Conclusions

Cesium-137 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from the Area II Landfill ISRA area does not exceed the local background for Cs-137. The incremental dose from Cs-137 above background is therefore zero mrem/y. The highest Cs-137 result is 0.178 pCi/g which is less than the highest background result. The highest non-background subtracted Cs-137 result is equivalent to an effective dose of 0.125 mrem/y[6].

Strontium-90 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from the Area II Landfill ISRA area does not exceed the local background for Sr-90. The incremental dose from Sr-90 above background is therefore zero mrem/y. The highest Sr-90

is not decommissioned material, and does not originate from the proximity of any radiological facility. The sampling in this certification has therefore been conducted as a best management practice that also complies with the requirements of D-62-02. Verification sampling and/or approval by the California Department of Public Health (CDPH) Radiologic Health Branch (RHB) are not required for the off-site disposal of decommissioned material or of the subject material[10].

Phil Rutherford
Manager, Health, Safety & Radiation Services

[10] The California Department of Public Health (CDPH) Radiologic Health Branch (RHB) has stated in a November 9, 2007 email to Phil Rutherford (Boeing) … *"The Governor's Executive Order D-62-02, does not specifically require the Department of Health Services (now the Department of Public Health) to perform verification sampling of decommissioned material or to provide approval for disposal of specific decommissioned material shipped offsite (e.g., to Class I or II landfills).*

Appendix 1

Wilcoxon Rank Sum Statistical Test for Cesium-137 and Strontium-90

Wilcoxon Rank Sum Test -- (Cesium-137)

General Information:
The WRS tests whether or not measurements of samples from a survey area (S)
tend to be consistently larger than those from a background reference area (R) by more than the DCGL.

The null hypothesis, Ho, is: Survey sample concentrations exceed those in the background
The alternative hypothesis, Ha, is: Survey sample concentrations do not exceed those in the background

Instruction on how to use this template:
1) Enter analysis results in pCi/gram
2) Enter number of samples for background and survey data sets, m and n.
3) The WRS test is calculated using the method prescribed in
NUREG-1505, Nuclear Regulatory Commission, “A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys.” January 1998.

DCGL (pCi/g)	0.12
Type I Error Rate, Alpha:	0.05
Type II Error Rate, Beta:	0.05
Number of Background Samples, m:	51
Number of Survey Samples, n:	8
Z-value for Alpha	1.645
Critical Value	1604
Sum -10 F9eenN.mples2.o81758471(1604)	

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
20		0.101	0.226	R	42	42
21		0.148	0.273	R	48	48
22		0.153	0.278	R	50	50
23		0.025	0.150	R	19	19
24		0.188	0.313	R	55	55
25		0.198	0.323	R	57	57
26		0.030	0.155	R	22	22
27		0.079	0.204	R	33	33
28		0.158	0.283	R	51.5	51.5
29		0.109	0.234	R	43	43
30		0.059	0.184	R	29	29
31		0.067	0.192	R	30.5	30.5
32		0.113	0.238	R	44	44
33		0.015	0.140	R	9	9
34		0.031	0.156	R	24	24
35		0.042	0.167	R	27	27
36		0.097	0.222	R	37.5	37.5
37		0.015	0.140	R	9	9
38		0.020	0.145	R	14	14
39		0.085	0.210	R	35	35
40		0.080	0.205	R	34	34
41		0.015	0.140	R	9	9
42		0.020	0.145	R	14	14
43		0.035	0.160	R	25.5	25.5
44		0.035	0.160	R	25.5	25.5
45		0.025	0.150	R	19	19
46		0.150	0.275	R	49	49
47		0.140	0.265	R	45.5	45.5
48		0.190	0.315	R	56	56
49		0.097	0.222	R	37.5	37.5
50		0.030	0.155	R	22	22
51		0.140	0.265	R	45.5	45.5
52	ISWC0104RadS001	0.122	0.122	S	4	0
53	ISWC0105RadS001	0.123	0.123	S	5	0
54	ISWC0106RadS001	-0.018	-0.018	S	1	0
55	ISWC0107RadS001	0.025	0.025	S	3	0
56	ISWC0108RadS001	0.134	0.134	S	7	0
57	ISWC0109RadS001	0.128	0.128	S	6	0
58	ISWC0110RadS001	0.178	0.178	S	28	0
59	ISWC0111RadS001	0.024	0.024	S	2	0
				Sum	1770	1714

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
22		0.098	0.158	R	55	55
23		0.045	0.105	R	34.5	34.5
24		0.045	0.105	R	34.5	34.5
25		0.020	0.080	R	14	14
26		0.045	0.105	R	34.5	34.5
27		0.089	0.149	R	53	53
28		0.050	0.110	R	44	44
29		0.045	0.105	R	34.5	34.5
30		0.050	0.110	R	44	44
31		0.045	0.105	R	34.5	34.5
32		0.040	0.100	R	26	26
33		0.045	0.105	R	34.5	34.5
34		0.045	0.105	R	34.5	34.5
35		0.045	0.105	R	34.5	34.5
36		0.025	0.085	R	17.5	17.5
37		0.082	0.142	R	50	50
38		0.045	0.105	R	34.5	34.5
39		0.040	0.100	R	26	26
40		0.035	0.095	R	22.5	22.5
41		0.025	0.085	R	17.5	17.5
42		0.005	0.065	R	9	9
43		0.020	0.080	R	14	14
44		0.010	0.070	R	10.5	10.5
45		0.020	0.080	R	14	14
46		0.020	0.080	R	14	14
47		0.050	0.110	R	44	44
48		0.030	0.090	R	20	20
49		0.030	0.090	R	20	20
50		0.020	0.080	R	14	14
51		0.040	0.100	R	26	26
52	ISWC0104RadS001	0.008	0.008	S	5	0
53	ISWC0105RadS001	0.029	0.029	S	8	0
54	ISWC0106RadS001	0.027	0.027	S	7	0
55	ISWC0107RadS001	0.005	0.005	S	2	0
56	ISWC0108RadS001	0.017	0.017	S	6	0
57	ISWC0109RadS001	0.004	0.004	S	1	0
58	ISWC0110RadS001	0.007	0.007	S	4	0
59	ISWC0111RadS001	0.007	0.007	S	3	0
				Sum	1770	1734

Soil Data from Area II Landfill ISRA

No.	Sample ID	Stockpile ID	Sampling Date	Laboratory Batch	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
					Activity	+/- 2 Error	MDA	Non-detect?	Activity	+/- 2 Error	MDA	Non-detect?	Activity	+/- 2 Error	MDA	Non-detect?
1	ISWC0104RadS001	N/A	9/3/2009	236678	0.122	0.0529	0.0437		0.00767	0.0224	0.0415	NDA	-0.136	0.51	0.915	NDA
2	ISWC0105RadS001	N/A	9/3/2009	236678	0.123	0.0418	0.0459		0.0287	0.0245	0.0393	NDA	-0.486	0.486	0.909	NDA
3	ISWC0106RadS001	N/A	9/3/2009	236678	-0.0176	0.0223	0.0368	NDA	0.0273	0.0272	0.0443	NDA	-0.365	0.493	0.908	NDA
4	ISWC0107RadS001	N/A	9/3/2009	236678	0.0254	0.0233	0.042	NDA	0.00488	0.0207	0.0398	NDA	-0.368	0.498	0.917	NDA
5	ISWC0108RadS001	N/A	9/3/2009	236678	0.134	0.0496	0.0536		0.0172	0.0223	0.0381	NDA	-0.222	0.517	0.934	NDA
6	ISWC0109RadS001	N/A	9/3/2009	236678	0.128	0.0389	0.0373		0.00413	0.021	0.0405	NDA	-0.411	0.499	0.922	NDA
7	ISWC0110RadS001	N/A	9/3/2009	236678	0.178	0.0445	0.0465		0.00741	0.0162	0.0295	NDA	-0.325	0.497	0.91	NDA
8	ISWC0111RadS001	N/A	9/3/2009	236678	0.0244	0.0243	0.0449	NDA	0.00713	0.0234	0.0443	NDA	-0.165	0.516	0.927	NDA

	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
	Activity		MDA	Non-detect?	Activity		MDA	Non-detect?	Activity		MDA	Non-detect?
Average	0.090		0.044		0.013		0.040		-0.310		0.918	
Maximum	0.178		0.054		0.029		0.044		-0.136		0.934	
Minimum	-0.018		0.037		0.004		0.030		-0.486		0.908	
Count				8				8				8
Number of Non-Detects				3				8				8
% Non-Detects				38%				100%				100%

Appendix 2

Analytical Radionuclide Results

ISRA Soil Sample Results for Area II Landfill

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Americium-241	-0.0227	0.182	0.336	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Americium-241	0.0143	0.118	0.203	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Americium-241	-0.00775	0.128	0.239	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Americium-241	-0.0246	0.0843	0.144	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Americium-241	0.048	0.0399	0.0699	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Americium-241	0.137	0.11	0.183	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Americium-241	0.0921	0.106	0.173	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Americium-241	0.0779	0.112	0.187	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cesium-134	0	0.0483	0.0636	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cesium-134	0	0.0425	0.061	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cesium-134	0	0.0311	0.0556	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cesium-134	0	0.0451	0.0531	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cesium-134	0.0442	0.0366	0.0673	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cesium-134	0.0383	0.0374	0.0531	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cesium-134	0	0.0413	0.0616	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cesium-134	0	0.0296	0.0572	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cesium-137	0.122	0.0529	0.0437		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cesium-137	0.123	0.0418	0.0459		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cesium-137	-0.0176	0.0223	0.0368	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cesium-137	0.0254	0.0233	0.042	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cesium-137	0.134	0.0496	0.0536		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cesium-137	0.128	0.0389	0.0373		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cesium-137	0.178	0.0445	0.0465		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cesium-137	0.0244	0.0243	0.0449	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cobalt-60	-0.0118	0.0242	0.0384	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cobalt-60	0.00764	0.0259	0.0448	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cobalt-60	0.0118	0.0242	0.043	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cobalt-60	0.000442	0.0236	0.0401	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cobalt-60	0.00422	0.0301	0.0519	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cobalt-60	-0.0123	0.0248	0.0397	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cobalt-60	0.0181	0.0226	0.0411	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cobalt-60	-0.00352	0.0241	0.041	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Europium-152	0.024	0.0994	0.123	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Europium-152	-0.0542	0.0719	0.0981	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Europium-152	-0.0644	0.061	0.0886	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Europium-152	-0.0671	0.0547	0.0882	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Europium-152	0.0286	0.0795	0.123	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Europium-152	-0.0016	0.0634	0.0971	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Europium-152	-0.0339	0.0836	0.11	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Europium-152	-0.0347	0.0682	0.102	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Europium-154	-0.0829	0.0862	0.133	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Europium-154	-0.0272	0.0794	0.132	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Europium-154	-0.0598	0.0695	0.112	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Europium-154	-0.0816	0.0776	0.12	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Europium-154	0.0163	0.0975	0.169	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Europium-154	0.0131	0.0697	0.119	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Europium-154	-0.0692	0.0695	0.109	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Europium-154	-0.0589	0.0734	0.119	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Lead-214	1.07	0.136	0.0868		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Lead-214	1.13	0.144	0.0748		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Lead-214	0.916	0.113	0.0695		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Lead-214	0.918	0.106	0.0721		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Lead-214	0.981	0.12	0.0708		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Manganese-54	-0.00929	0.0253	0.043	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Manganese-54	-0.00354	0.0239	0.0403	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Manganese-54	-0.00153	0.0208	0.0357	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Manganese-54	-0.0271	0.0231	0.0366	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Manganese-54	0.0429	0.0292	0.054	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Manganese-54	0.00149	0.0228	0.0396	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Manganese-54	0.00378	0.0235	0.04	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Manganese-54	0.00084	0.0234	0.0405	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Potassium-40	22.4	1.99	0.376		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Potassium-40	22.3	1.94	0.368		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Potassium-40	23.4	2.23	0.294		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Potassium-40	21.8	1.82	0.267		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial

ISRA Soil Sample Results for Area II Landfill

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Potassium-40	21.6	1.68	0.388		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Potassium-40	22	2.07	0.315		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Potassium-40	22	1.91	0.328		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Potassium-40	21	1.8	0.345		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Sodium-22	-0.03	0.0307	0.0474	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Sodium-22	-0.0099	0.0283	0.0468	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Sodium-22	-0.0291	0.0253	0.0397	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Sodium-22	-0.0294	0.0276	0.0428	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Sodium-22	0.00484	0.0347	0.0601	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Sodium-22	0.0045	0.0248	0.0422	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Sodium-22	-0.0266	0.0249	0.0388	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Sodium-22	-0.0202	0.0262	0.0426	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Strontium-90	0.00767	0.0224	0.0415	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Strontium-90	0.0287	0.0245	0.0393	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Strontium-90	0.0273	0.0272	0.0443	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Strontium-90	0.00488	0.0207	0.0398	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Strontium-90	0.0172	0.0223	0.0381	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Strontium-90	0.00413	0.021	0.0405	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Strontium-90	0.00741	0.0162	0.0295	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Strontium-90	0.00713	0.0234	0.0443	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Thorium-228	1.53	0.147	0.0692		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Thorium-228	1.53	0.16	0.0599		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Thorium-228	1.47	0.127	0.0527		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Thorium-228	1.4	0.117	0.0516		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Thorium-228	1.45	0.151	0.0628		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Thorium-228	1.38	0.114	0.0548		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Thorium-228	1.41	0.124	0.0638		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Thorium-228	1.37	0.121	0.0598		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Thorium-232	1.55	0.259	0.147		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Thorium-232	1.6	0.27	0.138		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Thorium-232	1.58	0.277	0.12		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Thorium-232	1.35	0.234	0.125		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Thorium-232	1.37	0.248	0.168		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Thorium-232	1.29	0.226	0.135		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Thorium-232	1.64	0.268	0.143		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Thorium-232	1.41	0.232	0.115		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Tritium	-0.136	0.51	0.915	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Tritium	-0.486	0.486	0.909	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Tritium	-0.365	0.493	0.908	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Tritium	-0.368	0.498	0.917	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Tritium	-0.222	0.517	0.934	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Tritium	-0.411	0.499	0.922	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Tritium	-0.325	0.497	0.91	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Tritium	-0.165	0.516	0.927	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Uranium-235	0.103	0.153	0.275	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Uranium-235	-0.106	0.141	0.233	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Uranium-235	0.0594	0.126	0.217	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Uranium-235	0.0255	0.12	0.206	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Uranium-235	0.252	0.195	0.229		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Uranium-235	0.0801	0.142	0.241	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Uranium-235	0.126	0.165	0.244	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Uranium-235	0.0967	0.175	0.227	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Uranium-238	-1.17	1.44	2.51	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Uranium-238	1.52	1.58	1.6	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Uranium-238	0.215	1.04	1.88	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Uranium-238	1.34	1.17	1.28		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Uranium-238	0.777	0.727	0.685		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Uranium-238	1.06	0.885	1.48	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Uranium-238	2.96	1.61	1.43		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Uranium-238	1.24	1.29	1.52	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial