366	98.97351	42.08476	876.9493
115.0761	-2686.513	2987.992	-72.72439	54.15074	737.3917	111.8422	-26.61843	42.24297	1401.555
124.9301	4923.015	2511.971	64.13177	55.32224	1558.050	194.3949	1263.583	89.03297	1473.701
102.8669	1713.632	4685.155	25.18312	49.52991	646.9994	99.7698	388.2055	46.54839	1362.047
122.5917	Sample too old for Th-234 and E		-60.37283	138.7244	1254.134	164.4582	64.73843	43.98088	1057.867
78.96518	-1647.883	1413.102	-34.91905	25.96972	1300.01	105.094	250.4284	27.69037	818.6862
108.5443	Sample too old for Th-234 and E		152.1091	134.1384	1691.077	181.6054	-8.105729	47.34492	1086.763
44.33706	Sample too old for Th-234 and E		-10.46731	23.98189	889.532	56.28751	98.60699	11.04664	750.2252
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
78.02399	-1510.543	1233.976	1.735	16.54156	1840.557	108.4853	858.5259	48.16649	1469.468
44.94297	Sample too old for Th-234 and E		-13.01951	18.619	755.549	43.5661	700.0053	37.32608	1120.171
76.51743	Sample too old for Th-234 and E		20.83032	28.29885	1294.702	110.4477	769.7095	52.38643	1057.939
68.37766	Sample too old for Th-234 and E		29.19897	35.82302	1190.406	89.87553	859.2189	52.85559	1268.014
64.9424	Sample too old for Th-234 and E		115.0534	49.02282	1243.965	109.2331	955.3004	58.5192	1059.88
83.65397	Sample too old for Th-234 and E		-14.63909	41.21972	1574.925	149.5968	1279.598	79.19453	1233.212
67.35994	Sample too old for Th-234 and E		-16.31388	47.85411	853.4478	70.01419	1297.15	75.89347	1264.646
60.11026	Sample too old for Th-234 and E		10.94795	29.35661	1148.985	77.48581	1421.797	75.69936	1038.312
72.8372	Sample too old for Th-234 and E		16.13273	31.71182	792.2656	73.86947	1453.73	84.89071	1326.313
57.47523	Sample too old for Th-234 and E		-7.211349	36.83434	1406.674	97.30688	2039.716	106.0959	1398.189
58.21368	Sample too old for Th-234 and E		1.4402	26.48582	1136.766	72.78609	2029.835	104.5063	1192.599
58.737	Sample too old for Th-234 and E		22.3037	30.0589	882.3928	56.4989	2101.071	108.8329	1377.92
62.20133	Sample too old for Th-234 and E		22.58697	35.03016	1651.131	103.4665	1425.78	75.04433	1295.021
76.74868	Sample too old for Th-234 and E		31.30266	35.33353	1274.329	95.04203	149.8804	21.45607	1201.345
72.38469	Sample too old for Th-234 and E		4.952702	53.96368	1487.886	123.715	58.78307	26.63855	1302.762
56.87346	Sample too old for Th-234 and E		-18.75008	22.3892	1253.115	74.97103	49.02582	10.76138	1208.909
54.07004	Sample too old for Th-234 and E		21.39183	32.32098	1373.639	91.11933	13.33403	16.00402	1282.453
50.91535	Sample too old for Th-234 and E		5.257305	28.26797	760.521	49.29108	-4.239174	12.45099	1325.481
104.6246	Sample too old for Th-234 and E		80.03954	53.13572	1553.104	171.9292	-19.70394	41.46419	1534.995
103.0276	Sample too old for Th-234 and E		43.78566	46.45934	1656.172	162.8936	-39.36632	36.53361	1342.752
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
71.61373	Sample too old for Th-234 and E		35.15233	29.0375	1512.016	124.2875	303.2151	31.6343	1140.641
68.77466	Sample too old for Th-234 and E		16.98338	32.39976	1221.409	88.91775	576.6882	38.36749	1050.489
95.42386	Sample too old for Th-234 and E		-2.34376	47.77493	726.8521	92.17786	592.5679	53.45399	1164.648
52.59048	Sample too old for Th-234 and E		-16.57142	27.1293	813.7066	50.90903	871.4935	47.1869	1291.862
99.65955	Sample too old for Th-234 and E		-36.36271	54.59591	566.1124	99.43085	58.13391	39.6769	1158.729
98.87339	Sample too old for Th-234 and E		31.47248	50.42428	652.9304	130.232	49.75547	38.1375	980.7178
134.5176	Sample too old for Th-234 and E		-90.72302	85.07417	708.0723	215.687	-93.56666	61.6836	811.4235
107.4135	Sample too old for Th-234 and E		-2.685019	58.84193	475.2019	102.2043	-28.53321	41.56081	1186.825
138.9572	Sample too old for Th-234 and E		21.87143	83.90824	952.933	216.3407	-67.0284	61.05997	696.6408
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
63.91854	Sample too old for Th-234 and E		-12.5372	34.25866	1185.373	82.00661	274.6515	22.14385	1057.343
46.71868	Sample too old for Th-234 and E		1.298264	23.10129	1455.298	86.15623	38.20552	11.87765	1094.759
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
154.4601	Sample too old for Th-234 and E		123.402	158.6222	1366.1450	277.3153	1030.137	70.65897	1189.935
238.3243	Sample too old for Th-234 and E		-255.3945	245.4512	1412.6460	434.7192	1322.327	108.5541	1558.466
161.5457	Sample too old for Th-234 and E		8.901333	162.3938	1706.0540	286.2053	1090.853	73.33968	1444.353
211.6199	Sample too old for Th-234 and E		-138.5217	223.2642	1268.083	396.0987	505.5934	70.54605	1101.793
192.7865	Sample too old for Th-234 and E		-112.0689	199.7854	1504.698	364.5592	213.8955	56.93525	1327.458
188.031	Sample too old for Th-234 and E		-213.8556	208.9132	1634.833	361.8442	168.8328	55.65381	1399.714
174.5883	Sample too old for Th-234 and E		-227.8972	183.8545	1427.351	312.7867	84.20984	47.60951	1050.811
208.2633	Sample too old for Th-234 and E		-353.0009	219.584	1689.956	388.9378	88.87222	58.42966	1644.952
202.047	Sample too old for Th-234 and E		-100.6859	214.2211	1681.918	375.3313	27.98585	54.32482	1259.111
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**

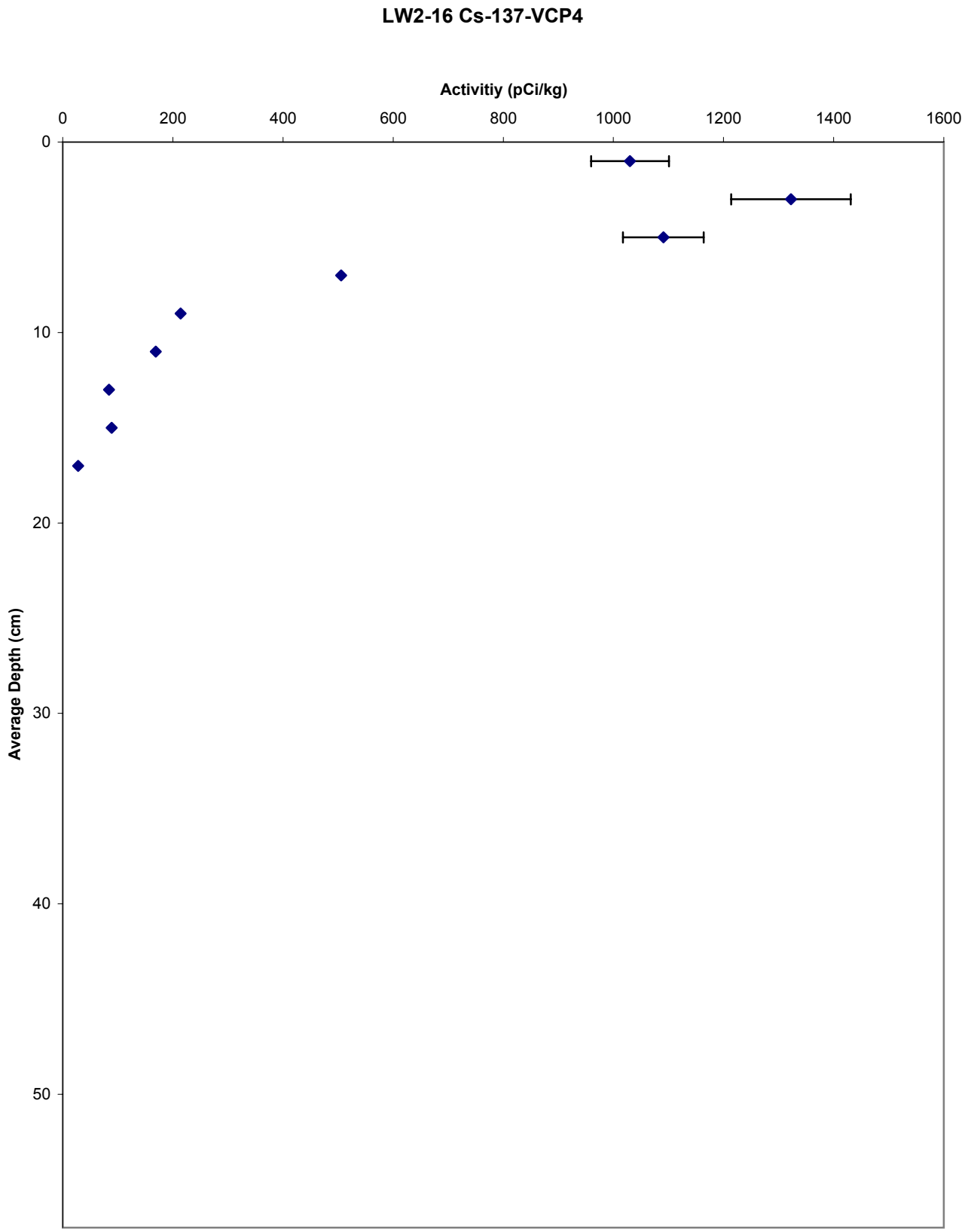
65.96964	Sample too old for Th-234 and E		-11.26573	32.38533	1309.531	86.78687	11.1336	14.03067	1266.593
58.15664	Sample too old for Th-234 and E		59.10004	40.15555	1474.195	101.4848	-10.1729	17.50393	1265.86
54.51223	Sample too old for Th-234 and E		-32.69565	32.4315	775.327	52.86002	-8.086218	13.31062	1459.146
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
41.89847	Sample too old for Th-234 and E		-2.191659	19.76071	931.5754	55.07035	530.7601	28.60876	825.3788
53.01299	Sample too old for Th-234 and E		47.48347	33.05284	1473.938	89.89953	1219.463	63.68969	1119.01
68.17175	Sample too old for Th-234 and E		52.03822	37.37178	1356.586	92.75452	1537.703	84.21119	1307.957
83.65829	Sample too old for Th-234 and E		-31.32285	47.20707	1852.149	120.3065	1792.334	97.50649	1648.692
56.4677	Sample too old for Th-234 and E		-4.10632	26.88111	1269.691	77.695	381.1434	24.39334	1190.065
56.99038	Sample too old for Th-234 and E		71.37691	37.80019	1534.009	98.92486	154.2322	18.71536	1145.497
56.73347	Sample too old for Th-234 and E		2.435871	20.00158	1277.554	71.15243	28.60074	7.703466	1091.151
51.19659	Sample too old for Th-234 and E		43.60717	30.06514	1416.51	84.96093	3.353384	12.75853	1181.646
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
69.33112	-1598.751	1657.212	5.174026	29.02959	1182.135	113.5688	-22.71537	25.2189	1095.149
91.31758	Sample too old for Th-234 and E		54.37733	46.27232	1550.516	167.3059	-78.7234	37.69974	1290.028
89.84577	Sample too old for Th-234 and E		-22.65458	42.54521	678.8828	89.50511	-18.69041	32.80789	1332.677
77.57368	Sample too old for Th-234 and E		7.441477	31.15847	1049.185	108.1488	10.12767	24.55772	1011.311
79.24294	Sample too old for Th-234 and E		-40.04575	38.84594	733.225	82.44011	-13.95813	29.43477	1307.743
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
66.44645	757.7617	1237.112	5.130992	22.04206	801.1185	63.97763	46.25405	19.10579	1502.619
69.54877	Sample too old for Th-234 and E		6.320939	23.76812	1354.876	106.5189	21.5828	19.40559	1104.714
75.33849	Sample too old for Th-234 and E		-48.56974	28.26194	1210.492	108.8579	-8.711521	22.50513	1062.899
77.14082	Sample too old for Th-234 and E		-14.71521	34.892	844.9766	79.4706	-24.24776	25.98207	1380.558
68.38529	Sample too old for Th-234 and E		0.6990777	28.93235	875.1882	94.55203	39.2038	21.98627	959.0609
64.84696	Sample too old for Th-234 and E		-13.62471	23.77828	954.1949	87.81676	10.72392	18.62695	943.5934
79.16473	Sample too old for Th-234 and E		65.20948	40.271	1107.753	131.7679	17.29405	31.9343	1133.744
80.90987	Sample too old for Th-234 and E		46.18143	41.31544	1304.463	143.238	31.88022	33.81778	1068.946
1 SIG ER	**Be-7**	**1 SIG ER**	**Cs-134**	**1 SIG ER**	**Bi-214**	**1 SIG ER**	**Cs-137**	**1 SIG ER**	**Ac-228**
127.8604	-1891.387	2967.407	22.95968	60.64347	1555.654	204.589	15.63161	53.33384	960.649
108.8418	Sample too old for Th-234 and E		65.57726	54.53505	1893.545	188.857	-40.04757	42.65512	1245.604
100.4053	Sample too old for Th-234 and E		68.97214	48.26429	1842.042	179.2223	-10.21334	37.92083	1300.955
93.6311	Sample too old for Th-234 and E		-15.00441	40.38227	1070.953	94.71819	10.33939	29.20091	1510.379
92.4208	Sample too old for Th-234 and E		-13.12635	35.09475	1506.99	133.7485	-17.50097	26.8568	1205.336
100.1185	Sample too old for Th-234 and E		47.80024	46.1994	1137.75	103.336	-44.53325	32.35088	1282.588
93.61174	Sample too old for Th-234 and E		-8.208237	43.67014	1093.454	126.8988	-8.71672	31.21597	907.9155
79.2914	Sample too old for Th-234 and E		-41.618	29.61546	1181.912	106.1346	13.75593	22.36499	1102.243

1 SIG ER	Co-60-1	1 SIG ER	Co-60-2	1 SIG ER	Co-60-Av	1 SIG ER	K-40	1 SIG ER
156.0703	-61.30551	41.80577	-44.32485	41.58107	-52.81518	29.48181	19732.47	1170.579
329.9764	-149.7652	136.2637	14.31766	132.1395	-67.72379	94.90605	17162.71	1805.489
203.8927	-179.0288	81.29747	-3.017144	83.50404	-91.02297	58.27135	18225.27	1302.873
229.2341	32.70066	57.72988	24.78507	58.00385	28.74286	40.91816	17220.89	1213.196
245.586	-83.22269	63.58698	-133.0729	59.76459	-108.1478	43.6323	18697.22	1484.32
205.2944	4.107204	51.73914	88.58318	52.88538	46.34519	36.99258	14979.68	1059.123
225.2443	-141.6407	92.44299	-60.9194	92.40128	-101.2801	65.35232	23518.51	1531.67
121.7449	-61.61182	31.8979	-38.44896	31.75548	-50.03039	22.50493	17174.8	1021.667
214.9734	-16.16347	86.04095	-112.6666	80.77766	-64.41505	59.00863	19910.86	1414.999
61.43737	-24.67023	18.66771	9.195765	18.01458	-7.737231	12.9712	15774.21	830.9817
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
107.1427	-30.50516	21.17566	12.3034	20.3947	-9.100883	14.69994	31928.87	1659.83
71.56762	0.2782205	13.98877	15.79351	13.78858	8.035865	9.821032	19060.03	982.5938
129.1996	-59.70805	31.77652	-54.64556	30.75201	-57.1768	22.11014	19805.58	1194.381
115.5411	-42.40936	30.55013	-0.2266736	28.16426	-21.31802	20.7758	19126.2	1098.466
121.6463	-50.17456	38.12423	-36.54546	34.69675	-43.36001	25.77461	16831.98	1022.741
169.7798	-49.60482	44.72472	2.399695	42.54453	-23.60256	30.86397	18440.52	1231.406
128.2005	-59.52613	34.85863	-2.948239	33.66562	-31.23718	24.23066	21287.39	1228.894
89.78178	4.177843	25.35338	-37.2277	24.31522	-16.52493	17.56434	19610.4	1056.711
144.4992	44.51653	33.25396	-27.20838	32.13233	8.654076	23.12094	19757.01	1184.542
108.8268	-6.291135	29.3855	-61.5773	27.07864	-33.93422	19.97974	20109.44	1094.344
88.06421	-46.19358	22.82249	-11.68948	22.31491	-28.94153	15.95949	20904.28	1098.608
99.42194	-10.72258	22.50771	36.67449	22.04347	12.97596	15.75208	22118.55	1169.487
101.2269	-40.77452	27.55757	-49.03228	26.1018	-44.9034	18.97843	21034.66	1123.385
112.5812	-14.26891	31.39331	-18.0259	28.99468	-16.14741	21.36721	21617.78	1221.518
136.6482	-13.44091	41.02116	-25.0288	38.07513	-19.23485	27.98415	21378.54	1256.316
83.61677	-5.160933	19.69351	8.995521	19.06631	1.917294	13.70546	21531.3	1122.594
97.05245	-43.33217	25.8269	-38.21851	24.34748	-40.77534	17.74703	19759.98	1056.417
93.47417	-14.18821	21.30602	16.32961	21.1607	1.070699	15.01434	20665.52	1085.009
211.2456	-60.56229	56.25091	-49.32975	52.86828	-54.94602	38.59799	19512.51	1396.369
187.7112	-87.16962	49.27256	-75.5241	46.38408	-81.34686	33.83515	20536.58	1362.496
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
129.5618	-5.094754	32.62785	-36.35722	30.11747	-20.72599	22.20156	17075.6	1058.106
102.5274	-21.86729	29.33946	36.8612	27.58862	7.496958	20.13663	19970.83	1124.722
180.8329	-31.60323	45.99994	56.56596	48.25233	12.48136	33.33272	16778.59	1159.767
90.29247	-37.30644	20.15604	6.942585	20.05328	-15.18193	14.21619	20333.62	1064.892
206.3861	-59.86911	53.60797	52.19337	54.75443	-3.837866	38.31404	17107.09	1209.689
199.3505	-46.41952	56.89307	-41.45293	56.58575	-43.93623	40.12097	18436.5	1293.462
293.7148	-102.0129	86.51221	-192.2467	81.01443	-147.1298	59.2615	15519.8	1599.695
216.16	-121.7867	56.00048	69.37445	57.05684	-26.20613	39.97355	15453.72	1169.618
295.8504	-94.87045	84.54832	-41.01402	79.78078	-67.94223	58.12356	13432.76	1533.161
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
96.56181	-20.92584	29.03067	-27.12914	28.7425	-24.02749	20.42616	17212.29	941.3737
76.13144	-49.30881	18.70884	-17.46498	17.3625	-33.3869	12.76202	17196.75	903.131
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
185.7258	41.87587	85.9623	166.5691	88.7086	104.2225	61.76312	21938.93	1324.892
299.0264	141.4848	139.648	329.8496	144.5196	235.6672	100.4832	22402.33	1716.623
192.2689	57.18145	86.87631	83.10181	87.98596	70.14163	61.82439	21695.88	1311.131
257.3568	6.660017	124.9822	80.39642	122.6727	43.52822	87.56302	21826.82	1610.691
240.6855	288.5714	111.3843	90.85362	111.9485	189.7125	78.9603	22700.48	1581.258
243.6067	33.61867	111.4222	55.08897	116.187	44.35382	80.48963	23467.03	1549.776
205.7618	117.0524	98.91026	100.4974	99.36657	108.7749	70.10163	22356.73	1413.313
266.5021	27.98448	119.0841	17.55455	122.1928	22.76952	85.31136	22822.69	1617.038
253.2234	25.93798	115.7433	35.70605	117.6667	30.82201	82.52571	22147.5	1587.586
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**

100.5263	-51.71646	26.43695	-4.129819	24.22577	-27.92314	17.92903	20889.81	1140.859
104.1031	-0.4224793	29.52355	-25.9438	26.94692	-13.18314	19.9861	20058.25	1100.844
104.6077	3.174988	23.18453	35.63079	22.66619	19.40289	16.21171	20764.88	1118.159
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
57.70497	-40.40513	15.56504	5.195208	15.36855	-17.60496	10.9369	17093.74	881.8087
83.80661	-38.42491	23.99565	-26.89097	22.71621	-32.65794	16.52133	18330.46	968.0808
107.6404	-18.32575	28.95032	-14.01071	27.00425	-16.16823	19.79489	22348.31	1230.921
130.7879	-66.71007	35.70154	-10.49057	33.25764	-38.60032	24.39606	35219.75	1871.047
84.91291	-7.949444	21.07291	-18.83076	19.84289	-13.3901	14.47245	19998.86	1060.209
92.52695	-22.06266	26.81197	-41.02183	24.85138	-31.54225	18.2789	19461.01	1049.63
69.09605	-16.05852	15.79	-15.80438	15.42762	-15.93145	11.03784	20615.86	1056.578
82.28246	-35.12576	21.86443	-28.31757	20.66442	-31.72166	15.0422	18929.16	989.329
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
133.8584	-3.45668	32.78172	-27.35326	30.66448	-15.40497	22.4441	17066.62	1067.322
190.5639	-91.55547	50.36883	-14.92912	48.58662	-53.24229	34.99171	18275.71	1291.857
180.1189	-4.096061	43.18707	59.49141	44.56369	27.69768	31.0284	20998.29	1338.64
141.2814	-24.39941	36.86898	-27.96319	34.41187	-26.1813	25.21655	20234.33	1243.263
166.4763	-25.60842	39.29817	-22.33083	39.09166	-23.96962	27.71509	18437.23	1182.231
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
127.6032	-12.02806	24.56241	2.587131	24.05424	-4.720462	17.18952	19036.26	1087.667
118.9598	-32.8254	28.28103	21.95713	27.31688	-5.434134	19.65979	22266.94	1276.931
133.2251	-32.36844	33.54674	1.40106	31.75412	-15.48369	23.09604	22747.09	1335.472
155.2612	9.58977	35.30913	22.47698	34.48772	16.03337	24.67862	21543.85	1298.394
128.9105	-29.71119	33.15652	-21.44259	30.22333	-25.57689	22.43214	17694.26	1091.986
113.0201	-15.58689	28.01932	-10.2973	26.11883	-12.9421	19.15252	16626.54	1005.373
161.2445	-61.05621	42.59885	-2.265997	40.5784	-31.6611	29.41627	16760.97	1143.594
165.0871	22.41627	44.83523	-38.19796	41.32512	-7.890845	30.48755	17125.71	1175.559
1 SIG ER	**Co-60-1**	**1 SIG ER**	**Co-60-2**	**1 SIG ER**	**Co-60-Av**	**1 SIG ER**	**K-40**	**1 SIG ER**
252.511	-133.1188	69.69198	-156.2315	66.49373	-144.6751	48.16219	15295.34	1403.635
208.0477	-35.81973	57.05542	-90.81586	53.99485	-63.31779	39.2771	19556.21	1407.559
188.5348	-45.9848	50.84328	-35.30873	47.83417	-40.64677	34.90396	20331.61	1368.363
173.9576	-29.42248	39.81537	46.42794	39.69956	8.502728	28.1128	19994.25	1250.522
158.8752	16.55471	42.2578	17.77939	39.73989	17.16705	29.00422	21904.82	1350.156
181.5736	-12.5152	44.90797	-2.21825	44.09516	-7.366725	31.46867	22292.47	1397.988
171.9497	-23.6686	48.81991	14.16112	46.82997	-4.753741	33.82466	17318.13	1178.723
135.0652	2.998247	34.43954	55.83272	34.1571	29.41548	24.25278	20847.22	1245.341


LW2-2 - Cs-137
Activitiy (pCi/kg)
0
500
1000
1500
2000
2500
Average Depth (cm)
0
10
20
30
40
50

Supplement 7 - 137-Cs - LW2-16



Core Name	upper depth	lower depth	av depth	Sample date	Count date	Canning date	mass counted	Detector	Pb-210	1 SIG ER	Th-234	1 SIG ER	Ra-226	1 SIG ER	Pb-212	1 SIG ER	Pb 214-1
rh02-1v	0	2	1	2002250	2002346	2002338	11.54100037	tracor	5220	1711	400	2044	1376	672	71	5	1119
rh02-2v	0	2	1	2002250	2002339	2002338	8.300000191	tracor	-131	2230	-1105	2682	1574	896	61	5	833
rh02-3v	0	2	1	2002250	2002346	2002338	8.649999619	ortec	-76	999	1436	1241	410	1081	59	7	581
rh02-4v	0	2	1	2002250	2002339	2002338	16.20299911	ortec	1210	653	2042	804	666	646	69	5	744
rh02-5v	0	2	1	2002250	2002345	2002338	12.68500042	tracor	71	1490	1208	1846	1279	613	61	4	1065
rh02-6v	0	2	1	2002250	2002340	2002338	10.89099979	tracor	872	1694	1847	2090	1624	695	61	5	1056
rh02-7v	0	2	1	2002251	2002340	2002338	17.54199982	ortec	138	560	1898	702	883	567	55	4	619
rh02-8v	0	2	1	2002251	2002343	2002338	14.56099987	tracor	1679	1005	3600	1242	1487	419	66	4	1100
rh02-9v	0	2	1	2002251	2002343	2002338	9.954999924	ortec	1426	716	1744	871	1030	745	72	5	936
rh02-10v	0	2	1	2002251	2002345	2002338	13.95300007	ortec	677	734	1538	902	290	738	69	5	1098
rh02-11v	0	2	1	2002251	2002344	2002338	9.529999733	tracor	987	1997	2121	2470	1071	833	73	5	1155
rh02-12v	0	2	1	2002251	2002344	2002338	9.456999779	ortec	-389	887	3214	1110	1148	976	70	7	877

1 SIG ER	Pb 214-2	1 SIG ER	Be-7	1 SIG ER	Cs-134	1 SIG ER	Bi-214	1 SIG ER	Cs-137	1 SIG ER	Ac-228	1 SIG ER	Co-60-1	1 SIG ER	Co-60-2	1 SIG ER	Co-60-Av	1 SIG ER	K-40
168	1039	111	-460	1186	-26	41	1151	148	411	51	990	208	57	55	-2	54	28	38	21861
210	760	134	-588	1507	0	60	765	182	52	53	747	262	-24	73	-37	71	-31	51	17468
254	828	157	-1707	2022	7	79	782	243	137	73	1029	339	-108	94	-78	86	-93	64	13767
157	884	103	210	1077	64	47	1141	165	179	47	1232	219	-46	56	-21	52	-34	38	18597
157	873	98	-1199	1084	-1	38	815	132	21	36	989	189	9	51	-12	49	-1	35	19787
173	762	105	-943	1159	-47	44	1076	150	493	54	869	207	1	57	1	56	1	40	19678
139	709	88	-1266	944	80	41	1198	149	18	38	1070	190	-91	49	-71	46	-81	34	16975
106	1085	78	-24	704	-14	25	1175	99	464	34	1046	128	-63	33	-15	33	-39	23	21135
170	894	109	-200	1312	21	53	1130	172	338	53	1252	239	-115	63	-58	60	-86	44	19880
184	898	116	421	1327	-46	55	1370	192	429	59	1159	239	-132	62	-61	59	-97	43	19819
203	1125	130	-1071	1420	-34	50	1275	177	82	47	856	239	35	65	-20	64	8	46	24253
234	751	145	-457	1765	1	71	1016	224	17	65	803	307	-35	83	-73	77	-54	57	16172

1 SIG ER	excess Pb 210	
1473	4104	5%
1473	-911	5%
1729	-819	18%
1400	233	22%
1337	-821	14%
1371	-121	18%
1244	-793	37%
1184	545	4%
1454	403	13%
1539	-508	21%
1692	-220	7%
1668	-1304	15%

Supplement 9 -Core Locations for Cruise R/V Robert Hayes

		Water depth		latitude		Longitude	
Station	**Area**	**(ft)**	**(m)**	**Degrees**	**Minutes**	**Degrees**	**Minutes**
1	N. of Alpine	14	4	40	58.00	-73	54.50
2	NY state line	13	4	40	59.50	-73	54.00
3	Piermont	13	4	41	1.43	-73	54.67
4	Tappan Zee channel	35	11	41	6.00	-73	53.00
5	Haverstraw (east)	8	5	41	11.00	-73	56.67
6	Haverstraw (west)	12	5	41	11.00	-73	55.40
7	Stony Point	16	5	41	14.25	-73	58.15
8	Storm King Mtn (south)	66	20	41	26.12	-73	59.79
9	Storm King Mtn (north)	52	16	41	26.29	-73	58.73
10	West Point	33	10	41	23.95	-73	56.85
11	Iona	13	4	41	17.85	-73	58.00
12	Peekskil (channel)	20	6	41	17.50	-73	56.85
13	Peekskil (flatsl) or Jones Poin	26	8	41	16.65	-73	57.75

R/V ROBERT HAYES

Supplement 10 - Hudson River Estuary Radiocarbon Ages

Shell Sample I.D.	Description	Process	Age	correction	Age Error	d13C	F Modern	Fm Error	D14C
LW1-4, 105 cm	Crassostrea virgin	HY	2100	1000	35	-3.98	0.77014	0.0031	-235
LW1-24, 42 cm	Crassostrea virgin	HY	3180	2080	35	-4.41	0.67284	0.0028	-331
LW1-25, 15 cm	Crassostrea virgin	HY	2030	930	40	-6.3	0.77676	0.0041	-228
LW1-48, 38 cm	Crassostrea virgin	HY	1610	510	55	-5.07	0.81883	0.0055	-186
LW1-56, 93 cm	Crassostrea virgin	HY	3410	2310	45	-4.33	0.65421	0.0036	-350
LW1-78, 130 cm	Crassostrea virgin	HY	2700	1600	35	-2.5	0.71434	0.0029	-290
LW1-79, 155 cm	Crassostrea virgin	HY	3050	1950	60	0.2		1.2	

Wood Sample I.D	Descritpion	Process	Age	correction	Age Error	d13C	F Modern	Fm Error	D14C
LW2-2, 65 cm	wood	OC	955	none	30	-25.19	0.887748	0.0035	-118
LW2-2, 104 cm	wood	OC	3400	none	35	-25.79	0.655212	0.0029	-349
LW2-2, 130 cm	wood	OC	4710	none	40	-25.64	0.556475	0.003	-447
LW2-13, 125 cm	wood	OC	2620	none	65	-25.41	0.72205	0.0057	-282
LW2-13, 135 cm	wood	OC	3380	none	70	-26.14	0.65611	0.0057	-348
LW2-16, 49 cm	wood	OC	570	none	30	-26.15	0.931217	0.0033	-74.6
LW2-16, 70 cm	wood	OC	825	none	30	-26.09	0.902474	0.0032	-103
LW2-16, 120 cm	wood	OC	1720	none	45	-27.8	0.80718	0.0045	-198
LW2-16, 174 cm	wood	OC	2870	none	35	-26.74	0.69972	0.0032	-305

Sample ID, cm	Descritpion	Process	Age	Age Error	d13C	F Modern	Fm Error	D14C
RH02-10V, 142-14	wood	OC	1780	25	-27.33	0.80114	0.0027	-204
RH02-10, 222-223	wood	OC	3490	30	-26.77	0.647394	0.0026	-356.7
RH02-11V, 42-46	Crassostrea virgin	HY	3860	30	-3.29	0.618325	0.0023	-385.6
RH02-11V, 120	Crassostrea virgin	HY	4730	40	-3.64	0.555223	0.0028	-448.3
RH02-11V, 422-43	Crassostrea virgin	HY	6440	35	-4.28	0.448556	0.0021	-554.3

Supplement 10 - Hudson River Estuary Radiocarbon Ages

RH02-12V, 60-64	Crassostrea virgin	HY	2840	35	-4.42	0.702139	0.0031	-302.3
RH02-12V, 580	Crassostrea virgin	HY	5210	40	-3.44	0.522844	0.0027	-480.5

Diatom Counts - LW2-16

	Cyclotella	Gomphonema	Stenopterobia	Epithemia	Fragiliforma	Aulocasiera	Staurosirella	Achnanthidium	Eunotia	Stauroneis	Cymbella	Tabellaria	Pleurosigma	Navicula	Cocconeis	Denticula	Surirella	Frustulia	Ctenophora	Actinoptychus	Raphoneis	Coscinodiscus	Diploneis	Thalassionema	Paralia	Gomphoseptatum
Depth (cm)																										
30-31	110	8	0	3	25	17	1	0	2	0	7	1	6	12	63	5	5	1	6	1	1	11	2	6	4	0
40-41	69	27	0	2	25	33	0	2	13	2	7	0	0	30	38	4	4	2	8	0	2	12	3	7	0	4
50-51	112	11	1	2	9	26	0	0	9	0	2	1	1	15	46	0	7	1	6	0	1	30	2	5	1	4
60-61	96	22	0	7	22	23	0	0	11	0	5	2	3	23	31	8	6	1	10	0	0	14	1	2	2	4
70-71	130	10	1	5	21	14	0	4	4	0	9	2	3	23	30	4	6	0	6	0	0	15	0	4	0	1
80-81	110	13	0	7	16	23	0	2	8	1	8	0	1	17	43	2	3	0	8	0	0	13	3	6	3	3
90-91	92	21	0	7	1	20	1	0	5	0	9	3	0	25	58	8	10	1	5	0	2	12	2	5	3	3
100-101	82	10	0	5	11	29	2	0	5	1	7	1	3	14	81	8	3	0	5	0	1	22	1	5	0	0
110-111	61	11	0	7	22	20	3	0	8	0	9	1	1	14	66	4	6	1	7	1	3	35	5	3	1	3
120-121	59	14	0	13	24	29	4	0	3	0	22	1	0	26	42	8	6	2	4	2	1	20	6	2	1	0
130-131	94	5	1	8	21	17	0	7	6	0	4	4	2	16	36	4	8	0	3	3	4	27	5	4	12	1
140-141	66	8	0	7	24	51	1	4	6	0	5	0	0	15	34	2	6	2	6	2	2	19	2	10	26	0
150-151	64	7	2	12	15	48	3	0	4	0	9	0	0	18	41	9	1	0	1	3	5	31	8	11	3	3
160-161	89	9	0	9	6	49	3	0	8	1	3	0	3	12	26	6	6	0	1	4	1	39	3	7	3	0
170-171	76	12	2	15	10	56	1	0	4	3	3	0	1	17	34	2	6	1	4	0	2	31	5	2	9	0

Diatom Counts - LW2-16

Dactyliosolen	Seminavis	Achnanthes	Odontella	Total		Fresh	Fresh-Brackish	Brackish-Marine	Marine	Fresh-Marine		% Fresh	% Fresh-Brackish	% Brackish-Marine	% Marine	% Fresh-Marine		
0	0	3	0	300		174	7	6	28	85		58	2.33	2	9.33	28.34		0.16
0	4	2	0	300		180	10	0	34	76		60	3.33	0	11.33	25.34		0.19
0	6	3	0	301		173	7	1	52	68		57.48	2.33	0.33	17.28	22.58		0.3
0	3	4	0	300		188	11	3	30	68		62.67	3.67	1	10	22.66		0.16
1	2	5	0	300		200	6	3	28	63		66.67	2	1	9.33	21		0.14
1	7	3	0	301		188	8	1	39	65		62.46	2.66	0.33	12.96	21.59		0.21
0	6	1	0	300		159	6	0	34	101		53	2	0	11.33	33.67		0.21
0	4	0	0	300		153	5	3	33	106		51	1.67	1	11	35.33		0.22
3	3	2	0	300		142	8	1	59	90		47.33	2.67	0.33	19.67	30		0.41
2	5	4	0	300		169	6	0	43	82		56.33	2	0	14.33	27.34		0.25
3	3	2	0	300		167	3	2	64	64		55.67	1	0.67	21.33	21.33		0.38
0	0	2	0	300		172	8	0	63	57		57.33	2.67	0	21	19		0.37
0	0	2	0	300		164	1	0	66	69		54.67	0.33	0	22	23		0.4
2	5	4	1	300		177	1	3	69	50		59	0.33	1	23	16.67		0.39
0	3	1	0	300		182	5	1	53	59		60.67	1.67	0.32	17.67	19.67		0.29

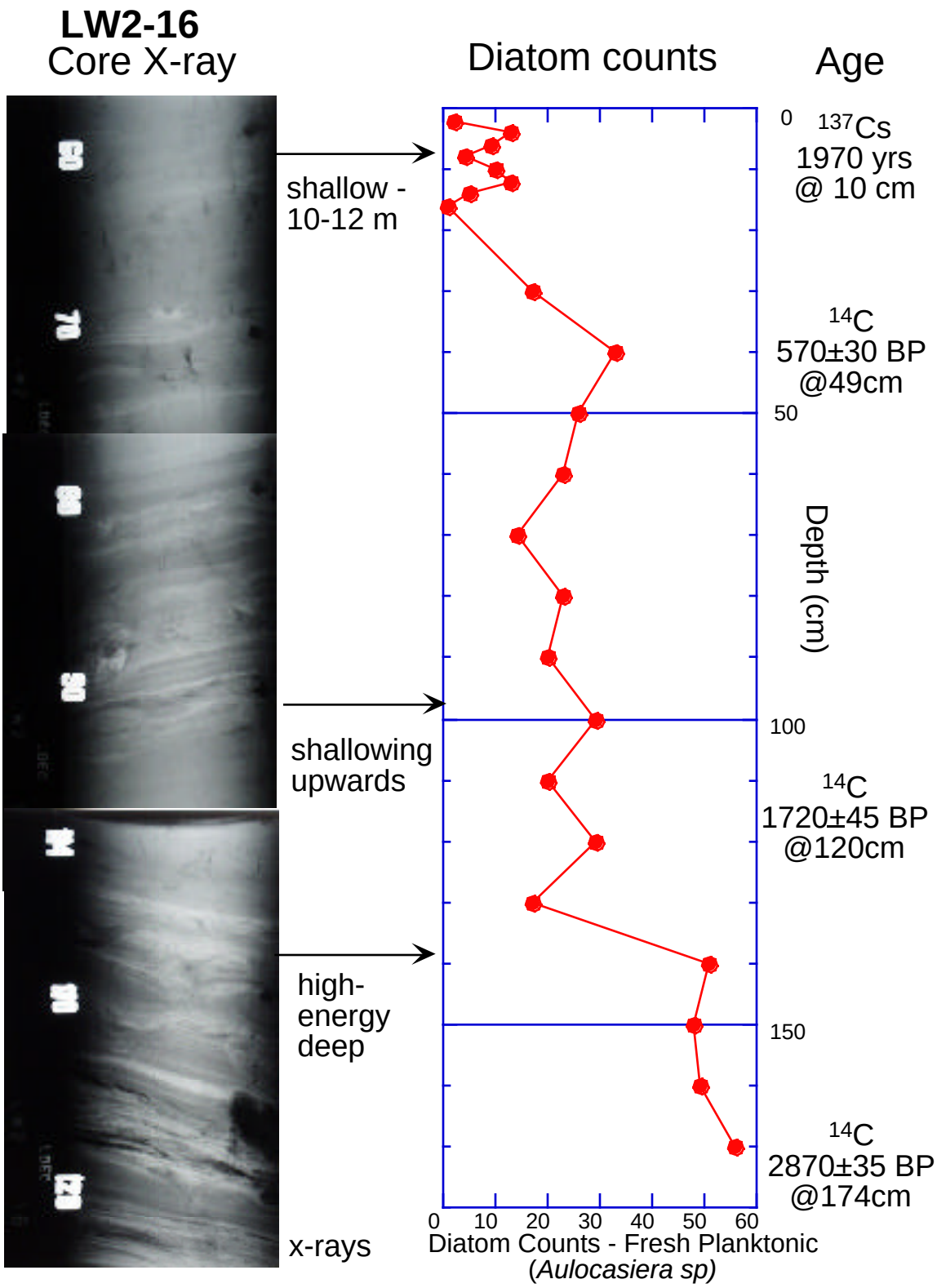


Figure illustrating the shallowing of the estuary south of Diamond Reef. *Right* core x-ray showing tidal laminations, scour, and climbing ripples typical of those parts of the estuary that are deep (~10m). Sediment is homogeneous in the upper 60 cm of the core. *Left, Aulocasiera sp.* is a fresh water planktonic diatom typical of deeper waters (10 -12m). Their numbers decrease as the estuary shallows. The age of the sediment was obtained from radiocarbon dating of wood and short-lived radioisotopes (far left).