
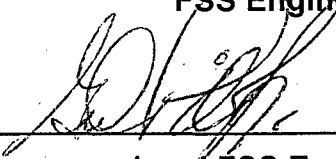
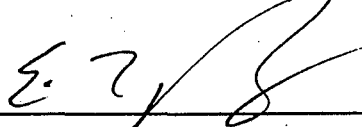


Rancho Seco
Final Status Survey Summary Report
April 2, 2008
Switch Gear (Wire Yard) Paved Areas
Survey Unit F8510002

Prepared By:  Date: 4-2-2008
FSS Engineer

Reviewed By:  Date: 4/3/08
Lead FSS Engineer

Approved By:  Date: 5-1-08
Dismantlement Superintendent, Radiological

FINAL STATUS SURVEY SUMMARY REPORT

Survey Unit:

F8510002, Switch Gear (Wire Yard) Paved Areas

Survey Unit Description:

Operating History: The area consisted of both paved and soil covered land. The area was located on the west side of the IA and contained the electrical switchgear for the system grid. Operating records and the HSA document the storage of radioactive material within the area.

Site Characterization: Soil samples were collected and showed Cs-137 at mean activity levels of 0.056pCi/g and a maximum activity of 0.072 pCi/g. Based on the classification procedure (DSIP-0020) and levels of activity reported, the area was determined to be a Class 3 area.

HSA Events: HSA Report pg. 64.

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 randomly determined and 424 m² were scanned for approximately 3% coverage. Gamma measurements were made at each direct measurement location and analyzed by the Inspector 1000. 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:	F851	Switch Gear (Wire Yard) Paved Areas
Survey Unit:	0002	Open Land Area
Class:	3	LTP Table 5-4
SU Area (m²):	14505	
Evaluator:	Gary Frank	
DCGL Cs137 surrogate (pCi/g):	51.2	
Area Factor:	N/A	Class 3
Design DCGL_{mc} (pCi/g):	N/A	Class 3
LBGR (pCi/g):	25.6	Default = 50% DCGL
Design Sigma (pCi/g):	0.097	DTBD-06-001, Table 5-4D
Type I Error:	0.05	
Type II Error:	0.05	
Nuclide:	Cs137	
Sample Area (m²):	N/A	Class 3
Total Area Scanned (m²):	424	
Scan Coverage (%):	2.9%	Class 3
Z_{1-α}:	1.645	
Z_{1-β}:	1.645	
Sign P:	0.99865	
Calculated Relative Shift:	263.9	
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:	N/A	Class 3

Survey Results:

A total of 14 direct measurements were made in F8510002. The results including mean, median, standard deviation and range are shown in Table 2. All of the direct measurements were less than the DCGL. None of the scan measurements indicated areas of elevated activity. Direct measurements were counted to the MDC shown in Table 2-1 of Attachment 2.

Table 2. Direct Measurement Results
(all activity values in pCi/g)

Measurement ID	Cs137 MDA	Cs137 Activity	Uncertainty
Mean:		8.20E-01	
Median:		8.19E-01	
Standard Deviation:		2.81E-02	
Range:	7.70E-01 to 8.77E-01		
F8510002 A0001GD	8.32E-01	< 8.32E-01	
F8510002 A0002GD	8.01E-01	< 8.01E-01	
F8510002 A0003GD	8.10E-01	< 8.10E-01	
F8510002 A0004GD	8.14E-01	< 8.14E-01	
F8510002 A0005GD	8.51E-01	< 8.51E-01	
F8510002 A0006GD	8.04E-01	< 8.04E-01	
F8510002 A0007GD	8.24E-01	< 8.24E-01	
F8510002 A0008GD	8.27E-01	< 8.27E-01	
F8510002 A0009GD	8.77E-01	< 8.77E-01	
F8510002 A0010GD	8.00E-01	< 8.00E-01	
F8510002 A0011GD	7.87E-01	< 7.87E-01	
F8510002 A0012GD	8.27E-01	< 8.27E-01	
F8510002 A0013GD	8.52E-01	< 8.52E-01	
F8510002 A0014GD	7.70E-01	< 7.70E-01	

Survey Unit Data Assessment:

The survey design required 14 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 less than the design standard deviation so no additional samples were required.

Table 3. Data Assessment Results

Survey Results Parameter	Value	Comment
Actual Direct Measurements (N):	14	
Median (pCi/g):	8.19E-01	
Mean (pCi/g):	8.20E-01	
Standard Deviation (pCi/g):	2.81E-02	
Maximum (pCi/g):	8.77E-01	
Sign Test Final N Value:	14	
S+ Value:	14	
Critical Value:	10	
Sufficient Samples Collected:	Yes	
Maximum Value < DCGL:	Yes	
Median Value < DCGL:	Yes	
Mean Value < DCGL:	Yes	
Maximum Value < DCGL_{mc}:	N/A	Class 3
Standard Deviation <= Sigma:	Yes	
Pass the Sign Test?	Yes	
Reject the Null Hypothesis?	Yes	
The survey unit passes all conditions?	Yes	

Survey Unit Investigations and Results:

No investigations were required for either direct or scan measurements and no investigation results are reported.

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 (i.e. the survey unit average activity is less than the DCGL and the EMC criterion has been met), the ALARA criterion has been met.

Changes in Initial Survey Unit Assumptions:

The survey unit was designed as a Class 3 land survey and the sample results are consistent with that classification. The variability of the survey results was less than the characterization data used for survey design. No potential areas of elevated activity were detected.

Conclusion:

The FSS of this survey unit was properly designed as a Class 3 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 the DCGL. 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.

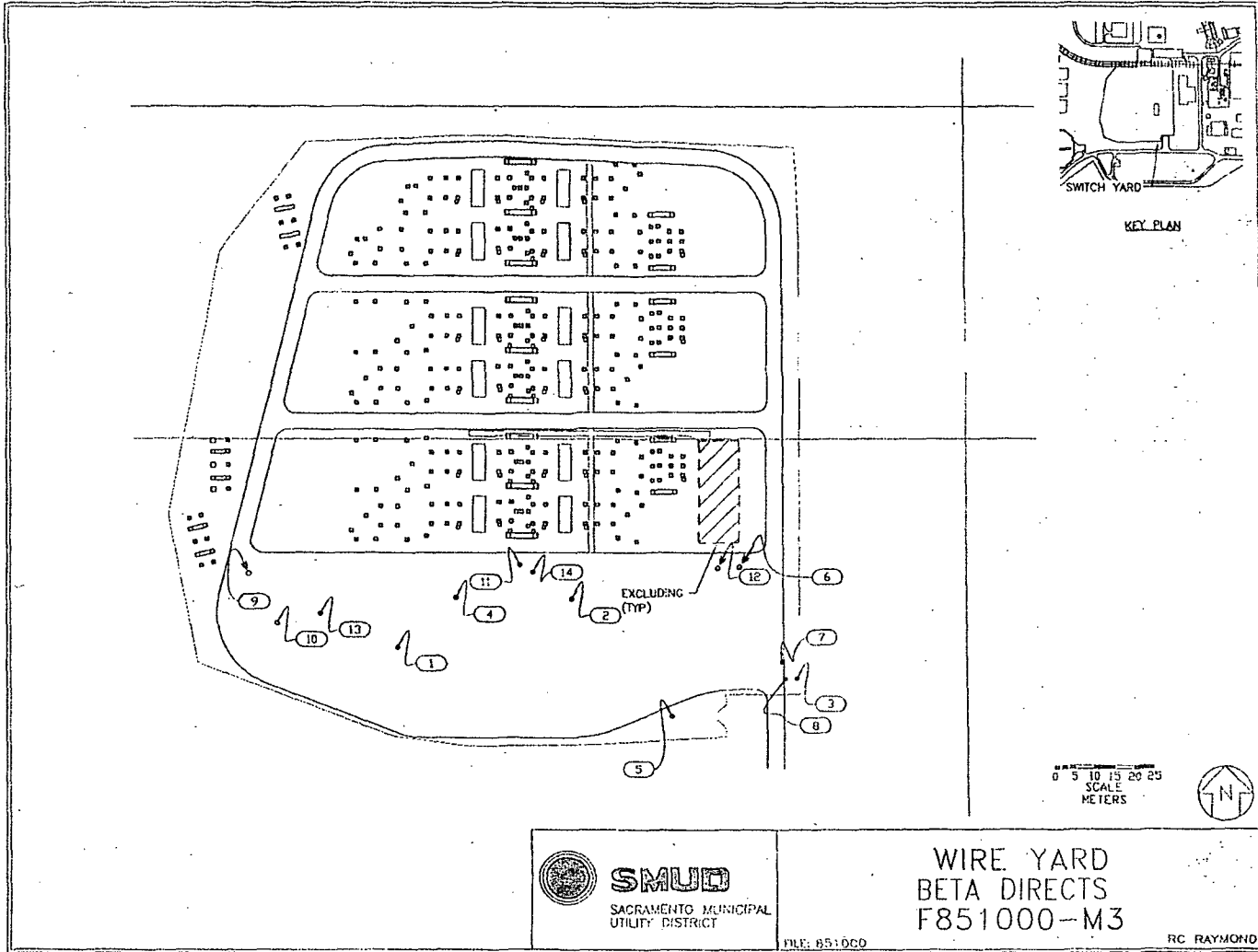
It is concluded that survey unit F8510002 meets the release criteria of 10CFR20.1402.

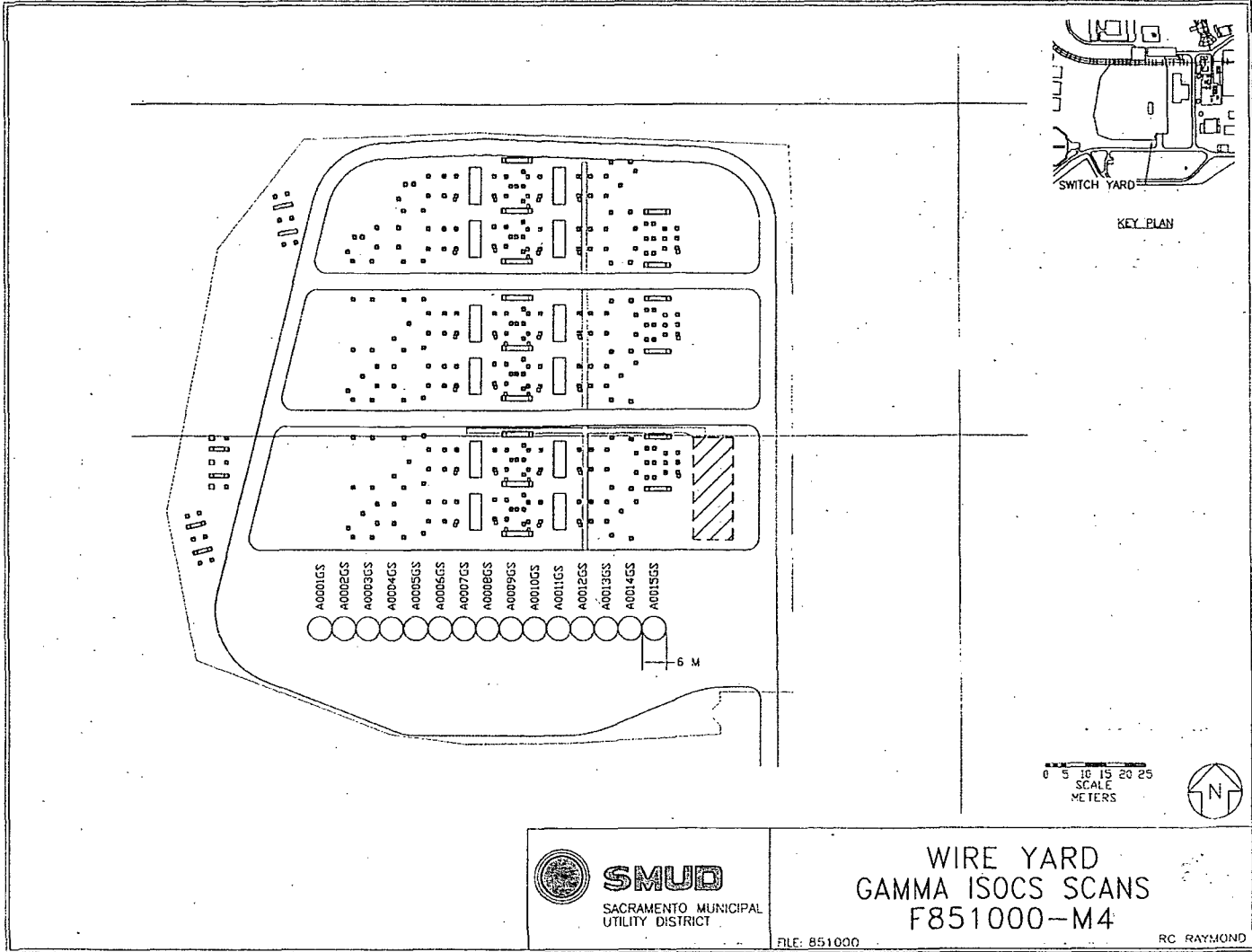
Attachment 1

Maps

April 2, 2008

Survey Unit F8510002





FILE: 851000

WIRE YARD
GAMMA ISOCS SCANS
F851000-M4

RC RAYMOND

Attachment 2

Instrumentation

April 2, 2008

Survey Unit F8510002

Table 2-1. Survey Unit Instrumentation

Instrument	Detector Model No.	Detector Serial No.	MDC
Inspector	N/A	08051294	Asphalt – 0.877 pCi/g Cs-137
ISOCS	N/A	1983920	Asphalt – 0.382 pCi/g Cs-137

Table 2-2. Investigation Criteria and DCGL

Instrument	Parameter	Value
ISOCS	Investigation Criteria - Scan	Asphalt – 26.3 pCi/g Cs-137
All	DCGL _w	51.2 Cs-137 12.6 Co-60
All	DCGL _{EMC}	N/A

Attachment 3

Investigation

April 2, 2008

Survey Unit F8510002

(none required)

Attachment 4

Data Assessment

April 2, 2008

Survey Unit F8510002

