


Rancho Seco
Final Status Survey Summary Report
April 3, 2008
North Retention Basin
Survey Unit F8480011

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FINAL STATUS SURVEY SUMMARY REPORT

Survey Unit:

F8480011, North Retention Basin

Survey Unit Description:

Operating History: This area is located at the southwest corner of the site. The area surrounds the structures that were used for containment and final treatment of liquid effluents prior to their release from the site. Contaminated resin was reported to have been found in the basins. Operating records and the HSA document occurrences of radioactive material with the potential for a release of radioactivity associated with this survey area. Records confirmed the presence of radioactive material within the area and basin sediment/soil contamination levels up to ~290 pCi/g. In addition, soil contamination levels up to ~5 pCi/g prior to some decontamination activities.

Site Characterization: Soil samples were collected and showed Cs-137 at mean activity levels of 0.086 pCi/g and a maximum activity of 0.196 pCi/g. Based on the classification procedure (DSIP-0020) and previously reported levels of gross activity, the area was determined to be Class 1.

HSA Events: LER-8812.

Survey Unit Design Information:

The Survey Unit Design Parameters are presented in Table 1 below. The survey unit and measurement locations are depicted on the maps in Attachment 1. Direct measurement locations were determined using a random-start, fixed grid pattern and 1432 m² were scanned for approximately 100% coverage. Soil samples were collected at each direct measurement location and analyzed by HPGe detector. The instrumentation used for the survey along with the MDC values are listed in Tables 2-1 and 2-2 in Attachment 2.

Table 1. Survey Unit Design Parameters

Survey Design Parameter	Value	Comment
Survey Area:	F848	North Retention Basin
Survey Unit:	0011	Open Land Area
Class:	1	LTP Table 5-4
SU Area (m²):	1432	
Evaluator:	Gary Frank	
DCGL for Cs-137 surrogate (pCi/g):	52.6	
DCGL for Co-60 (pCi/g):	12.6	
Area Factor:	1.2	Class 1
Design DCGL_{emc} (pCi/g):	64.6	Class 1
LBGR (pCi/g):	25.6	Adjusted
Design Sigma (pCi/g):	0.49	DTBD-06-001, Table 5-4A or B
Type I Error:	0.05	
Type II Error:	0.05	
Sample Area (m²):	102.3	Class 1
Total Area Scanned (m²):	1432	
Scan Coverage (%):	100%	Class 1
Z_{1-α}:	1.645	
Z_{1-β}:	1.645	
Sign P:	0.99865	
Calculated Relative Shift:	55.1	
Relative Shift Used:	3	Uses 3.0 if Rel Shift >3
N-Value:	11	
Design N-Value + 20%:	14	NUREG-1575 Table 5-5
Grid Spacing L:	10.1	Class 1

Survey Results:

A total of 29 direct measurements were made in F8480011. The results are shown in Table 2-1. Statistical data including the mean, median, and standard deviation are shown in Table 2-2. All of the direct measurements were less than Unity. None of the scan measurements indicated areas of elevated activity. Soil samples were counted to the MDCs shown in Table 2-1 of Attachment 2.

In situ gamma spectroscopy (ISOCS) was performed on the soil on the floor of the basin. Forty-three ISOCS scans were made and the maximum as left value for Cs-137 was 3.28 pCi/g and for Co-60 0.275 pCi/g. In addition, 117 scan measurements were performed with the 2350-1 and 44-10 detector to look for discrete particles in the basin floor, walls, and trench which resulted in 100% coverage. Seventy-one of the particle scans had count rates greater than the investigation criterion of 8200 c/m. Fifteen scan grids (Grid 1, 3, 13, 29, 30, 47, 67, 76, 79, 90, 91, 93, 95, 115, and 116) showed initial soil activity greater than the DCGL_w and were remediated below the DCGL_w. Grids exceeding the investigation criteria were sampled and evaluated as shown in Table 3-1. Selected grids greater than the DCGL_w (Grids 1, 29, and 30) were sampled at depth to ensure there was no downward migration of activity,

Table 2-1. Direct Measurement Results

(all activity values in pCi/g)

Sample ID	Cs137				Co60				Unity Total
	MDA	Activity	Uncertainty	Unity Value	MDA	Activity	Uncertainty	Unity Value	
F8480011S0001SS	4.74E-02	<4.74E-02		0.0009	3.98E-02	<3.98E-02		0.0032	0.0041
F8480011S0002SS	4.02E-02	<4.02E-02		0.0008	3.00E-02	<3.00E-02		0.0024	0.0031
F8480011S0003SS	9.16E-02	3.51E00	1.82E-01	0.0668	6.26E-02	1.41E-01	3.91E-02	0.0112	0.078
F8480011S0004SS	7.83E-02	1.34E-01	5.63E-02	0.0025	6.74E-02	<6.74E-02		0.0053	0.0079
F8480011S0006SS	6.75E-02	1.33E00	1.08E-01	0.0253	8.48E-02	<8.48E-02		0.0067	0.0321
F8480011S0007SS	5.18E-02	1.01E-01	4.04E-02	0.0019	3.79E-02	<3.79E-02		0.003	0.0049
F8480011S0008SS	7.91E-02	2.21E00	1.47E-01	0.042	1.09E-01	<1.09E-01		0.0087	0.0506
F8480011S0009SS	5.94E-02	1.60E00	1.14E-01	0.0305	6.13E-02	<6.13E-02		0.0049	0.0354
F8480011S0010SS	6.86E-02	1.98E00	1.40E-01	0.0377	5.64E-02	1.80E-01	4.01E-02	0.0143	0.052
F8480011S0011SS	7.35E-02	2.20E00	1.45E-01	0.0418	5.39E-02	1.81E-01	4.06E-02	0.0143	0.0562
F8480011S0012SS	6.11E-02	1.37E00	1.16E-01	0.026	8.30E-02	<8.30E-02		0.0066	0.0326
F8480011S0013SS	8.62E-02	9.02E00	2.88E-01	0.1714	3.93E-02	1.71E-01	3.75E-02	0.0136	0.185
F8480011S0014SS	4.74E-02	9.15E-02	3.77E-02	0.0017	5.43E-02	<5.43E-02		0.0043	0.006
F8480011S0015SS	9.32E-02	9.29E00	2.88E-01	0.1767	5.27E-02	1.98E-01	4.16E-02	0.0157	0.1924
F8480011S0016SS	7.02E-02	2.54E00	1.58E-01	0.0483	5.64E-02	1.68E-01	3.92E-02	0.0133	0.0617
F8480011S0017SS	8.91E-02	3.58E00	1.87E-01	0.0681	1.24E-01	<1.24E-01		0.0098	0.0779
F8480011S0018SS	7.36E-02	1.56E00	1.26E-01	0.0296	8.06E-02	<8.06E-02		0.0064	0.036
F8480011S0018SS	7.36E-02	1.56E00	1.26E-01	0.0296	8.06E-02	<8.06E-02		0.0064	0.036
F8480011S0019SS	8.18E-02	4.15E00	1.99E-01	0.079	5.25E-02	1.10E-01	3.35E-02	0.0088	0.0878
F8480011S0020SS	5.44E-02	3.17E-01	5.83E-02	0.006	5.79E-02	<5.79E-02		0.0046	0.0106
F8480011S0021SS	7.07E-02	1.47E-01	5.32E-02	0.0028	3.97E-02	<3.97E-02		0.0032	0.006
F8480011S0022SS	6.89E-02	1.36E00	1.26E-01	0.0258	9.54E-02	<9.54E-02		0.0076	0.0334
F8480011S0023SS	8.72E-02	3.45E00	1.81E-01	0.0655	4.09E-02	1.88E-01	4.12E-02	0.0149	0.0805
F8480011S0024SS	6.75E-02	1.52E00	1.28E-01	0.0288	9.85E-02	<9.85E-02		0.0078	0.0366
F8480011S0025SS	7.17E-02	<7.17E-02	4.58E-02	0.0014	6.11E-02	<6.11E-02		0.0048	0.0062
F8480011S0026SS	6.01E-02	4.46E-01	7.09E-02	0.0085	8.68E-02	<8.68E-02		0.0069	0.0154
F8480011S0027SS	5.79E-02	<5.79E-02		0.0011	5.39E-02	<5.39E-02		0.0043	0.0054
F8480011S0028SS	7.47E-02	<7.47E-02		0.0014	6.19E-02	<6.19E-02		0.0049	0.0063
F8480011S0029SS	7.56E-02	<7.56E-02		0.0014	5.87E-02	<5.87E-02		0.0047	0.0061

Table 2-2. Direct Measurements Results Summary

	Cs137 Activity (pCi/g)	Co60 Activity (pCi/g)	Cs137 Unity	Co60 Unity	Unity Total
DCGLw	52.6	12.6			
Mean	1.86E00	9.67E-02	0.0353	0.0077	0.043
Median	1.37E00	8.30E-02	0.026	0.0066	0.0334
Standard Deviation	2.37E00	5.10E-02	0.0451	0.004	0.0483
Cs137 Activity Range (pCi/g)	4.02E-02 to 9.29E00				
Co60 Activity Range (pCi/g)	3.00E-02 to 1.98E-01				
Cs137 Unity Range	0.0008 to 0.1767				
Co60 Unity Range	0.0024 to 0.0157				
Total Unity Range	0.0031 to 0.1924				
Sample Count	29				

Survey Unit Data Assessment:

The survey design required 29 direct measurements for the Sign Test. The critical value and the results of the Sign Test are presented in Table 3. The sample mean and median values were less than the DCGL. The sample standard deviation was greater than the design standard deviation, but no additional samples were required.

Table 3. Data Assessment Results

Survey Results Parameter	Value	Comment
Actual Direct Measurements (N):	29	
Median (Unity):	0.033	
Mean (Unity):	0.043	
Direct Measurement Std Deviation (Unity):	0.048	
Maximum (Unity):	0.192	
Sign Test Final N Value:	29	
S+ Value:	29	
Critical Value:	19	
Sufficient Samples Collected:	Yes	
Maximum Value < Unitized DCGL:	Yes	
Median Value < Unitized DCGL:	Yes	
Mean Value < Unitized DCGL:	Yes	
Maximum Value < DCGL_{mc} (Unity):	Yes	Class 1
Standard Deviation <= Sigma:	Investigate	All values <0.5 DCGL _w
Pass the Sign Test?	Yes	
Reject the Null Hypothesis?	Yes	
Does the Survey Unit Pass All Criteria?	Investigate	Survey Passes

Survey Unit Investigations and Results:

Seventy-one investigations were required for the scan measurements and the results are reported in Attachment 3. The EMC unity rule was not exceeded as shown in Table 3-1.

ALARA Statement:

As stated in Chapter 4 of the LTP, as long as the residual activity within the survey unit is less than the DCGL, the ALARA criterion has been met.

Changes in Initial Survey Unit Assumptions:

The survey unit was designed as a Class 1 land survey and the sample results are consistent with that classification. The variability of the survey results was greater than the characterization data used for survey design. Seventy-one areas of elevated activity were detected. The EMC unity rule was not exceeded as shown in Table 3-1 therefore the EMC criterion was met.

Conclusion:

The FSS of this survey unit was properly designed as a Class 1 survey based on Table 5-4 of the LTP. The required number of direct measurements was made and the scan coverage met the requirement of Table 5-6 of the LTP. All of the direct measurements were less than Unity. No investigations were required.

The direct measurement data support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and that the data quality objectives were met.

It is concluded that survey unit F8480011 meets the release criteria of 10CFR20.1402.

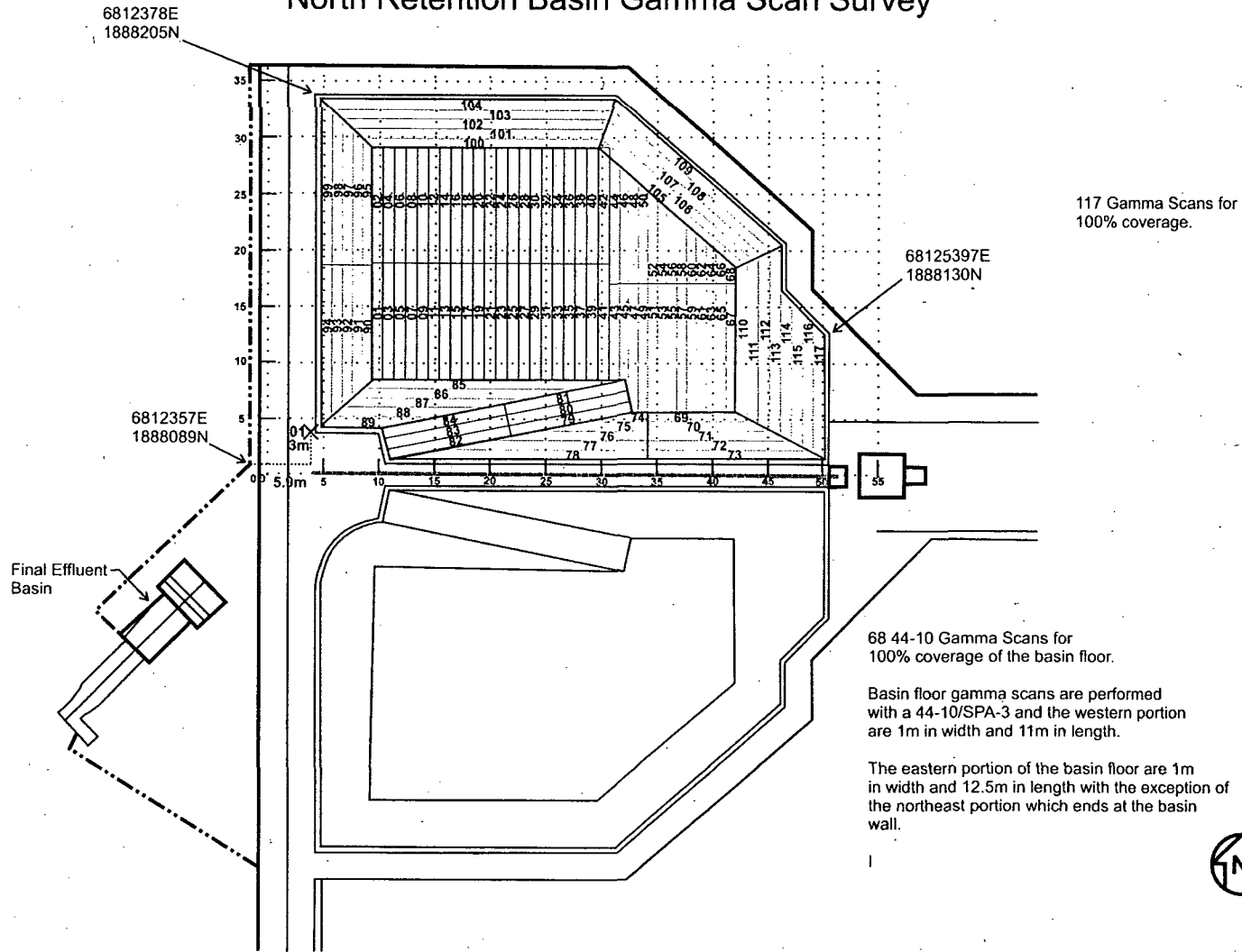
Attachment 1

Maps

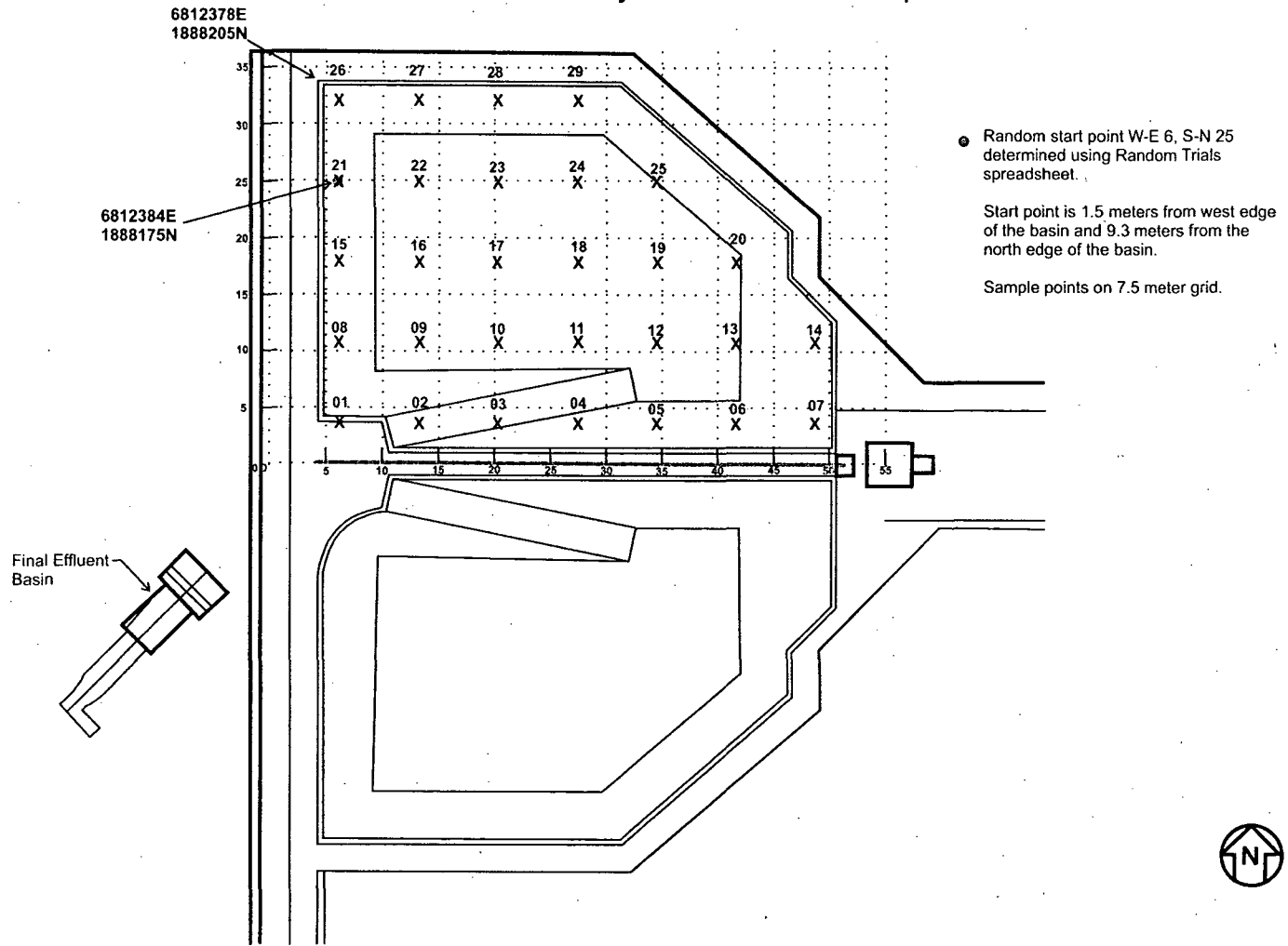
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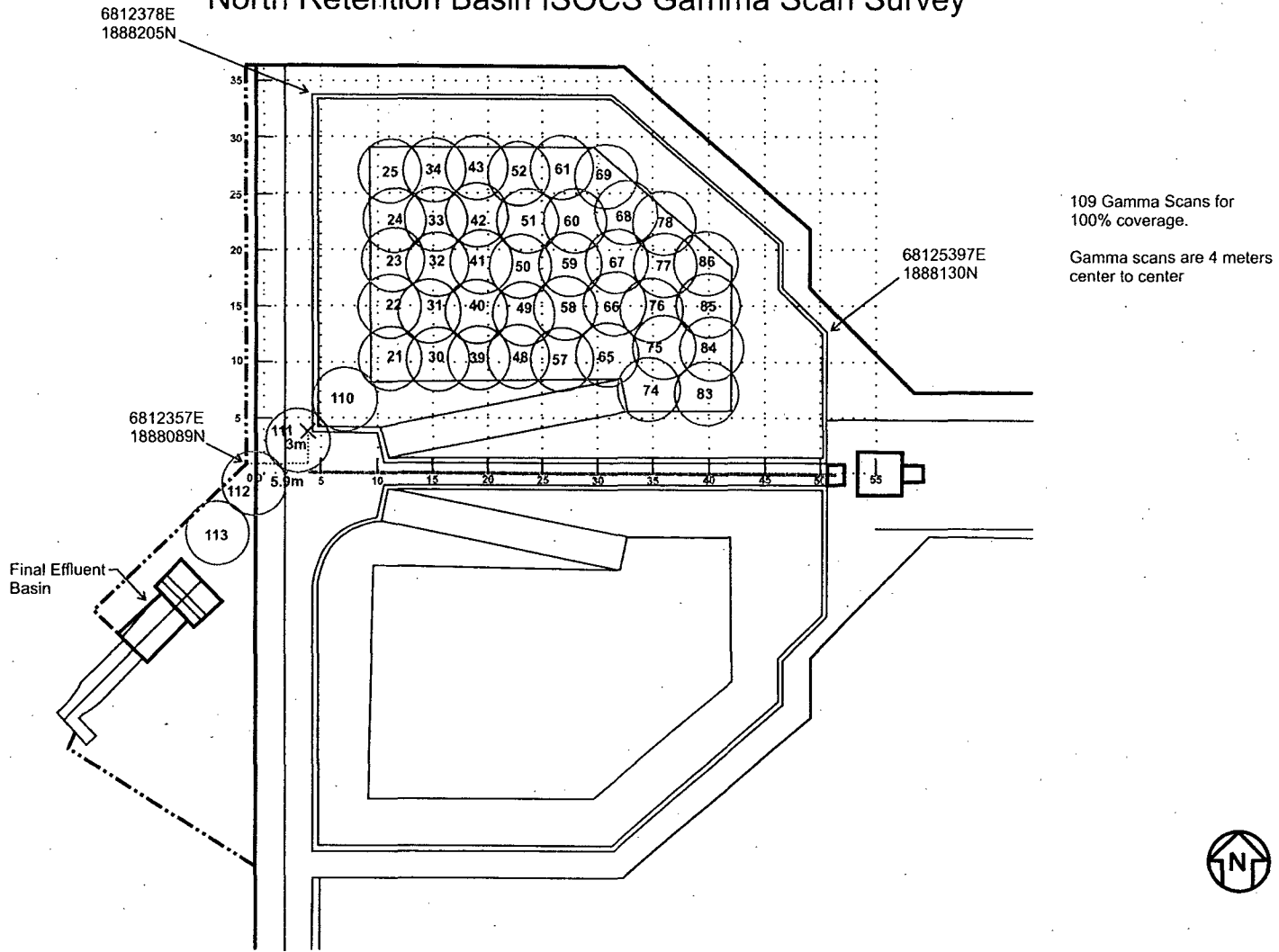
North Retention Basin Gamma Scan Survey



North Retention Basin Survey Gamma/Soil Sample Directs



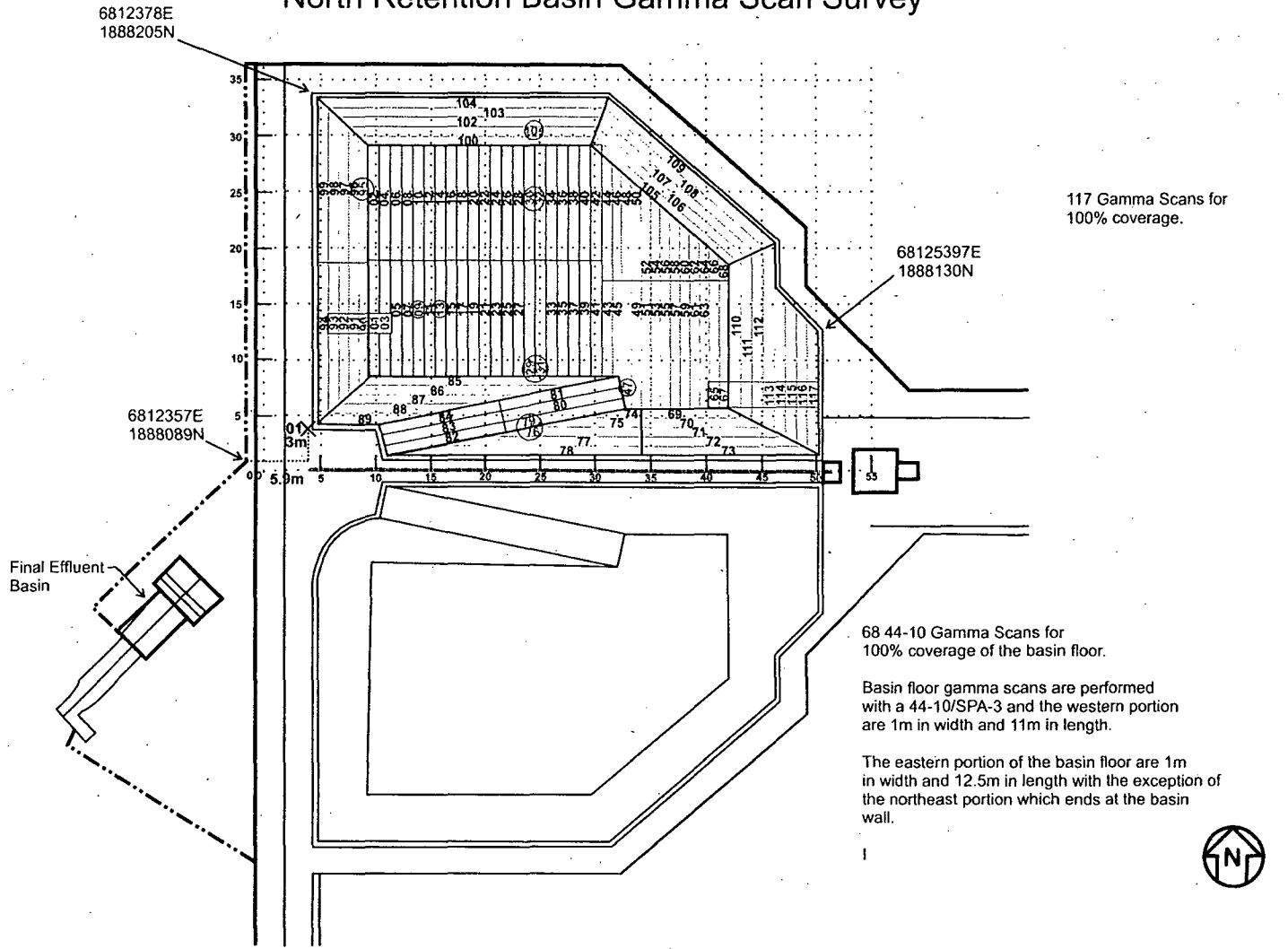
North Retention Basin ISOCS Gamma Scan Survey



109 Gamma Scans for 100% coverage.
Gamma scans are 4 meters center to center



North Retention Basin Gamma Scan Survey



Attachment 2

Instrumentation

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Table 2-1. Survey Unit Instrumentation

Instrument	Detector Model No.	Detector Serial No.	MDC
HPGe	N/A	05069128	Soil – 0.288 pCi/g Cs-137 Soil – 0.124 pCi/g Co-60
ISOCS	N/A	2983947	Soil – 0.201 pCi/g Cs-137 Soil – 0.223 pCi/g Co-60
2350-1	44-10	171992	5.2 pCi/g Cs-137
2350-1	44-10	171995	5.2 pCi/g Cs-137

Table 2-2. Investigation Criteria and DCGL

Instrument	Parameter	Value
ISOCS	Investigation Criteria - Scan	Soil – 26.3 pCi/g Cs-137 Soil – 6.3 pCi/g Co-60
All	DCGL _w	52.6 Cs-137 12.6 Co-60
All	DCGL _{EMC}	64.6 Cs-137
NaI	Investigation Criteria – Scan	8055 cpm

Attachment 3

Investigation

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Table 3-1 Survey Unit Investigation

<i>Grid</i>	<i>Investigation Level (pCi/g)</i>	<i>Initial Value (pCi/g)</i>	<i>Investigation Result (pCi/g)</i>	<i>Elevated Area (m²)</i>	<i>Area Factor</i>	<i>DCGL_{emc}</i>	<i>Investigation Result (pCi/g)</i>	<i>DCGL_{emc} Unity Fraction</i>
1	52.6	136	11.9	0.5	11.3	1188.76	11.9	0.0084
1	12.6	4.99	0.644	0.5	11.8	295	0.644	0.0019
2	52.6	18.5	18.5	0.5	11.3	1188.76	18.5	0.0140
2	12.6	1.07	1.07	0.5	11.8	295	1.07	0.0033
3	52.6	58	2.17	0.5	11.3	1188.76	2.17	0.0003
3	12.6	1.32	0.17	0.5	11.8	295	0.17	0.0002
4	52.6	17.3	17.3	0.5	11.3	1188.76	17.3	0.0130
4	12.6	0.921	0.921	0.5	11.8	295	0.921	0.0028
5	52.6	18.8	18.8	0.5	11.3	1188.76	18.8	0.0143
5	12.6	0.926	0.926	0.5	11.8	295	0.926	0.0028
9	52.6	42.9	9.44	0.5	11.3	1188.76	9.44	0.0064
9	12.6	0.662	3.75	0.5	11.8	295	3.75	0.0124
10	52.6	10.6	10.6	0.5	11.3	1188.76	10.6	0.0074
10	12.6	0.147	0.147	0.5	11.8	295	0.147	0.0002
11	52.6	26.7	26.7	0.5	11.3	1188.76	26.7	0.0209
11	12.6	0.798	0.798	0.5	11.8	295	0.798	0.0024
13	52.6	0.512	0.512	0.5	11.3	1188.76	0.512	0.0000
13	12.6	0.188	0.188	0.5	11.8	295	0.188	0.0003
15	52.6	17.5	17.5	0.5	11.3	1188.76	17.5	0.0132
15	12.6	0.394	0.394	0.5	11.8	295	0.394	0.0010
17	52.6	13.2	13.2	0.5	11.3	1188.76	13.2	0.0095
17	12.6	0.148	0.148	0.5	11.8	295	0.148	0.0002
19	52.6	8.28	8.28	0.5	11.3	1188.76	8.28	0.0054
19	12.6	0.278	0.278	0.5	11.8	295	0.278	0.0006

Grid	Investigation Level (pCi/g)	Initial Value (pCi/g)	Investigation Result (pCi/g)	Elevated Area (m ²)	Area Factor	DCGL _{emc}	Investigation Result (pCi/g)	DCGL _{emc} Unity Fraction
23	52.6	24	24	0.5	11.3	1188.76	24	0.0186
23	12.6	0.196	0.196	0.5	11.8	295	0.196	0.0003
27	52.6	18.1	18.1	0.5	11.3	1188.76	18.1	0.0137
27	12.6	0.483	0.483	0.5	11.8	295	0.483	0.0013
29	52.6	139	8.27	0.5	11.3	1188.76	8.27	0.0054
29	12.6	2.3	0.473	0.5	11.8	295	0.473	0.0013
30	52.6	99.4	8.27	0.5	11.3	1188.76	8.27	0.0054
30	12.6	0.613	0.473	0.5	11.8	295	0.473	0.0013
31	52.6	37.6	1.61	1.61	11.3	1188.76	1.61	0.0000
31	12.6	2.09	0.0951	0.5	11.8	295	0.0951	0.0000
32	52.6	39.8	1.61	0.5	11.3	1188.76	1.61	0.0000
32	12.6	0.251	0.0951	0.5	11.8	295	0.0951	0.0000
33	52.6	12	12	0.5	11.3	1188.76	12	0.0085
33	12.6	0.0991	0.0991	0.5	11.8	295	0.0991	0.0000
35	52.6	7.58	7.58	0.5	11.3	1188.76	7.58	0.0048
35	12.6	0.309	0.309	0.5	11.8	295	0.309	0.0007
43	52.6	4.96	4.96	0.5	11.3	1188.76	4.96	0.0026
43	12.6	0.18	0.18	0.5	11.8	295	0.18	0.0003
45	52.6	24.2	24.2	0.5	11.3	1188.76	24.2	0.0188
45	12.6	0.328	0.328	0.5	11.8	295	0.328	0.0008
47	52.6	52.5	7.76	0.5	11.3	1188.76	7.76	0.0050
47	12.6	0.906	3.04	0.5	11.8	295	3.04	0.0100
50	52.6	14.7	14.7	0.5	11.3	1188.76	14.7	0.0108
50	12.6	0.559	0.559	0.5	11.8	295	0.559	0.0016
52	52.6	23.3	23.3	0.5	11.3	1188.76	23.3	0.0180
52	12.6	0.58	0.58	0.5	11.8	295	0.58	0.0016

Grid	Investigation Level (pCi/g)	Initial Value (pCi/g)	Investigation Result (pCi/g)	Elevated Area (m ²)	Area Factor	DCGL _{emc}	Investigation Result (pCi/g)	DCGL _{emc} Unity Fraction
54	52.6	18.6	18.6	0.5	11.3	1188.76	18.6	0.0141
54	12.6	0.766	0.766	0.5	11.8	295	0.766	0.0023
58	52.6	17.8	17.8	0.5	11.3	1188.76	17.8	0.0134
58	12.6	0.723	0.723	0.5	11.8	295	0.723	0.0021
60	52.6	20.1	20.1	0.5	11.3	1188.76	20.1	0.0153
60	12.6	0.854	0.854	0.5	11.8	295	0.854	0.0026
63	52.6	10.9	10.9	0.5	11.3	1188.76	10.9	0.0076
63	12.6	0.213	0.213	0.5	11.8	295	0.213	0.0004
65	52.6	42.2	3.3	0.5	11.3	1188.76	3.3	0.0012
65	12.6	0.685	0.104	0.5	11.8	295	0.104	0.0000
67	52.6	86.8	3.3	0.5	11.3	1188.76	3.3	0.0012
67	12.6	0.794	0.104	0.5	11.8	295	0.104	0.0000
71	52.6	12.8	12.8	0.5	11.3	1188.76	12.8	0.0092
71	12.6	0.0611	0.0611	0.5	11.8	295	0.0611	0.0000
72	52.6	32.5	32.5	0.5	11.3	1188.76	32.5	0.0258
72	12.6	1.39	1.39	0.5	11.8	295	1.39	0.0044
74	52.6	17.8	17.8	0.5	11.3	1188.76	17.8	0.0134
74	12.6	0.494	0.494	0.5	11.8	295	0.494	0.0013
75	52.6	1.27	1.27	0.5	11.3	1188.76	1.27	0.0000
75	12.6	0.329	0.329	0.5	11.8	295	0.329	0.0008
76	52.6	82.1	7.08	0.5	11.3	1188.76	7.08	0.0044
76	12.6	2.4	0.186	0.5	11.8	295	0.186	0.0003
77	52.6	6.1	6.1	0.5	11.3	1188.76	6.1	0.0036
77	12.6	0.132	0.132	0.5	11.8	295	0.132	0.0001
79	52.6	54.9	7.08	0.5	11.3	1188.76	7.08	0.0044
79	12.6	6.28	0.186	0.5	11.8	295	0.186	0.0003

Grid	Investigation Level (pCi/g)	Initial Value (pCi/g)	Investigation Result (pCi/g)	Elevated Area (m ²)	Area Factor	DCGL _{emc}	Investigation Result (pCi/g)	DCGL _{emc} Unity Fraction
80	52.6	15.5	15.5	0.5	11.3	1188.76	15.5	0.0115
80	12.6	0.155	0.155	0.5	11.8	295	0.155	0.0002
81	52.6	8.79	8.79	0.5	11.3	1188.76	8.79	0.0058
81	12.6	0.179	0.179	0.5	11.8	295	0.179	0.0003
82	52.6	1.81	1.81	0.5	11.3	1188.76	1.81	0.0000
82	12.6	0.169	0.169	0.5	11.8	295	0.169	0.0002
85	52.6	40.3	2.98	0.5	11.3	1188.76	2.98	0.0009
85	12.6	2	1.28	0.5	11.8	295	1.28	0.0040
86	52.6	45	2.98	0.5	11.3	1188.76	2.98	0.0009
86	12.6	2.57	1.28	0.5	11.8	295	1.28	0.0040
87	52.6	23	23	0.5	11.3	1188.76	23	0.0178
87	12.6	0.339	0.339	0.5	11.8	295	0.339	0.0008
90	52.6	95.4	0.791	0.5	11.3	1188.76	0.791	0.0000
90	12.6	8.74	0.161	0.5	11.8	295	0.161	0.0002
91	52.6	96.7	0.761	0.5	11.3	1188.76	0.761	0.0000
91	12.6	6.07	0.161	0.5	11.8	295	0.161	0.0002
92	52.6	43.3	0.0681	0.5	11.3	1188.76	0.0681	0.0000
92	12.6	0.846	0.0741	0.5	11.8	295	0.0741	0.0000
93	52.6	94.5	0.0681	0.5	11.3	1188.76	0.0681	0.0000
93	12.6	2.81	0.0741	0.5	11.8	295	0.0741	0.0000
95	52.6	82.4	7.48	0.5	11.3	1188.76	7.48	0.0047
95	12.6	0.997	0.0734	0.5	11.8	295	0.0734	0.0000
96	52.6	37.7	7.48	0.5	11.3	1188.76	7.48	0.0047
96	12.6	1.7	0.0734	0.5	11.8	295	0.0734	0.0000
97	52.6	12.1	12.1	0.5	11.3	1188.76	12.1	0.0086
97	12.6	0.289	0.289	0.5	11.8	295	0.289	0.0007

<i>Grid</i>	<i>Investigation Level (pCi/g)</i>	<i>Initial Value (pCi/g)</i>	<i>Investigation Result (pCi/g)</i>	<i>Elevated Area (m²)</i>	<i>Area Factor</i>	<i>DCGL_{emc}</i>	<i>Investigation Result (pCi/g)</i>	<i>DCGL_{emc} Unity Fraction</i>
98	52.6	32.8	32.8	0.5	11.3	1188.76	32.8	0.0260
98	12.6	0.406	0.406	0.5	11.8	295	0.406	0.0010
101	52.6	35	4.92	0.5	11.3	1188.76	4.92	0.0026
101	12.6	0.547	1.41	0.5	11.8	295	1.41	0.0045
102	52.6	25.7	25.7	0.5	11.3	1188.76	25.7	0.0201
102	12.6	0.43	0.43	0.5	11.8	295	0.43	0.0011
103	52.6	19.8	19.8	0.5	11.3	1188.76	19.8	0.0151
103	12.6	1.01	1.01	0.5	11.8	295	1.01	0.0031
104	52.6	13.7	13.7	0.5	11.3	1188.76	13.7	0.0100
104	12.6	0.263	0.263	0.5	11.8	295	0.263	0.0006
105	52.6	11.9	11.9	0.5	11.3	1188.76	11.9	0.0084
105	12.6	0.454	0.454	0.5	11.8	295	0.454	0.0012
106	52.6	13.7	13.7	0.5	11.3	1188.76	13.7	0.0100
106	12.6	0.406	0.406	0.5	11.8	295	0.406	0.0010
107	52.6	9.49	9.49	0.5	11.3	1188.76	9.49	0.0064
107	12.6	0.305	0.305	0.5	11.8	295	0.305	0.0007
108	52.6	33.6	11.6	0.5	11.3	1188.76	11.6	0.0082
108	12.6	0.667	0.0995	0.5	11.8	295	0.0995	0.0000
109	52.6	2.08	2.08	0.5	11.3	1188.76	2.08	0.0002
109	12.6	0.098	0.098	0.5	11.8	295	0.098	0.0000
110	52.6	25.4	25.4	0.5	11.3	1188.76	25.4	0.0198
110	12.6	0.737	0.737	0.5	11.8	295	0.737	0.0022
111	52.6	31.7	31.7	0.5	11.3	1188.76	31.7	0.0251
111	12.6	0.78	0.78	0.5	11.8	295	0.78	0.0023
112	52.6	16.6	16.6	0.5	11.3	1188.76	16.6	0.0124
112	12.6	0.51	0.51	0.5	11.8	295	0.51	0.0014

Grid	Investigation Level (pCi/g)	Initial Value (pCi/g)	Investigation Result (pCi/g)	Elevated Area (m ²)	Area Factor	DCGL _{emc}	Investigation Result (pCi/g)	DCGL _{emc} Unity Fraction
113	52.6	42.4	7.6	0.5	11.3	1188.76	7.6	0.0048
113	12.6	1.68	0.108	0.5	11.8	295	0.108	0.0000
114	52.6	48.5	7.6	0.5	11.3	1188.76	7.6	0.0048
114	12.6	2.04	0.108	0.5	11.8	295	0.108	0.0000
115	52.6	53.7	0.811	0.5	11.3	1188.76	0.811	0.0000
115	12.6	2.84	0.0824	0.5	11.8	295	0.0824	0.0000
116	52.6	77.4	0.811	0.5	11.3	1188.76	0.811	0.0000
116	12.6	2.51	0.0824	0.5	11.8	295	0.0824	0.0000
117	52.6	39.1	0.811	0.5	11.3	1188.76	0.811	0.0000
117	12.6	2.48	0.0824	0.5	11.8	295	0.0824	0.0000
118	52.6	0.0446	0.0446	0.5	11.3	1188.76	0.0446	0.0000
118	12.6	0.0326	0.0326	0.5	11.8	295	0.0326	0.0000
119	52.6	0.0408	0.0408	0.5	11.3	1188.76	0.0408	0.0000
119	12.6	0.0485	0.0485	0.5	11.8	295	0.0485	0.0000
Survey Unit Remainder						DCGL = *52.6 **12.6	SU Mean = 1.86 0.0967	0.0431
EMC Unity Sum								0.7099

Initial soil analysis found fifteen (15) grids (1, 3, 13, 29, 30, 47, 67, 76, 79, 90, 91, 93, 95, 115, and 116) exceeding the DCGL_w. All grids exceeding the DCGL_w were remediated below the DCGL_w.

*Cs-137 and **Co-60 Survey Unit Remainder is 0.0431

The first result for each grid is the Cs-137, the second result (shaded) is Co-60.

Attachment 4

Data Assessment

April 3, 2008

Survey Unit F8480011

