

**ISRA 009 – AP/STP-1B.
Soil Sampling for Radionuclides.
Results and Statistical Analysis.
Waste Certification.**

This data package provides the laboratory results and statistical analysis of the 10 samples taken at the ISRA Outfall 009, AP/STP-1B area. This analysis and data interpretation complies with the procedure approved by the California Department of Public Health¹.

Samples taken for waste disposal characterization were analyzed for strontium-90, tritium and gamma emitting radionuclides by gamma spectroscopy, using an off-site laboratory. Minimum detectable activity (MDA) for cesium-137 and strontium-90 averaged ~0.037 pCi/g and ~0.045 pCi/g respectively. Minimum detectable activity for tritium averaged ~0.52 pCi/g. The gamma spectroscopy library also included the following contaminants-of-concern: Na-22, K-40, Mn-54, Co-60, Cs-134, Cs-137, Eu-152, Eu-154, Th-228, Th-232, U-235, U-238 and Am-241.

Statistical evaluation of sample analytical results to determine whether or not the sampled waste contains Cs-137 or Sr-90 activity elevated above local background was conducted using the Wilcoxon Rank Sum Test using protocols described in NUREG-1505² and DTSC guidance³ (See Appendix 1). Appendix 2 shows the complete analytical results for all radionuclides. Complete laboratory data packages are available on request.

Local background data for cesium-137 and strontium-90 was taken from Table 20 of the 1995 McLaren/Hart report⁴. Background for tritium in soil is not well established, and is not reported in the 1995 McLaren/Hart report, therefore tritium background in soil is conservatively assumed to be zero. Tritium data is therefore compared to the MDA of the analysis and the EPA preliminary remediation goal (PRG)⁵ for residential 10⁻⁶ risk.

Conclusions

Cesium-137 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from AP/STP-1B 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 0.177 pCi/g

¹ Boeing, "Northern Drainage Waste Sampling for Radionuclides." Revision 9, November 5, 2007. (Attachment 3 to Northern Drainage Work Plan) and "ISRA Waste Sampling for Radionuclides", Attachment A to the ISRA Soil Management Plan.

² NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998. http://www.philrutherford.com/Radiation_Cleanup_Standards/NUREG-1505.pdf

³ DTSC, "Selecting Inorganic Constituents as Chemicals of Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities." February 1997.

⁴ McLaren/Hart, "Additional Soil and Water Sampling at the Brandeis-Bardin Institute and Santa Monica Mountains Conservancy." Jan 19, 1995. <http://www.etec.energy.gov/Health-and-Safety/Documents/BrandeisBardin/AddSoilandWaterSamp.pdf>

⁵ EPA preliminary remediation goals for radionuclides (Effective January 1, 2007) - <http://epa-prgs.ornl.gov/radionuclides/>.

which is less than the highest background result of 0.213 pCi/g. The highest non-background subtracted Cs-137 result is equivalent to an effective dose of 0.17 mrem/y⁶.

Strontium-90 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from AP/STP-1B does not exceed the local background for Sr-90. The incremental dose from Sr-90 above background is therefore zero mrem/y. All Sr-90 results are non-detect. The highest Sr-90 result is 0.047 pCi/g which is non-detect and less than the highest background result of 0.13 pCi/g. The highest non-background subtracted, non-detect Sr-90 result is equivalent to an effective dose of 0.0028 mrem/y⁶.

Tritium - All tritium results are non-detect, the average tritium result is 0.109 pCi/g and the highest tritium result is 0.233 pCi/g. The highest non-detected, non-background subtracted tritium result is equivalent to an effective dose of 0.050 mrem/y⁶.

This waste is certified to be “radiologically” acceptable for shipment to, and disposal at, any waste disposal facility. The waste requires no further radiological controls.

This waste meets the requirements of disposal facility permits^{7,8} and complies with the California Health & Safety Code⁹.

The Governor’s Executive Order D-62-02 prohibits the “*disposal of decommissioned materials to Class III landfills or unclassified management units.*” The soil from AP/STP-1B 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 complies with the requirements of D-62-02. Verification sampling and/or approval by the

⁶ EPA dose compliance considerations for radionuclides (Effective August 3, 2010) - <http://epa-dccs.ornl.gov/>. Soil concentrations that meet the 10⁻⁶ residential risk PRG are < 0.5 mrem/y. The Cs-137 residential PRG of 0.0597 pCi/g is equivalent to 0.056 mrem/y. The Sr-90 residential PRG of 0.231 pCi/g is equivalent to 0.014 mrem/y. The tritium residential PRG of 2.28 pCi/g is equivalent to 0.486 mrem/y.

⁷ This waste is exempt from regulation and licensing or is expressly authorized for disposal under the Radiation Control Law (Division 104, Part 9, Chapter 8 of the California Health & Safety Code).

⁸ This waste is not prohibited from disposal by any government agency with jurisdictional authority over this waste.

⁹ Division 104, Part 9, Chapter 5, Article 1, Section 114715, “No person shall bury, throw away, or in any manner dispose of radioactive wastes within the state except in a manner and at locations as will result in no significant radioactive contamination of the environment.” For the purposes of this requirement, “significant” is defined in Section 114710 as amounts of radioactive materials that are likely to expose persons to ionizing radiation greater than the guide levels published by the Federal Radiation Council (FRC). The FRC no longer exists, but the applicable guide level last published by the FRC was 500 mrem per year to a member of the public. Because the regulatory dose limit to members of the public has since been lowered to 100 mrem per year, CDPH/RHB conservatively utilizes the lower dose for purposes of defining “significant” radioactive contamination in this Article of the California Health and Safety Code.
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=114001-115000&file=114705-114780>

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 material¹⁰.



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). The California DPH has not imposed a requirement that Boeing or the Department of Energy (DOE) seek DPH verification sampling or approval of all decommissioned material destined for Class I or II landfills in compliance with the Governor's Executive Order."*

Appendix 1

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

Soil Data from ISRA 009 - AP/STP-1B

No.	Sample ID	Stockpile ID	Sampling Date	Laboratory Batch	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
					Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?
1	APWC0201S001	N/A	7/28/2010	257420	0.13	0.0433	0.0337		0.0373	0.0307	0.0493	NDA	0.179	0.29	0.499	NDA
2	APWC0202S001	N/A	7/28/2010	257420	0.177	0.0365	0.04		0.015	0.028	0.0486	NDA	0.2	0.3	0.514	NDA
3	APWC0203S001	N/A	7/28/2010	257420	0.00481	0.0171	0.0307	NDA	0.00895	0.0269	0.0475	NDA	0.104	0.303	0.535	NDA
4	APWC0204S001	N/A	7/28/2010	257420	0.0577	0.0373	0.0361		0.0169	0.024	0.0414	NDA	0.0154	0.283	0.515	NDA
5	APWC0205S001	N/A	7/28/2010	257420	0.0561	0.04	0.0433		0.00755	0.0249	0.0445	NDA	0.187	0.302	0.521	NDA
6	APWC0206S001	N/A	7/28/2010	257420	-0.000548	0.0242	0.0426	NDA	-0.0155	0.02	0.0421	NDA	0.233	0.305	0.519	NDA
7	APWC0207S001	N/A	7/28/2010	257420	0.163	0.0508	0.0351		0.0178	0.0293	0.0508	NDA	-0.0699	0.278	0.52	NDA
8	APWC0208S001	N/A	7/28/2010	257420	0.119	0.0418	0.0344		0.000434	0.0167	0.0327	NDA	0.0622	0.291	0.52	NDA
9	APWC0209S001	N/A	7/28/2010	257420	0.0517	0.0299	0.034		0.0344	0.0291	0.0462	NDA	0.113	0.286	0.503	NDA
10	APWC0210S001	N/A	7/28/2010	257420	0.032	0.0319	0.0389	NDA	0.0473	0.0307	0.0483	NDA	0.0631	0.295	0.527	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	0.079		0.037		0.017		0.045		0.109		0.517	
Maximum	0.177		0.043		0.047		0.051		0.233		0.535	
Minimum	-0.001		0.031		-0.016		0.033		-0.070		0.499	
Count				10				10				10
Number of Non-Detects				3				10				10
% Non-Detects				30%				100%				100%

Soil Data from ISRA 009 - AP/STP-1B

Wilcoxon Rank Sum Test -- (Cesium-137)

General Information:

The Wilcoxon Rank Sum method 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, H_0 , is: Survey sample concentrations exceed those in the background by more than the DCGL.

The alternative hypothesis, H_a , is: Survey sample concentrations do not exceed those in the background by more than the DCGL.

How to use this template:

- 1) Enter analysis results in Data Tab.
- 2) The Wilcoxon Rank Sum test is prescribed in, NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

Derived Concentration Guideline Level, DCGL (pCi/g)	0.03
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:	10
z-value for alpha	1.645
No. of groups of tied measurements, g	11
Critical Value (excluding ties)	1665.4
Critical Value (including ties)	1665.3
Sum of Reference Ranks	1666.5
Sum of Survey Ranks	224.5
Sum of All Ranks	1891
Check Rank Sum $(n+m)*(n+m+1)/2$	1891

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:

Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.087	0.079
Max	0.213	0.177
Min	0.015	-0.001
σ	0.062	0.064
$m-1.96*\sigma$	-0.035	-0.046
$m+1.96*\sigma$	0.210	0.204

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
1		0.092	0.122	R	35	35
2		0.020	0.050	R	10	10
3		0.020	0.050	R	10	10
4		0.100	0.130	R	40	40
5		0.020	0.050	R	10	10
6		0.158	0.188	R	53.5	53.5
7		0.175	0.205	R	55	55
8		0.209	0.239	R	60	60
9		0.180	0.210	R	56	56
10		0.030	0.060	R	21	21
11		0.213	0.243	R	61	61
12		0.025	0.055	R	16	16
13		0.020	0.050	R	10	10
14		0.020	0.050	R	10	10
15		0.074	0.104	R	30	30
16		0.147	0.177	R	48.5	48.5
17		0.100	0.130	R	40	40

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
18		0.067	0.097	R	28.5	28.5
19		0.099	0.129	R	38	38
20		0.101	0.131	R	42	42
21		0.148	0.178	R	50	50
22		0.153	0.183	R	52	52
23		0.025	0.055	R	16	16
24		0.188	0.218	R	57	57
25		0.198	0.228	R	59	59
26		0.030	0.060	R	21	21
27		0.079	0.109	R	31	31
28		0.158	0.188	R	53.5	53.5
29		0.109	0.139	R	43	43
30		0.059	0.089	R	27	27
31		0.067	0.097	R	28.5	28.5
32		0.113	0.143	R	44	44
33		0.015	0.045	R	5	5
34		0.031	0.061	R	23	23
35		0.042	0.072	R	26	26
36		0.097	0.127	R	36.5	36.5
37		0.015	0.045	R	5	5
38		0.020	0.050	R	10	10
39		0.085	0.115	R	33	33
40		0.080	0.110	R	32	32
41		0.015	0.045	R	5	5
42		0.020	0.050	R	10	10
43		0.035	0.065	R	24.5	24.5
44		0.035	0.065	R	24.5	24.5
45		0.025	0.055	R	16	16
46		0.150	0.180	R	51	51
47		0.140	0.170	R	46.5	46.5
48		0.190	0.220	R	58	58
49		0.097	0.127	R	36.5	36.5
50		0.030	0.060	R	21	21
51		0.140	0.170	R	46.5	46.5
52	APWC0201S001	0.130	0.130	S	40	0
53	APWC0202S001	0.177	0.177	S	48.5	0
54	APWC0203S001	0.005	0.005	S	2	0
55	APWC0204S001	0.058	0.058	S	19	0
56	APWC0205S001	0.056	0.056	S	18	0
57	APWC0206S001	-0.001	-0.001	S	1	0
58	APWC0207S001	0.163	0.163	S	45	0
59	APWC0208S001	0.119	0.119	S	34	0
60	APWC0209S001	0.052	0.052	S	14	0
61	APWC0210S001	0.032	0.032	S	3	0
Sum					1891.0	1666.5

Soil Data from ISRA 009 - AP/STP-1B

Wilcoxon Rank Sum Test -- (Strontium-90)

General Information:

The Wilcoxon Rank Sum method 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, H_0 , is: Survey sample concentrations exceed those in the background by more than the DCGL.

The alternative hypothesis, H_a , is: Survey sample concentrations do not exceed those in the background by more than the DCGL.

How to use this template:

- 1) Enter analysis results in Data Tab.
- 2) The Wilcoxon Rank Sum test is prescribed in, NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

Derived Concentration Guideline Level, DCGL (pCi/g)	0.00
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:	10
z-value for alpha	1.645
No. of groups of tied measurements, g	9
Critical Value (excluding ties)	1665.4
Critical Value (including ties)	1665.0
Sum of Reference Ranks	1765.0
Sum of Survey Ranks	126.0
Sum of All Ranks	1891
Check Rank Sum $(n+m)*(n+m+1)/2$	1891

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:

Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.051	0.017
Max	0.130	0.047
Min	0.005	-0.016
σ	0.030	0.019
$m-1.96*\sigma$	-0.008	-0.019
$m+1.96*\sigma$	0.109	0.054

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
1		0.030	0.030	R	19	19
2		0.010	0.010	R	6.5	6.5
3		0.045	0.045	R	35.5	35.5
4		0.045	0.045	R	35.5	35.5
5		0.050	0.050	R	46	46
6		0.040	0.040	R	27	27
7		0.035	0.035	R	22.5	22.5
8		0.050	0.050	R	46	46
9		0.050	0.050	R	46	46
10		0.130	0.130	R	60.5	60.5
11		0.120	0.120	R	59	59
12		0.040	0.040	R	27	27
13		0.045	0.045	R	35.5	35.5
14		0.130	0.130	R	60.5	60.5
15		0.050	0.050	R	46	46
16		0.088	0.088	R	54	54
17		0.080	0.080	R	51	51

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
18		0.100	0.100	R	58	58
19		0.069	0.069	R	50	50
20		0.097	0.097	R	56	56
21		0.084	0.084	R	53	53
22		0.098	0.098	R	57	57
23		0.045	0.045	R	35.5	35.5
24		0.045	0.045	R	35.5	35.5
25		0.020	0.020	R	13	13
26		0.045	0.045	R	35.5	35.5
27		0.089	0.089	R	55	55
28		0.050	0.050	R	46	46
29		0.045	0.045	R	35.5	35.5
30		0.050	0.050	R	46	46
31		0.045	0.045	R	35.5	35.5
32		0.040	0.040	R	27	27
33		0.045	0.045	R	35.5	35.5
34		0.045	0.045	R	35.5	35.5
35		0.045	0.045	R	35.5	35.5
36		0.025	0.025	R	16.5	16.5
37		0.082	0.082	R	52	52
38		0.045	0.045	R	35.5	35.5
39		0.040	0.040	R	27	27
40		0.035	0.035	R	22.5	22.5
41		0.025	0.025	R	16.5	16.5
42		0.005	0.005	R	3	3
43		0.020	0.020	R	13	13
44		0.010	0.010	R	6.5	6.5
45		0.020	0.020	R	13	13
46		0.020	0.020	R	13	13
47		0.050	0.050	R	46	46
48		0.030	0.030	R	19	19
49		0.030	0.030	R	19	19
50		0.020	0.020	R	13	13
51		0.040	0.040	R	27	27
52	APWC0201S001	0.037	0.037	S	24	0
53	APWC0202S001	0.015	0.015	S	8	0
54	APWC0203S001	0.009	0.009	S	5	0
55	APWC0204S001	0.017	0.017	S	9	0
56	APWC0205S001	0.008	0.008	S	4	0
57	APWC0206S001	-0.016	-0.016	S	1	0
58	APWC0207S001	0.018	0.018	S	10	0
59	APWC0208S001	0.000	0.000	S	2	0
60	APWC0209S001	0.034	0.034	S	21	0
61	APWC0210S001	0.047	0.047	S	42	0
Sum					1891.0	1765.0

Appendix 2
Radionuclide Results

ISRA Outfall 009 - AP/STP 1B

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
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Americium-241	0.0165	0.0756	0.134	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Americium-241	-0.0369	0.112	0.205	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Americium-241	-0.0216	0.101	0.171	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Americium-241	0.0201	0.0275	0.0461	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Americium-241	0.0435	0.0381	0.0643	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Americium-241	0.007	0.106	0.175	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Americium-241	0.00498	0.0634	0.106	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Americium-241	-0.0342	0.0665	0.124	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Americium-241	0.0351	0.0831	0.136	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Americium-241	0.0143	0.119	0.225	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Cesium-134	0	0.0383	0.0483	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Cesium-134	0.0351	0.032	0.0514	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Cesium-134	0	0.0286	0.0402	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Cesium-134	0	0.0317	0.0549	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Cesium-134	0	0.0355	0.062	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Cesium-134	0	0.0399	0.056	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Cesium-134	0	0.0452	0.0608	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Cesium-134	0	0.0424	0.0524	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Cesium-134	0	0.0379	0.052	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Cesium-134	0	0.0434	0.061	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Cesium-137	0.13	0.0433	0.0337	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Cesium-137	0.177	0.0365	0.04	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Cesium-137	0.00481	0.0171	0.0307	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Cesium-137	0.0577	0.0373	0.0361	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Cesium-137	0.0561	0.04	0.0433	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Cesium-137	-0.000548	0.0242	0.0426	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Cesium-137	0.163	0.0508	0.0351	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Cesium-137	0.119	0.0418	0.0344	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Cesium-137	0.0517	0.0299	0.034	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Cesium-137	0.032	0.0319	0.0389	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Cobalt-60	0.00235	0.0192	0.0329	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Cobalt-60	-0.00673	0.0235	0.0389	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Cobalt-60	0.00691	0.018	0.0312	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Cobalt-60	0.0189	0.0225	0.0411	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Cobalt-60	0.00333	0.0233	0.0394	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Cobalt-60	-0.0193	0.0251	0.0404	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Cobalt-60	-0.00249	0.0242	0.0407	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Cobalt-60	0.0146	0.0206	0.0371	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Cobalt-60	-0.00821	0.0207	0.0332	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Cobalt-60	0.00228	0.0238	0.0411	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Europium-152	-0.00237	0.0583	0.0899	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Europium-152	0.0255	0.0658	0.103	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Europium-152	-0.0349	0.0555	0.0745	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Europium-152	-0.051	0.0491	0.081	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Europium-152	-0.00473	0.0715	0.11	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Europium-152	-0.0127	0.0677	0.103	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Europium-152	0.0194	0.0591	0.0975	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Europium-152	-0.0137	0.0573	0.089	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Europium-152	-0.00364	0.0506	0.0855	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Europium-152	0.00246	0.0553	0.0953	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Europium-154	0.0102	0.0666	0.115	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Europium-154	-0.0121	0.0762	0.129	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Europium-154	-0.0141	0.0574	0.0964	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Europium-154	-0.0617	0.0744	0.12	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Europium-154	-0.0346	0.0813	0.132	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Europium-154	-0.0142	0.0744	0.127	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Europium-154	-0.0442	0.0734	0.119	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Europium-154	-0.00155	0.067	0.115	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Europium-154	-0.0222	0.0692	0.113	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Europium-154	0.0197	0.0779	0.136	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Manganese-54	0.00167	0.0192	0.0336	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP														

ISRA Outfall 009 - AP/STP 1B

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
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Manganese-54	0.00504	0.0198	0.0342	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Manganese-54	0.0123	0.0192	0.0348	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Manganese-54	-0.00578	0.0219	0.0371	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Potassium-40	24.1	2.33	0.27	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Potassium-40	22.5	2.27	0.302	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Potassium-40	24.1	2.46	0.251	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Potassium-40	24	2.26	0.276	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Potassium-40	22.1	2.13	0.335	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Potassium-40	22.5	2.23	0.284	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Potassium-40	23.1	2.28	0.297	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Potassium-40	23.8	2.27	0.258	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Potassium-40	23.6	2.26	0.267	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Potassium-40	23.6	2.4	0.258	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Sodium-22	0.00358	0.0234	0.0403	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Sodium-22	-0.00503	0.0267	0.045	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Sodium-22	-0.00576	0.0202	0.0337	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Sodium-22	-0.0219	0.0261	0.0421	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Sodium-22	-0.0122	0.0286	0.0465	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Sodium-22	-0.00476	0.026	0.0445	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Sodium-22	-0.0224	0.0263	0.0419	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Sodium-22	0.000288	0.0236	0.0405	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Sodium-22	-0.00781	0.0243	0.0398	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Sodium-22	0.00252	0.0273	0.0474	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Strontium-90	0.0373	0.0307	0.0493	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Strontium-90	0.015	0.028	0.0486	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Strontium-90	0.00895	0.0269	0.0475	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Strontium-90	0.0169	0.024	0.0414	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Strontium-90	0.00755	0.0249	0.0445	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Strontium-90	-0.0155	0.02	0.0421	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Strontium-90	0.0178	0.0293	0.0508	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Strontium-90	0.000434	0.0167	0.0327	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Strontium-90	0.0344	0.0291	0.0462	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Strontium-90	0.0473	0.0307	0.0483	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Thorium-228	1.31	0.18	0.0527	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Thorium-228	1.14	0.136	0.0604	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Thorium-228	1.3	0.138	0.048	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Thorium-228	1.39	0.167	0.0472	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Thorium-228	1.43	0.187	0.0627	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Thorium-228	1.26	0.144	0.0638	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Thorium-228	1.27	0.141	0.0548	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Thorium-228	1.18	0.126	0.0537	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Thorium-228	1.28	0.161	0.0498	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Thorium-228	1.4	0.166	0.0558	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Thorium-232	1.47	0.26	0.118	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Thorium-232	1.14	0.243	0.131	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Thorium-232	1.43	0.25	0.108	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Thorium-232	1.08	0.233	0.143	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Thorium-232	1.55	0.257	0.157	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Thorium-232	1.34	0.252	0.148	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Thorium-232	1.37	0.226	0.139	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Thorium-232	1.38	0.253	0.139	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Thorium-232	1.31	0.257	0.116	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Thorium-232	1.47	0.266	0.153	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Tritium	0.179	0.29	0.499	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Tritium	0.2	0.3	0.514	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Tritium	0.104	0.303	0.535	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Tritium	0.0154	0.283	0.515	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Tritium	0.187	0.302	0.521	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Tritium	0.233	0.305	0.519	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Tritium	-0.0699	0.278	0.52	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Tritium	0.0622	0.291	0.52	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Tritium	0.113	0.286	0.503	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Tritium	0.0631	0.295	0.527	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC020												

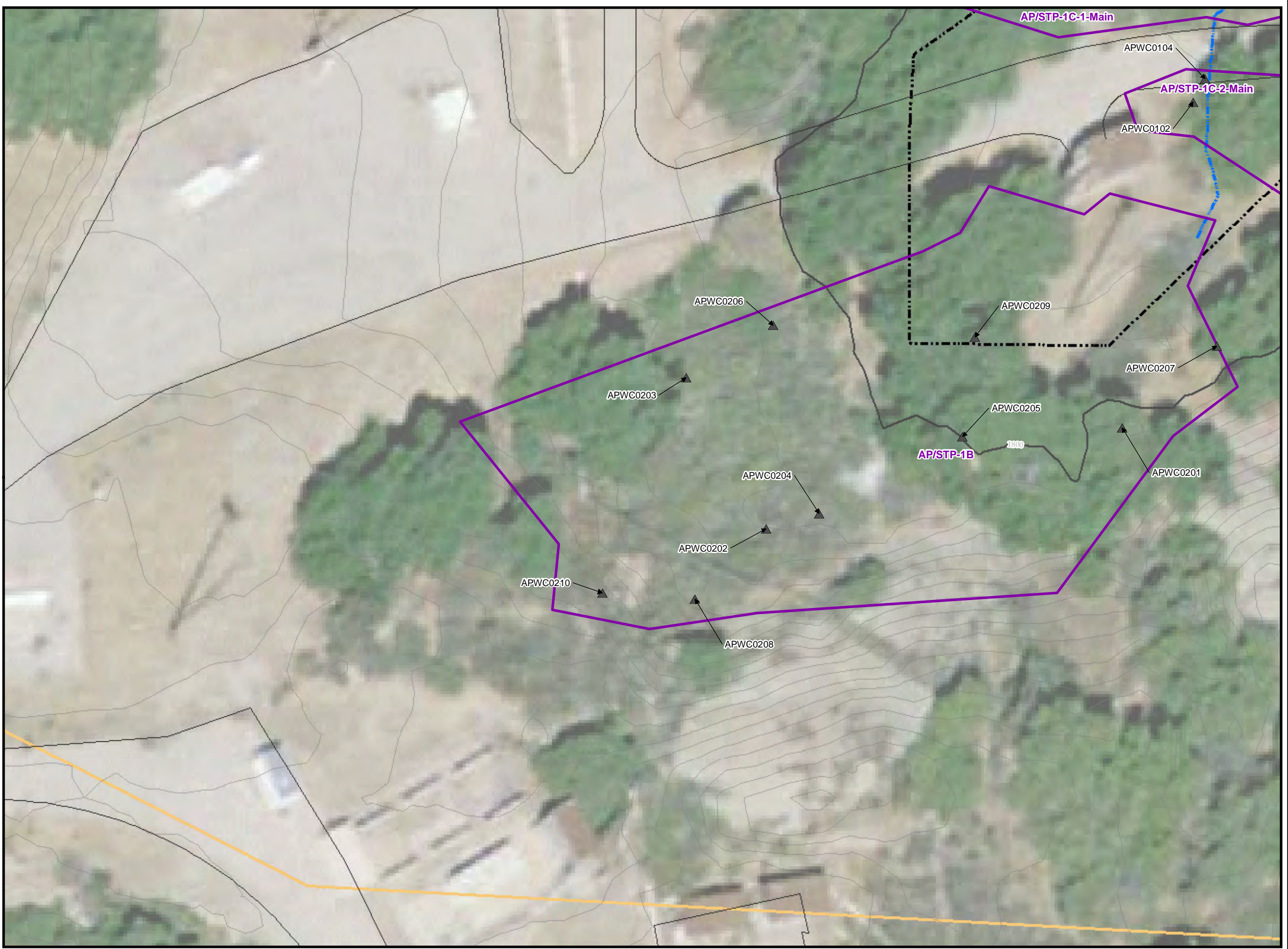
ISRA Outfall 009 - AP/STP 1B

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
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Uranium-235	0.131	0.136	0.229	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Uranium-235	0.0154	0.128	0.229	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Uranium-235	0.051	0.12	0.205	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Uranium-235	0.0794	0.115	0.204	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Uranium-235	0.121	0.106	0.19	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Uranium-235	0.0456	0.114	0.205	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0201	APWC0201S001	Soil	Uranium-238	1.1	0.726	1.31	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0202	APWC0202S001	Soil	Uranium-238	-0.00477	0.986	1.77	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0203	APWC0203S001	Soil	Uranium-238	1.41	1.14	1.4		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0204	APWC0204S001	Soil	Uranium-238	0.761	0.489	0.462		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0205	APWC0205S001	Soil	Uranium-238	1.54	0.613	0.655		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0206	APWC0206S001	Soil	Uranium-238	1.1	1.18	1.47	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0207	APWC0207S001	Soil	Uranium-238	2.26	1	0.941		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0208	APWC0208S001	Soil	Uranium-238	0.41	0.62	1.16	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0209	APWC0209S001	Soil	Uranium-238	0.941	1	1.11	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste
2010 ISRA Waste Characterization	MWH	7/28/2010	AP/STP 1B	APWC0210	APWC0210S001	Soil	Uranium-238	1.14	1.01	1.86	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	257420	Waste

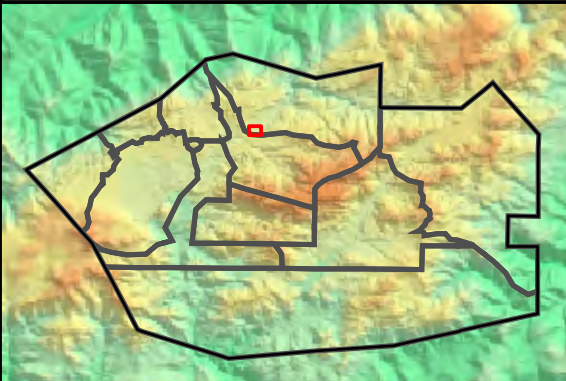
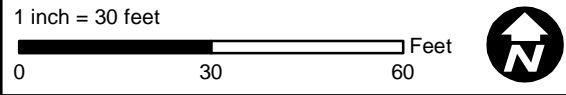
Outfall 009
Sample Locations for AP/STP - 1B

- Base Map Legend**
- Administrative Area Boundary
 - RFI Site Boundary
 - Report Group Boundary
 - NPDES Outfall
 - Dirt Road
 - A/C Paving
 - Drainage
 - Non Jurisdictional Surface Water Pathway
 - Surface Water Divide
 - Elevation Contour

- Figure Legend**
- ▲ Waste Characterization Sample



Document: ISRA_Plots_SP_RD47_SampleLocations_060710.mxd Date: Jun 22, 2010



SANTA SUSANA FIELD LABORATORY

FIGURE X