FirstEnergy	SNEC CALCULAT		OVER SHE	ET	
· · · · · · · · · · · · · · · · · · ·	CALCULATION	N DESCI	RIPTION		
Calculation Number	Revision	Number	Effective Date	F	Page Number
E900-04-013		0	7/15/04		1 of
Subject		;			
CV Yard Survey Design -	- North East Side of CV				
Question 1 - Is this calculation	defined as "In QA Scope"? Refe	r to definition	on 3.5. Yes ⊠ N	  o []	
Question 2 - Is this calculation	n defined as a "Design Calculation	"? Refer to	definitions 3.2 and 3.	3. Yes 🛛	No 🗖
Question 3 - Does the calcula	tion have the potential to affect an	1 SSC as de	scribed in the USAR?	Yes 🗌	No 🛛
Assurance Plan. If a "Yes" and calculation as the Technical Review	ined for Question 1, the calculation mo swer is obtained for Question 2, the ewer. If a "YES" answer is obtained for ot have the potential to affect SSC's m	e Calculation or Question	n Originator's immediate 3, SNEC Management a	supervisor s	should not re
	DESCRIPTION	OF RE	VISION		
				-	
				•	
				•	
,					
,					
!					
!	· .				
?					
!					
?					
!	•				
?					
?	3				
?	3				
?		1			
?		<u> </u>	JRES		
	APPROVAL S	SIGNATI	URES	· · · ·	
		SIGNATI	JRES	Date	
Calculation Originator	APPROVAL S B. Brosey/ B.	SIGNATI	JRES	Date	
Calculation Originator	APPROVAL S	SIGNATI	JRES	· · · ·	
Calculation Originator	APPROVAL S B. Brosey/ E. P. Donnachie/	SIGNATI	JRES	Date Date	<u> </u>
Calculation Originator Technical Reviewer	APPROVAL S B. Brosey/ B.	SIGNATI	JRES	Date	7/15/ 7/15/ 163
Calculation Originator Technical Reviewer Additional Review	APPROVAL S B. Brosey/ E. P. Donnachie/	SIGNATI	JRES	Date Date	<u> </u>
? Calculation Originator Technical Reviewer Additional Review	APPROVAL S B. Brosey/ E. P. Donnachie/	SIGNATI	JRES	Date Date Date	

•

! !

. .

FirstEnergy	SNEC CALCULATION SHEET	
-Calculation Number	Revision Number	Page Number
E900-04-013	0	Page 2 of <u>10</u>
Subject		
-CV Yard Survey Design -	- <del>Nort</del> h East Side of CV	

# 1.0 PURPOSE

1.1 The purpose of this calculation is to develop a survey design for one (1) CV Yard open land area (OL1-4), and a concrete cap poured over the cut-off CV Dome area. These are below grade, Class 1 and Class 3 survey units to be surveyed IAW **Reference 3.1** and **3.2**.

# 2.0 SUMMARY OF RESULTS

The following information should be used to develop a survey request for these survey units.

- 2.1 The open land area begins at the ~804' El (the cut-off elevation of the CV shell), and extends to about grade level at ~811' El. This survey unit is bounded on the eastern side by the remaining CV yard area at grade level, and on the southern edge by a wing wall extension from the CV support structure. A line from a well in the north extending to the center of the CV bounds this area on the western side. These landmarks are shown in Attachment 1-1. This survey area is located in site area OL1 and the open land survey unit is designated <u>OL1-4</u>.
- 2.2 The poured concrete cap over the CV area is designated <u>MA8-3</u>.
- 2.3 These survey units are to be classified and scanned as follows:
  - 2.3.1 The open land area is a Class 1 survey unit of ~<u>441 m<sup>2</sup></u> (<u>OL1-4</u>) (100% scan coverage).
  - 2.3.2 Concrete cap over CV is a Class 3 survey unit of  $\sim 182 \text{ m}^2$  (MA8-3) (scan randomly chosen 1 m<sup>2</sup> grids as shown on Attachment 2-1, (~31 m<sup>2</sup> = ~17% scan coverage).
- 2.4 The open land area survey unit should be scanned using a Nal detector. A Gas Flow Proportional-Counter (GFPC) beta radiation detection system should be used to survey the concrete cap over the CV. Scanning parameters for these two areas are listed below.

Area or Structure	····Instrument Type Used	Scan Speed 🛊	Surface to Detector Face	Calculated MDCscan Values
OL1-4 (soil)	Nál (2° bý 2° Cs-137 Window)	9.8° per sec (25 cm/sec)	· ·4* (10.2 cm)	2.2 to 4.4 pCi/g (100 – 400 cpm bkgnd)
MA8-3 (concrete cap)	GFPC (beta)	0.9° per sec (2.2 cm/sec)	Contact	929 dpm/100 cm²

### SUMMARY OF SCANNING PARAMETERS

Soil survey parameters taken from Reference 3.3. Concrete cap survey parameters taken from Attachment 3-1.

### 2.5 Nal Scanning Criteria

- 2.5.1 A <u>2" D by 2" L Nal. detector</u> with a Cs-137 window setting shall be used. The window will straddle the Cs-137 662 keV full energy peak width.
- 2.5.2 The Nal instrument conversion factor/efficiency shall not be less than <u>208 cpm/uR/h</u> (used for planning purposes). See **Reference 3.3** for site listing of typical instrument efficiency factors (Cs-137).
- 2.5.3 Scan in a serpentine pattern that is ~0.5 meters wide (soil and fill materials).
- 2.6 The effective DCGLw values for the CV Yard area are listed below. The US NRC has reviewed and concurred with the derivation logic for applicable DCGL determination. See **Attachment 4-1** to **4-6**.

Hatterey .	SNEC CALCU	ILATION SHEET	
Calculation Number		Revision Number	Page Number
E900-04-013		0	Page 3 of <u>10</u>

:

### CV Yard Survey Design – North East Side of CV

#### **DCGLw** Table

Volumetric DCGLw (pCi/g - Cs-137)	Surface Gross Activity DCGLw (dpm/100 cm <sup>2</sup> )
5.73 (4.3 A.L.)	44,434 (33,325 A.L.)

NOTE: A.L. is the site Administrative Limit (75% of effective DCGLw)

### 2.7 GFPC Scanning of Concrete Cap over CV

A Gas Flow Proportional Counter (GFPC) shall be used to scan the MA8-3 structure in one square meter blocks designated 1 through 36 on Attachment 2-1. The following parameters were used to develop this survey design.

#### **GFPC Detection Efficiency Results Used for Planning**

Material Type	£i*	Es	ɛ <sub>t</sub> (as %)	% Cs-137	Resulting counts/disintegration
Concrete	0.478	0.5	23.9%	0.5952	0.142

\*See Reference 3.3 for examples of typical detector efficiency factors (as of 6/1/04).

NOTE 1: Total efficiency should not be less than  $\varepsilon_t$  value for any instrument used during this survey effort. NOTE 2: No efficiency correction factor (for rough surfaces) is applied for the CV concrete cap area.

#### 2.8 Alarm Set-Points

Based on the expected minimum detection efficiency, the following are the alarm set-points for these survey units.

#### **Alarm Set-Points**

Area or Structure	Instrument Type Used	Alarm Set (gross cpm)	DCGL (in ncpm)
OL1-4 (soil)	Nal (2" by 2" Cs-137 Window)*	300	~200*
MA8-3 (concrete cap)	GFPC (gross beta)	3,000	5,879

\* See Reference 3.3 for information used to establish this factor.

- 2.8.1 All survey personnel shall be trained to identify count rates at or above these alarm set-points.
- 2.8.2 If an alarm set point is reached during any scanning process, the surveyor should stop and locate the boundary of the elevated area. The surveyor should then mark the elevated area with stakes or other appropriate marking tools.

# 2.9 <u>Sample elevated areas(s) IAW SNEC Procedure E900-IMP-4520.04 (Reference 3.2) and the following.</u>

- 2.9.1 Clearly mark, identify and document all sample locations
- 2.11.2 Sample any location that is above the action level cited is Section 2.8 above.
- 2.11.3 For concrete, a 4" long core bore sample is preferred so that the depth of penetration can be identified. However, when a core bore cannot be taken because of the lack of volume, quality of concrete, or because of limited access in the area, sampling should remove the first 1" of material and yield a volume of at least 200 cc to ensure an adequate counting MDA for Cs-137 (a 4" diameter area by 1" deep = ~200 cc).

SNEC CALCL	JLATION SHEET	
Calculation Number	Revision Number	Page Number
E900-04-013	0	Page 4 of <u>/ 0</u>

## CV Yard Survey Design -- North East Side of CV

2.10 The minimum number of sampling points indicated for these survey units by the Compass computer program (Reference 3.5) are listed in the following Table. See Attachments 5-1 to 5-4 for Compass results for OL1-4 area, and Attachment 6-1 to 6-2 for Compass results for the MA8-3 area. Diagrams of measurement or sampling points are provided in Attachment 7-1 to 7-2 for OL1-4, and Attachment 8-1 to 8-2 for MA8-3.

#### Minimum Number of Samples or Fixed Point Measurements per Area

Survey Unit No.	Classification	No. of Points
OL1-4 (soil)	Class 1	26
MA8-3 (solid concrete cap)	Class 3	8

- 2.11 VSP (Reference 3.6) is used to plot all sampling and measurement points on the included diagrams. In some cases, the actual number of random start systematically spaced sample/measurement points may be greater than that required by the Compass computer code because of:
  - placement of the initial random starting point (edge effects),
  - odd shaped diagrams, and/or
  - coverage concerns
  - <u>.</u>
  - 2.11.1 The starting points for physically locating sites in the excavation area (OL1-4) are based on measurements from the CV outer shell and an angle center within the CV Pad. All key measurement points are marked on **Attachment 7-2**. Once the key points are located in the survey unit, a triangular grid system of sampling points must be laid out over the contour of each survey unit.

#### NOTE

Some starting point locations may need to be adjusted to accommodate obstructions within a survey unit. Contact the SR coordinator to report any difficulties encountered when laying out systematic grid sampling points.

2.11.2 When an obstruction is encountered that will not allow collection of a sample or placement of a measurement point, <u>contact the cognizant SR coordinator for</u> <u>permission to delete or move the point</u>. <u>Document any adjustments made</u>.

### NOTE

If remediation actions are taken as a result of this survey, this survey design must be revised or re-written entirely.

Frationersv	SNEC CALCULATION SHEET	
-Calculation Number	-Revision Number	Page Number
E900-04-013	0	Page 5 of 1D

## -CV Yard-Survey-Design - North East Side of CV

## 3.0 REFERENCES

- 3.1 SNEC Procedure E900-IMP-4500.59, "Final Site Survey Planning and DQA".
- 3.2 SNEC Procedure E900-IMP-4520.04, "Survey Methodology to Support SNEC License Termination".
- 3.3 SNEC Calculation E900-04-009, "CV Yard Survey Design South Side of CV".
- 3.4 SNEC Calculation No. E900-03-018, "Optimize Window and Threshold Settings for the Detection of Cs-137 Using the Ludlum 2350-1 and a 44-10 Nal Detector", 8/7/03.
- 3.5 Compass Computer Program, Version 1.0.0, Oak Ridge Institute for Science and Education.
- 3.6 Visual Sample Plan, Version 2.0 (or greater), Copyright 2002, Battelle Memorial Institute.
- 3.7 SNEC Procedure E900-IMP-4520.06, "Survey Unit Inspection in Support of FSS Design".
- 3.8 SNEC Calculation No. E900-04-005, "CV Yard Survey Design North West Side of CV".
- 3.9 Plan SNEC Facility License Termination Plan.
- 3.10 ISO 7503-1, Evaluation of Surface Contamination, Part 1: Beta-emitters (maximum beta energy greater than 0.15 MeV) and alpha-emitters, 1988.
- 3.11 SNEC Facility Historical Site Assessment, Rev 0, March, 2000.
- 3.12 SNEC Calculation No. E900-03-012, Effective DCGL Worksheet Verification.
- 3.13 NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual", August, 2000.
- 3.14 Microsoft Excel 97, Microsoft Corporation Inc., SR-2, 1985-1997.

### 4.0 ASSUMPTIONS AND BASIC DATA

4.1 Remediation History

A review of the survey history of this open land area (OL1-4) adjacent to the CV shell, was conducted in support of this survey design. Surface and subsurface sample data collected in conjunction with installation of the anchor bolts, grout curtain, and various wells within this area, and previously scanned back-fill materials make up the sample data base for this general area. However, only a few soil samples were taken from this area during the recent post remediation survey effort (SR-0136). Therefore, it is assumed that this area has a similar variability as the North West sector (Reference 3.8). The few samples that do exist suggest that the use of North West sector sample results will be a conservative choice for use as a variability estimate. Earlier remediation history in this area is reported in the SNEC facility Historical Site Assessment document (Reference 3.11) and the 1994 Soil Remediation Project Report.

The concrete cap over the cut-off CV Dome area (MA8-3) was added by the SNEC site to prevent groundwater from entering the below grade dome area that was previously surveyed. Therefore, the only source of contamination for this structure is cross contamination from soil or structures in the CV yard. Since the surrounding area has been

SNEC CALCULATION SHEET			
Calculation Number	Revision Number	Page Number	
E900-04-013	0	Page 6 of <u>/</u> 0	
Subject			
CV Yard Survey Design - North	East Side of CV		

remediated there is little chance cross contamination could have occurred. Thus the concrete cap is probably free of any surface contamination.

- 4.2 Remediation has impacted radionuclide concentration levels in this survey unit. Remediation efforts have been shown to be effective in lowering the average concentration of Cs-137 in this area. Therefore, the impact of remediation must be considered in determining the effective Cs-137 DCGLw surrogate value. Remediation of this survey unit was largely complete by about July of 2001. Samples collected prior to this date have been disqualified in the final listing which was decayed to January 15th, 2004. In all, about twenty three (23) sample results were used to determine the best representative mix for this survey unit.
- 4.3 The Compass computer program is used to calculate the required number of random start systematically spaced samples (or measurements) to be taken in each survey unit (Reference 3.5). An off-site soil background from Reference 3.9 is used to estimate background for input to the Compass program (see Attachment 5-3), and Williamsburg concrete GFPC measurements were used to estimate a background value for concrete (see Attachment 9-1).
- •4.4 Soil samples from **Reference 3.8** are used as the initial estimate of variability for this survey area. These results are shown on **Attachment 10-1**.
- 4.5 Concrete variability measurements were performed at the start of this work under SR-0143 and are reported in Attachment 11-1.
- 4.6 The MARSSIM WRS Test criteria will be used for work in this area.
- 4.7 This survey design uses Cs-137 as a surrogate to bound the average volumetric concentration for all SNEC facility related radionuclides in the survey unit. The effective DCGLw (in pCi/g) is just the permitted Cs-137 concentration (6.6 pCi/g) lowered to compensate for the presence (or potential presence) of other SNEC related radionuclides. In addition, an administrative limit (75%) has been set that further lowers the permissible Cs-137 concentration to an "effective PCGLw" for this radionuclide.
- 4.8 The sample data base used to determine the effective radionuclide mix for the CV Yard area has been drawn from samples assayed at off-site laboratories. This list is shown in Attachment 4-2, and includes (23) analysis results. Review of the data shows several radionuclides have not been positively identified at any significant concentration. These radionuclides have been removed from the data set and will not be considered further. Radionuclides removed include Am-241, C-14, Eu-152, Ni-63, Pu-238, Pu-239 and Pu-41. The data shows Cs-137 and H-3 (99%) to be the predominant radioactive contaminants found in this area. Sr-90 and Co-60 on the other hand, were also positively identified, but constitute less than 1% of the mix. The gross activity DCGLw considers all beta emitting radionuclides above the energy required to enter the detectors active volume. However, Cs-137 remains the primary beta radiation producer.

The decayed sample results were input to the spreadsheet titled "Effective DCGL Calculator for Cs-137" (Reference 3-12) to determine the effective volumetric and surface DCGLw values for the OL1-3 area. The output of this spreadsheet is shown on Attachment 4-4 and 4-6.

4.9 The Nal scan MDC calculation is determined based on a 25 cm/sec scan rate, a 1.38 index of sensitivity (95% correct detection probability and 60% false positive) and a detector

SNEC CAL	ULATION SHEET	
-Calculation Number	-Revision Number	Page Number

E900-04-013

0

Page 7 of <u>1</u>0

#### Subject

## CV Yard Survey Design – North East Side of CV

sensitivity of 208 cpm/uR/h for Cs-137. The detection system incorporates a Cs-137 window that lowers sensitivity to background in the survey unit. The range of background values in the CV Yard area varies from about 100 cpm to ~400 cpm (see **Reference 3.4**).

- 4.10 These survey units were inspected after remediation efforts were shown effective. A copy of portions of the SNEC facility post-remediation inspection report is included as **Attachment 12-1**.
- 4.11 No special area characteristics including any additional residual radioactivity (not previously noted during characterization) have been identified in this survey area.
- 4.12 The decision error for this survey design is 0.05 for the  $\alpha$  value and 0.1 for the  $\beta$  value.
- 4.13 Special measurements including gamma-ray spectroscopy are not included in this survey design.
- 4.14 No additional sampling will be performed IAW this survey design beyond that described herein.
- 4.15 The applicable SNEC site radionuclides and their individual DCGLw values are listed on **Exhibit 1** of this calculation.
- 4.16 The survey design checklist is listed in Exhibit 2.
- 4.17 Area factors are not applicable in subsurface soil volumes (below 1 meter). Therefore, the area factor input requirement for soil in the Compass computer program is 1 for both a 10,000 square meter area as well as for a 1 square meter area (see Attachment 5-1).
- 4.18 Area factors for structural surfaces are not appropriate for Class 3 areas (MA8-3).

# 5.0 CALCULATIONS

5.1 All calculations are performed internal to applicable computer codes or within an Excel spreadsheet.

# 6.0 APPENDICES

- 6.1 Attachment 1-1, is a diagram of survey unit OL1-4 and MA8 –3.
- 6.2 **Attachment 2-1**, is diagram of survey unit MA8-3 showing randomly placed scanning areas 1 through 36.
- 6.3 Attachment 3-1 and 3-2 are the calculations used to determine the scan MDC for the MA8-3 area.
- 6.4 Attachment 4-1 to 4-6, are the DCGL calculation logic for the CV Yard area showing the samples used in the mix ratios.
- 6.5 Attachment 5-1 to 5-4, are Compass output for the OL1-4 area.
- 6.6 Attachment 6-1 to 6-2, are Compass output for the MA8-3 area
- 6.7 Attachment 7-1 to 7-2, are diagrams of area OL1-4 showing the VSP selected sample locations for this survey unit.
- 6.8 **Attachment 8-1** to 8-2, are diagrams of area MA8-3 showing the VSP selected fixed point locations for-this survey unit.

FinalEnergy S	NEC CALCULATION SHEET	
-Calculation Number	-Revision Number	Page Number
E900-04-013	0	Page 8 of <u>10</u>

!

# CV Yard Survey Design - North-East Side of CV

- 6.9 **Attachment 9-1**, are background concrete GFPC measurements from Williamsburg (FSS-001).
- 6.10 Attachment 10-1, is the soil variability results for soil samples from the OL1-2 area collected IAW Reference 3.8 requirements.
- 6.11 Attachment 11-1, is the concrete surface variability measurements from MA8-3.
- 6.12 Attachment 12-1, is a copy of the inspection report for the OL1-4 and MA8-3 areas.

FastEnergy	
------------	--

## SNEC CALCULATION SHEET

-Revision Number

-Calculation Number E900-04-013

.

# Page Number

0

Page 9 of <u>10</u>

Subject

## -CV Yard Survey Design – North East Side of CV

# Exhibit 1

# SNEC Facility Individual Radionuclide DCGL Values (a)

Radionuclide	25 mrem/y Limit Surface Area (dpm/100cm²)	25 mrem/y Limit (All Pathways) Open Land Areas (Surface & Subsurface) (pCi/g)	4 mrem/y Goal (Drinking Water) Open Land Areas <sup>(b)</sup> (Surface & Subsurface) (pCi/g)
Am-241	2.7E+01	9.9	2.3
C-14	3.7E+06	2	5.4
Co-60	7.1E+03	3.5	67
Cs-137	2.8E+04	6.6	397
Eu-152	1.3E+04	10.1	1440
H-3	1.2E+08	132	. 31.1
Ni-63	1.8E+06	747	1.9E+04
. Pu-238	3.0E+01	1.8	0.41
Pu-239	2.8E+01	1.6	.0.37
<del>P</del> u-241	<del>8.8E</del> +02	86	19.8
,Sr-90	8.7E+03	1.2	0.61

NOTES:

(a) While drinking water DCGLs will be used by SNEC to meet the drinking water 4 mrem/y goal, only the DCGL values that constitute the 25 mrem/y regulatory limit will be controlled under this LTP and the NRC's approving license amendment.

(b) Listed values are from the subsurface model. These values are the most conservative values between the two models (i.e., surface & subsurface).

FirstEnergy

# SNEC CALCULATION SHEET

-Calculation Number

•

#### E900-04-013

**Revision Number** 

0

Page Number Page 10 of <u>/0</u>

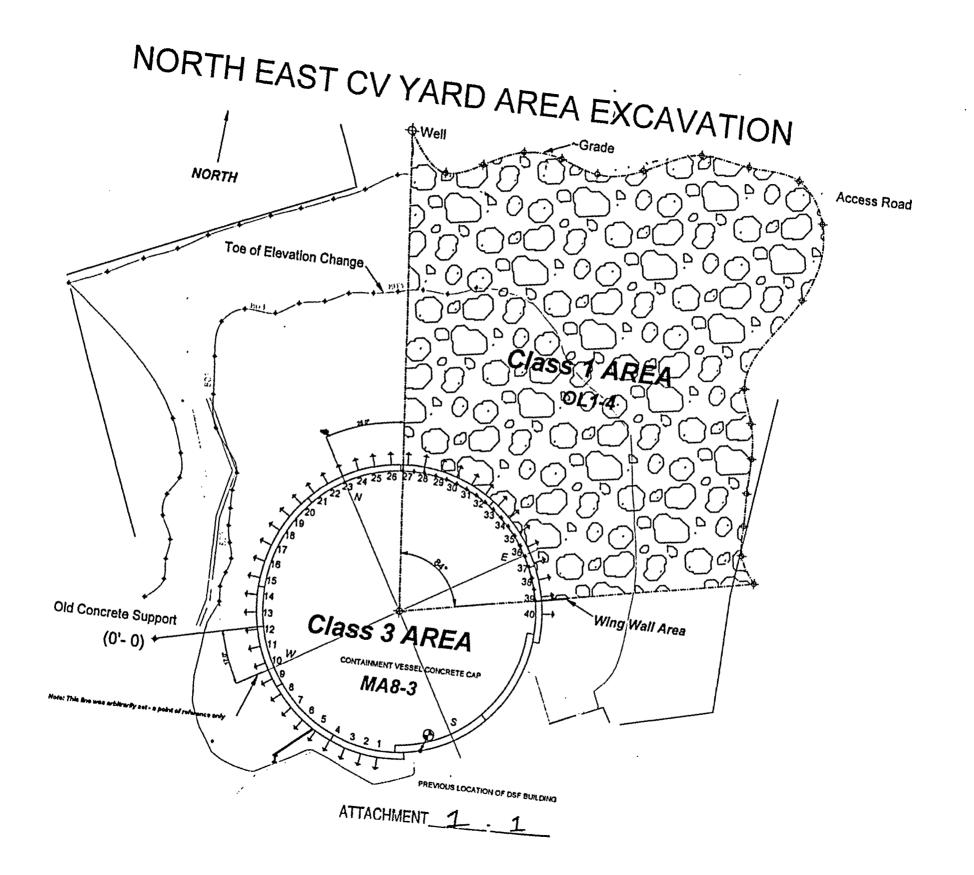
Subject

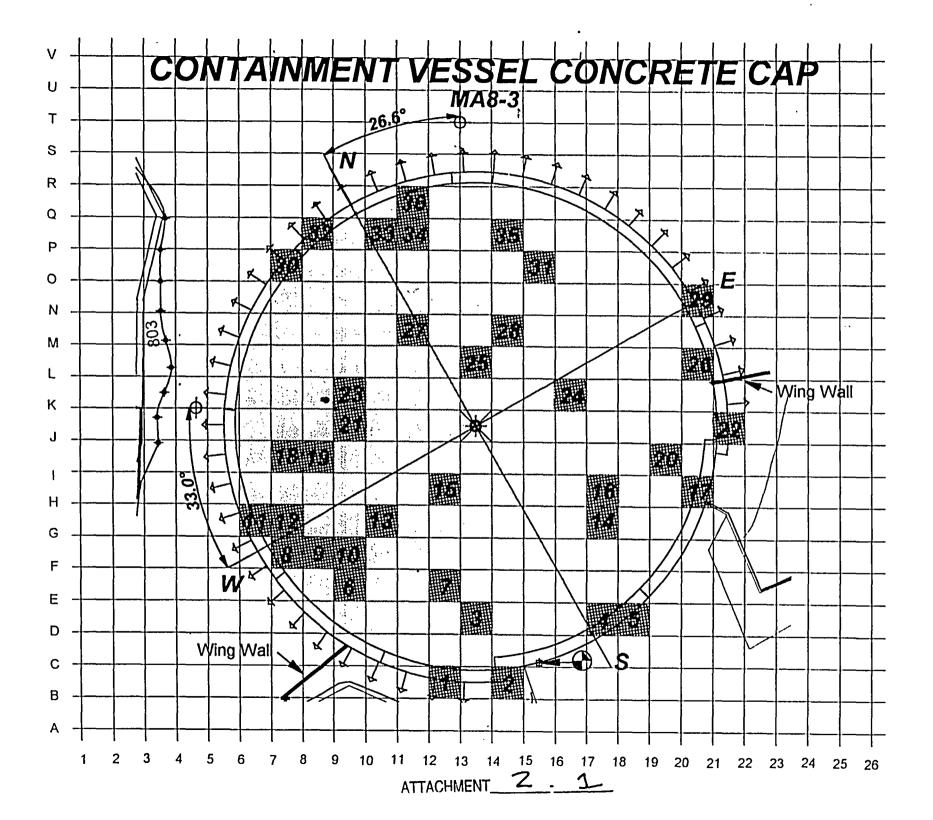
•

# -CV Yard Survey Design - North East Side of CV

# Exhibit 2 **Survey Design Checklist**

	ation No. E900-04-013	Location Codes OL1-4 & MA8-3	
ITEM	REVIEV	V FOCUS	Status Revie (Circle One) Initials
1		en assigned and is a survey design summary n provided?	Yes N/A AD 7/
2		ubject area (drawings should have compass lings)?	Yes N/A AD 7
3	Are boundaries property identified and is th	e survey area classification clearly indicated?	Yes N/A
4	Has the survey area(s) been properly d	livided into survey units IAW EXHIBIT 10	(Yes) N/A APD 7
5	Are_physical characteristics of the a	area/location or system documented?	Tres NIA AD 7
6	ts a remediation effective	ness discussion included?	(Yes) N/A AD 7
7		ling results been converted to units that are icable DCGL values?	Yes N/A AN,
8	Is survey and/or sampling data that was used	for determining survey unit variance included?	Fes N/A AD 7
9		e areas (or materials) and their survey and/or ith a justification for their selection?	(Yes) N/A APO Z
10	Are applicable survey and/or sampling data the	hat was used to determine variability included?	Yes, N/A A
11	Will the condition of the survey area have a probable impact been c	an impact on the survey design, and has the onsidered in the design?	Yes, N/A AD 7/
12	previously noted during characterization) be	ing any additional residual radioactivity (not een identified along with its impact on survey . .ign?	Yes N/A AD 7/
13	Are all necessary supporting calculations ar	d/or site procedures referenced or included?	(Yes N/A )
14	Has an effective DCGLw been	identified for the survey unit(s)?	(Yes) N/A (A) 7
15	Was the appropriate DCGLEssc inclusion	ded in the survey design calculation?	(Yes) N/A
16	Has the statistical tests that will be use	ed to evaluate the data been identified?	(Yes N/A P) 2/
17	Has an elevated measurement compa	arison been performed (Class 1 Area)?	(Yes N/A AD 1/
18	Has the decision error levels been identified a	and are the necessary justifications provided?	(Yes) NIA P) 7
19	Has scan instrumentation been identified alo	ng with the assigned scanning methodology?	(Yes) N/A
20	Has the scan rate been identified, and is the	e MDCscan adequate for the survey design?	(Yes) N/A AD,
21	Are special measurements e.g., in-situ gamma and is the survey methodology, and	a-ray spectroscopy required under this design, nd evaluation methods described?	Yes, NA A
22	Is survey instrumentation calibration data inclu	ided and are detection sensitivities adequate?	Yes N/A HAD -//
23	Have the assigned sample and/or measuremen oc-CAD drawing of the survey are	nt locations been clearly identified on a diagram a(s) along with their coordinates?	(res N/A AD 7/1
24	Are investigation levels and administrative lim		Yes N/A
25	For sample analysis, have the requi	red MDA values been determined.?	Yes, NIA 1/1/
26	Has any special sampling methodology been in	lentified other than provided in Reference 6.3?	Yes, (N/A) () 7/1





# **Beta Scan Measurement MDC Calculation**

MA8-3, Concrete Cap-Over CV Dome

$$\varepsilon_i := .478$$
  $\varepsilon_s := .5 \cdot .5952$   $b := 306$   $p := 0.5$   $W_d := 8.8$   $S_r := 2.2$   $d := 1.38$   $A := 100$ 

$$\frac{W_{d}}{S_{r}} = 4 \qquad Observation Interval (seconds) \qquad O_{i} := \frac{W_{d}}{S_{r}} \qquad Observation Interval (seconds)$$

$$\varepsilon_{i} := \varepsilon_{i} \cdot \varepsilon_{s}$$

$$b_i := \frac{(b \cdot O_i)}{60}$$

$$\varepsilon_i = 0.1423$$

$$C = 9.942$$

$$MDCR_{i} := \left(d \cdot \sqrt{b_{i}}\right) \cdot \frac{60}{O_{i}}$$

$$MDCR_{i} = 93.5$$

$$\underline{net \ counts \ per \ minute}$$

b<sub>i</sub> = 20.4 Counts in observation Interval

 $C := \frac{1}{\left(\varepsilon_i \cdot \varepsilon_s, \frac{A}{100}\right) \sqrt{p}}$ 

$$\frac{MDCR_{i}}{O_{i}} = 23.4$$
net counts per minute in observation interval

.

MDC<sub>scan</sub> := C·MDCR<sub>i</sub>

$$MDC_{scan} = 929.479 \qquad dpm \ per \ 100 \ cm^2$$

3

.

• •

#### where:

.

e....

f

-----

b = background counts per minute

 $b_i$  = background counts in observation interval

p = human performance factor

 $W_d$  = detector width in centimeters

 $S_r = scan rate in centimeters per second$ 

d = index of sensitivity (Table 6.5 MARSSIM), 1.38 = 95% of correct detection's, 60% false positives

9

MDC<sub>scan</sub> = Minimum Detectable Concentration for scanning (dpm/100 square centimeters)

C = constant used to convert MDCR to MDC

 $\epsilon_i = instrument \, efficiency \, (counts/emission)$ 

 $\varepsilon_{s}$  = source efficiency (emissions/disintegration)

A = instrument physical probe area (in square centimeters)

4 ATTACHMENT 3.2

# DCGL Calculation Logic-CV Yard Soil & Boulders

I. Survey Unit: SNEC Containment Vessel (CV) Yard Soil and Boulders

• \*\*

- II. Description: The purpose of this calculation is to determine a representative isotopic mix for the CV Yard Soil and associated Boulders from available sample analyses. The effective volumetric DCGL<sub>w</sub>s are then determined from the mean percent of applicable samples.
- III. Data Selection Logic Tables: The radionuclide selection logic and subsequent DCGL calculations are provided in six (6) tables. These tables were developed using Microsoft Excel. Table explanation is as follows.

Table 1: Data Listing – This table, which has been extracted from a larger database, provides a list of the most representative sample analyses. Results are from scoping, characterization, and pre/post remediation surveys. The samples consist of soil media that was taken in support of the aforementioned surveys. As applicable, a sample number, sample location/description, radionuclide concentration, analysis date are provided for each sample. Positive nuclide concentrations are noted with yellow/shaded background fields while MDA values are noted in the gray shaded fields.

**Table 2**: Decayed Listing – This table decays the data from Table 1. Half-life values (days) are listed above each respective nuclide column. Samples are decayed from the respective analysis date to January 15, 2004. Positive results are denoted in a yellow background field while MDA values are noted in the gray shaded fields.

**Table 3**: Decayed Listing of Positive Nuclides & MDAs Removed – This table provides the best overall representation of the data. Non-positive nuclide columns have been removed as well as all the MDA values. Therefore, 11 nuclides have been reduced to four (4).

Table 4: Ratio to Cs-137 for Positive Nuclides – This table provides the calculation methodology for determining the surrogate ratio to Cs-137 for each radionuclide. From this information the mean, sigma, and mean % of total are calculated. The mean % of total values is used to calculate the volumetric DCGLw per MARSSIM equation I-14. See Table 5. Note that the mean percent values were averaged using only the positive sample results in each column. In some cases only a single nuclide value (e.g. Sr-90) had a positive result. This value is listed as the value in the mean result field. This results in higher "mean percent of total" values in the mix, which are conservative.

Note: From Table 4 only the "mean % of total" values are used as input to the "Effective DCGL Calculation Spreadsheet" as illustrated in Table 5.

 Table 5: Effective DCGL Calculator for Cs-137 (in pCi/g) – This table provides the surrogate volumetric modified Cs-137 DCGL, calculation results from data derived from Table 4.

IV. Summary – Since the CV Yard and Boulders are volumes of soil or rock material, existing in place or in a pile, the release limit is primarily based on the volumetric DCGL<sub>w</sub>. Using the above data selection logic tables the calculated Cs-137 volumetric DCGL<sub>w</sub> is 5.73 pCi/g. This value will be reduced by 25% as part of SNEC's requirement to apply an administrative limit as discussed in the License Termination Plan (LTP).

1

ATTACHMENT 4 .

				TABLE	1 - Data Listin	g (pCi/g)									
									[		<b></b>	T			
	SNEC Sample No	Location/Description	H-3	\$r-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152		
1	CV Tunnel	CV Tunnel Sediment Composite, OL1	9.40E+00	9.67E+00	1.26E+00	1.25E+03	1.80E-01	5.50E-01	2.20E-01	4.47E+01	9.34E+00	4.02E+00	1.30E-01		
2	SX9SL99219	Subsuface Sample #29 (0-5'), AY-128, OL1			7.00E-02	5.90E-01									
3	SXSL1063	North CV Yard Soil BA-127, 812' El, Sample # 5, OL2	4.58E+00	5.31E-02	1.92E-02	8.86E-01	9.61E-02	4.68E-02	3.27E-02	3.77E+00	2.10E-01	1.09E+01	5.25E-02		
4	SXSL1089	North CV Yard Soil AY-127, 810' El, Sample # 3, OL1	3.03E+00	6.95E-02	3.32E-02	1.29E+00	9.93E-02	1.28E-01	5.00E-02	4.97E+00	2.10E-01	7.54E+00	8.28E-02		
5	SXSL1115	North CV Yard Soil AY-128, 804' El, Sample # 2, OL1	4.88E+00	5.36E-02	2.43E-02	1.80E+00	2.40E-01	1.38E-01	4.07E-02	4.21E+00	2.10E-01	7.60E+00	5.71E-02		
6	SXSL1122	North CV Yard Soil AY-129, 798' El, Sample # 2, OL1	3.44E+00	5.29E-02	2.79E-02	4.77E+00	1.83E-01	8.94E-02	4.00E-02	3.68E+00	2.06E-01	8.75E+00	8.62E-02		
7	\$X\$L1130	North CV Yard Soil AX-129, 803' El, Sample # 4, OL1	4.99E+00	6.48E-02	2.98E-02	2.26E+01	1.49E-01	8.56E-02	1.21E-02	3.55E+00	2.31E-01	1.34E+01	9.89E-02		
8	SX\$L1132	North CV Yard Soil AZ-130, Sample # 5, OL1	2.98E+00	7.15E-02	3.50E-02	2.59E+00	1.64E-01	7.46E-02	6.46E-02	5.27E+00	2.15E-01	1.26E+01	7.34E-02		
9	SX\$L1270	AX-129, 3-3, Soil, CV SE Side 5' From CV, 800' El., OL1	1.13E+01	2.00E-02	1.00E-02	2.31E+01	3.70E-02	7.00E-03	7.00E-03	2.10E+00	3.93E+00	8.68E+00	7.00E-02		
10	SXSL1281	AX-128, 3-1, Soil, CV Tunnel East 5' From CV, 800' El, OL1	1.15E+01	3.00E-02	1.00E-02	4.38E+00	3.10E-02	1.60E-02	7.00E-03	1.91E+00	4.00E+00	7.78E+00	4.00E-02	for a second second second second	
11	SXSL2649	Anulus Well, A-2, 5 to 10' Depth, OL1	2.00E+00	3.14E-02	1.00E.01	6.00E-01	9.78E-03	1.33E-02	1.10E-02	1.87E+00	1.83E-01	1.75E+00			
13	SXSL2871	CV Area - East Yard Dirt Pile - Middle, 1/2 Way Up, OL1		3.00E-02	7.00E-02	5.60E-01									
14	SXSL2872	CV Area - East Yard Dirt Pile - Bottom (also top center), OL1		3.00E-02	6.00E-02	1.00E-01									
15	SXSL3140	East CV Yard, Soil Pile @ 6' on West Side (6" Depth), OL1	1.89E+00	1.20E-02	1.40E-02	8.25E-01	7.00E-03	5.00E-03	5.00E-03	3.69E-01	8.60E-02	3.41E+00	3.00E-02		
16	SXSL3142	Soil Pile, CV Yard, Three Feet on East Side, SR-37, OL1		2.95E-02	7.00E-02	6.00E-01									
17	SXSL3145	East CV Yard, Soil Pile @ 3' on East Side (6" Depth), OL1	1.90E+00	1.70E-02	1.30E-02	1.26E+00	4.00E-03	5.00E-03	5.00E-03	3.76E-01	8.30E-02	3.69E+00	3.80E-02		
18	SXSL3149	Soil Pile, CV Yard, Six Feet on East Side, SR-37, OL1		2.97E-02	8.00E-02	3.00E-01				Circz P.		0.000 00	01000-01		
19	SXSL3153	East CV Yard, Soil Pile @ Top (6" Depth), OL1	1.94E+00	4.30E-02	2.30E-02	3.00E-01	3.00E-03	5.00E-03	5.00E-03	3.43E-01	8.70E-02	4.18E+00	5.10E-02		
21	SXSL4142	CV Yard Soil - West Side, AP1-7, OL1	2.22E+00	3.25E-02	5.00E-02	9.00E-01	1.76E-02	6.71E-02	2.02E-02	0.102.01	0.102.02	1.102.00	OTTOE VE		
22	SXSL4143	CV Yard Soil - West Side, AP1-7, OL1	2.23E+00	3.16E-02	5.00E-02	5.00E-01	2.21E-02	6.31E-02	3.64E-02						
	SXSL4149	CV Yard Soil - West Side, AP1-7, OL1	2.24E+00	2.77E-02	7.00E-02	3.90E+00	2.77E-02	4.30E-02	3.04E-02						
23	37314148				TABLE 2 - Dec	ayed Listing	(pCi/g)								
23	37364148														
23			T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	<u>T 1/2</u>	T1/2	T1/2	T 1/2	Decay Date	
			T 1/2 4485.27	T 1/2 10446.15	T 1/2 1925.23275	T 1/2 11019.5925	T 1/2 157861.05	32050.6875	8813847.75	5259.6	2092882.5	36561.525	4967.4	January 15, 2004	
	SIIEC Sample No	Location/Description	Т 1/2 4485.27 H-3	T 1/2 10446.15 Sr-90	T 1/2 1925.23275 Co-60	T 1/2 11019.5925 Cs-137	T 1/2 157861.05 Am-241	32050.6875 Pu-238	8813847.75 Pu-239	5259.6 Pu-241	2092882.5 C-14	36561.525 Ni-63	4967.4 Eu-152	January 15, 2004 Analysis Date	
1	SIIEC Sample No CV Tunnel	Location/Description CV Tunnel Sediment Composite, 0L1	T 1/2 4485.27	T 1/2 10446.15	T 1/2 1925.23275 Co-60 8.59E-01	T 1/2 11019.5925 Cs-137 1.17E+03	T 1/2 157861.05	32050.6875	8813847.75	5259.6	2092882.5	36561.525	4967.4	January 16, 2004 Analysis Date February 14, 2001	1
1 2	SIIEC Sample IIo CV Tunnel SX95L99219	Location/Description CV Tunnel Sediment Composite, OL1 Subsuface Sample #28 (0-5°), AY-128, OL1	T 1/2 4485.27 H-3 7.97E+00	T 1/2 10446.15 \$r-90 9.01E+00	T 1/2 1925.23275 Co-80 8.59E-01 4.05E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01	T 1/2 157861.05 Am-241 1.79E-01	32050.6875 Pu-238 5.37E-01	8813847.75 Pu-238 2.20E-01	5259.6 Pu-241 3.88E+01	2092882.5 C-14 9.34E+00	36561.525 Ni-63 3.94E+00	4967.4 Eu-152 1.12E-01	January 15, 2004 Analysis Date February 14, 2001 November 17, 199	
1 2 3	SIIEC Sample No CV Tunnel SX95L99219 SX5L1063	Location/Description CV Tunnel Sediment Composite, OL1 Subsuface Sample #29 (0-57), AV-128, OL1 North CV Yard Soli 8A-127, 812 EI, Sample # 5, OL2	T 1/2 4485.27 H-3 7.97E+00 4.20E+00	T 1/2 10446.15 \$r-90 9.01E+00 5.11E-02	T 1/2 1925.23275 Co-80 8.59E-01 4.05E-02 1.57E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02	32050.6875 Pu-238 5.37E-01 4.62E-02	8813847.75 Pu-238 2.20E-01 3.27E-02	5259.6 Pu-241 3.88E+01 3.50E+00	2092882.5 C-14 9.34E+00 2.10E-01	36561.525 Ni-63 3.94E+00 1.08E+01	4967.4 Eu-152 1.12E-01 4.85E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002	1
1 2 3 4	SIIEC Sample No CV Tunnel SX95L99219 SX5L1063 SX5L1089	Location/Description CV Tunnel Sediment Composite, OL1 Subsurface Sample #29 (0-57), AY-128, OL1 North CV Yard Soil 8A-127, 812° EI, Sample # 5, OL2 North CV Yard Soil 8A-127, 810° EI, Sample # 3, OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00	T 1/2 10446.15 \$r-90 9.01E+00 5.11E-02 6.69E-02	T 1/2 1925.23275 Co-80 <b>8.59E-01</b> 4.05E-02 1.57E-02 2.71E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002	1
1 2 3 4 5	SIIEC Sample No CV Tunnel SX81.99219 SX81.003 SX81.008 SX81.1089 SX81.1115	LocationiDescription CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-5'), AY-128, 0L1 North CV Yard Soli AY-127, 810' EI, Sample # 3, 0L1 North CV Yard Soli AY-127, 810' EI, Sample # 3, 0L1 North CV Yard Soli AY-128, 804' EI, Sample # 2, 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.16E-02	T 1/2 1925.23275 Co-80 <b>8.59E-01</b> 4.05E-02 1.57E-02 2.71E-02 1.98E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 28, 2002	1
1 2 3 4 5 6	SHEC Sample Ho CV Tunnel SX95L9219 SX5L1083 SX5L1089 SX5L1115 SX5L1112	Location/Description CV Tunnel Sediment Composite, OL1 Subsuface Sample #28 (0-5°), AY-128, OL1 North CV Yard Soll 8A-127, 812° EJ, Sample # 5, OL2 North CV Yard Soll AY-128, 804° EJ, Sample # 2, OL1 North CV Yard Soll AY-128, 788° EJ, Sample # 2, OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 4.27E+00 3.15E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E.02 6.69E.02 5.16E.02 5.10E.02	T 1/2 1925.23275 Co-80 <b>8.59E-01</b> 4.05E-02 1.57E-02 2.71E-02 1.98E-02 2.28E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 4.60E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 29, 2002 June 29, 2002	1
1 2 3 4 5 8 7	SHEC Sample Ho CV Tunnel SXSL99219 SXSL1083 SXSL1089 SXSL1109 SXSL1115 SXSL1122 SXSL1122	Location/Description CV Tunnel Sediment Composite, OL1 Subsurface Sample #28 (0-57), AY-122, OL1 North CV Yard Soll BA-127, 812 EI, Sample # 3, OL2 North CV Yard Soll AY-128, 804 EI, Sample # 2, OL1 North CV Yard Soll AY-128, 802 EI, Sample # 2, OL1 North CV Yard Soll AY-128, 802 EI, Sample # 2, OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 4.58E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.10E-02 5.10E-02 6.24E-02	T 1/2 1925.23275 Co-80 <b>8.59E-01</b> 4.05E-02 1.57E-02 2.71E-02 1.98E-02 2.28E-02 2.24E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 4.60E+00 2.18E+01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02	5259.6 Pu-241 3.88E+01 4.61E+00 3.91E+00 3.42E+00 3.30E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01 2.31E-01	36561.525 Ni-83 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.33E+01	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 29, 2002 June 29, 2002 July 3, 2002	1
1 2 3 4 5 6 7 8	SIIEC Sample IIO CV Tunnel SX35L99219 SX5L1083 SX5L1089 SX5L1108 SX5L115 SX5L1122 SX5L1130 SX5L1130	Location/Description CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-5'), AY-128, 0L1 North CV Yard Soil A-127, 812 E, Sample # 3, 0L2 North CV Yard Soil AY-128, 804' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 804' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 803' EI, Sample # 4, 0L1 North CV Yard Soil AX-129, 803' EI, Sample # 4, 0L1 North CV Yard Soil AX-129, 803' EI, Sample # 5, 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 2.73E+00	T 1/2 10446.15 5.7-80 9.01E+00 5.11E-02 6.69E-02 5.16E-02 5.16E-02 6.24E-02 6.24E-02 6.69E-02	T 1/2 1925.23275 Co-80 8.59E-01 4.05E-02 2.71E-02 2.71E-02 2.28E-02 2.88E-02 2.86E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 4.60E+00 2.18E+01 2.50E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01 2.31E-01 2.15E-01	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.33E+01 1.25E+01	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 28, 2002 June 29, 2002 July 3, 2002	1
1 2 3 4 5 8 7 8 9	SIIEC Sample No CV Tunnel SX95L99219 SX5L1089 SX5L1089 SX5L115 SX5L115 SX5L115 SX5L115 SX5L1132 SX5L1132	LocationiDescription CV Tunnel Sediment Composite, OL1 Subsuface Sample #28 (0-5'), AY-128, OL1 North CV Yard Soli AY-127, 810' EI, Sample #3, OL1 North CV Yard Soli AY-128, 804' EI, Sample #3, OL1 North CV Yard Soli AY-128, 789' EI, Sample #2, OL1 North CV Yard Soli AY-128, 789' EI, Sample #2, OL1 North CV Yard Soli AZ-130, Sample #3, OL1 North CV Yard Soli AZ-130, Sample #5, OL1 AX-128, 5-3, Soli, CV SE Side 5' From CV, 800' EI, OL1	T 1/2 4485.27 H-3 7.97E+00 2.78E+00 4.278E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.84E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.10E-02 5.10E-02 6.24E-02 6.24E-02 6.24E-02 1.88E-02	T 1/2 1925.23275 C-0-80 8.59E-01 4.05E-02 2.71E-02 2.71E-02 2.28E-02 2.44E-02 2.86E-02 7.22E-03	T 1/2 11019.5925 C \$-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 3.69E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 6.86E-03	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.00E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00 1.87E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 2.31E-01 3.93E+00	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02 6.17E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 29, 2002 July 3, 2002 July 3, 2002 July 28, 2001	1
1 2 3 4 5 5 8 8 7 7 8 9 10	SHEC Sample Ho CV Tunnel SX81.99219 SX51.1063 SX51.1089 SX51.115 SX51.1122 SX51.1122 SX51.1122 SX51.1122 SX51.1270 SX51.1281	Location/Description CV Tunnel Sediment Composite, 0L1 Subsuface Sample #28 (0-5°), AY-122, 0L1 North CV Yard Soil 8A-127, 812° EI, Sample # 5, 0L2 North CV Yard Soil AY-122, 804° EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 804° EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 805° EI, Sample # 2, 0L1 North CV Yard Soil AZ-130, Sample # 5, 0L1 North CV Yard Soil AZ-130, Sample # 5, 0L1 AX-128, 3-3, Soil, CV SE Side 5° From CV, 800° EI, 0L1 AX-128, 3-1, Soil, CV Tunnel East 5° From CV, 800° EI, 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 3.15E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.84E+00 1.00E+01	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.10E-02 6.24E-02 6.24E-02 1.88E-02 2.83E-02	T 1/2 1925 23275 Co-80 8.595-01 4.055-02 1.57E-02 2.71E-02 2.27E-02 2.28E-02 2.28E-02 2.28E-02 2.28E-02 7.22E-03 7.22E-03	T 1/2 11019.5925 C6-137 1.77E-03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 2.18E+01 4.14E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 3.69E-02 3.09E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.86E-02 7.37E-02 6.86E-03 1.57E-02	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00 1.87E+00 1.69E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01 2.31E-01 3.93E+00 4.00E+00	36561.525 NI-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.32E+01 1.25E+01 8.53E+00 7.65E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02	January 15, 2004 Analysis Date February 14, 2001 November 17, 199 June 27, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 28, 2001	19
1 2 3 4 5 5 8 8 7 7 8 9 10 11	SHEC Sample Ho CV Tunnel SX81.99219 SX81.1083 SX81.1089 SX81.1130 SX81.1130 SX81.1130 SX81.1130 SX81.1212 SX81.1281 SX81.2849	Location/Description CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-57), AY-128, 0L1 North CV Yard Soil 8A-127, 812° EI, Sample # 5, 0L2 North CV Yard Soil AY-128, 804° EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 802° EI, Sample # 2, 0L1 North CV Yard Soil AZ-130, Sample # 5, 0L1 North CV Yard Soil AZ-130, Sample # 5, 0L1 North CV Yard Soil AZ-130, Sample # 5, 0L1 AX-128, 3-1, Soil, CV SE Side S <sup>7</sup> From CV, 800° EI, 0L1 AX-128, 3-1, Soil, CV Se Side S <sup>7</sup> From CV, 800° EI, 0L1 Ax-129, CV Se Side S <sup>7</sup> From CV, 800° EI, 0L1 Ax-120, Soil, CV Tunnel East S <sup>7</sup> From CV, 800° EI, 0L1	T 1/2 4485.27 H-3 7.97E+00 2.78E+00 4.278E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.84E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E.02 6.69E.02 5.16E.02 5.16E.02 6.24E.02 6.24E.02 6.89E.02 1.88E.02 2.83E.02 3.00E.02	T 1/2 1925.23275 Co-80 <b>9.59E-01</b> 4.05E-02 1.57E-02 2.71E-02 2.28E-02 2.28E-02 2.28E-02 7.22E-03 7.72E-03 7.77E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 1.24E+00 1.74E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 4.14E+00 5.74E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 3.69E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 6.86E-03	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.00E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00 1.87E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 2.31E-01 3.93E+00	36561.525 Ni-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02 6.17E-02	January 16, 2004 Analysis Date February 14, 2000 November 17, 199 June 27, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 28, 2001 July 28, 2001 February 13, 2002	19
1 2 3 4 5 8 7 8 9 10 11 13	SIIEC Sample No CV Tunnel SX85L99219 SX8L1083 SX8L1089 SX8L1135 SX8L1132 SX8L1132 SX8L1132 SX8L1320 SX8L1320 SX8L1270 SX8L2849 SX8L2849	LocationiDescription CV Tunnel Sediment Composite, 0L1 Subsuface Sample #28 (0-5'), AY-128, 0L1 North CV Yard Soil AY-127, 810' EI, Sample # 3, 0L1 North CV Yard Soil AY-128, 804' EI, Sample # 3, 0L1 North CV Yard Soil AY-128, 789' EI, Sample # 2, 0L1 North CV Yard Soil AX-129, 802' EI, Sample # 2, 0L1 North CV Yard Soil AX-129, 802' EI, Sample # 4, 0L1 North CV Yard Soil AX-129, 802' EI, Sample # 4, 0L1 AX-128, 3-3, Soil, CV SE Side 5' From CV, 800' EI, 0L1 AX-128, 3-4, Soil, CV Tunnel East 5' From CV, 800' EI, 0L1 Anulus Well, A-2, 5 to 10' Depth, 0L1 CV Area - East Yard Oir Pile - Middle, 12' Way Up, 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 3.15E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.84E+00 1.00E+01	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.10E-02 5.10E-02 6.24E-02 6.24E-02 6.28E-02 1.88E-02 2.83E-02 2.83E-02 2.87E-02	T 1/2 1925.23275 Co-80 8.59E.01 4.05E.02 1.57E.02 2.71E.02 2.24E.02 2.24E.02 2.24E.02 2.26E.02 7.22E.03 7.22E.03 7.77E.02 5.48E.02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 1.24E+00 1.74E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 2.18E+01 4.14E+00 5.74E-01 5.37E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 3.69E-02 3.09E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.86E-02 7.37E-02 6.86E-03 1.57E-02	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00 1.87E+00 1.69E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01 2.31E-01 3.93E+00 4.00E+00	36561.525 NI-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.32E+01 1.25E+01 8.53E+00 7.65E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02 6.17E-02	January 15, 2004 Analysia Date February 14, 2000 November 77, 199 June 27, 2002 June 28, 2002 June 28, 2002 Juny 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 28, 2001 February 13, 2002 March 6, 2002	19
1 2 3 4 5 8 7 8 9 10 11 13 14	SIIEC Sample IIO CV Tunnel SX95L09219 SX5L1089 SX5L1089 SX5L115 SX5L115 SX5L115 SX5L115 SX5L127 SX5L1284 SX5L2849 SX5L287	LocationiDescription CV Tunnel Sediment Composite, OL1 Subsuface Sample #28 (0-5°), AY-128, OL1 North CV Yard Soil AY-127, 810° EI, Sample # 5, OL2 North CV Yard Soil AY-128, 804° EI, Sample # 3, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 2, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 2, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 4, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 4, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 4, OL1 North CV Yard Soil AY-128, 788° EI, Sample # 4, OL1 AX-128, 3-3, Soil, CV S Side 5° From CV, 800° EI, OL1 AX-128, 3-1, Soil, CV Tunnel East 5° From CV, 800° EI, OL1 AX-128, 3-1, Soil, CV Tunnel East 5° From CV, 800° EI, OL1 CV Area - East Yard Dirt Pile - Middle, 120 Way Up, OL1 CV Area - East Yard Dirt Pile - Bottom (Jaiso top center), OL1	T 1/2 4485.27 H-3 7.97E+00 2.78E+00 3.15E+00 4.47E+00 3.15E+00 4.58E+00 9.84E+00 1.00E+01 1.79E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 5.16E-02 5.16E-02 5.10E-02 6.24E-02 6.89E-02 1.88E-02 2.83E-02 3.00E-02 2.87E-02 2.87E-02	T 1/2 1925 23275 Co-80 <b>8.595</b> -01 4.05E-02 1.57E-02 2.71E-02 2.27E-02 2.28E-02 2.28E-02 2.28E-02 7.22E-03 7.22E-03 7.72E-03 7.77E-02 5.48E-02 4.70E-02	T 1/2 11019.5925 Cs-137 1.17E-03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 2.18E+01 2.18E+01 2.18E+01 4.14E+00 5.74E-01 5.37E-01 9.58E+02	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 3.69E-02 9.75E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 6.86E-03 1.57E-02 1.31E-02	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 1.10E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.30E+00 4.89E+00 1.87E+00 1.69E+00 1.71E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 3.93E+00 4.00E+00 1.83E-01	36561.525 HI-63 3.94E+00 1.08E+01 7.52E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00 7.65E+00 1.73E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 9.15E-02 6.79E-02 6.79E-02 6.17E-02 3.53E-02	January 16, 2004 Analysis Date February 14, 2007 Hovember 17, 199 June 28, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2001 February 13, 2002 March 6, 2002	1 2 2
1 2 3 4 5 8 7 8 9 10 11 13 14 15	SHEC Sample Ho CV Tunnel SX85L98219 SX5L1083 SX5L1089 SX5L1125 SX5L1125 SX5L1125 SX5L1120 SX5L1270 SX5L1281 SX5L2874 SX5L2874 SX5L2872 SX5L2872	Location/Description CV Tunnel Sediment Composite, OL1 Subsurface Sample #29 (0-57), AY-128, OL1 North CV Yard Soil 8A-127, 812° EI, Sample # 5, OL2 North CV Yard Soil AY-128, 940° EI, Sample # 2, OL1 North CV Yard Soil AY-128, 930° EI, Sample # 2, OL1 North CV Yard Soil AZ-130, Sample # 5, OL1 North CV Yard Soil AZ-130, Sample # 5, OL1 North CV Yard Soil AZ-130, Sample # 5, OL1 AX-129, 5-3, Soil, CV Statel East S <sup>2</sup> from CV, 800° EI, OL1 AX-129, 5-3, Soil, CV Statel East S <sup>2</sup> from CV, 800° EI, OL1 AX-129, 5-3, Soil, CV Statel East S <sup>2</sup> from CV, 800° EI, OL1 AX-120, 5-3, Soil, CV Statel East S <sup>2</sup> from CV, 800° EI, OL1 AX-120, 5-3, Soil, CV Statel East S <sup>2</sup> from CV, 800° EI, OL1 CV Area - East Yard Dirt Pile - Middle, 1/2 Way Up, OL1 CV Area - East Yard Dirt Pile - Bottom (also top center), OL1 East CV Yard, Soil Pile @ S <sup>2</sup> on West Side (6° Depth), OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 3.15E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.84E+00 1.00E+01	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 5.16E-02 5.16E-02 5.16E-02 6.24E-02 6.89E-02 1.88E-02 3.00E-02 2.87E-02 2.87E-02 1.16E-02	T 1/2 1925.23275 Co-80 8.59E.01 4.05E.02 1.57E.02 2.71E.02 2.28E.02 2.28E.02 2.28E.02 2.28E.02 7.22E.03 7.72E.03 7.77E.02 5.48E.02 4.70E.02 1.17E.02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 5.74E-01 5.37E-01 9.58E-02 7.39E-02	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 3.69E-02 3.09E-02	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.86E-02 7.37E-02 6.86E-03 1.57E-02	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.42E+00 3.30E+00 4.89E+00 1.87E+00 1.69E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.06E-01 2.31E-01 3.93E+00 4.00E+00	36561.525 NI-63 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.32E+01 1.25E+01 8.53E+00 7.65E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 7.97E-02 9.15E-02 6.79E-02 6.17E-02	January 16, 2004 Analysis Date February 14, 2000 Hovember 17, 199 June 28, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 March 6, 2002 March 6, 2002 August 30, 2002	19
1 2 3 4 5 8 7 8 9 10 11 13 14 15 16	SIIEC Sample IIO CV Tunnel SX35L99219 SX5L1089 SX5L1089 SX5L1108 SX5L1102 SX5L1102 SX5L1102 SX5L1201 SX5L1281 SX5L2814 SX5L2814 SX5L28140 SX5L2142	LocationiDescription CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-5'), AY-128, 0L1 North CV Yard Soil AY-127, 812 E, Sample # 5, 0L2 North CV Yard Soil AY-128, 804' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 804' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 803' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 803' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 803' EI, Sample # 5, 0L1 AX-128, 3-3, Soil, CV SE Side 5' From CV, 800' EI, 0L1 AX-128, 3-3, Soil, CV SE Side 5' From CV, 800' EI, 0L1 AX-128, 3-4, Soil AY-128, 56 10' Depth, 0L1 CV Area - East Yard Dirt Pile - Bottom (also top center), 0L1 East CV Yard, Soil Pile @ 5' on West Side (5'' Depth), 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 2.73E+00 9.84E+00 2.73E+00 1.00E+01 1.79E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 5.16E-02 5.16E-02 5.16E-02 5.16E-02 6.24E-02 6.24E-02 6.24E-02 6.28E-02 2.83E-02 2.87E-02 2.87E-02 2.87E-02 2.87E-02 2.87E-02 2.87E-02 2.87E-02	T 1/2 1925.23275 Co-80 8.59E-01 4.005E-02 1.57E-02 2.71E-02 2.20E-02 2.24E-02 2.24E-02 2.26E-02 7.22E-03 7.22E-03 7.72E-03 7.77E-02 5.48E-02 4.70E-02 1.17E-02 5.81E-02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 1.24E+00 1.74E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 2.74E+01 5.37E-01 5.37E-01 5.37E-01 5.37E-01 5.37E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 3.69E-02 3.09E-02 9.75E-03 6.98E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 1.37E-02 1.31E-02 1.31E-02 4.95E-03	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 1.10E-02 5.00E-03	5259.6 Pu.241 3.88E+01 3.50E+00 4.61E+00 3.30E+00 3.30E+00 1.87E+00 1.87E+00 1.87E+00 1.71E+00 3.45E-01	2092882.5 C-44 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.10E-01 2.10E-01 2.15E-01 3.93E+00 4.00E+00 1.83E-01 8.60E-02	36561.525 111-83 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.32E+01 8.53E+00 1.73E+00 3.37E+00	4967.4 Eu-152 1.12E-01 4.85E-02 5.28E-02 5.28E-02 5.28E-02 6.79E-02 6.17E-02 3.53E-02 2.80E-02	January 16, 2004 Analysie Date February 14, 2007 November 77, 199 June 27, 2002 June 28, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 28, 2001 July 28, 2001 July 28, 2001 March 6, 2002 March 6, 2002 August 30, 2002 August 30, 2002	
1 2 3 4 5 8 8 9 9 10 11 13 14 15 16 17	SIIEC Sample No CV Tunnel SX95L09219 SX5L1089 SX5L1089 SX5L115 SX5L1120 SX5L1122 SX5L1200 SX5L1201 SX5L2849 SX5L2871 SX5L2871 SX5L2872 SX5L2140 SX5L2142 SX5L2142	LocationiDescription CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-5'), AY-128, 0L1 North CV Yard Soil AY-127, 810' EI, Sample # 3, 0L2 North CV Yard Soil AY-128, 804' EI, Sample # 3, 0L1 North CV Yard Soil AY-128, 894' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 789' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 789' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 789' EI, Sample # 2, 0L1 North CV Yard Soil AY-128, 789' EI, Sample # 4, 0L1 AX-129, 3-3, Soil, CV SE Side 5' From CV, 800' EI, 0L1 AX-128, 3-1, Soil, CV Tunnel East 5' From CV, 800' EI, 0L1 AX-128, 3-4, Soil, CV Tunnel East 5' From CV, 800' EI, 0L1 CV Area - East Yard Dirt Pile - Niddle, 12' Way Up, 0L1 CV Area - East Yard Dirt Pile - Bottom (also top center), 0L1 East CV Yard, Soil Pile @ 3' on Nest Side (6'' Depth), 0L1 Soil Pile, CV Yard, Soil Pile @ 3' on East Side, 89:37, 0L1 East CV Yard, Soil Pile @ 3' on East Side (6'' Depth), 0L1	T 1/2 4485.27 H-3 7.97E+00 2.78E+00 3.15E+00 4.47E+00 3.15E+00 4.58E+00 9.84E+00 1.00E+01 1.79E+00	T 1/2 10446.15 5r-80 9.01E+00 5.11E-02 6.69E-02 5.10E-02 5.10E-02 6.24E-02 6.29E-02 1.80E-02 2.83E-02 2.87E-02 2.87E-02 1.16E-02 2.85E-02 1.64E-02	T 1/2 1925 23275 Co-80 <b>8.595</b> -01 4.055-02 1.57E-02 2.71E-02 2.27E-02 2.28E-02 2.28E-02 2.28E-02 2.28E-02 7.22E-03 7.72E-03 7.72E-03 7.77E-02 4.70E-02 1.17E-02 1.17E-02 5.81E-02	T 1/2 11019.5925 Cs-137 1.17E-03 5.36E-01 8.55E-01 1.24E-00 1.74E+00 2.18E-01 2.18E-01 2.18E-01 2.18E-01 4.14E+00 5.74E-01 9.50E-02 7.99E-01 5.81E-01 1.22E+00	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 3.69E-02 9.75E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 6.86E-03 1.57E-02 1.31E-02	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 1.10E-02	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.30E+00 4.89E+00 1.87E+00 1.69E+00 1.71E+00	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 3.93E+00 4.00E+00 1.83E-01	36561.525 HI-63 3.94E+00 1.08E+01 7.52E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00 7.65E+00 1.73E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 9.15E-02 6.79E-02 6.79E-02 6.17E-02 3.53E-02	January 16, 2004 Analysie Date February 14, 2000 November 17, 199 June 28, 2002 June 28, 2002 Juny 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 March 6, 2002 March 6, 2002 August 30, 2002 August 30, 2002	
1 2 3 4 5 8 7 8 9 9 10 11 13 14 15 16 17 18	SHEC Sample Ho CV Tunnel SX95L99219 SX5L1083 SX5L1089 SX5L1089 SX5L1122 SX5L1120 SX5L1120 SX5L1201 SX5L1201 SX5L1201 SX5L2014 SX5L20140 SX5L2140 SX5L2140 SX5L2149	Location/Description CV Tunnel Sediment Composite, OL1 Subsurface Sample #29 (0-57), AY-122, OL1 North CV Yard Soil 8A-127, 812' EI, Sample # 5, OL2 North CV Yard Soil AY-128, 940' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 5, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV SE Side S' From CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 East CV Yard, Soil Pile @ 3' on West Side (5'' Depth), OL1 Soil Pile, CV Yard, Soil Pile @ 3' on East Side, SP-37, OL1 East CV Yard, Soil Pile @ 3' on East Side, SP-37, OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.04E+00 1.00E+01 1.79E+00 1.75E+00	T 1/2 10446.15 5-50 9.01E+00 5.11E.02 5.10E.02 5.10E.02 5.10E.02 6.29E.02 1.80E.02 2.83E.02 2.83E.02 1.16E.02 2.85E.02 1.16E.02 2.85E.02	T 1/2 1925 23275 Co-80 8.595.01 4.055.02 1.57E.02 2.71E.02 2.271E.02 2.28E.02 2.28E.02 2.28E.02 2.28E.02 7.22E.03 7.72E.03 7.72E.03 7.72E.03 7.72E.03 7.77E.02 5.48E.02 1.17E.02 5.81E.02 1.08E.02 1.08E.02	T 1/2 11019.5925 C4-137 1.17E-03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 2.18E+01 4.14E+00 5.74E-01 5.77E-01 5.37E-01 5.37E-01 5.38E-02 7.99E-01 5.28E+00 2.29E-00 2.29E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 1.64E-01 3.69E-02 9.75E-03 6.98E-03 3.99E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 7.37E-02 6.86E-03 1.57E-02 1.31E-02 4.95E-03 4.95E-03	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 1.10E-02 5.00E-03 5.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.91E+00 1.82E+00 1.82E+00 1.82E+00 1.82E+00 3.45E-01 3.45E-01	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 2.31E-01 3.93E+00 4.00E+00 1.83E-01 8.60E-02 8.30E-02	36561.525 HI-63 3.94E+00 1.08E+01 7.62E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00 7.65E+00 3.37E+00 3.65E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 9.15E-02 6.79E-02 6.79E-02 3.53E-02 2.80E-02 3.54E-02	January 16, 2004 Analysis Date February 14, 2007 June 27, 2002 June 28, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 March 6, 2002 August 30, 2002 August 30, 2002 August 30, 2002	
1 2 3 4 5 5 8 7 8 9 10 11 13 14 15 16 17 18 19	SIIEC Sample IIO CV Tunnel SX85L99219 SX81.003 SX51.1089 SX51.115 SX51.1120 SX51.1120 SX51.1120 SX51.1201 SX51.1201 SX51.2849 SX51.2849 SX51.2849 SX51.2849 SX51.2849 SX51.2140 SX51.2145	Location/Description CV Tunnel Sediment Composite, 0L1 Subsuface Sample #29 (0-57), AY-128, 0L1 Horth CV Yard Soil 8A-127, 612 [E, Sample # 5, 0L2 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 604 [E], Sample # 2, 0L1 Horth CV Yard Soil AY-128, 605 [E], Sample # 5, 0L1 AX-128, 3-1, Soil, CV SE Side S <sup>*</sup> From CV, 800 [E], 0L1 AX-128, 3-1, Soil, CV Tunnel East S <sup>*</sup> From CV, 800 [E], 0L1 AX-128, 3-1, Soil, CV Tunnel East S <sup>*</sup> From CV, 800 [E], 0L1 CV Area - East Yard Dirt Pile - Middle, 12 Way Up, 0L1 CV Area - East Yard Dirt Pile - Bottom (also top center), 0L1 East CV Yard, Soil Pile @ 3' on West Side (8' Depth), 0L1 Soil Pile, CV Yard, Six Feet on East Side, SR-37, 0L1 East CV Yard, Six Feet on East Side, SR-37, 0L1 East CV Yard, Six Feet on East Side, SR-37, 0L1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 2.73E+00 9.04E+00 1.00E+01 1.79E+00 1.75E+00 1.75E+00 1.75E+00	T 1/2 10446.15 5r-80 9.01E-00 5.11E-02 5.16E-02 5.16E-02 5.16E-02 5.16E-02 6.24E-02 6.24E-02 6.24E-02 1.88E-02 2.87E-02 2.87E-02 1.16E-02 2.85E-02 1.64E-02	T 1/2 1925.23275 Co-80 <b>8.59E.01</b> 4.05E.02 1.57E.02 2.71E.02 2.28E.02 2.28E.02 2.28E.02 2.28E.02 2.28E.02 7.22E.03 7.72E.03 7.77E.02 5.48E.02 1.37E.02 5.81E.02 1.08E.02 1.92E.02	T 1/2 11019.5925 Cs-137 1.17E+03 5.36E-01 1.24E+00 1.74E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 5.74E.01 5.37E-01 5.81E.01 1.22E+00 2.90E-01 2.90E-01 2.90E-01	T 1/2 157061.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 3.09E-02 9.75E-03 6.98E-03 3.99E-03 2.99E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 8.46E-02 7.37E-02 1.37E-02 1.31E-02 1.31E-02 4.95E-03 4.95E-03 4.95E-03	8813847.75 Pu-238 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.07E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 5.00E-03 5.00E-03 5.00E-03	5259.6 Pu.241 3.88E+01 3.50E+00 4.61E+00 3.30E+00 3.30E+00 1.87E+00 1.87E+00 1.87E+00 1.71E+00 3.45E-01	2092882.5 C-44 9.34E+00 2.10E-01 2.10E-01 2.10E-01 2.10E-01 2.10E-01 2.15E-01 3.93E+00 4.00E+00 1.83E-01 8.60E-02	36561.525 111-83 3.94E+00 1.08E+01 7.46E+00 7.52E+00 8.66E+00 1.32E+01 8.53E+00 1.73E+00 3.37E+00	4967.4 Eu-152 1.12E-01 4.85E-02 5.28E-02 5.28E-02 5.28E-02 6.79E-02 6.17E-02 3.53E-02 2.80E-02	January 15, 2004 Analysie Date February 14, 2007 Hovember 17, 199 June 27, 2002 June 28, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 28, 2001 February 13, 2002 March 6, 2002 March 6, 2002 August 30, 2002 August 30, 2002 August 30, 2002	
1 2 3 4 5 8 7 8 9 9 10 11 13 14 15 16 17 18	SHEC Sample Ho CV Tunnel SX95L99219 SX5L1083 SX5L1089 SX5L1089 SX5L1122 SX5L1120 SX5L1120 SX5L1201 SX5L1201 SX5L1201 SX5L2014 SX5L20140 SX5L2140 SX5L2140 SX5L2149	Location/Description CV Tunnel Sediment Composite, OL1 Subsurface Sample #29 (0-57), AY-122, OL1 North CV Yard Soil 8A-127, 812' EI, Sample # 5, OL2 North CV Yard Soil AY-128, 940' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 2, OL1 North CV Yard Soil AY-128, 902' EI, Sample # 5, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV SE Side S' From CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 AX-128, 3-3, Soil, CV Tunnel East 5' from CV, 900' EI, OL1 East CV Yard, Soil Pile @ 3' on West Side (5'' Depth), OL1 Soil Pile, CV Yard, Soil Pile @ 3' on East Side, SP-37, OL1 East CV Yard, Soil Pile @ 3' on East Side, SP-37, OL1	T 1/2 4485.27 H-3 7.97E+00 4.20E+00 2.78E+00 4.47E+00 3.15E+00 4.58E+00 2.73E+00 9.04E+00 1.00E+01 1.79E+00 1.75E+00	T 1/2 10446.15 5-50 9.01E+00 5.11E.02 5.10E.02 5.10E.02 5.10E.02 6.29E.02 1.80E.02 2.83E.02 2.83E.02 1.16E.02 2.85E.02 1.16E.02 2.85E.02	T 1/2 1925 23275 Co-80 8.595.01 4.055.02 1.57E.02 2.71E.02 2.271E.02 2.28E.02 2.28E.02 2.28E.02 2.28E.02 7.22E.03 7.72E.03 7.72E.03 7.72E.03 7.72E.03 7.77E.02 5.48E.02 1.17E.02 5.81E.02 1.08E.02 1.08E.02	T 1/2 11019.5925 C4-137 1.17E-03 5.36E-01 8.55E-01 1.24E+00 1.74E+00 2.18E+01 2.50E+00 2.18E+01 2.50E+00 2.18E+01 4.14E+00 5.74E-01 5.77E-01 5.37E-01 5.37E-01 5.38E-02 7.99E-01 5.28E+00 2.29E-00 2.29E-01	T 1/2 157861.05 Am-241 1.79E-01 9.59E-02 9.91E-02 2.39E-01 1.83E-01 1.49E-01 1.64E-01 1.64E-01 3.69E-02 9.75E-03 6.98E-03 3.99E-03	32050.6875 Pu-238 5.37E-01 4.62E-02 1.26E-01 1.36E-01 8.83E-02 7.37E-02 6.86E-03 1.57E-02 1.31E-02 4.95E-03 4.95E-03	8813847.75 Pu-239 2.20E-01 3.27E-02 5.00E-02 4.07E-02 4.07E-02 4.00E-02 1.21E-02 6.46E-02 7.00E-03 7.00E-03 1.10E-02 5.00E-03 5.00E-03	5259.6 Pu-241 3.88E+01 3.50E+00 4.61E+00 3.91E+00 3.91E+00 1.82E+00 1.82E+00 1.82E+00 1.82E+00 3.45E-01 3.45E-01	2092882.5 C-14 9.34E+00 2.10E-01 2.10E-01 2.06E-01 2.31E-01 2.31E-01 3.93E+00 4.00E+00 1.83E-01 8.60E-02 8.30E-02	36561.525 HI-63 3.94E+00 1.08E+01 7.62E+00 8.66E+00 1.33E+01 1.25E+01 8.53E+00 7.65E+00 3.37E+00 3.65E+00	4967.4 Eu-152 1.12E-01 4.85E-02 7.65E-02 5.28E-02 9.15E-02 6.79E-02 6.79E-02 3.53E-02 2.80E-02 3.54E-02	January 16, 2004 Analysis Date February 14, 2007 Hovember 17, 199 June 27, 2002 June 28, 2002 June 28, 2002 July 3, 2002 July 3, 2002 July 3, 2002 July 3, 2002 March 6, 2002 August 30, 2002 August 30, 2002 August 30, 2002	

KEY	
	Yellow Shaded Background = Positive Result
	Gray Shaded Background = MDA

Attachment 4-2

2

C01

		TABLE 3 - Decayed Listing of Pos	itive Nuclides	& MDAs Rem	ioved (pCi/g)		
	SNEC Sample No	Location/Description	H-3	Sr-90	Co-60	Cs-137	Total pC
1	CV Tunnel	CV Tunnel Sediment Composite, 0L1		9.01E+00	8.59E-01	1.17E+03	1178.89
2	SX9SL99219	Subsuface Sample #29 (0-5'), AY-128, OL1				5.36E-01	0.54
3	SXSL1063	North CV Yard Soil BA-127, 812' El, Sample # 5, OL2	4.20E+00			8.55E-01	5.05
4	SXSL1089	North CV Yard Soil AY-127, 810' El, Sample # 3, OL1	2.78E+00			1.24E+00	4.02
5	SXSL1115	North CV Yard Soil AY-128, 804' El, Sample # 2, OL1	4.47E+00			1.74E+00	6.21
6	SXSL1122	North CV Yard Soil AY-129, 798' El, Sample # 2, OL1	3.15E+00			4.60E+00	7.76
7	SXSL1130	North CV Yard Soil AX-129, 803' El, Sample # 4, OL1	4.58E+00		2.44E-02	2.18E+01	26.42
8	SXSL1132	North CV Yard Soil AZ-130, Sample # 5, OL1	2.73E+00			2.50E+00	5.23
9	SXSL1270	AX-129, 3-3, Soil, CV SE Side 5' From CV, 800' El., OL1				2.18E+01	21.82
10	SXSL1281	AX-128, 3-1, Soil, CV Tunnel East 5' From CV, 800' El, OL1				4.14E+00	4.14
11	SXSL2649	Anulus Well, A-2, 5 to 10' Depth, OL1				5.74E-01	0.57
13	SXSL2871	CV Area - East Yard Dirt Pile - Middle, 1/2 Way Up, OL1				5.37E-01	0.54
14	SXSL2872	CV Area - East Yard Dirt Pile - Bottom (also top center), OL1				9.58E-02	0.10
15	SXSL3140	East CV Yard, Soil Pile @ 6' on West Side (6" Depth), OL1				7.99E-01	0.80
16	SXSL3142	Soil Pile, CV Yard, Three Feet on East Side, SR-37, OL1				5.81E-01	0.58
17	SXSL3145	East CV Yard, Soil Pile @ 3' on East Side (6" Depth), OL1				1.22E+00	1.22
18	SXSL3149	Soil Pile, CV Yard, Six Feet on East Side, SR-37, OL1				2.90E-01	0.29
19	SXSL3153	East CV Yard, Soil Pile @ Top (6" Depth), OL1				2.91E-01	0.29
21	SXSL4142	CV Yard Soil - West Side, AP1-7, OL1				8.94E-01	0.89
22	SXSL4143	CV Yard Soil - West Side, AP1-7, OL1				4.97E-01	0.50
23	SXSL4149	CV Yard Soil - West Side, AP1-7, OL1			6.74E-02	3.87E+00	3.94

		TABLE 4 - Ratio To Ca	s-137 for Pos	itive Nuclides			
	SNEC Sample No	Location/Description	H-3	Sr-90	Co-60	Cs-137	Total
1	CV Tunnel	CV Tunnel Sediment Composite, 0L1		7.71E-03	7.35E-04	1.00E+00	1.01
2	SX9SL99219	Subsuface Sample #29 (0-5'), AY-128, OL1				1.00E+00	1.00
3	SXSL1063	North CV Yard Soil BA-127, 812' El, Sample # 5, OL2	4.91E+00			1.00E+00	5.91
4	SXSL1089	North CV Yard Soil AY-127, 810' El, Sample # 3, OL1	2.23E+00			1.00E+00	3.23
5	SXSL1115	North CV Yard Soil AY-128, 804' El, Sample # 2, OL1	2.57E+00			1.00E+00	3.57
6	SXSL1122	North CV Yard Soil AY-129, 798' El, Sample # 2, OL1	6.85E-01			1.00E+00	1.68
7	SXSL1130	North CV Yard Soil AX-129, 803' El, Sample # 4, OL1	2.10E-01		1.12E-03	1.00E+00	1.21
8	SXSL1132	North CV Yard Soil AZ-130, Sample # 5, OL1	1.09E+00			1.00E+00	2.09
9	SXSL1270	AX-129, 3-3, Soil, CV SE Side 5' From CV, 800' El., OL1				1.00E+00	1.00
10	SXSL1281	AX-128, 3-1, Soil, CV Tunnel East 5' From CV, 800' El, OL1				1.00E+00	1.00
11	SXSL2649	Anulus Well, A-2, 5 to 10' Depth, OL1				1.00E+00	1.00
13	SXSL2871	CV Area - East Yard Dirt Pile - Middle, 1/2 Way Up, OL1				1.00E+00	1.00
14	SXSL2872	CV Area - East Yard Dirt Pile - Bottom (also top center), OL1				1.00E+00	1.00
15	SXSL3140	East CV Yard, Soil Pile @ 6' on West Side (6" Depth), OL1				1.00E+00	1.00
16	SXSL3142	Soil Pile, CV Yard, Three Feet on East Side, SR-37, OL1				1.00E+00	1.00
17	SXSL3145	East CV Yard, Soil Pile @ 3' on East Side (6" Depth), OL1				1.00E+00	1.00
18	SXSL3149	Soil Pile, CV Yard, Six Feet on East Side, SR-37, OL1				1.00E+00	1.00
19	\$X\$L3153	East CV Yard, Soil Pile @ Top (6" Depth), OL1				1.00E+00	1.00
21	SXSL4142	CV Yard Soil - West Side, AP1-7, OL1				1.00E+00	1.00
22	SXSL4143	CV Yard Soil - West Side, AP1-7, OL1				1.00E+00	1.00
23	SXSL4149	CV Yard Soil - West Side, AP1-7, OL1			1.74E-02	1.00E+00	1.02
		Mean⇒	1.95E+00	7.71E-03	6.42E-03	1	2.96
		Sigma⇒	1.708		0.010	0.000	
		Mean % of Total⇒	65.79%	0.26%	0.22%	33.74%	100.00

Attachment 4-3

Tat	10 5	

					SNEC AL	75%	Total Activity Limit 0	CGLW	Adminis	trative Limit	
Effective	DCGL Calcu	lator for C	s-137 (in pCi/	g)			16.98	pCi/g	12.74	pCi/g	
SAMP	LE NUMBER(s)⇒	CV YARD SOIL	& BOULDER SAMP	LES							
	-				1		Cs-137 Limit		Cs-137 Admi	inistrative Limit	
17.45%	25.0	mrem/y TEDE	Limit				5.73	pCi/g	4.30	pCi/g	
7.79%	4.0	mrem/y Drinki	ng Water (DW) Lin	iit ,	Check for 25 mrem/y		: 				
Isotope	Sample Input (pCi/g, uCi, % of Total, etc.)	% of Total	25 mrem/y TEDE Limits (pCi/g)	4 mrem/y DW Limits (pCi/g)	A - Allowed pCi/g for 25 mrem/y TEDE	<b>B</b> - Allowed pCl/g for 4 mrem/y DW	Value Checked from Column A or B		This Sample mrem/y TEDE	This Sample mrem/y DW	
1 Am-241		0.000%	9.9	2.3	0.00	0.00	0.00		0.00	0.00	Am-2
2 C-14		0.000%	2.0	5.4	0.00	0.00	0.00		0.00	0.00	C-14
3 Co-60	0.0064	0.216%	3.5	67.0	0.04	0.08	0.04		0.05	0.00	Co-60
Cs-137	1.0000	33.738%	6.6	397	5.73	12.83	5.73		3.79	0.01	Cs-13
5 Eu-152		0.000%	10.1	1440	0.00	0.00	0.00		0.00	0.00	Eu-1
6 H-3	1.9499	65.786%	132	31.1	11.17	25.02	11.17		0.37	0.25	H-3
NI-63		0.000%	747	19000	0.00	0.00	0.00		0.00	0.00	Ni-63
8 Pu-238		0.000%	1.8	0.41	0.00	0.00	0.00		0.00	0.00	Pu-2
Pu-239		0.000%	1.6	0.37	0.00	0.00	0.00		0.00	0.00	Pu-23
0 Pu-241		0.000%	86	19.8	0.00	0.00	0.00		0.00	0.00	Pu-24
1 Sr-90	0.0077	0.260%	1.2	0.61	0.04	0.10	0.04		0.16	0.05	Sr-90
	2.96E+00	100.000%			16.98	38.03	16.98		4.364	0.312	
					Maximum Permissible pCi/g (25 mrem/y)	Maximum Permissible pCi/g (4 mrem/y)			Sample Input	s Information, Units Must Be In <u>% of Total.</u>	

Attachment 4-4

C03

Buttelot

		BLE 3 - REDUCED LISTING - DECAYED - MDA'S I	CEMOVED (EX	Cent C8-1371			
GNEC Bampia No	[AN No	Laughan/Dysoription	<u></u> H4	81-89	C+-19	C+487	Teta
CV Turnel	BHTTY, 0102000-01	CV Turnel Bedrunt Companie, OL1		0.01E+00	8.40E-01	1.176-00	11
SX98.89718	111074	Bulandras Bangto \$28 (D.#) AV-128, OL1				0.206-01	·
#X8L1063	Tatadyrep. (0018: (. 19184-1	Herbi CV Yard Bell BA-127, 812 62, Bergin 8 5, 012	4,208+00_		l	1409-01	<b></b>
SX8L1080	Teledyme.80019; L19184.8	Numb CV Yand Bad AY-127, 010 (B. Sample & S. OL1	2.765+00		L	1246+00	
6X8L1115	Taladyna 88828; (.18184.3	Horth CV Yord Ball AY-128, 804 BL Barryth # 2, OL1	4.475+00			1.74-00	<u> </u>
\$X8L1122	Taladyma-80021; 1, 19164-4	Hurth CV Yard Bul AV-128, 788" BL Banges # 2, 051	3.146-00			4.00-+00	
8X8L1130	Taladyna. (0022; 119104-0	North CV Yard Ball AT, 128, 803 D, Bungle # 4, OL1	4.444+00		1448-02	2.181-01	
8X8(1132	Toladyne-80022; L19104-0	Hards CV Yard Bull AZ-130, Burryto # B, OL1	2.726+00			2105-00	
6X8L1270	PHYXT, 9100006-03	AT-128 3-3 Pel CY PE PHO & Free CY. FOR BLOLI				2188-01	
6X8L1281	BWXT, \$198064.01	AX-128, 3-1, Bol, CV Turnel Bast # Press CV, 8007 B, CL1				4.148+00	
\$X\$L2640	Tologina-72289; L 19877-8	Annale Well, A-2, 5 to 10 Dapes, OL1				6.74E-41	
87.81.2571	Teledyne-77949; 1,17838-11	OV Area - Best Yard Die Pla - Milda, 1/2 Way Up, OL1			l	6.)72.41	
\$X\$L2972	Taladyana 71948; L17838-10	CV Area - East Yard Cht Pite - Bellere (sine top certier), O.1				9.54E-92	
\$7.8(3140	BW/XT,1030-003-10-01	Bear CV Yard, Bed Pile @ & en West Bile (* Daplin, OL1				7396-01	
8X8L3142	Taladyaa; 1,20538-8	Bud Plu, CV Yard, Three Feet on East Step, 64-37, OL1				6.81E-01	
\$X\$L3145	BWYT,1939-891-19-91	East CV Vard, Bell Pile @ 7 on East Blas #" Dayth, OL1				1226-00	<b>!</b>
6X3L3140	Taladysa; L.(99) 18-6	Bull Play, CV Yand, Ble Paul on Epst State, SR-37, OL1				2.90E-01	
\$X8L3153	WWTT,1030-003-10-01	But CV York Bel Ple @ Tep (F Dupts OL)				2,015-01	
BXBL4142	Tuladyne; L22107-2	CV Yard Bud - West Blas, AP1-7, OL1				8, ME-41	
BX8L4143	Telefyee; L22107-0	CV Yard Ball - West Bids, AP1-7, OL1	•			4.97E-01	<u> </u>
\$X3L4140	Totodyner 1,22187-6	CV Yard Bell - West Bills, AP1-7, OL1			6.74E-02	1.87E+00	
attic Servic No.	LAB No.	TABLE 4 - N OF TOTAL CALCUL		\$1.40	C+-M	C+127	
eNEC Sample No	LAB No.	Location Description	H-1 H-1	97-50 0.79%	Co-44 0.07%	Ca-137	
CV Turnal	LAB No. SWXT, 6103096-01 111074		<u> </u>	<u>97-50</u> 0.79%	0.07%	Ce-137 BB,10%	1
CV Turnel	\$11074	LosdinnQssoription CV Turve Bodness Careponis, CL 1	<u> </u>	\$r-00 0.79%	0.07%	80.10%	-,
CV Turnel 8X86(38218	\$WXT, \$183858-81	Loostine@socryptice CV Turved Bedrard Qurgenite, CL Bedrafters Bergin (28 (S-F) AV-128, CL1	<u> </u>	9 0.79%	0.07%	100,00%	
CV Turnel 8X86(39218 6X8L1063	847.5, 4163.671 11107.4 7 dtudyma-84916; L 19194.1 7 dtudyma-84919; L 19194.2	Leastinn Description CV Turne Badhard Companie, CL1 Badadess Depart (201 AV128, CL1 Nach CV Veri Bad (A-127, 612 TB, Banya () 8, CL2		9 0.79%	0.07%	100.00% 100.00%	
CV Turnel 8X86(39218 6X8(1063 6X8(1069	84/27, 0102000-01 111074 Teledyne 99910; L19194-1	Leading Description CV Turing Sedanas Companie, CL1 Bedautima Bargia (28 (04), AV128, CL1 India (27 Vint Jul (04), 77, 677 (8, Bargia F 3, CL2 India (27 Vint Jul (04), 77, 677 (8, Bargia F 3, CL2	H-3 69.07% 72.01% 40.65%	9: -0 0.79%	0.07%	84.10% 100.00% 14.83% 50.99% 77.89%	
CV Turnel 8X86(39218 8X86(39218 8X8(1083 8X8(1088 8X8(1115		Leadlan Queer price O'V Turing Bedfand Carpysolin, O.1 Bedradans Bangin (20 (O-0) AV128, OL1 Num (2) York Bel (A-127, 617 R, Bangin (1) G.O.2 Hami, CY York Bel (A-127, 617 R, Bangin (1) S.O.1 Nam, CY York Bel (A-128, BDF R, Bangin (1) 2.O.1	H-3 95.07% 96.04% 72.02% 72.02%	91-40 0.79%	Co-+4 0.07%	NO. 10%	
CV Turnel 8X96(39219 8X96(39219 8X9(1053 8X9(1059 8X9(115 8X8(1115	9077, 0102000-01 11074 Tataina 60016, L19104-1 Tataina 60017, L19104-2 Tataina 60027, L19104-2 Tataina 60027, L19104-4	Loading Description CV Turing Sections (Corporate, CC) Bedactions Starger (CB) (CP), AV128, CC1 Hank CV West Self AV127, STC RE, Sangta F 3, CC3 Hank CV West Self AV127, STC RE, Sangta F 3, CC3 Hank CV West Self AV127, STC RE, Sangta F 3, CC1 Hank CV West Self AV127, STC RE, Sangta F 3, CC1 Hank CV West Self AV128, TOP RE, Sangta F 3, CC1	H-3 63.07% 60.04% 72.04%	97.40 0.70%	0.07%	100.00% 100.00% 19.57% 7.67% 10.57% 10.57% 10.57% 10.57%	
CV Turnel 8X84(38219 8X84(083 8X8(1083 8X8(1089 8X8(1115 8X8(1115 8X8(1122 8X8(1130	#VXT, 11074     11074     Tokyne (1016 L1996-1     Tokyne (1016 L1996-1     Tokyne (1016 L1996-1     Tokyne (1016 L1996-4     Tokyne (1016 L1996-4     Tokyne (1016 L1996-4	Localize/Description           CV Turing Sedence Comparis, CL1           Behaviore Despin (28) (27), AV128, CL1           Index CV Turing And Av127, APTE, Assays P 8, CL2           Name CV Turing And Av127, APTE, Assays P 8, CL2           Name CV Turing And Av127, APTE, Assays P 8, CL2           Name CV Turing And Av127, APTE, Assays P 8, CL2           Name CV Turing And Av128, CPTE, Assays P 8, CL2           Name CV Turing And Av128, CPTE, Assays P 8, CL2           Name CV Turing And Av128, CPTE, Benging P 2, CL1           Name CV Turing And Av128, CPTE, Benging P 2, CL1	H-3 95.07% 96.04% 72.02% 72.02%	0.79%	0.07%	100.00% 100.00% 19.52% 20.97% 21.67% 21.67% 21.67% 21.67%	
CV Turvet 8,X96,36219 6,X84,1063 8,X84,1069 8,X84,1115 8,X84,1122 8,X84,1132 8,X84,1132	PV27, 012090-01     111074     Totopa Gene, L11074-1     Totopa Gene, L11094-1     Totopa Gene, L11094-2     Totopa Gene, L10194-2     Totopa Gene, L10194-3     Totopa Gene, L10194-4     Totopa Gene, L10194-4     Totopa Gene, L10194-4	Leaders Cosservation CV Turing Seadered Comparish, CC1 Bedraction Stargets (20 (C-2) AV128, CC1 Numb CV Yard Bed Av127, d177 R, Barrysh & B, CC2 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC2 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1 Numb CV Yard Bed Av128, BCF R, Barrysh & B, CC1	H-3 95.07% 96.04% 72.02% 72.02%	0.79%	0.07%	6,10% 100,50% 14,82% 17,48% 17,48% 17,78% 100,00%	
CV Turnat &X94,59219 &X84,59219 &X84,508 &X84,5122 &X84,5122 &X84,1120 &X84,1122 &X84,1122 &X84,1270	9027, 413896-61 11074 Telefyna 6904, L1994-1 Telefyna 6907, L1994-1 Telefyna 6907, L1994-2 Telefyna 6907, L1994-4 Telefyna 6907, L1994-4 Telefyna 6907, L1994-4 Telefyna 6907, L1994-9 Telefyna 6907, L1994-9	Loading Classifier CV Turing Sections Conjugate, CL Market Starger CB (49) AV128, CL Market CY 1000 (6) AV127, BY AV128, CL Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV128, CH AV128, CH AV128, CH Market CY 1000 (6) AV128, CH AV128, CH AV128, CH Market CY 1000 (6) AV128, CH AV128, CH AV128, CH AV128, D-1, BH, CY 1000 (2010) (5) CB, Ch AV128, D-1, BH, CH 1000 (2010) (5) CB, CH AV128, D-1, BH	H-3 95.07% 96.04% 72.02% 72.02%	0.79%	0.07%	19.10% 19.20% 19.20% 19.20% 19.20% 19.20% 19.20% 19.20%	
CV Turnat &X84,08219 &X84,083 &X84,1083 &X84,1115 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,1221 &X84,1221		Loadinar@corportion           CV Tarvet Seatures Corports, C1           Behardene Starger CB (C4), AV128, C1           Instric CV Year Seatures CB, Instrage F 3, C1           Instric CV Year Seatures CB, Instrage F 3, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 4, C1           Instric CV Year Seatures CB, Instrage F 2, C1           AV128, In J, Ind, CV Year Seatures F Jongs CV, S07 B, C1           Av140, Ind, Ind, Ind, Ind, Ind, Ind, Ind, Ind	H-3 95.07% 96.04% 72.02% 72.02%	\$:-** 0.79%	0.07%	100.07% 100.07% 10.87% 10.87% 10.87% 10.87% 100.00% 100.00% 100.00%	
CV Turnal &X84186719 &X841903 &X841905 &X841905 &X84192 &X84	9027, 010096-01 11074 Telegree, 9006, 11194-1 Telegree, 9006, 11194-1 Telegree, 9005, 11194-3 Telegree, 9005, 11194-4 Telegree, 9005, 11194-4 Telegree, 9005, 11194-4 Port, 010098-01 POT, 01009-01 POT, 010	Loading Classifier CV Turing Sections Conjugate, CL Market Starger CB (49) AV128, CL Market CY 1000 (6) AV127, BY AV128, CL Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV127, BY AV128, CA Market CY 1000 (6) AV128, CH AV128, CH AV128, CH Market CY 1000 (6) AV128, CH AV128, CH AV128, CH Market CY 1000 (6) AV128, CH AV128, CH AV128, CH AV128, D-1, BH, CY 1000 (2010) (5) CB, CL AV128, D-1, BH, CY 1000 (2010) (5) CB, CL AV128, D-1, BH, CY 1000 (2010) (5) CB, CL Av128, D-1, BH, CY 1000 (2010) (5) (5) CB, CL Av128, D-1, BH, CY 1000 (2010) (5) (5) CB, CL Av128, D-1, BH, CY 1000 (2010) (5) (5) (5) (5) (5) (5) (5) (5) (5) (5	H-3 95.07% 96.04% 72.02% 72.02%	9:49 0.79%	0.07%		
CV Turnel &X84182;19 &X841979 &X841970 &X84110 &X84112 &X84112 &X84112 &X84112 &X84112 &X84112 &X841270 &X84270 &X84289 &X84271	PVXT, 413896-61     11074     11074     Telegram, 69015, L19164-1     Telegram, 69015, L19164-2     Telegram, 69015, L19164-4     Telegram, 69015, L191	Loadinar@Desription           CV Turve Sedewal Comparis, CL           Bedadwal Sangka (20 (20), AV128, CL           Intel CV Two Sed Set (20), AV128, CV           Intel CV Two Set (20), CV           Intel CV Two, Set (20), CV <td< td=""><td>H-3 95.07% 96.04% 72.02% 72.02%</td><td>9:49 0.79%</td><td>0.07%</td><td></td><td></td></td<>	H-3 95.07% 96.04% 72.02% 72.02%	9:49 0.79%	0.07%		
C/ Turnel &X841,55278 &X841,053 &X841,053 &X841,053 &X841,115 &X84,1115 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,1122 &X84,127 &X84,127 &X84,2249 &X84,2740 &X84,2742 &X84,2742 &X84,2742	PVXT, 010000-01     11074     11074     11074     Telepre-QVIS, 11174-1     Telepre-QVIS, 11174-1     Telepre-QVIS, 11174-2     Telepre-QVIS, 11174-4     Telepre-QVIS, 11174-4     Telepre-QVIS, 11174-4     PVXT, 010000-47     PVXT, 010000-47     Telepre-QVIS, 11074-4     Telepre-QVIS, 11074-4     PVXT, 010000-47     Telepre-QVIS, 11074-4     PVXT, 010000-47     Telepre-TISS, 11074-4     PVXT, 01000-4	Localized/Description           CV Travel Sections Comparis, CL           Behaviore Bengles (28) (CP), AV128, CL1           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Bell (A-172), CTC (28, Section § 8, CL2           Instrict, CV Yord, Section (28, Section § 8, CL2), CL1           Instrict, CV Yord, Section (28, Section § 8, CL2), CL1           Av128, D-1, Section (28, Dec. 7, CL2), CR2 (D, CL1), CV (28, CL2), CL1           Av128, D-1, Section (28, Dec. 7, CL2), CR2 (D, CL1), CV (28, CL2), CL1           Av128, D-1, Section (28, Dec. 7, CL2), CR2 (D, CL1), CV (28, CL2), CL1           Av128, D-1, Section (28, Dec. 7, CL2), CR2 (D, CL1), CV (28, CL2), CL1           CV Area, - Section (28, Dec. 7, Dec. 7, CL2), CL1, CV (28, CL1), CL1, CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL1, CV (28, CL2), CL1, CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL1, CV (28, CL2), CL2), CV (28, CL2), CL2, CV (28, CL2), CL2, CV (28, CL2), CL2), CV (28, CL2), CV	H-3 95.07% 96.04% 72.02% 72.02%	8:49 0.79%	0.07%	4,194 100,00% 2,20% 2,20% 2,20% 2,20% 2,20% 100,00% 100,00% 100,00% 100,00%	
C// Turnel 8.X484,86710 8.X484,86710 8.X484,1003 8.X484,1105 8.X484,1115 8.X484,1112 8.X484,1112 8.X484,1112 8.X484,1112 8.X484,1112 8.X484,2007 8.X484,2007 8.X484,2014 8.X48	9027, evaluate-61 11074 Telefyn-Gereg, Liffel-1 Telefyn-Gereg, Liffel-3 Telefyn-Gereg, Liffel-3 Telefyn-Gereg, Liffel-3 Telefyn-Gereg, Liffel-3 Perst, evaluate-67 Perst, evaluate-67 Telefyn-7220, Liffel-3 Perst, evaluate-67 Telefyn-7220, Liffel-3 Perst, 1748-41 Telefyn-7220, Liffel-3 Perst, 1748-41 Telefyn-7240, Liffel-3 Perst, 1748-41 Telefyn-740, Liffel-3 Perst, 1748-41 Telefyn-740, Liffel-3 Perst, 1748-41 Telefyn-740, Liffel-3 Perst, 1748-44	LoadinarQuestigners CV Turve Sections Conjugate, CL Beaching Starting CP (497) AV128, CL Num CV West Self AV127, STO R, Sangle F B, CL Num CV West Self AV127, STO R, Sangle F B, CL Num CV West Self AV127, STO R, Sangle F B, CL Num CV West Self AV128, TOP C, Sangle F B, CL Num CV West Self AV128, TOP C, Sangle F B, CL Num CV West Self AV128, TOP C, Sangle F B, CL Num CV West Self AV128, TOP C, Sangle F B, CL Num CV West Self AV128, TOP C, Sangle F B, CL Num CV West Self AV128, Top C, Sangle F B, CL Num CV West Self AV128, Top C, Sangle F B, CL Num CV West Self AV128, Top C, Sangle F B, CL Num CV West Self AV128, Top C, Sangle F B, CL Num CV West Self AV128, Top C, Sangle F B, CL Num CV West Self AV128, Top Self B, Sangle F B, CL AV128, PA, Self CV I FPR Self Self B, Sangle F B, CL CV Appe - Sant Yan DP RPs - Instan, 122 Weg Up, CL CV Appe - Sant Yan DP RPs - Instan, 122 Weg Up, CL CV Appe - Sant Yan DP RS - Instan, 122 Weg Up, CL Sand CV Yand, Theos Fact Sent Self B P C Selfs, CL Sand CV Yand, Theos Fact Sent Self Sent Self Sent Self Sent Self Sent Self Sent Self Sent Sent Sent Sent Sent Sent Sent Sent	H-3 95.07% 96.04% 72.02% 72.02%	9:49 0.79%	0.07%	4,14% 100,87% 14,87%14,97% 14,87% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97% 14,97%14,97% 14,97%14,97% 14,97% 14,97%14,97%14,97% 14,97%14,97%14,97% 14,97%14,97%14,97% 14,97%14,97%14,97% 14,97%14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97% 14,97%14,97%14,97% 14,97%14,97%14,97%14,97%14,97%14	
CV Turnel &X4218219 &X4218219 &X42193 &X42193 &X42193 &X42192 &X42122 &X42122 &X42122 &X42122 &X42122 &X42122 &X42127 &X4217 &X4217 &X4217 &X427 &X477 &X477 &X477 &X4777 &X4777 &X4777 &X4777 &X4777 &X4777 &X	9027, 012096-01 11074 Teadyme-9016, L1196-1 Teadyme-9016, L1196-1 Teadyme-9016, L1196-2 Teadyme-9017, L1196-2 Teadyme-9017, L1196-4 Teadyme-9017, L1196-4 9027, 010000-47 9027, 010000-47 9027, 010000-47 9027, 010000-47 9027, 01000-47 9027, 01000-47 9027, 0100-47 9027, 0100-47	Loadinar@corported           CY Turvet Sedimet Comparis, C1           Induction Stargin (29 (24), AV128, C1)           Induction (27 Verb and AV127, DC76, Stargin § 3, C1)           Induction (27 Verb and AV127, DC76, Stargin § 3, C1)           Induction (27 Verb and AV127, DC76, Stargin § 3, C1)           Induction (27 Verb and AV128, DC76, Stargin § 3, C1)           Induction (27 Verb and AV128, DC76, Stargin § 3, C1)           Induction (27 Verb and AV128, DC76, Stargin § 3, C1)           Induction (27 Verb and AV128, DC76, Stargin § 4, C1)           AV128, B-1, B-2, C4 (26), Brit (27 Verb, C1, C1)           AV128, B-3, B-3, C4 (27 Ben, Stargin (27, SC76, Stargin (24, C1))           AV128, B-3, B-3, C4 (27 Ben, Stargin (24, SC76, Stargin (24, C1))           AV128, B-3, B-3, C4 (27 Ben, Stargin (24, SC76, Stargin (24, SC766, Stargin (24,	H-3 95.07% 96.04% 72.02% 72.02%	9:49 0.79%	0.07%	4,19% 100,50% 4,87% 4,87% 4,87% 4,87% 4,87% 4,87% 4,87% 4,00% 100,00% 100,00% 100,00% 100,00% 100,00%	
C/ Turnet 8.X84189218 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X841083 8.X842071	PV27, 012090-01     11074     11074     Tridyne Q016, 11194-1     Tridyne Q016, 11194-1     Tridyne Q016, 11194-1     Tridyne Q017, 11194-2     Tridyne Q017, 11194-3     Tridyne Q017, 11194-3     Q017, 010090-41     Tridyne Q017, 11194-3     PV17, 010090-41     Tridyne Z1285, 11194-4     PV17, 010090-41     Tridyne Z1285, 11194-4     PV17, 1128-4     PV17,	Leading Description CV Tures Soldward Comparison, CL Bedandare Sample (20, 60%, Arri28, CL Home CV Ture) and Arri27, Arri28, Cu (20, 20%, Arri28, CL) Home CV Ture (and Arri27, Arri28, Barryle § 8, CL) Home CV Ture (and Arri28, BOY 8, Barryle § 8, CL) Home CV Ture (and Arri28, BOY 8, Barryle § 8, CL) Home CV Ture (and Arri28, BOY 8, Barryle § 8, CL) Home CV Ture (and Arri28, BOY 8, Barryle § 8, CL) Home CV Ture (and Arri28, Boy 8, 6 CL) Arria9, PA, Hom, CV FF Hom, FF, Home DV, HOT 60, CL) Arria9, PA, Hom, CV FF, Home JF, Home CV, HOT 60, CL) Arria9, PA, Hom, CV FF, Home JF, Home DV, HOT 60, CL) Arria9, PA, Hom, CV FF, Home JF, Home DV, HOT 60, CL) CV Area - Bart Yan CDr How. France Strate JF, Deck CV Ture, And Frang BF on Home State JF, Dech CV Ture, And Frang BF on Home State JF, Dech CV Ture, And Frang BF on Home State JF, CL) Bart GV, Yang, Hom France Intern BM, BH-27, CL) Bart GV, Yang, Hom Frang in State BH (20%, CL) CV Area, Col Ture, Bit Foreign State BH (20%, CL) Bart GV, Yang, Hom Frang In State Bhart JF, Dech CV Ture, State Frang BF on Home State JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, Dech State State State JF, State JF, State State State JF, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart JF, Dech State State State JF, CV Ture, Hom Frang Home And State JF, Dech, CL) Bart GV, Yang, Hom Frang Intern Bhart Bhart Bhart JF, CL) Bhart GV, Yang, Hom Frang Intern Bhart Bhart JF, Dech State State JF,	H-3 95.07% 96.04% 72.02% 72.02%		0.07%	100,00% 100	
C/ Turnel &X441,59710 &X441,59710 &X441103 &X441115 &X441115 &X441112 &X441122 &X441122 &X441122 &X441122 &X441122 &X44121 &X441221 &X	9027, 010096-01 11074 Telefyne, 6005, 1194-1 Telefyne, 6005, 1194-1 Telefyne, 6005, 10194-3 Telefyne, 6005, 10194-4 Telefyne, 6005, 10194-4 Telefyne, 6005, 10194-4 Port, 010094-01 Port, 010094-01 Telefyne, 1005-01 Telefyne, 1005-0	Loadinar@corputation           CV Turved Bedfaust Corputation, CC1           Bedrafans Stargker (20) 6/27, A1728, Borgele F3, OC1           Intelline (20) Vited field AT-127, BTC R, Borgele F3, OC1           Intelline (2V) Vited field AT-127, BTC R, Borgele F3, OC1           Intelline (2V) Vited field AT-127, BTC R, Borgele F3, OC1           Intelline (2V) Vited field AT-127, BTC R, Borgele F3, OC1           Intelline (2V) Vited field AT-127, BTC R, Borgele F3, OC1           Intelline (2V) Vited field AT-128, DTC R, Borgele F3, OC1           Number (2V) Vited field AT-128, DTC R, Borgele F3, OC1           AT-128, D-18, DVC P4, D-128, TTC R, Borgele F3, OC1           AT-128, D-18, DVC P4, D-128, TTC R, D-128, DVC R, D-124, OC1           AT-128, D-18, DVC P4, D-18, DF1, DVC P4, DC1           CV / Arge - East Typel (2P) P40 - East of Promo CV, EOZ EB, OC1           CV / Arge - East Typel (2P) P40 - East of Promo CV, EOZ EB, OC1           CV / Arge - East Typel (2P) P40 - East of Promo CV, EOZ EB, OC1           CV / Arge - East Typel (2P) P40 - East of Promo CV, EOZ EB, OC1           CV / Arge - East Typel (2P) P40 - East of Promo CV, EOZ EB, OC1           CV / Arge - East Typel (2P) P40 - East of Pane, OC1           CV / Arge, East Typel (2P) P40 - East of Pane, DC3, OC1           Base CV / Vired, Bar / Argel (2P) OC1           Gen CV / Vired, Bar / Argel (2P) OC1           Gen CV / Vired, Bar / Argel (2P) OC1      <	H-3 95.07% 96.04% 72.02% 72.02%	\$1-49 0.79%	0.07%	e,19% 100,57% 40,57% 40,57% 40,57% 40,57% 40,57% 100,00% 100,00% 100,00% 100,00% 100,00% 100,00% 100,00% 100,00%	
C/ Turnel 6.X841,89218 8.X841083 8.X841083 8.X841083 8.X841115 8.X841115 8.X841115 8.X841122 8.X841123 8.X841123 8.X84299 8.X84299 8.X84299 8.X84299 8.X84299 8.X84297 8.X84294 8.X84444 8.	PVXT, essent-of     11074     11074     11074     Tetopme-PVIs, L1914-1     Tetopme-PVIs, L1914-2     Tetopme-PVIS, L1914-2     Tetopme-PVIS, L1914-4     Tetopme-PVIS, L1914-4     PVXT, essent-4     PVXT, essent-4     PVXT, essent-4     Tetopme-TVIS, L1924-1     PVXT, essent-4     Tetopme-TVIS, L1924-1     PVXT, essent-4     Tetopme-TVIS, L1924-1     PVXT, essent-4	Leading Description CV Tured Sedimat Comparis, CL Belandson Starping (2), GVD, AT (2), CL Hum CV Tured Belandson (2), AT (2), CL Hum CV Tured Bel AT (2), GTT (2), Starping § 3, CL Hum CV Tured Bel AT (2), GTT (2), Starping § 3, CL Hum CV Tured Bel AT (2), BTT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), BTT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL Hum CV Tured Bel AT (2), Barrying § 3, CL At (2), FA, Hum CV (2), FF (2), FF (2), CL (2), CL At (2), FA, Hum CV (2), FF (2), FF (2), CL (2), CL At (2), FA, Hum CV (2), FF (2), FF (2), CL (2), CL CV Aper, Barry Ture Dr Files (2), FF (2), CL (2), CL Barr CV Tured, Barr Files (2), FF (2), CL (2), CL Barr CV Tured, Barr Files (2), FF (2), CL (2), CL Barr CV Tured, Barr Files (2), FF (2), CL (2), CL Barr CV Tured, Barr Files (2), Files (2), CL (2), CL Barr CV Tured, Barr Files (2), Files (2), CL (2), CL Barr CV Tured, Barr Files (2), Files (2), CL (2), CL (2), CV (4), CV (4), Files (4), Files (4), AF (2), CL (4), CV (4), CV (4), Files (4), Files (4), AF (2), CL (4), CV (4), CV (4), Files (4), Files (4), AF (2), CL (4), CV (4), CV (4), Files (4), Files (4), AF (2), CL (4), CV (4), CV (4), Files (4), Files (4), AF (7), CL (4), CV (4), CV (4), Hum Barr, AF (7), CL (4), CV (4), CV (4), Hum Barr, AF (7), CL (4), CV (4), CV (4), Hum Barr, AF (7), CL (4), CV (4), CV (4), Hum Barr, AF (7), CL (4), CV (4), Files (4),	H-3 95.07% 96.04% 72.02% 72.02%		0.07%	0.195           100207h           101207h	
C/ Turnel &X441,59710 &X441,59710 &X441103 &X441115 &X441115 &X441112 &X441122 &X441122 &X441122 &X441122 &X441122 &X44121 &X441221 &X4	9027, 010096-01 11074 Telefyne, 6005, 1194-1 Telefyne, 6005, 1194-1 Telefyne, 6005, 10194-3 Telefyne, 6005, 10194-4 Telefyne, 6005, 10194-4 Telefyne, 6005, 10194-4 Port, 010094-01 Port, 010094-01 Telefyne, 1005-01 Telefyne, 1005-0	Loadinar@conjetion           CV Turve Sections Conjetion, CL           Belandson Starger CB (40%) AV128, CL           Name CY West Belandson, CL (20%) AV128, CL           Name CY West Belandson, CL (20%) AV128, CL           Name CY West Belandson, CL (20%) AV128, CL (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY West Belandson, CL (20%) AV128, CM (20%)           Name CY (20%) AV128, CM (20%) AV128, CM (20%)           Name CY (20%) AV128, CM (20%) AV128, CM (20%)           AV128, D-3, Bela (20%) BP18, D (20%), CM (20%)           CV (20%) AV128, CM (20%), D (20%), CM (20%), CM (20%)           CV (20%) AV128, CM (20%), D (20%), CM (20%), CM (20%), CM (20%), D (20%), D (20%), D (20%), CM (20%), D (20%), CM (20%), D (20%), CM (20%), D (	P-3	0.79%	<u>9.07%</u>	4.14% 100,85% 14.24% 14.24% 14.24% 14.24% 14.24% 14.24% 100,80	
C/ Turnel 6.X841,89218 8.X841083 8.X841083 8.X841083 8.X841115 8.X841115 8.X841115 8.X841122 8.X841123 8.X841123 8.X84299 8.X84299 8.X84299 8.X84299 8.X84299 8.X84297 8.X84294 8.X84444 8.	PVXT, essent-of     11074     11074     11074     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     QUIS_CONSEL47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44	Loadinar@corputation           CV Turved Sedimar Comparis, C1           Indextman Stargin (29) (24), AV128, C11           Indext (29) (20) (20), AV128, C11           Indext (20), C12, D127, D127, Barryin § 51, C12           Index (27) Yerd (20), AV128, C02, D128, Barryin § 51, C13           Index (27) Yerd (20), AV128, C02, D128, Barryin § 52, C13           Index (27) Yerd (20), AV128, C02, D128, D129, D128, D129, D128, D129, D128, D129, D		0.79%	0.07%	0.1955           1002000      1002000	
C/ Turnel 6.X841,89218 8.X841083 8.X841083 8.X841083 8.X841115 8.X841115 8.X841115 8.X841122 8.X841123 8.X841123 8.X84299 8.X84299 8.X84299 8.X84299 8.X84299 8.X84297 8.X84294 8.X84444 8.	PVXT, essent-of     11074     11074     11074     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     QUIS_CONSEL47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44	Loading Closer/grisen           CV Turves Societaria (Cresponte, CL)           Belandaria Sangta (20, 60%, Arr/32, CL)           Henn CY Turves Societaria           Hum CY Turves Societaria           Advis Title, Advis Turves Citle Societaria           Advis Title, Advis Turves Citle Societaria           Advis Title, CY Turves Turves Citle Societaria           CV Turves, Societaria           CV Turves, Turves Citle Title Societaria           Bea Societaria           Hum CY Turves, Turves Citle Societaria           Bea Societaria           CV Turves, Turves, Turves Citle Societaria           Bea The, CV Turves, Turv	H-3 (5.67%) (7.24%) 40.66% 17.44% 63.27% (3.27%) (5.57200(72) 0.241	0.79%	0.07%		
C/ Turnel 6.X841,89218 8.X841083 8.X841083 8.X841083 8.X841115 8.X841115 8.X841115 8.X841122 8.X841123 8.X841123 8.X84299 8.X84299 8.X84299 8.X84299 8.X84299 8.X84297 8.X84294 8.X84444 8.	PVXT, essent-of     11074     11074     11074     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     Tetopro_QUIS_LITE44     QUIS_CONSEL47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_QUIS_LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_TIE5, LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-47     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44     PVXT, essent-44     Tetopro_LITE44     Tetopro_LITE44	Loadinar@corputation           CV Turved Sedimar Comparis, C1           Indextman Stargin (29) (24), AV128, C11           Indext (29) (20) (20), AV128, C11           Indext (20), C12, D127, D127, Barryin § 51, C12           Index (27) Yerd (20), AV128, C02, D128, Barryin § 51, C11           Index (27) Yerd (20), AV128, C02, D128, Barryin § 52, C11           Index (27) Yerd (20), AV128, C02, D128, Barryin § 52, C11           Index (27) Yerd (20), AV128, D20, D128, D20, D20, D128, D20, D20, D20, D20, D20, D20, D20, D20		0.79%	0.07%	0.1955           1002000      1002000	

ATTACHMENT 4.5

SAMPLES RESULTS FOR ORISE

7/13/2004

•

Effective D	CGL Calculator	for Cs-137	(dpm/100 cm	l^2)	Gross Acti	vity DCGLw	. Gross Activity	Administrative Limit
				i i	44434	dpm/100 cm^2	33325	dpm/100 cm^2
25.	.0 mrqm/y TEDĘ Ļimit			**			· · · · · · · · · · · · · · · · · · ·	······································
· · ·						7 Limit	Cs-137 Ada	inistrative Limit
\$AMPLE NO(s)⇒	CV YARD SOIL & BO	ULDER SAMPLE	S	]	26445	dpm/100 cm^2	19834	dpm/100 cm^2
				i	SNEC AL	75%		
Isotope	Sample Input (pCl/g, uCl, etc.)	% pf Total	Individual Limits (dpm/100 cm^2)	Allowed dpm/100 cm^2	mrem/y TEDE	Beta dpm/100 qm^2	Alpha dpm/100 cm^2	]
1 Am-241		0.000%	27	0.00	0.00	N/A	0.00	Am-241
2 C-14 3 Co-60	6.25E-03	0.000% 0.443%	3,700,000 7.100	0.00 196.87	0.00 0.69	0.00 196.87	N/A N/A	C-14
	7 101581710E2018745					190.87 1:126444.7 ::	N/A	Co-60
۶ Eu-162 β H-3 7 Ni-63	5.57E-01	0.000% 39.500% 0.000%	13,000 120,000,000 1,800,000	0,00 17551.45 0,00	0.00 Q.QO Q.QO	0.00 Not Detectable Not Detectable	N/A N/A N/A	Eu-152 H-3 Ni-63
β Pu-238 β Pu-239		0.000%	30	0,00	0.00	N/A	0.00	Pu-238
ρ[Pu-241		0.000%		0.00	0.00	N/A	0.00	Pu-239
1 Sr-90	7.64E-03	0.542% 0.542% 100.000%	880 8,700	0.00 240.75 44434	0.00 0.69	Not Detectable 240.75	N/A N/A	Pu-241 Sr-90
		100.040.70	I	Maximum Permiseible dpm/100 cm^2	25.0	26882	0	1

. !

.

.

ATTACHMENT 4 6

.



# Site Summary

Site Name: CV Yard Area (OL1-4)

BHB

Planner(s):

# **Contaminant Summary**

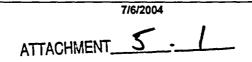
NOTE: Surface soil DCGLw units are pCi/g. Building surface DCGLw units are dpm/100 cm<sup>2</sup>.

			Screening		
Contaminant	Туре	DCGLw	Value Used?	Area (m²)	Area Factor
Cs-137	Surface Soil	4.30	No	10,000	1
				1.	1

.

• •••

ļ

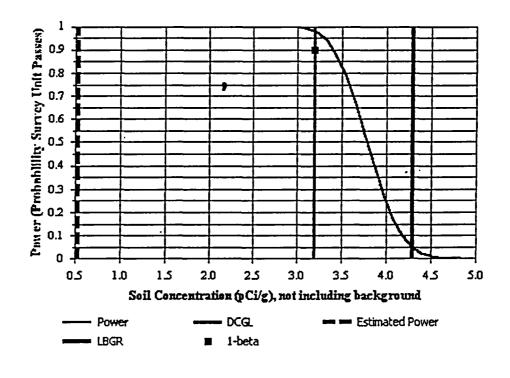




# **Survey Plan Summary**

	Site:	CV Yard Area	(OL1-4)		
	Planner(s):	BHB			
	Survey Unit Name:	CV Yard Area	(OL1-4)		
	Comments:	North East Are	а		
	Area (m²):	441		Classification:	1
	Selected Test:	WRS		Estimated Sigma (pCi/g):	1.06
	DCGL (pCi/g):	4.30		Sample Size (N/2):	26
	LBGR (pCi/g):	3.2		Estimated Conc. (pCi/g):	0.5
	Alpha:	0.050		Estimated Power:	1
•	Beta:	0.100		EMC Sample Size (N):	26
	Scanning Instrumentati	on:	Nal 2" by 2" (W	0	•

# **Prospective Power Curve**



7/6/2004



# **Contaminant Summary**

Contaminant	DCGL <del>w</del> (pCl/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCl/g)	Scan MDC (pCi/g)
Cs-137	4.30	N/A	N/A	N/A	3.2
Contaminant	:	Survey Unit Estimate (Mean ± 1-Sigma) (pCl/g)		Reference Area Esti (Mean ± 1-Sigma (pCl/g)	
Cs-137		0.82 ± 1.06		0.28 ± 0.39	

•

• •-

1

<b>V</b> [CIIME	ASS-DRO Wizzard find Sunfaces Sull Accession	
	Elevated Measurement Comparison (E	MC)
:		umentation used. Then enter a scan MDC for each ATE button to view the integrated survey design DC and DCGL units are in pCi/g.
	Scanning Instrumentation Description: Na	2" by 2" (W)
	Contaminant Scan MDC Cs-137 3.2	Enter Scan MDC Scan MDC: SAVE SAVE
<u> </u>	<i>t</i>	······
معنده» پندنو	Statistical Design	<u>Hot Spot Design</u>
and the second s	N/2: 26	Actual Scan MDC: 3.2
in the	Bounded Area (m²): 17	Area Factor: N/A
	Area Factor. 1	Bounded Area (m²): N/A
	DCGLwr. 4.30	Post-EMC N/2: 26
	Scan MDC Required: N/A	COMPASS
	Enable Training v1.0.0	No additional samples are required because the actual scan MDC is less than the DCGLw.

.

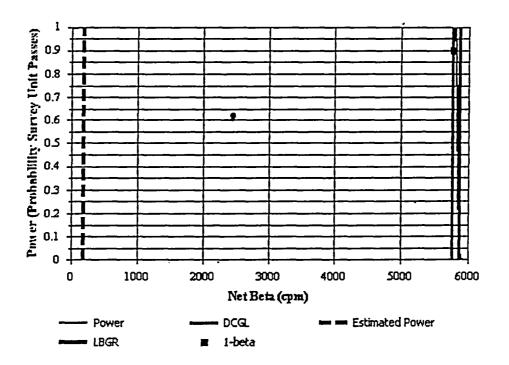
ATTACHMENT 5. 4



# **Survey Plan Summary**

· Site:	Concrete Cap Over CV dome		
Planner(s):	внв		
Survey Unit Name:	CV Dome Cap - MA8-3		
·	CV Dome Cap - MAC-5		
Comments:			
Area (m²):	182	Classification:	3
Selected Test:	WRS	Estimated Sigma (cpm):	38.7
DCGL (cpm):	5,879	Sample Size (N/2):	8
LBGR (cpm):	5,770	Estimated Conc. (cpm):	187
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.100		

# **Prospective Power Curve**



7/13/2004 6. ATTACHMENT\_



# **Contaminant Summary**

.

O ante a la cat	DCGLw
Contaminant	(dpm/100 cm <sup>2</sup> )
Gross Activity	33,325

# Beta Instrumentation Summary

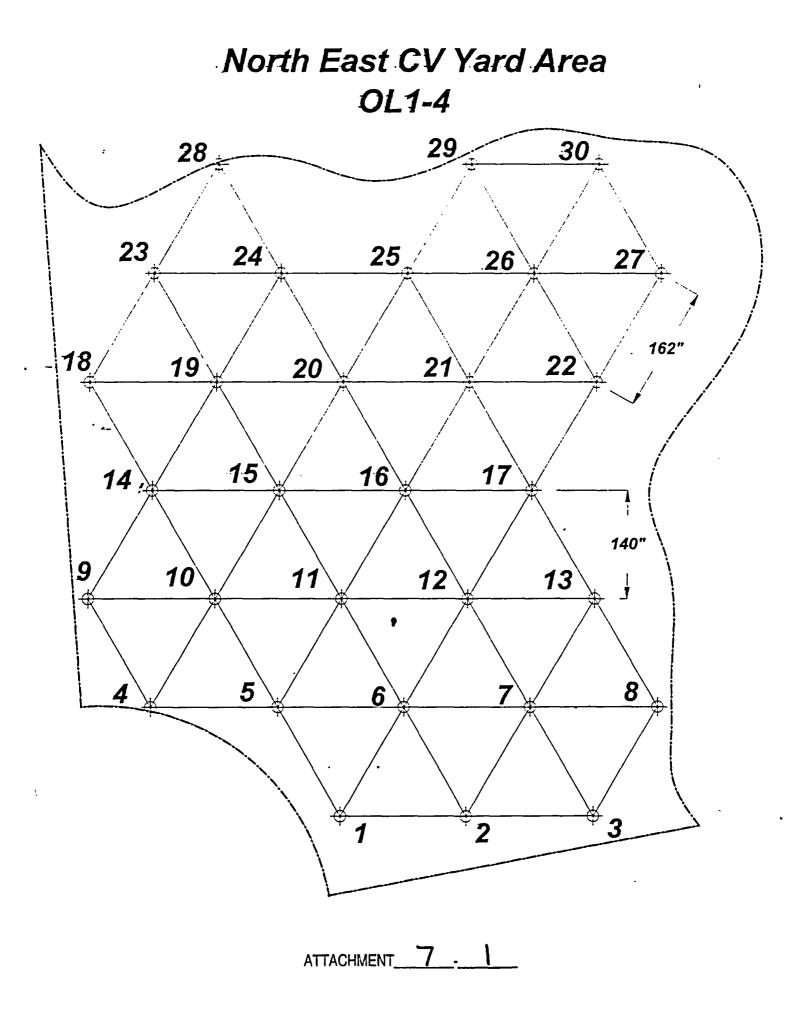
Gross Beta DCGLw (dpm/	100 cm²):	33,325			
Total Efficiency:		0.14			
Gross Beta DCGLw (cpm):	•	5,879			
D Type			Mode	,	Area (cm²)
23 GFPC			Beta		126
Contaminant	Energy'	Fraction <sup>2</sup>	Inst. Eff.	Surf. Eff.	Total Eff.
Gross Activity	187.87	1.0000	0.48	0.30	0.1423
Average beta energy (ke)			0.48	0.30	0.1423
Gross Activity Average beta energy (ke) Activity fraction Gross Survey Unit Mean (c Count Time (min): 1	<ul> <li>/) [N/A indicates alpha</li> </ul>	emission]	0.48	0.30	0.1423
Average beta energy (ke) Activity fraction Gross Survey Unit Mean (c	<ul> <li>/) [N/A indicates alpha</li> </ul>	emission]	0.48 Average (cpm)	0.30 Standard Deviation (cpm)	0.1423 MDC (dpm/100 cm²)

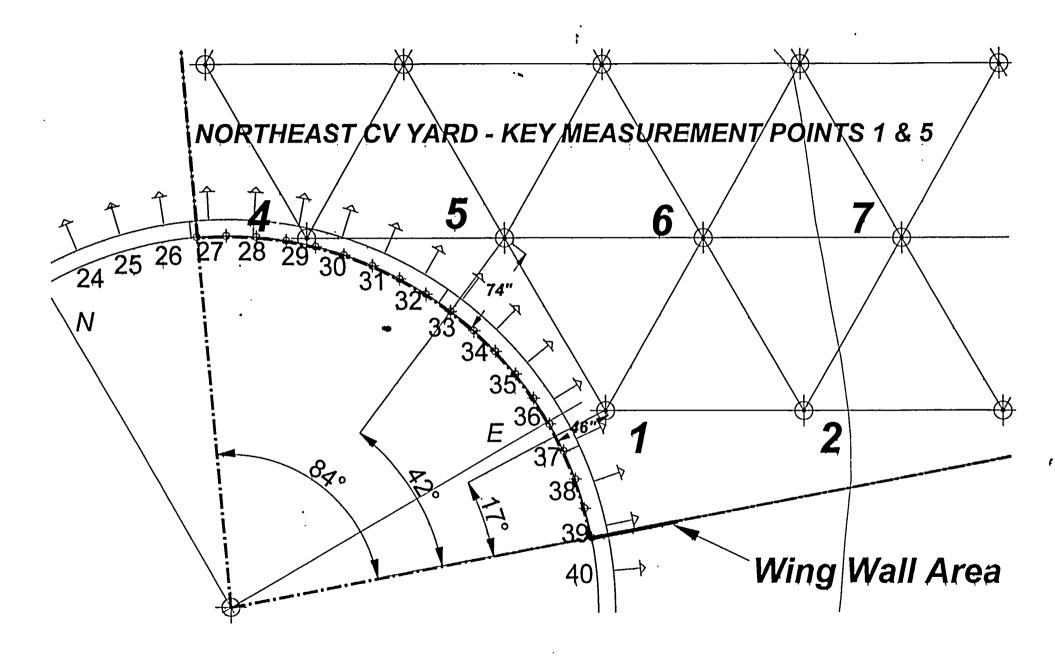
•

1

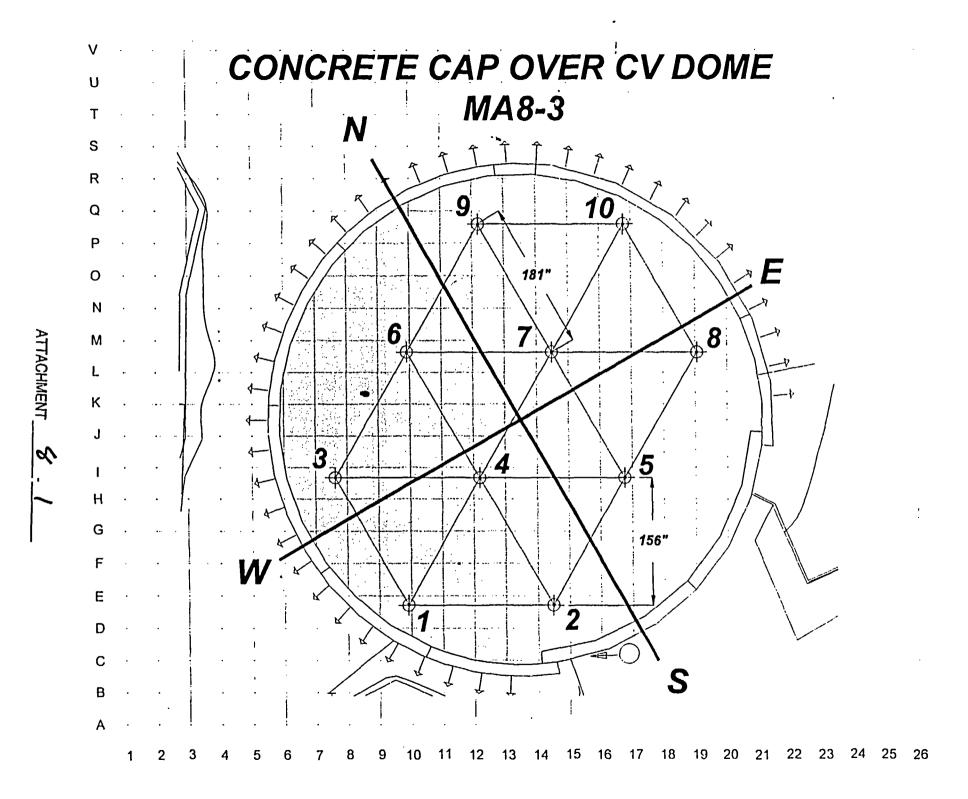
ATTACHMENT 6 2

<u>.</u> .





ATTACHMENT 7		2
--------------	--	---



# MA8-3 Concrete Cap Over CV Dome

Sample No.	Grid No.	X-Coordinate	Y-Coordinate
1	D9	36"	28"
2	D14	19"	28"
3	H7	25"	26"
4	H12	8"	26"
5	H16	30"	26"
6	L9	36"	25"
7	L14	19"	25"
8	L19	2"	25"
·~ 9	P12	8"	23"
10	P6	31"	23"

ATTACHMENT 8.2

	· · · · · · · · · · · · · · · · · · ·					te Backgroun			<u> </u>		
	Instrument 95348					Count Time (sec)				FSS-001	BHB
0 1	BKGND Source Check	1/4/2002 1/4/2002	8:52 9:07	1 1	7.26E+03 1.79E+05	1800 60	SCL	Inital Backgrour	•		
2	BKGND	1/4/2002		2	4.40E+01	1800	SCL	Source Inital Backgrour	β nd α	0	0
14	Source Check	1/4/2002		2	1.51E+05	60	SCL	Source	α	Concrete CF(com) ⇒ Shieided	Unshielde
15	CON A1S	1/4/2002	13:00	1	2.78E+02	60	SCL	Shielded	ΤĒ		
16	CON A1U	1/4/2002	13:02	1	3.88E+02	60	SCL	Unshielded	ß		3.88E+0
17	CON A2S	1/4/2002	13:20	1	2.39E+02	60	SCL	Shielded	B	2.39E+02	
18	CON A2U	1/4/2002		1	2.22E+02	60	SCL	Unshielded	B		2.22E+0
19	CON A3S	1/4/2002		1	2.39E+02	60	SCL	Shielded	LB	2.39E+02	
20	CON A3U CON A4S	1/4/2002		<u>1</u> 1	2.62E+02 2.45E+02	<u> </u>	SCL SCL	Unshielded Shielded		2.455.00	2.62E+0
21	CON A4U	1/4/2002		1	2.45E+02 2.71E+02	60	SCL	Unshielded	ß	2.45E+02	2.71E+0
23	CON A5S	1/4/2002		1	2.00E+02	60	SCL	Shielded	B	2.00E+02	2.1 1270
24	CON A5U	1/4/2002	14:00	1	2.82E+02	60	SCL	Unshielded	ß		2.82E+0
25	CON A6S	1/4/2002		1	1.84E+02	60	SCL	Shielded	β	1.84E+02	
26	CON A6U	1/4/2002		1	3.10E+02	60	SCL	Unshielded	β		3.10E+02
27	CON A7S	1/4/2002		1	1.98E+02	60	SCL	Shielded	<u> p</u>	1.98E+02	
<u>28</u> 29	CON A7U CON A8S	1/4/2002	14:10	<u>1</u> 1	3.15E+02 2.34E+02	<u> </u>	SCL SCL	Unshielded Shielded	- <u> </u> 8	2245.00	3.15E+02
29 30	CON A8S	1/4/2002		1	2.34E+02	60	SCL	Shielded	B	2.34E+02 2.31E+02	
31	CON A8U	1/4/2002		1	2.88E+02	60	SCL	Unshielded	B	2.312702	2.88E+02
32	CON A9S	1/4/2002		<u> </u>	2.65E+02	60	SCL	Shielded	B	2.65E+02	
33	CON A9U	1/4/2002	14:33	1	2.89E+02	60	SCL	Unshielded	ß		2.89E+02
34	CON A10S		14:42	1	2.46E+02	60	SCL	Shielded	B	2.46E+02	
35	CON A10U	1/4/2002			3.16E+02	60	SCL	Unshielded	B		3.16E+02
36 37	CON A11S CON A11U	1/4/2002 1/4/2002		1	1.95E+02 2.94E+02	60	SCL SCL	Shielded Unshielded	Ъ	1.95E+02	0.015
	CON A12S	1/4/2002			2.94E+02 2.21E+02	<u> </u>	SCL	Shielded	B	2.21E+02	2.94E+02
39	CON A123	1/4/2002		1	2.21E+02	60	SCL	Unshielded	B	2.21E+02	2.84E+02
40	CON A13S	1/4/2002		1	1.74E+02	60	SCL	Shielded	間	1.74E+02	2.042702
41	CON A13U	1/4/2002		1	2.94E+02	60	SCL	Unshielded	B		2.94E+02
42 .	CON A14S	1/4/2002	15:25	1	1.96E+02	60	SCL	Shielded	В	1.96E+02	
43	CON A14U	1/4/2002			3.33E+02	60	SCL	Unshielded	ß		3.33E+02
44	CON A15S	1/4/2002		1	2.16E+02	60	SCL	Shielded	B	2.16E+02	
45	CON A15U	1/4/2002		1	3.45E+02	60	SCL	Unshielded	181		3.45E+02
46 47	CON A16S CON A16U	1/4/2002 1/4/2002		1	1.83E+02	60	SCL SCL	Shielded	ЪЦ	1.83E+02	2405.00
48	CON A17S		15:33	1	3.13E+02 1.82E+02	<u> </u>	SCL	Unshielded Shielded	B	1.82E+02	3.13E+02
49	CON A17U	1/4/2002		1	3.22E+02	60	SCL	Unshielded	В	1.022.02	3.22E+02
50	CON A18S	1/4/2002		-	1.84E+02	60	SCL	Shielded	B	1.84E+02	
51	CON A18U	1/4/2002	15:36	1	3.24E+02	60	SCL	<u>Unshielded</u>	B		3.24E+02
52	CON A19S		15:37		1.91E+02	60	SCL	Shielded	B	1.91E+02	
53	CON A19U	1/4/2002			3.07E+02	60	SCL	Unshielded	B		3.07E+02
54	CON A20S	1/4/2002			1.94E+02	60	SCL	Shielded	Ц₽	1.94E+02	0.005.00
<u>55</u> 56	CON A20U CON A21S	1/4/2002			3.33E+02 2.23E+02	<u> </u>	SCL SCL	Unshielded Shielded		2.23E+02	3.33E+02
57	CON A21U	1/4/2002			2.92E+02	60	SCL	Unshielded	В В	2.232+02	2.92E+02
58	CON A22S	1/4/2002			1.72E+02	60	SCL	Shielded	ß	1.72E+02	
59	CON A22U	1/4/2002	16:00	1	2.80E+02	60	SCL_	Unshielded	B		2.80E+02
60	CON A23S	1/4/2002			1.94E+02	60	SCL	Shielded	B	1.94E+02	
61	CON A23U	1/4/2002			3.29E+02	60	SCL	Unshielded	B	4.075.00	3.29E+02
62 62	CON A24S	1/4/2002			1,87E+02	60 60	SCL	Shielded	B	1.87E+02	2 495+02
<u>63</u> 64	CON A24U CON A25S	1/4/2002			3.48E+02 2.07E+02	<u> </u>	<u>SCL</u>	Unshielded Shielded	B	2.07E+02	3.48E+02
65	CON A255 CON A25U	1/4/2002			3.72E+02	60 60	SCL	Unshielded	β B	2.010702	3.72E+02
66	CON A26S	1/4/2002			2.09E+02	60	SCL	Shielded	ß	2.09E+02	
67	CON A26U	1/4/2002			3.26E+02	60	SCL	Unshielded	ß		3.26E+02
68	CON A27S	1/4/2002 1			2.07E+02	60	SCL	Shielded	В	2.07E+02	11
69	CON A27U	1/4/2002 - 1			3.30E+02	60	SCL	Unshielded	B	a second and a second of	3.30E+02
70	CON A28S	1/4/2002 1			2.30E+02	60	SCL	Shielded	B	2.30E+02	
71	CON A28U	1/4/2002 1			3.06E+02	<u> </u>	SCL	Unshielded	ß	2 125-02	3.06E+02
72 73	CON A29S CON A29U	1/4/2002 1 1/4/2002 1			2.13E+02 2.58E+02	60 60	SCL SCL	Shieided Unshieided	B B	2.13E+02	2.58E+02
74	CON A290	1/4/2002 1			2.33E+02	<u> </u>	SCL	Shielded	聞	2.33E+02	2.500-02
75	CON A30U	1/4/2002 1			2.89E+02	60	SCL	Unshielded	Ē		2.89E+02
76	CON A31S	1/4/2002 1			1.84E+02	60	SCL	Shielded	ß	1.84E+02	
77	CON A31U	1/4/2002 1			2.63E+02	60	SCL	Unshielded	B		2.63E+02
	Source Check	1/4/2002 1			1.70E+05	60	SCL		B		
										num ⇒ 1.72E+02	2.22E+02
	·							L		num = 2.78E+02	3.88E+02
										lean ⇒ 2.11E+02	3.06E+02
										ma ⇒ 2.69E+01	3.45E+01

	OL1-1 POST RE		ON SAMPLES
	Onsite analysis		C= 437 =C1/a
	Sample Numbe		Cs-137 pCl/g 4.5
	SX-SL-1281	AX-128 AX-128	4.5
	SX-SL-1282 SX-SL-1283	AX-128	0.04
	SX-SL-1284	AX-128	3
	SX-SL-4076	AX-128	0.9
	SX-SL-4073	AX-128	0.07
	SX-SL-1285	AX-128	1.5
;	SX-SL-1228	AX-130	0.48
	SX-SL-1229	AX-130	0.15
	SX-SL-1230	AX-130	3.7
	SX-SL-1231	AX-130	0.49
	SX-SL-1232	AX-130	1.25
	SX-SL-1128	AZ-130	0.36
	SX-SL-1127	AZ-130	0.64
	SX-SL-1128	AZ-130	0.22
	SX-SL-1132	AZ-130	2
	SX-SL-1104	AZ-129	0.08
1	SX-SL-1105	AZ-129	0.34
	SX-SL-1106	AZ-129	0.78
	SX-SL-1107	AZ-129	0.25
1	SX-SL-1108	AZ-129	0.28 1.2
	SX-SL-1099	AZ-128 AZ-128	0.12
	SX-SL-1100 SX-SL-1101	AZ-128	0.07
i	SX-SL-1102	AZ-128	0.2
	SX-SL-1102	AZ-128	0.23
	SX-SL-1075	AX-127	0.23
	SX-SL-1076	AX-127	0.16
	SX-SL-1077	AX-127	0.7
	SX-SL-1078	AX-127	0.13
	SX-SL-1079	AX-127	0.13
	SX-SL-1087	AY-127	0.08
	SX-SL-1088	AY-127	0.07
	SX-SL-1089	AY-127	0.05
	SX-SL-1090	AY-127	0.06
	SX-SL-1091	AY-127	0.07
	SX-SL-1027	AZ-127	0.35
	SX-SL-1028	AZ-127	0.57
	SX-SL-1029	AZ-127	0.5
	SX-SL-1030	AZ-127	0.45
	SX-SL-1031	AZ-127	0.7
	SX-SL-1233	AY-130	0.14
	SX-SL-1234	AY-130	0.6
	SX-SL-1235	AY-130	1.3 0.035
	SX-SL-1121 SX-SL-1122	AY-129 AY-129	4.3
	SX-SL-1221	AY-128	0.17
1	SX-SL-1222	AY-128	1.1
	SX-SL-1223	AY-128	2.1
	SX-SL-1224	AY-128	2
	SX-SL-1225	AY-128	1.75
	SX-SL-4083	AX-129	0.3
	SX-SL-4082	AX-129	0.14
		Max	4.50
		Avg	0.82
		STDEV	1.06
	Denotes < MDA	<u> </u>	

•

•

		itional sample: Cs-137 pCl/g
SX-SL-1281		4.5
SX-SL-1282	AX-128	0.94
SX-SL-1283	AX-128	3
SX-SL-1284	AX-128	1.4
SX-SL-4076	AX-128 AP1-1	0.9
SX-SL-4135 SX-SL-4138	AP1-2	0.00
SX-SL-4137	AP1-3	0.17
SX-SL-4138	AP1-4	0.16
SX-SL-4133	AP1-5	0.06
SX-SL-4134	AP1-8	0.05
SX-SL-4139	AP1-7	0.06
SX-SL-4140 SX-SL-4141	AP1-8 AP1-9	0.05
SX-SL-4142	AP1-10	0.9
SX-SL-4143	AP1-11	0.5
SX-SL-4149	AP1-12	3.9
SX-SL-4150	AP1-13	0.05
SX-SL-4152	AP1-14	0.06
SX-SL-4073	AX-128 AX-128	0.07 1.5
SX-SL-1285 SX-SL-1228	AX-128 AX-130	1.ə 0.48
SX-SL-1229	AX-130	0.15
SX-SL-1230	AX-130	3.7
SX-SL-1231	AX-130	0.49
SX-SL-1232	AX-130	1.25
SX-SL-1126	AZ-130	0.36
SX-SL-1127 SX-SL-1128	AZ-130 AZ-130	0.64 0.22
SX-SL-1128 SX-SL-1132	AZ-130 AZ-130	2
SX-SL-1104	AZ-129	0.08
SX-SL-1105	AZ-129	0.34
SX-SL-1106	AZ-129	0.78
SX-SL-1107	AZ-129	0.25
SX-SL-1108	AZ-129	0.28
SX-SL-1099 SX-SL-1100	AZ-128 AZ-128	1.2 0.12
SX-SL-1101	AZ-128	0.07
SX-SL-1102	AZ-128	0.2
SX-SL-1103	AZ-128	0.23
SX-SL-1075	AX-127	0.23
SX-SL-1076	AX-127	0.16
SX-SL-1077 SX-SL-1078	AX-127 AX-127	0.7 0.13
SX-SL-1079	AX-127	0.13
SX-SL-1087	AY-127	0.08
SX-SL-1088	AY-127	0.07
SX-SL-1089	AY-127	0.05
SX-SL-1090	AY-127	0.06
SX-SL-1091 SX-SL-1027	AY-127 AZ-127	0.07
SX-SL-1027 SX-SL-1028	AZ-127 AZ-127	0.35 0.57
SX-SL-1028	AZ-127	0.5
SX-SL-1030	AZ-127	0.45
SX-SL-1031	AZ-127	0.7
SX-SL-1233	AY-130	0.14
SX-SL-1234	AY-130	0.6
SX-SL-1235 SX-SL-1121	AY-130 AY-129	1.3 0.035
SX-SL-1121 SX-SL-1122	AT-129 AY-129	4.3
SX-SL-1221	AY-128	0.17
SX-SL-1222	AY-128	1.1
SX-SL-1223	AY-128	2.1
SX-SL-1224	AY-128	2
SX-SL-1225	AY-128	1.75
SX-SL-4083	AX-129	0.3
SX-SL-4082	<u>AX-129</u> Max	0.14
	Avg	0.74
	STDEV	1.05

OL1-1 POST RE		
Onsite analysis		
Sample Number	AX-128	Cs-137 pCl/g 4.5
SX-SL-1281 SX-SL-1282	AX-128	4.5 0.94
SX-SL-1283	AX-128	3
SX-SL-1284	AX-128	1.4
SX-SL-4076	AX-128	0.9
SX-SL-4135		0.06
SX-SL-4136	AP1-2	0.1
SX-SL-4137	AP1-3	0.17
SX-SL-4138	AP1-4	0.16
SX-SL-4133	AP1-5	0.06
SX-SL-4134	AP1-8	0.05
SX-SL-4139	AP1-7	0.06
SX-SL-4140	AP1-8	0.05
SX-SL-4141	AP1-9	0.06
SX-SL-4142	AP1-10	0.9
SX-SL-4143	AP1-11	0.5
SX-SL-4149	AP1-12 AP1-13	3.9 0.05
SX-SL-4150 SX-SL-4152	AP1-13	0.06
SX-SL-4153		0.05
SX-SL-4154		0.05
SX-SL-4158	<u> </u>	0.06
SX-SL-4158	t	0.14
SX-SL-4157		0.03
SX-SL-4160		0.06
SX-SL-4161		0.05
SX-SL-4182		0.05
SX-SL-4159		0.08
SX-SL-4164	ļ	0.07
SX-SL-4165		0.08
SX-SL-4073	AX-128	0.07
SX-SL-1285	AX-128	1.5
SX-SL-1228 SX-SL-1229	AX-130 AX-130	0.48 0.15
SX-SL-1229	AX-130	3.7
SX-SL-1231	AX-130	0.49
SX-SL-1232	AX-130	1.25
SX-SL-1126	AZ-130	0.36
SX-SL-1127	AZ-130	0.64
SX-SL-1128	AZ-130	0.22
SX-SL-1132	AZ-130	2
SX-SL-1104	AZ-129	0.08
SX-SL-1105	AZ-129	0.34
SX-SL-1106	AZ-129	0.78
SX-SL-1107	AZ-129	0.25
SX-SL-1108	AZ-129 AZ-128	0.28 1.2
SX-SL-1099 SX-SL-1100	AZ-128	0.12
SX-SL-1101		0.07
SX-SL-1102	AZ-128	0.2
SX-SL-1103	AZ-128	0.23
SX-SL-1075	AX-127	0.23
SX-SL-1078	AX-127	0.16
SX-SL-1077	AX-127	0.7
SX-SL-1078	AX-127	0.13
SX-SL-1079	AX-127	0.13
SX-SL-1087		0.08
SX-SL-1088	AY-127	0.07
SX-SL-1089	AY-127	0.05
SX-SL-1090	AY-127	0.06
SX-SL-1091		0.07
SX-SL-1027 SX-SL-1028	AZ-127 AZ-127	0.35
SX-SL-1028 SX-SL-1029	AZ-127 AZ-127	0.57
SX-SL-1029 SX-SL-1030	AZ-127	0.45
SX-SL-1031	AZ-127	0.7
SX-SL-1233	AY-130	0.14
SX-SL-1234	AY-130	0.6
SX-SL-1235	AY-130	1.3
SX-SL-1121	AY-129	0.035
SX-SL-1122	AY-129	4.3
SX-SL-1221	AY-128	0.17
SX-SL-1222	AY-128	1.1
SX-SL-1223	AY-128	2.1
SX-SL-1224	AY-128	2
	AY-128	1.75
SX-SL-1225		~ ~
SX-SL-1225 SX-SL-4083	AX-129	0.3
	AX-129	0.14
SX-SL-4083	AX-129 Max	0.14 4.50
SX-SL-4083	AX-129	0.14

ATTACHMENT 10 1

	CV-Pad Variability-Measurements SR-0143							- <b></b>	-			
	внв	FSS-753		Designator		Count Time (sec)		Detector		JF1995	126186	37122N21
	0	Steel CF(cpm) =>	Iβ	Inital Background	SCL	600	2.65E+03	1	5:54	7/12/2004	BKG CK	0
NET CD	Unshielded	Shielded	β	Source	SCL	60	1.73E+05	1	6:00	7/12/2004	SCCK	1
-		2.97E+02	TB	Shielded	SCL	60	2.97E+02	1	12:51	7/12/2004	MA8-3FP1S	2
1.65E+	4.62E+02		B B	Unshielded	SCL	60	4.62E+02	1	12:53	7/12/2004	MA8-3FP1U	3
		3.56E+02	B	Shielded	SCL	60	3.56E+02	1	12:54	7/12/2004	MA8-3FP2S	4
1_20E+	4.76E+02		8 8	Unshielded	SCL	60	4.76E+02	1	12:55	7/12/2004	MAB-3FP2U	5
		4.03E+02		Shielded	SCL	60	4.03E+02	1	12:57	7/12/2004	-MA8-3FP3S	6
2.50E+	4.28E+02		B	Unshielded	SCL	60	4.28E+02	1	12:58	7/12/2004	MA8-3FP3U	7
		3.61E+02	ß	Shielded	SCL	60	3.61E+02	1	13:00	7/12/2004	MA8-3FP4S	8
1.80E+	5.41E+02		ß	Unshielded	SCL	60	5.41E+02	1		7/12/2004	MA8-3FP4U	9
		3.26E+02		Shielded	SCL	60	3.26E+02	1	13:03	7/12/2004	MA8-3FP5S	10
1.83E+0	5.09E+02	· · ·	В Ф	Unshielded	SCL	60	5.09E+02	1		7/12/2004	MA8-3FP5U	11
		3.89E+02	B	Shielded	SCL	60	3.89E+02	1	13:06	7/12/2004	MA8-3FP6S	12
1.05E+0	4.94E+02		től –	Unshielded	SCL	60	4.94E+02	1	13:07	7/12/2004	MA8-3FP6U	13
		3.92E+02	B	Shielded	SCL	60	3.92E+02	1	13:09	7/12/2004	MA8-3FP7S	14
1.54E+0	-5.46E+02		B	Unshielded	SCL	-60	5.46E+02	1		7/12/2004	MA8-3FP7U	15
		3.63E+02	ß	Shielded	SCL	80	3.63E+02	1		7/12/2004	MA8-3FP8S	16
1.84E+0	5.47E+02		ৰি	Unshielded	SCL	60	5.47E+02	1	13:13	7/12/2004	MA8-3FP8U	17
		3.79E+02	B	Shielded	SCL	60	3.79E+02	1	13:14	7/12/2004	MA8-3FP9S	18
7.30E+0	4.52E+02		वि	Unshielded	SCL	60	4.52E+02	1	13:16	7/12/2004	MA8-3FP9U	19
		3.57E+02	B	Shielded	SCL	50	3.57E+02	1	13:17	7/12/2004	MA8-3FP10S	20
6.20E+0	4.19E+02		ß	Unshielded	SCL	60	4.19E+02	1	13:18	7/12/2004	MA8-3FP10U	21
		3.67E+02	B	Shielded	SCL	60	3.67E+02	1	13:20	7/12/2004	MA8-3FP11S	.22
1.33E+0	5.00E+02		B B	Unshielded	SCL	.60	5.00E+02	1	13:21	7/12/2004	MA8-3FP11U	23
		3.69E+02	ß	Shielded	SCL	60	3.69E+02	1	13:23	7/12/2004	MA8-3FP12S	24
1.69E+0	5.38E+02		ß	Unshielded	SCL	60	5.38E+02	1	13:24	7/12/2004	MA8-3FP12U	25
		3.35E+02		Shielded	SCL	60	3.35E+02		13:26	7/12/2004	MA8-3FP13S	26
1.34E+0	4.69E+02		<u>ज</u> के स्व	Unshielded	SCL	60	4.69E+02			7/12/2004	MA8-3FP13U	27
		9.7 <del>5E+</del> 02	8	Shielded	SCL	60	3.75E+02			7/12/2004	MA8-3FP14S	26
1.25E+0	5.00E+02		B	Unshielded	SCL	60	5.00E+02	1	13:30	7/12/2004	MA8-3FP14U	29 *
		3.26E+02	8 1	Shielded	SCL	60	3.26E+02	1	13:31	7/12/2004	MA8-3FP15S	30
2.24E+0	5,50E+02		BB	Unshielded	SCL	60	5.50E+02			7/12/2004	MA8-3FP15U	31
		4.16E+02	8	Shielded	SCL	60	4.16E+02	1	13:34	7/12/2004	MA8-SFP16S	32
6.80E+0	4.84E+02		99	Unshielded	SCL	60	4.84E+02			7/12/2004	MA8-3FP16U	33
		3.61E+02	6	Shielded	SCL	60	3.61E+02		_	7/12/2004	MA8-3FF 17S	34
1.53E+0	5.14E+02		<u>β</u> β	Unshielded	SCL	60	5.14E+02			7/12/2004	MA8-3FP17U	35
		3.90E+02	8		SCL	60	3.90E+02			7/12/2004	MA8-3FP18S	38
1.00E+0	4.90E+02		99	Unshielded	SCL	60	4.90E+02			7/12/2004 -	MA8-3FP18U	37
		3.71E+02	1 1 1	Shielded	SCL	60	3.71E+02			7/12/2004	MA8-3FP19S	38
1_05E+0	4.76E+02		B B	Unshielded	SCL	60	4.76E+02			7/12/2004	MA8-3FP19U	39
		3.58E+02	a l		SCL	60	3.58E+02		-	7/12/2004	MA8-3FP20S	-40
- 1.07E+0	4.65E+02		β B	Unshielded	SCL	60	4.65E+02			7/12/2004	MA8-3FP20U	41
			ايک									
2.50E+0	4.19E+02	2.97E+02	in -1	Minim								
2.24E+0		4.16E+02		-Maxim								
1.28E+0		3.65E+02				•						
4.94E+0		2.82E+01	ma 🖃			T						

•

.

ATTACHMENT\_ /

٠,

.

.

•

•

# INFORMATION DILY

E	R	IG	NA	1
_ <b>`</b> _	7 U R.	E 1408 H	2 2 2 2 2	1000

Exhibit 1 Burvey Unit Inspection Check Sheet	JIN	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
SECTION 1-SURVEY UNIT INSPECTION DESCRIPTION						
Survey Unit # CV1-4 and MA8-3 Survey Unit Location CV Excavation Northeast and CV Concrete Pad						
	arge					
SECTION 2 - SURVEY UNIT INSPECTION SCOPE						
Inspection Requirements (Check the appropriate Yes/No answer.)	Yes	No	N/A			
1 Have sufficient surveys (i.e., post remediation, characterization, etc.) been obtained for the survey unit?	X					
2. Do the surveys (from Question 1) demonstrate that the survey unit will most likely pass the FSS?	X					
3. Is the physical work (i.e., remediation & housekeeping) in or around the survey unit complete?	X					
4. Have all tools, non-permanent aggipment, and meterial not needed to perform the FSS been removed?	X					
5 Are the survey surfaces relatively free of loose debris (i.e., dirt, concrete dust, metal filings, etc.)?	X					
6. Are the survey surfaces relatively tree of liquids (i.e., water, moisture, cil, etc.)?	X					
7. Are the survey surfaces free of all paint, which has the potential to shield radiation?	X					
8. Have the Surface Measurement Test Areas (SMTA) been established? (Refer to Exhibit 2 for instructions.)			х			
9. Have the Surface Measurement Test Areas (SMTA) data been collected? (Refer to Exhibit 2 for instructions.)			X			
10. Are the survey surfaces easily accessible? (No scaffolding, high reach, etc. is needed to perform the FSS)		X	•			
11. Is lighting adequate to perform the FSS?	X					
12. Is the area industrially safe to perform the FSS? (Evaluate potential fail & top hazards, confined spaces, etc.)		X				
13. Have photographs been taken showing the overall condition of the area?	X					
14. Have all unsatisfactory conditions been resolved?	X					
NOTE: If a "No" answer is obtained above, the inspector should immediately correct the problem or initiate corr responsible site department, as applicable. Document actions taken and/or justifications in the "Comments" section sheats as necessary.						
Comments: Response to Question 10: As mentioned on survey inspection performed on 6/30/04, access to east slope may require assistance via ladder/scaffolding. Discussed with L. Shamenek. He will have support personnel available to assist survey team. Response to Question 12: As mentioned on survey inspection performed on 6/30/04, erosion is occurring on southeast side of CV1-4 (at wing wall). Erosion has occurred also on the east slope. This area needs to be evaluated by D and D Engineering prior to start of FSS. Discussed with L. Shamenek. He will examine the erosion at the time of FSS performance.						
Survey Unit Inspector (print/sign) D. Sarge / Coup	Date	7/1:	3/04			
Survey Designer (print/sign)	Date					

NDOLTA TITACHMENT 12

٠

1

SNEC CALCULATION COVER SHEET								
CALCULATION DESCRIPTION								
Calculation Number Ravision Number Effective Date Page Number								
E900-04-024		0	11-15.2004		1 (	of	9	
Subject CV Yard Phase 4 - Survey De	sign							
Question 1 - Is this calculation def	ined as "In QA Sco	pe"? Refer to definition :	3.5. Yes 🛛 No 🗋			<u> </u>		
Question 2 - Is this calculation def	ined as a "Design (	Calculation"? Refer to de	finitions 3.2 and 3.3. Yes	8	No [			
NOTES: If a "Yes" answer is obtained Assurance Plan. If a "Yes" answer calculation as the Technical Reviewer.	is obtained for Que	alculation must meet the req action 2, the Calculation O	uvrements of the SNEC Facilit Inginator's immediate supervi	y Dec sor a	ommissk hould no	oning ( It revie	Quality w the	
	DESCI	RIPTION OF REVI	SION					
							-	
		·						
							<u> </u>	
<u></u>	T	ROVAL SIGNATUR	<u> </u>		r			
Calculation Originator	B. Brosey/	B. Brown	- Da	ite	11-1	5 - 1	ру	
Technical Reviewer	R. D. Holmes	1 ROAK	De De	ite	11/15	5/04	,	
Additional Review	A. Paynter/	Inthe	Da	ite	"12	عا	04	
Additional Review			Da	te				
Additional Review			Da	te				

----

SNEC CALCULATION SHEET						
Calculation Number	Revision Number	Page Number				
E900-04-024	0	Page 2 of 9				

## CV Yard Phase 4 - Survey Design

# 1.0 PURPOSE

- 1.1 The purpose of this calculation is to develop a survey design for the phase 4 CV Yard area. This area is composed of one (1) soil survey unit and a collection of miscellaneous concrete surfaces considered one (1) additional survey unit. This is a below grade Class 1 survey area that is adjacent to remnants of the SNEC CV structure. It extends upward from about the 803' El to grade (at ~811' El), and is bounded by the eastern end of the CV Steam/Pipe Tunnel and in general, is located in the south west sector of the CV Yard. These landmarks are shown on Attachment 1-1 through 1-3.
- 1.2 The soil survey unit is designated <u>OL1-5</u>. The miscellaneous concrete surfaces are collectively designated <u>MA8-4</u>.
- 1.3 The total exposed soil surface area is <u>~66 square meters</u> and the concrete surfaces are collectively <u>~7.8 square meters</u>.

## 2.0 SUMMARY OF RESULTS

The following information should be used to develop a survey request for these survey units. The effective DCGLw values are listed below. The US NRC has concurred with the original mix and approach used to derive these values. See Attachment 2-1 to 2-5.

Volumetric DCGLw (pCi/g – Cs-137)	Surface Gross Activity DCGLw (dpm/100 cm <sup>2</sup> )
5.74 (4.3 A.L.)	44,353 (33,265 A.L.)

NOTE: A.L. is the site Administrative Limit (75% of effective DCGLw), decayed to 9/15/04.

- 2.1 Soil and Fill Materials Survey Design
  - 2.1.1 Scanning of soil and fill materials shall be performed using a <u>2" D by 2" L Nal</u> <u>detector</u> with a Cs-137 window setting. The window will straddle the Cs-137 662 keV full energy peak width.

#### Soil Scanning Parameters

MDCscan (pCi/g) - Cs-137	Scan Speed (cm/sec)	Maximum Distance from Surface	% Coverage
3.3	25	4" (gap between)	100%

- 2.1.2 The instrument conversion factor/efficiency shall be not less than the value reported on Attachment 3-1 (205 cpm/uR/h).
- 2.1.3 <u>Class 1</u> soil should be scanned using a serpentine scanning pattern that is ~0.5 meters wide.
- 2.1.4 The MDCscan for soil is determined using a MicroShield model (Attachment 4-1 & 4-2). MDCscan Calculations are shown on Attachments 5-1 and 5-2.
- 2.1.5 Background has been measured in the area over similar background materials, and ranges from about 100 cpm to approximately 400 cpm (see **Reference 3.1**). If a count rate of greater than <u>200 ncpm</u> is encountered during the scanning process, the surveyor should stop and locate the boundary of the elevated area. The surveyor should then mark the elevated area with stakes or other appropriate marking methods. Sample the elevated areas(s) IAW SNEC procedure E900-IMP-4520.04 (Reference 3-2).

## SNEC CALCULATION SHEET

Calculation Number

E900-04-024

Revision Number

0

Page Number

Subject

CV Yard Phase 4 - Survey Design

NOTE

This survey design must be revised if it is shown that the true background count rate (from natural occurring materials) is greater than ~550 counts per minute.

- 2.1.6 All survey personnel shall be trained to identify 200 ncpm above background based on an audible instrument response.
- 2.1.7 Sampling points are to be clearly marked, identified and documented.
- 2.1.8 Other instruments of the type specified in Section 2.1.1 above may be used during the FSS but they must demonstrate a detection efficiency at or above the value listed in Section 2.1.2 (~205 cpm/uR/h).
- 2.1.9 VSP (Reference 3.3) is used to plot all sampling points on included diagrams.
- 2.1.10 The minimum number of soil sampling points indicated for this survey unit by Compass (Reference 3.4) is <u>11</u>. Sampling depth should be top 6 inches (15 cm) of soil (see Attachment 6-1 through 6-5). Distances between soil sample points are measured over the contour of the survey unit. Some starting point locations may need to be adjusted to accommodate obstructions within the survey area. Contact the SR coordinator to report any difficulties encountered when laying out systematic grid sampling points or to adjust survey point locations.
- 2.2 Survey Work for Concrete Surfaces

A Gas Flow Proportional Counter (GFPC) shall be used to survey concrete surfaces in this survey area. The following parameters should be used to develop a survey request.

ε <sub>i</sub>	Es	% Cs-137	Efficiency Loss Factor	counts/disintegration
0.478	0.5	0.598	0.421	0.06

- 2.2.1 The overall counting efficiency for this survey design assumes a mix ratio as shown on Attachment 2-5. For planning purposes, the instrument and source efficiency is assumed to be as shown in the previous Table. The detection efficiency is based on the instruments response to Cs-137. Radionuclides less than 1% of the total mix and are ignored. H-3 which is ~39% of the mix, has no detectable beta contribution.
- 2.2.2 A rough surface efficiency factor is employed to ensure that a conservative but representative efficiency is used for weathered concrete surfaces. From Attachment 7-1 to 7-3 the assessment of the surface area of these rough concrete surfaces indicates that the mean surface gouge depth is ~1.6 inches deep. From Reference 3-5 and Attachment 8-1 this gap would reduce the overall efficiency by a factor of ~0.421. The resulting efficiency is then <u>0.06 cts/dis</u>.
- 2.2.3 All GFPC instruments having a total efficiency ( $\epsilon_t$ ) less than 0.239 (23.9%) should not be used for this survey work.
- 2.2.4 These parameters were incorporated into the Compass computer program. The following is the Compass output for this survey design.

FirstEnergy	SNEC CALCULATION SHEET	
Calculation Number	Revision Number	Page Number
E900-04-024	0	Page 4 of 9

Subject

**CV Yard Phase 4 - Survey Design** 

N	MDCstatic	MDCscan	
(dp	<u>m/100_cm²)*</u>	(dpm/100 cm <sup>2</sup> )*	Action Level Assigned During Phase 1 Scanning (ncpm)
	1,116	2,204	1,500

\*As calculated by the Compass computer program assuming a background value of 306 cpm.

- 2.2.5 The number of static measurement points on miscellaneous concrete surfaces were determined using the Compass computer program (see Attachment 9-1 through 9-5). The required number of static measurement points was determined to be as shown below. VSP was used to plot these locations.
  - CV Yard Concrete Misc. (Attachment 9-5) <u>10 points</u>,
- 2.2.5 This survey design requires the detector be in <u>contact with the surface</u> during all measurement phases except in areas where this is not physically possible (gouges, cavities, etc.).
- 2.2.6 The action level during first phase scanning is <u>1,500 cpm above background</u>. If this level is reached, the surveyor should stop and perform <u>a count of at least 1/2</u> <u>minute</u> duration to identify the actual count rate.
- 2.2.7 Areas greater than the DCGLw (2,515 ncpm) must be identified, documented, marked, and bounded to include an area estimate.

#### NOTE

If remediation actions are taken as a result of this survey, this survey design must be revised or re-written entirely.

#### 3.0 <u>REFERENCES</u>

- 3.1 SNEC Calculation No. E900-03-018, "Optimize Window and Threshold Settings for the Detection of Cs-137 Using the Ludlum 2350-1 and a 44/10 Nal Detector", 8/7/03.
- 3.2 SNEC Procedure E900-IMP-4520.04, "Survey Methodology to Support SNEC License Termination".
- 3.3 Visual Sample Plan, Version 2.0 (or greater), Copyright 2002, Battelle Memorial Institute.
- 3.4 Compass Computer Program, Version 1.0.0, Oak Ridge Institute for Science and Education.
- 3.5 SNEC Calculation No. 6900-02-028, GFPC Instrument Efficiency Loss Study.
- 3.6 SNEC Survey Request No. SR-173, Post-Remediation Results.
- 3.7 Plan SNEC Facility License Termination Plan.
- 3.8 SNEC Procedure E900-IMP-4500.59, "Final Site Survey Planning and DQA".
- 3.9 Westinghouse Electric Corporation, Gilbert Associates, Inc., Drawing No. D-37798, Saxton Reactor Project, "Containment Vessel Penetration Access", 7/21/60.
- 3.10 GPU Nuclear, SNEC Facility, "Containment Vessel Survey", SNECRM-019, Rev 1, 1/18/02.
- 3.11 SNEC Facility Historical Site Assessment, Rev 0, March, 2000.

SNEC CALCU	JLATION SHEET	
Calculation Number	Revision Number	Page Number

E900-04-024

Page 5 of 9

Subject

#### CV Yard Phase 4 - Survey Design

- 3.12 SNEC Calculation No. E900-03-012, Effective DCGL Worksheet Verification.
- 3.13 SNEC procedure E900-IMP-4520.06, "Survey Unit Inspection in Support of FSS Design".
- 3.14 ISO 7503-1, Evaluation of Surface Contamination, Part 1: Beta-emitters (maximum beta energy greater than 0.15 MeV) and alpha-emitters, 1988.
- 3.15 NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual", August, 2000.
- 3.16 Microsoft Excel 97, Microsoft Corporation Inc., SR-2, 1985-1997.

#### 4.0 ASSUMPTIONS AND BASIC DATA

- 4.1 The Compass computer program is used to calculate the required number of random start systematic samples to be taken in the survey unit (**Reference 3.4**).
- 4.2 Soil samples from the area used as the initial estimate of variability are shown in Attachment 10-1.
- 4.3 Concrete variability of the area structures was performed at the start of this work and are shown in **Attachment 11-1**. Background variability results are taken form the Williamsburg survey work of non-impacted background material (see **Attachment 11-2**).
- 4.4 The MARSSIM Sign Test will be applicable for the soil section of this survey design. No background subtraction will be performed under this criteria.
- 4.5 The MARSSIM WRS Test criteria is applicable for concrete survey work in this area.
- 4.6 The number of points chosen by Compass are located on the survey map for the survey unit by the Visual Sample Plan (VSP) computer code (**Reference 3.3**).
- 4.7 VSP is used to plot random start systematically spaced sampling points. The dimensions of selected survey points are provided for each survey unit referenced to an existing survey area landmark (key point measurement location).
- 4.8 **Reference 3.7,** and **3.8** was used as guidance during the survey design development phase.

The construction/assembly drawings used to determine the original physical extent of these areas are listed as **Reference 3.9** and **3.10**.

4.9 Remediation History

A review of survey request data pertaining to this open land area adjacent to the CV shell was conducted in support of this survey design. Analysis of soil samples taken after remediation of the area (from SR-0173), shows that the region has been reduced to an average of 0.26 pCi/g (Cs-137) with a maximum value of 0.51 pCi/g. Earlier remediation history in this area is reported in the SNEC facility Historical Site Assessment document (**Reference 3-11**) and the 1994 Soil Remediation Project Report.

4.10 This survey design uses Cs-137 as a surrogate to bound the average concentration for all SNEC facility related radionuclides in the survey unit. The effective DCGLw is just the permitted Cs-137 concentration (6.6 pCi/g) lowered to compensate for the presence (or potential presence) of other SNEC related radionuclides. In addition, an administrative limit

SNEC CALCULATION SHEET									
Calculation Number	Revision Number	Page Number							
E900-04-024	0	Page 6 of 9							
Subject									
CV Yard Phase 4 - Surve	ev Design								

(75%) has been set that further lowers the permissible Cs-137 concentration to an effective DCGLw for this radionuclide.

4.11 The sample data base used to determine the effective radionuclide mix for the CV Yard area has been drawn from previous samples that were assayed at off-site laboratories. This list is shown as Attachment 2-1 through 2-5, and includes (23) analysis results. Review of the data shows several radionuclides have not been positively identified at any significant concentration. These radionuclides have been removed from the data set and will not be considered further. Radionuclides removed include Am-241, C-14, Eu-152, Ni-63, Pu-238, Pu-239 and Pu-41. Additionally, the data shows Cs-137 to be the predominant radioactive contaminant found in this area. Sr-90 on the other hand, was positively identified in only one (1) sample. H-3 was identified as a positive contaminant in six (6) samples, and Co-60 was identified in three (3) samples.

Remediation has impacted radionuclide concentration levels in this survey unit. Remediation efforts have been shown to be effective in lowering the average concentration of Cs-137 in this survey unit to less than 4.5 pCi/g (see **Attachment 8-1**). Therefore, the impact of remediation must be considered in determining the effective Cs-137 DCGLw surrogate value. Remediation of this survey unit was completed by about July of 2001. Samples collected prior to this date have been disqualified in the final listing which was decayed to September 15<sup>th</sup>, 2004. In all, about twenty three (23) sample results were used to determine the best representative mix for these survey units.

The decayed sample results were input to the spreadsheet titled "Effective DCGL Calculator for Cs-137" (Reference 3-12) to determine the effective volumetric and surface DCGLw values for the OL1 area. The output of this spreadsheet is shown on Attachment 2-4 and 2-5.

The Nal scan MDC calculation is determined based on a 25 cm/sec scan rate, a 1.38 index of sensitivity (95% correct detection probability and 60% false positive) and a detector sensitivity of 205 cpm/uR/h for Cs-137. Additionally, the detection system incorporates a Cs-137 window that lowers sensitivity to background in the survey unit. The resulting range of background values varies from about 100 cpm to ~400 cpm. The resulting MDCscan is ~3.3 pCi/g (see Attachment 5-1 and 5-2). This value is based on a nominal background value of 200 cpm.

- 4.12 The survey unit described in this survey design was inspected after remediation efforts were shown effective. A copy of portions of the SNEC facility post-remediation inspection report (Reference 3.13), is included as Attachment 7-1 to 7-3.
- 4.13 No special area characteristics including any additional residual radioactivity (not previously noted during characterization) have been identified in this survey area.
- 4.14 The decision error for this survey design is 0.05 for the  $\alpha$  value and 0.1 for the  $\beta$  value.
- 4.15 Special measurements including gamma-ray spectroscopy are not included in this survey design.
- 4.16 No additional sampling will be performed IAW this survey design beyond that described herein.
- 4.17 The applicable SNEC site radionuclides and their individual DCGLw values are listed on **Exhibit 1** of this calculation.

SNEC CALCULATION SHEET									
Calculation Number	Revision Number	Page Number							
E900-04-024	0	Page 7 of 9							
Subject									
OV/ Vand Dhana A. Curu	u Deelen								

- CV Yard Phase 4 Survey Design
  - 4.18 The survey design checklist is listed in Exhibit 2.
  - 4.19 Area factors are not applicable in subsurface soil volumes (below 1 meter). Therefore, the area factor input requirement for soil in the Compass computer program is 1 for both a 10,000 square meter area as well as for a 1 square meter area (see Attachment 6-2).
  - 4.20 Area factors for concrete surface areas are shown on Attachment 9-1. These values are for Co-60 which is a constituent of the mix. However, Cs-137 and Co-60 area factors are very similar and therefore there is little impact from using the more conservative area factor.

#### 5.0 CALCULATIONS

5.1 All calculations are performed internal to applicable computer codes or within an Excel spreadsheet.

#### 6.0 APPENDICES

6.1 Attachment 1-1 to 1-2, are photos of survey unit OL1-5 and MA8 –4.

6.1.1 Attachment 1-3, is a diagram of the OL1-5 open land area.

- 6.2 Attachment 2-1 to 2-5 is the sample results from the OL1 area. In addition to the effective DCGL calculation sheets.
- 6.3 **Attachment 3-1**, is a copy of the calibration data from typical Nal and GFPC radiation detectors that will be used in this FSS process.
- 6.4 Attachment 4-1 and 4-2, is a MicroShield model of a soil volume used to determine the exposure rate from a 1 pCi/g Cs-137 source term.
- 6.5 Attachment 5-1 and 5-2, is the MDCscan calculation sheets for the soil model.
- 6.6 Attachment 6-1, is a diagram of the OL1-5 area showing the soil sampling points.

6.6.1 Attachment 6-2 to 6-5, are the Compass output data for the soil area OL1-5.

- 6.7 Attachment 7-1 to 7-3, is the results of the inspection report for the OL1-5 and MA8-4 areas.
- 6.8 Attachment 8-1, is the efficiency correction factor employed for a GFPC instrument.
- 6.9 Attachment 9-1 to 9-4, are Compass output data for the misc. concrete survey unit MA8-4.
  - 6.9.1 Attachment 9-5 is the fixed point survey locations for the MA8-4 misc. concrete surface.
- 6.10 Attachment 10-1 is the variability measurements of soil samples from the OL1-5 area.
- 6.11 Attachment 11-1, is the GFPC MA8-4 misc. concrete variability measurement results. 6.11.1 Attachment 11-2, is the Williamsburg GFPC background measurement results.

# SNEC CALCULATION SHEET

**Calculation Number** 

E900-04-024

Revision Number

0

Page Number

Subject

CV Yard Phase 4 - Survey Design

#### Exhibit 1

### SNEC Facility Individual Radionuclide DCGL Values (a)

Radionuclide	25 mrem/y Limit Surface Area (dpm/100cm²)	25 mrem/y Limit (All Pathways) Open Land Areas (Surface & Subsurface) (pCi/g)	4 mrem/y Goal (Drinking Water) Open Land Areas <sup>(b)</sup> (Surface & Subsurface (pCi/g)			
Am-241	2.7E+01	9.9	2.3			
C-14	3.7E+06	2	5.4			
Co-60	7.1E+03	3.5	67			
Cs-137	2.8E+04	6.6	397			
Eu-152	1.3E+04	10.1	1440			
H-3	1.2E+08	132	31.1			
Ni-63	1.8E+06	747	1.9E+04			
Pu-238	3.0E+01	1.8	0.41			
Pu-239	2.8E+01	1.6	0.37			
Pu-241	8.8E+02	86	19.8			
Sr-90	8.7E+03	1.2	0.61			

NOTES:

(a) While drinking water DCGLs will be used by SNEC to meet the drinking water 4 mrem/y goal, only the DCGL values that constitute the 25 mrem/y regulatory limit will be controlled under this LTP and the NRC's approving license amendment.

(b) Listed values are from the subsurface model. These values are the most conservative values between the two models (i.e., surface & subsurface).

#### UR UNUULLHIN

• • • - - - -

- ---

SNEC CALC	JLATION SHEET	
Calculation Number	Revision Number	Page Number
E900-04-024	0	Page 9 of 9

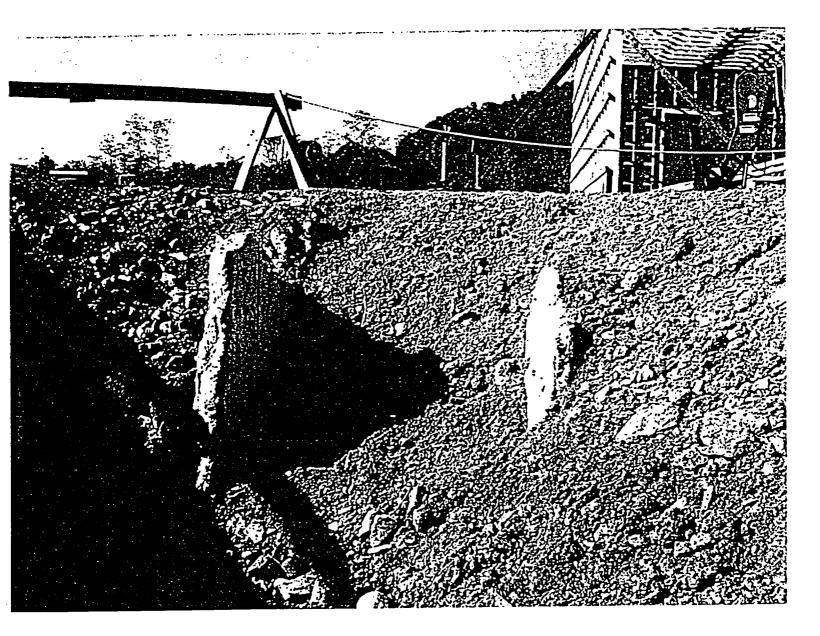
Subject

CV Yard Phase 4 - Survey Design

#### Exhibit 2 Survey Design Checklist

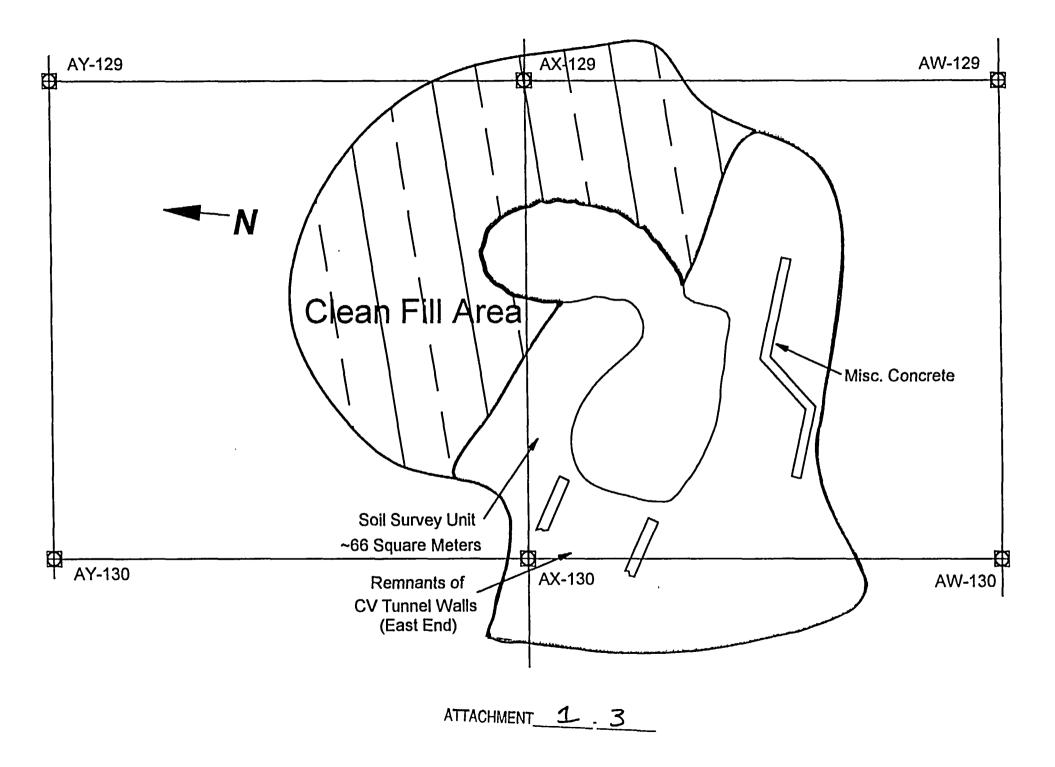
		Location Codes OL1-5 & MA8-4		
ITEM	REVIEW	FOCUS	Status (Circle One)	Reviewer Initials & Dat
1	Has a survey design calculation number been description	Yes, N/A	AXA 34/05	
2	Are drawings/diagrams adequate for the sul	bject area (drawings should have compass ligs)?	(Yes) N/A	AVL YT6
3	Are boundaries properly identified and is the	survey area classification clearly indicated?	Yes N/A	Ance 3/2/25
4	Has the survey area(s) been property div	Ided into survey units IAW EXHIBIT 10	(Yes) N/A	And Yob
5	Are physical characteristics of the are	pa/location or system documented?	Yes. N/A	AV1 1/1/04
6	Is a remediation effectiven	ess discussion included?	(Yes) N/A	ANI 7/16 -
7	Have characterization survey and/or samplin comparable to applic	ng results been converted to units that are able DCGL values?	(res) N/A	and 3/1/05
8	Is survey and/or sampling data that was used for		(Yes) N/A	PRIA Yol
9	Is a description of the background reference a sampling results included along with	areas (or materials) and their survey and/or a justification for their selection?	Yes) N/A	Dal 71/05
10	Are applicable survey and/or sempling data the		Yes N/A	Dark Holos
11	Will the condition of the survey area have an probable impact been con	impact on the survey design, and has the skdered in the design?	Yes, NA	AYL 7/2/05
12	Has any special area characteristic includin previously noted during characterization) bee desig	g any additional residual radioactivity (not in identified along with its impact on survey	Yes.NA	Day 3/1/05
13	Are all necessary supporting calculations and	for site procedures referenced or included?	(Yes.) N/A	AVAYT
14	Has an effective DCGLw been id	entified for the survey unit(s)?	(Yes N/A	and Hope
15	Was the appropriate DCGLEMC include	d in the survey design calculation?	Yes. N/A	Are Vitor
18	Has the statistical tests that will be used	to evaluate the data been identified?	(Yes) N/A	AVL >/1/
17	Has an elevated measurement compari-	son been performed (Class 1 Area)?	(Ye). N/A	Devi 3/1/05
18	Has the decision error levels been identified an	d are the necessary justifications provided?	(Yes) N/A	AV13/1/00
19	Has scan instrumentation been Identified along	with the assigned scanning methodology?	(Yes) N/A	and France
20	Has the scan rate been identified, and is the h		(Yes) N/A	ou the
21	Are special measuremonts e.g., in-situ gamma-i and is the survey methodology, and	By spectroscopy required under this design, evaluation methods described?	Yes. (N/A)	and shine
22	Is survey instrumentation calibration data include		(res) N/A	av Hal
23	Have the assigned sample and/or measurement to pr CAD drawing of the survey area(	ocations been clearly identified on a diagram s) along with their coordinates?	(Ye) NIA	3/2/-
24	Are investigation levels and administrative limits clearly indic	adequate, and are any associated actions	Yes N/A	201 7/0-
25	For sample analysis, have the required	MDA values been determined.?	Yes (N/A)	91/ 47/00
26	Has any special sampling methodology been iden		Yes. NA	900 8/7/~
TE: a d	copy of this completed form or equivalent, shall be I	ncluded within the survey design calculation.		

NOTE: a copy of this completed form or equivalent, shall be included within the survey design calculation.



ATTACHMENT 1 -1

ATTACHMENT 1.2



#### CV YARD SAMPLES - FOR RAD WASTE PURPOSES

ſ	TABLE 1 - REDUCED LISTING														
-															Decay Date
	BHEC Barryle No	LAB HA	Location/Description	<u> </u>	81-90	C+ 40	C+137	Am 341	N1H	PV 330	Pu-141	C.14	N 43		Analysia Date
1	CV Turnet	BWX7, 9182049-01	CV Turnel Sedment Composite OL 1		9 67	120	1250	018	0.55	0 22	44 69	9 34	4 02	0 13	February 14 2001
- 1 L			Bubeudece Semple #28 (0-87), AY-128, CL 1			0 07	0.69	II			L			I	November 17, 1999
- * L	\$X8L1083	Taledyne 80018: 119184-1	North CV Yard Sol 84-127, 812 23, Sample # 5, CL 2	4.60	0 0531	0 0192	0 866	0 0961	0 0466	0 0327	377_	0 21	10.9	0 0525	Mrs 27. 2002
4	6X5L1089	Taladyna 80019; L19164 2	North CV Yard Bol AY-127, 810 El, Semple # 3 OL 1	3 03	0 0095	0 0332	129	0 0993	0 128	0.05	4 07	0 21	7 54	0.0828	Arg 21 2072
- + Į	8X\$1115	Teledyne 80020; 119184-3	North CV Yard Boll AV-128, IOI' E), Sample # 2, OL 1	4 68	0 0536	0 0243	1.6	0 24	0 138	0 0407	4 21	0.21	7.6	0.0571	June 28, 2012
• i	8×511122	Teledyne 80021; L19184-4	North CV Yard Boll AY-128, 798 EL Sample # 2 CL 1	3 44	0 0529	0 0279	477	0 183	0 0894	0.04	3 68	0 208	8 75	0 0882	Nr 2 273
1	EX\$(1130	Telegyne 40022; 1 10184-8	North CV Yard Bolt AX-128, 803; EJ, Sample # 4, OL 1	4 99	0.0648	0 0298	22.6	0 149	0 0856	0 0121	3 55	0 231	13.4	0 0989	AN 2 202
[	\$X9(1)32	Teledyne 80023; L19184-6	North CV Yand Boll AZ-130, Bample # \$, OL 1	290	0 0715	0 035	2 69	0 164	0 0748	0 0646	5 27	0 215	126	0 0734	MA 2 202
• [	EX5(1770	BWXT, PIDEORS 02	AJC 128, 3-3, Solt, CV SE Side & From CV, 807 EL, CL 1	11.31	0.02	0.01	231	0 037	0 007	0 007	2 104	3 93	8 68	0.07	ANY 28, 2001
10	5×511281	BWYT, \$108088-81	AX-128, S-1, Soll CV Turnel East S Frem CV, 600 EL OL 1	11 52	0.03	0 01	4 38	0 031	0 016	0 007	1 908	4	7 78	0.04	14 28 2001
- 11	6×5(2549	Telefore 73220: L18077-2	Anda Wel A-2 6 to 10 Depth, OL 1	2	0 0314	01	0 6	0 00978	0 0133	0 011	1 87	0 183	1 75		February 13 2002
13	6×91,2671	Teledyne 71948: 117838-11	CV Aree - East Yard Dirt Pile - Midde, 1/2 Way Up, CL 1		0 03	0.07	0.56								March 9, 2002
14	8×51,2672	Telefyre-71948: 117656-18	CV Area - East Yard Cirl Pile - Ballow (also top center), OL 1		0.03	0.06	01								March 8, 2002
18	5X5L3140	PW XT. 1930-003-10-01	East CV Yard Soll Pile () If an West Bids (# Deph), Cl.1	1 892	0 012	0 014	0.825	0.007	0.005	0.005	0 369	0 086	3 406	0.03	Ag # 30 202
14	5×513142	Teledyre; ( \$0328-\$	Sol Pile CV Yard Three Feet on East Side, SP-37, CL 1		0 0295	0.07	0.6								April 12, 2002
17	6X5(3145	BW XT. 1030 403-18-01	East CV Yard, Boll Pile @ 3' on East Bids (#' Daph); CL 1	1 897	0 017	0.013	1 26	0 004	0.005	0 005	0 378	0 083	3 69	0.038	Ag # 20, 2012
18	6×5(3140	Telefore; ( 20126 4	Boy Pile CV Yard, Sa Fast on East Side \$9-37, CL 1		0 0297	0.08	03							1	Age 13 202
- 10	8X5(3153	WWXT.1830-003-10-01	East CV Yard Bolt Pile (@ Top (# Depili), CL 1	1 937	0 043	0 023	03	0 003	0 005	0 005	0 343	0 087	4 177	0.051	Age # 30, 2002
- 21	8×614142	Teledyne: L22187-2	CV Yard Sol - West Bide AP1-7 OL1	2 22	0 0325	0.05	0.0	0 0176	0 0671	0 0202					Octow 2 700
21	8×5(4143	Telefyne: 122187-3	CV Yard Bat - Wed Side, AP1-7, OL1	2 23	0 0310	0.05	05	0 0221	0 0831	0 0 364					Ortober 2, 2003
23	\$X5(4149	Teledyre; L22187-4	CV Yard Ball - West Bide, AP1-7, CL1	224	0 0277	0.07	39	0 0277	0 043	0 0304	1				Ortuber 2, 2009

TABLE 2 - REDUCED LISTING - DECAYED														
			T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	T 1/2	112	Decay Date
			4485 27	10446 15	1925 23275	11019 5925	157861 05	32050 8875	8813847 75	52598	2092882 5	36581 525	4987 4	Sectoreber 15 2004
BNEC Berrole No	LAB No.	Lecation/Desortation		81 99	C+40	C+117	Am 341	Pv 234	PV 200	Pv 141	Ç.14	NE 43	Ev-142	Analysis Date
1 CY Turnel	PWXT, 0102060-01	CV Turnel Bedment Composite, CL 1	7 68E+00	\$ \$7E+00	7 87E-01	1.156+03	1 79E-01	\$ 35E-01	2 20E-01	3 78E+01	9 34E+00	3 92E+00	1 08E-01	February 14, 2001
8 8×8% 89218	111074	Bubilitade Bample #28 (0-#) AY-128 OL 1	0 00E+00	0 00E+00	371E-02	6 28E-01	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	November 12, 1999
\$ 6X\$L1053_	Telegree 20018: 119184.1	North CV Yard Bol 84-127, 812 El, Bample 8 8, OL2	4 04E+00	5 03E-02	1 43E-02	\$ 426-01	9 58E-02	4 60E-02	3 27E-02	3 30E+00	2 10E-01	1 07E+01	4 69E-02	N/N 27. 2002
4 \$X8L1099	Teledone 80018; 119164 #	Horm CV Yard Soll AY-127, 8107 EL Banple # 8, OL 1	2 67E+00	0 59E-02	2 48E-02	1 236+00	9 89E-02	1 26E-01	5 00E-02	4 47E+00	2 10E-01	7 43E+00	7 40E-02	Are 26, 2002
8 8×51115	Taled me 80030; \$19184-3	North CV Yard Boll AY-128, 804' El, Sample # 2, OL 1 1	4 31E+00	5 08E-02	1 82E-02	1716+00	2 30E-01	1 30E-01	4 07E-02	3 78E+00	2 10E-01	7 48E+00	5 10E-02	Nry 29, 2002
6X5L1122	Telefore 80021; 119184-4	North CV Yard Bolt AY-128, 798" El, Bample # 2, OL 1	3 04E+00	501E-02	2 09E-02	4 53E+00	1 82E-01	6 78E-02	4 00E-02	3 31E+00	2 06E-01	8 62E+00	7 70E-02	Nrs 29, 2002
7 \$X911120	Teledyme #0072: 119184-8	North CV Yard Bod AV-128, 803' E, Bample # 4, Ct 1	4 41E+00	6 14E-02	2 235-02	2 155+01	1 48E-01	8 41E-02	1 21E-02	3 19E+00	2 31E-01	1 32E+01	8 64E-02	AN 3 2002
8 \$X8(1132	Teledyme #0023; 119184-#	North CV Yand Bolt A2-130, Sample # 8, QL 1	2 636+00	678E-02	2 82E 02	2 48E+00	1 63E-01	7 33E-02	0 46E-02	4 74E+00	2 156-01	1 24E+01	8 56E-02	NN 1 202
8X511770	WWXT. 9109044-92	AVE 128 S-2, Boll, CV BE Bide & From CV, BOP 10, CL1.	9 47E+00	1 85E-02	8 82E-03	2 155+01	3 608-02	8 83E-03	7 00E-03	1 81E+00	3 93E+00	6 49E+00	5 966-02	Atr 20 2001
10 8×51,1201	BWXT, 9199964 41	AV-120 S-1, Bolt CV Turnel East IP From CV, 800 EL OL1	9 65E+00	278E-02	0 02E-03	4 08E+00	3 08E-02	1 56E-02	7 00E-03	1 84E+00	4 00E+00	7 61E+00	3 415-02	Ner 20, 2001
11 \$1(3),2649	Teledyme-73230; L19077 1	Anula Wel, A-2, 8 to 10 Depth, OL 1	1.73E+00	2 95E-02	7 178-02	5 65E-01	9 74E-03	1 308-02	1 10E-02	1 85E+00	1 838-01	172E+00	0 00E+00	Febbery 12 202
13 BX SL 2071	Taladyme-71949; \$17934 11	CV Area - East Yard Old Pile - Midde, 1/2 Way Up. OL 1	0 00E+00	2 828-02	\$ 07E-02	8 28E-01	0.00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	March 8, 2002
14 8×8(2872	Telefore 11944: 117634 10	CV Area - East Yard Dirt Pile - Ballons (alle top center), CL 1	0002+00	2 82E-02	4 30E-02	9 44 E-07	Q 00E+00	0 00E+00	0 00E+00	0 DOE+00	0 00E+00	0 00E+00	0 00E+00	March 6, 2002
18 8×5L3140	PWXT,1930 003-19 41	East CV Yard, Soll Pile @ P on West Blde (# Depili), OL 1	1 69E+00	1 145-02	1 07E-02	7 878-01	6 98E-03	4 92E-03	5 00E-03	3 34E-01	6 60E-02	3 36E+00	2 70E-02	Age 10, 2002
16 8×51 3142	Teledyne: 1,20320 3	Ball Pile, CV Yard, Trove Feel on East Blae, SR 37, OL 1	0 00E+00	2 80E-02	5 32E-02	6 728-01	0 00E+00	0 005+00	0 00E+00	0 DOE+00	0 00E+00	0 00E+00	0 00E+00	A gr # 12 2002
17 8×81 3145	BWXT,1838.003-18-91	East CV Yand, Sol Pile @ 2 on East Side (# Depile), Ct.1	1 69E+00	1 62E-02	9 93E-03	1 2015+00	3 99E-03	4 92E-03	5 00E-03	3416-01	6 30E-02	3 84E+00	3 42E-02	August 30, 2002
18 6×9(3149	Telestyme: 1 20326-4	Bolt Pile CV Yard Shi Fust on East Bide BR \$7, Ct 1	0 00E+00	2 82E-02	6 08E-07	2 168-01	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	AQ#12 2007
19 8×51 3153	PW XT 1930 003 18 41	East CV Yard, Boll Pile (\$ Top (# Depili), OL 1	173E+00	4 09E-02	1 76E-02	2 60E-01	2 99E-03	4 92E-03	\$ 00E-03	3 11E-01	\$ 70E-02	4 12E+00	4 60E-02	Ag # 20, 202
81 6×61.4142	Telestytes: 122107 1	CV Yard Sol - Well Side AP1-7, CL1	2 10E+00	3 16E-02	4 41E-02	\$ 80E-01	1 78E-02	6 66E 02	2 02E-02	0 00E+00	0 00E+00	0 00E+00	0 00E+00	
23 57514143	Taladyna; 1,22187-3	CV Yard Boll - West Side AP1-7, CL1	211E+00	3 09E-02	4 41E-02	4 89E-01	2 21E-02	6 26E-02	3 64E-02	0 00E+00	0 00E+00	0 00E+00	0 00E+00	O-toby 2, 2013
23 6XSI 4140	Taledyne; 122107-4	CV Yard Ball - West Side AP1-7, OL1	2 12E+00	271E-02	6 1/E-02	\$ 87E+00	2 77E-02	4 27E-02	3 04E-02	0 002+00	0 00E+00	0 00E+00	0 00E+00	

ATTACHMENT Z . 1

,

.

REDUCED LISTING - DECAYED									
BNEC Bample No	LAB No.	Location/Description		87.90	Co 49	C+ 137	Total pCr		
CY Turnel	BWKT, 9182089-91	CV Turnel Bodimert Composite, OL 1		# 67E+00	7 67E-01	1 15E+03	1100 67		
8×954 9971 8	111074	Bubeutace Sample #29 (0-\$1), AY-178, CL 1				6 28E-01	0 52		
\$X5( 1083	Taladona 80018; 119184-1	North CV Yard Boll BA-127, 812 El, Sample # \$, OL 2	4 04E+00			8 42E-01	4 00		
\$X51 1010	Teledone 60018; 118164 2	North CV Yard Bolt AY-127, 810 El, Sample & S. OL 1	2 67E+00			1 23E+00	190		
5×511115	Teledyne #0028; 119184-3	North CV Yard Boll AY-128, 808" EL Sample # 2 CL 1	4 31E+00			1715+00	6 02		
8×811177	Telefone 80021: 119184-4	North CV Yard Bolt AV-128, THE EL Sample # 2, Ct 1	3048+00			4 53E+00	7 57		
8×911130	Teledime #9022: \$ 19184 8	North CV Yard Boll A36-126, 803" El, Bampie # 4, OL 1	North CV Yard Ball AX-128, BOY EL Bemple # 4, OL 1 4 41E+00		2 232-02	2 15E+Q1	25 91		
8×811132	Tatedyne 80023; L18184 #	North CV Yant Bolt A2-130, Bampie # 8, OL 1 2 63E+00			2 48E+00	8.09			
8×511270	WWXT, 9104085 82	AVE 129 S-8 Goll CV BE Blde & From CV. 900 ED. OL 1			2 15E+01	21 49			
\$×81,1281	WW XT. 9104044 41	AX-128 S-1, Bot, CV Turnel East & From CV, 800 EL OL 1	AU-128 3-1, Bot, CV Turnel East & Prom CV, BOT EL OL 1			4 08E+00	4.00		
5×51,2549	Taladyme 73229: \$19977 8	Ania.# Well A-2, \$10 10 Depth, OL 1				5 658-01	0 57		
\$×51,2871	Telectore 71949; \$17838-11	CV Aree - East Yard Drt Pile - Made, 1/2 Way Up OL 1				5 28E-01	0.53		
\$X\$1,2672	Teledone 71949: \$17938-10	CV Area - East Yard Dirt Pile - Bottom (and top curter); OL 1				944E-02	0.09		
\$X\$83140	WXT 1930 003-19-91	East CV Yard Sol Pre @ # on West Side (# Dephy OL 1				7 87E-01	0 79		
\$X\$13147	Teledyne: \$ \$6328-\$	Ball Pile CV Yard, Three Feet on East Side 67-37, CL 1				577E-01	0 57		
\$×813145	WXT,1030-003-18-01	East CV Yard Sol Pile @ 3 on East Bloe (6" Depili), CL 1				1 20E+00	1 20		
6×613149	Teledyna: 1,20328-4	Boll Pile CV Yard Bix Feet on East Side 6R-37, CL 1				2 86E-01	0.79		
6×8L3153	BWX7,1939-002-19-91	East CV Yard Soll Pie @ Top (@ Depth) CL1				2 86E-01	079		
8×514142	Teledyne: 122187-2	CV Yard Ball - Weel Bide, AP1-7, OL 1				8 80E-01	0.69		
6×51,4143	Teledyne: 1 22187-3	CV Yard Scill- West Bios AP1-7, OL1				4 88E-01	0.49		
8×514140	Telefyme: 122197-4	CV Yard Soll - West Side AP1-7 Q1			8 17E-02	3 82E+00	3.00		

ENEC Barrole No	LAB No.	Lacation/Description	H\$	81-90	Co-80	C+137	Total
CV Turnel	TWXT. \$192049 41	CV Turnel Bedmart Composite, CL 1		070%	0 07%	99 17%	100 0
8X96L99219	111074	Bubautace Bemple #79 (0-51) AY-128, CL 1				100 00%	100 0
5X51 1063	Teledyne #0918: 119184 1	North CV Yand Sol BA-127, 012 ED, Sample # 5, OL 2	8278%			17 24%	100 0
8×5L1089	Teledyne 80918; 119184 2	NOTE CV Yard Boll AY-127, 810 ES, Bampie # 3, Ct. 1	64 50%			31 44%	100 0
6×511119	Tatantyme #0928: 119184.3	North CV Yard Boll AY-128, IDI: El, Bample # 2, OL 1	71 57%			28 43%	100 0
\$X911122	Taindyme 90921: \$19184-4	North CV Yard Boll AY-128, 798" El, Barryle # 2, OL 1	40 11%			69 89%	100 0
87511170	Taledyme \$0022: 119184.8	North CV Yard Boll AX-128 403' El, Bample # 4, OL 1	17 00%		0.09%	82 91%	100 (
6X511132		Horth CV Yare Boll A2-130, Sample # 8, CL 1	51 00%			48 34%	100 0
EX811270	WW XT. 0100004-02	AX-129 3-3, Bull CV SE Side 1 From CV, 800 EL, OL 1				100 00%	100 0
6×6L1201	WWXT. \$199065 #1	All 126, S-1, Ball, CV Turnel East & From CV, 800" EJ OL 1				100 00%	100 0
5×51,2649	Telefyme-73230; 110077-8	- Anale Wet, A-2, 6 to 10 Depth, OL1				100 00%	100 0
\$X\$1,2871	Teledone 71848; \$17838-11	CV Area - East Yard Det Pas - Mode, 1/2 Way Up, CL 1				100 00%	100 0
8×51,2872	Telefore 71948: \$17838-19	CV Area - East Yard Det Pile - Boltom (dear top center), OL1				100 00%	100 0
\$X5(5140	WWXT.1030-002-10-01	East CV Yard, Boll Pile @ It on West Bide (It Depth) OL 1				100 00%	100 0
62(91,3142	Telectyre: 1,20126-3	Boll Pile, CV Yard, Three Fast on East Side, SR-37, CL 1				100 00%	100 0
6XSI 3145	WXT.1636.002-16-01	East CV Yard, Boll Pre @ P an East Side (& Daph) CL1				100 00%	100 0
\$X\$13149	Teledyne; 1,20328-4	Boll Pile, CV Yard, Bri Feel on East Bide, 89-37, OL 1				100 00%	100 0
6X81 3153	WXT.1030 002-18-01	Ead CV Yard, Bal Pile @ Tap (6" Depilit), OL 1				100 00%	100 0
8×51 4142	Teledyne; 122187 2	CV Yard Sol - Wed Bide, AP1-7, OL1				100 00%	100 0
8×81 4143	Teledyne: 122107-3	CV Yard Soll - Wed Blas APLT, OL1				100 00%	100 0
8X514140	Taladyne; 122187-4	CV Yard Sol - West Eds, AP1-7, OL1			1 59%	98 41%	100.0

ATTACHMENT 2 . 2

BINEC Barrola No	LAO No	Location/Description	H13	8/ 90	Co-44	C+117	Totel
CV Turnel	BW XT, 9182049 41	CV Turnel Sediment Composite, Ol 1		9 00770	0 00064	1 000	101
8×95199219	111074	Buble Asce Berrote #28 (0-9) AV-128 (0.1				1 000	100
6X6(1063	Telefine #0918: 118184-1	North CV Yard Boll BA-127, 812 EJ. Bampie # 5, CL 2	4 79913			1 000	5 80
8X5L1089	Toledyne 80018; L18184-2	North CV Yard Soll AY-127, 810 EL Sample # 3, OL 1	2.18044			1 000	310
8×511115	Taledyne 80020; 1 19184-3	North CV Yard Bolt AY-128 SOF EL Bample # 2, OL 1	2 51743			1 000	352
6×51,1122	Teledyne 80021; 1 19184-4	North CV Yard Boll AY-128, 798" EJ, Sample # 2, OL 1	0 00905			1 000	1 57
8×5(1130	Teledyne 90022; § 19184 8	Horth CV Yard Boll A36128, 802 El, Sample & 4, CL 1	0 20610		0 00104	1 000	171
6X9(1132	Telefyne 80023: 119184 4	North CV Yard Boll AZ-130, Gampie # 8, OL 1	1 00077			1 000	207
\$X511270	WXT. 9109064 02	AX-129, 5-3, Sol, CV 6E Blde # From CV, 807 EL, OL 1				1 000	100
8×8(1201	PWXT. 0100045 01	Alt-128, 3-1, Bolt CV Turnel East # From CV, 800' El, OL 1				1 000	100
\$X8(2649	Taledyne 73229: 119977-2	Ana.a Wel, A-2, 8 to 10 Dept. Ct.1				1 000	100
\$X\$L2071	Teledyne 71949; L17939-11	CY Ares - East Yard Drt Pile - Mode 1/2 Way Lip, Cl. 1				1 000	100
8×5L2672	Teledyne-71948; 117938-19	CV Area - East Yard Dut Pile - Boltom (also top cartier), CL1				1 000	100
5×513140	BW XT, 1830-003-18-81	East CV Yard, Boll Pile (# E an Well Bide (# Deph), OL1				1 000	100
6×81.9142	Taladyna: L20328-3	Boll Pile, CV Yard Tryse Feet on East Bole BR 37, CL1	_			1 000	100
8×51,3145	WITT, 1838 803-19-91	East CV Yard, Boll Pas @ 7 on East Star (# Depth), OL 1				1 000	100
8×513149	Telectyne: 1,20128-4	Bol Pile CV Yard, Bu Fest on East Bole, 57-37, OL1				1 000	1 00
8×6L3153	BW XT. 1030 003-18-81	East CV Yard Sol Pile (\$ Top (\$" Depile), CL1				1 000	100
8X51 4142	Taledyne: 1 22187-3	CV Yard Boll - Well Eide AP1-7, DL1				1 000	100
6X514143	Teledyne: (22187-3	CV Yard Soll - West Side AP1-7 OL1				1 000	100
BX8L4140	Taladyna; L22187-4	CV Yard Bull - West Bide, AP\$-7, CL1			0 01613	1 000	102
		Meanway	1 907	0 008	0 006	1 000	2 920
		Normalizedea	85 29%	0 20%	0 20%	34 24%	100 04

ATTACHMENT 2 3

					STEC AL	75%	Total Activity Limit D	CGLW	Adminis	trative Limit 1983	1
Effective D	CGL Calcula	ator for Cs-	137 (in pCi/g)				18.75	pCi/g		pCVg	1
SAMPLE NUMBER(s)⇒ CV YARD SAMPLES - 9/15/04											-
					I	and Ca-137 Limit	1	Cs-137 Adm	Inistrative Limit 🖄	ł	
17.43% 25.0 mrem/y TEDE Limit				5.74	pCl/g	4.30	pCVg	}			
7.70%	AT 10	mrem/y Drinking	y Water (DW) Limit		Check for 25 mrem/y	·					-
isotope	Sample Input (pCI/g, uCI, % of Total, etc.)		25 mrem/y TEDE	A HAR DOCING	A - Allowed pCi/g for 25 mrem/y TEDE	B Allowed pcl/g	Value Checked from Column A or B		This Sample mrem/y TEDE	This Sample mrem/y DW	
1 Am-241		0.000%	9.9	23 23	0.00	415F 2/F 0.00 + 1 = 15	0.00	1	0.00	0.003	
2 C-14		0.000%	2.0		0.00	1.0.00	0.00	1	0.00	0.002.03	C-14
3 Co-60	0.0060	0.205%	3.5		0.03	. 0.08	0.03	4	0.04	0.00.5 (2	
4 Cs-137 6 Eu-152	1.0000	34.235% 0.000%	6.6 10.1		5.74 · 0.00	12.98	<b></b>	4	3.79 0.00	0.012	C8-137
6H-3	1,9070	65.286%	132		10.94	24.75	10.94		0.36	0.25	
7 NI-63	1.5070	0.000%	747	19000	0.00	0.00	0.00	ł	0.00	~ 0.00	NI-63
8 Pu-238	1	0.000%	1.8		0.00	0.00	0.00		0.00	0.00	Pu-238
9 Pu-239		0.000%		1001037385	0.00	0.00 0.00 0.00	0.00	1	0.00	0.00	Pu-239
10 Pu-241		0.000%	88	10.0	0.00	0.00	0.00	}	0.00	0.00	Pu-241
11 Sr-90	0.0080	0.274%	1.2	A-10.61	0.05	0.10	0.05		0.17	CLA0.05.225	Sr-90
	2.92E+00	100.000%			16.75	37.91	16.75	]	4.359	0.308	
					Maximum Permissible pCl/g (25 mrem/y)	Maximum Permissible pCI/g (4 mrem/y)			Input Units Mu	nformation, Sample st Be in pCl/g <u>noi</u> f Total.	

ATTACHMENT 2 - 4

Effective D	CGL Calculator f	or Cs-137	(dpm/100 cm	^2)	Gross Activ	ity DCGLw	Gross Activity A	dministrative Limit
			•••			dpm/100 cm^2		dpm/100 cm^2
	_							
25.	.0 mrem/y TEDE Limit			1				
	·····				and the second se	Limit Approved		nistrative Limit
SAMPLE NO(s)⇒	CV YARD SAMPLES -	9/15/04			26508	dpm/100 cm^2	19881	dpm/100 cm^2
					SNEC ALS	75%		
							· · · · · · · · · · · · · · · · · · ·	_
isotope	Sample Input (pCl/g, uCl, etc.)	% of Total	individual Limits (dpm/100 cm^2)	Allowed dpm/100 cm^2	mrem/y TEDE	Beta dpm/100 cm^2	Alpha dpm/100 cm^2	
1 Am-241		0.000%	27	0.00	0.00	A NA NA	0.00	Am-241
2 C-14		0.000%	3,700,000	0.00	0.00	0.00	N/A	C-14
3 Co-60	4.10E-03	0.410%	7,100	181.86	0.64	181.86		Co-60
4 C# 137450 77	在 #2000 198 E-0.1 203 注	59,766%	28,000	***28507.83 t×	23.67	····* 26507.8	All and N/Alter Least	Cs-137
6 Eu-152		0.000%	13,000	0.00	0.00	0.00	S 3 6 N/A - 5 (2.13	Eu-152
6 H-3	3.93E-01	39.284%	120,000,000	17423.48	0.00	Not Detectable	NAR ANNAR SHE	H-3
7 NI-63		0.000%	1,800,000	0.00	0.00	Not Detectable	U.S. SANA DE LA	NI-63
8 Pu-238		0.000%	30	0.00	0.00	82. N/A	0.00	Pu-238
9 Pu-239		0.000%	28	0.00	0.00	NA NA SEAL	0.00	Pu-239
10 Pu-241		0.000%	880	0.00	0.00	Not Detectable	Stream N/A to be the	Pu-241
11 Sr-90	5.40E-03	0.540%	8,700	239.53	0.69	239.53	والمتخذفة المتخذفة والمتحدث والمتحدث والمتحدث والمحدودة والمحدودة والمحدودة والمحدودة والمحدودة والمحدودة والم	Sr-90
		100.000%		44353	25.0	26929	0	
	·			Maximum Permissible dpm/100 cm^2			- <u></u>	-

ATTACHMENT 2.5

2350 INSTRUMENT AND PROBE EFFICIENCY CHART 10/06/04							
Inst.#	Cal Due	AP #		Probe #	Cal Due	:	
95301	6 25 45	P& 11		25080 Pk	6/28/05		211.700
*8625	5.18.05	R&Y		211680 PK	5/18/05		214.882
-98642	9 28 94	B.c. V		185844	9,28.04		2(4,77)
08647	5 18 05			211667 Pk	5 18-05		218,807
117566	4 09 05	G&R		185852 Pk	4/13/05		209,862
:17573	5 18 05	0&Y		211674 Pk	5/18/05		212.173
120172	6.07/05	G&W		196022 Pk	6/07-05		208.302
126198	11,03.04	R&W		196021Pk	5/25/05		209,194
129423	5.18.05	P & Y		211687 Pk	5/18,05		213,539
129440	4/09/05	0&₩		210938 Pk	4/14/05		205,603
	50 INSTRU 26/04	JMENT A	ND PROB	E EFFICIENC	CY CHAR	Т	1
INST #	INST C/D	43-68 PROBE #	PROBE C/D			eta Eff	ALPHA EFF
79037	04/06/05	122014	04/23/05		25	5.8%	N/A
126188	1/27/05	099186	1/27/05		28	3.2%	10.7%
126218	01/08/05	095080	01/09/05		27	.9%	N/A
							<u> </u>

ATTACHMENT 3.1

#### MicroShield v5.05 (5.05-00121) GPU Nuclear

Page : 1 DOS File : SOIL.MS5 Run Date: October 20, 2004 Run Time: 12:54:38 PM Duration : 00:00:01

File Ref:	
Date:	
By:	
Checked:	······

Case Title: Soil Description: Soil Density 1.6 g/cc, 6" Deep Cylinder @ 5" from Surface Geometry: 8 - Cylinder Volume - End Shields

	Hei Rac	ght	Source Dimen 15.24 cm 28.21 cm		6.0 in 11.1 in
Z	# 1	<u>X</u> 0 cm 0.0 in	Dose Point <u>Y</u> 27.94 11.0	ст	<u>Z</u> 0 cm 0.0 in
	<u>Shield</u> Sou Air C	rce	Shields <u>Dimension</u> 2325.091 in <sup>3</sup>	<u>Material</u> Concrete Air	<u>Density</u> 1.6 0.00122

## Source Input

Grouping Method : Actual Photon Energies							
<u>Nuclide</u>	Bg/cm <sup>3</sup>						
Ba-137m	5.7670e-008	2.1338e+003	1.5136e-006	5.6003e-002			
Cs-137	6.0962e-008	2.2556e+003	1.6000e-006	5.9200e-002			

#### Buildup The material reference is : Source

#### **Integration Parameters**

Radial	40
Circumferential	40
Y Direction (axial)	40

			Results		
Energy	<u>Activity</u>	Fluence Rate	Fluence Rate	Exposure Rate	Exposure Rate
MeV	photons/sec	MeV/cm <sup>2</sup> /sec	MeV/cm <sup>2</sup> /sec	mR/hr	mR/hr
		<u>No Buildup</u>	With Buildup	<u>No Buildup</u>	With Buildup
0.0318	4.418e+01	6.794e-06	8.222e-06	5.659e-08	6.849e-08
0.0322	8.150e+01	1.306e-05	1.591e-05	1.051e-07	1.280e-07
0.0364	2.966e+01	7.236e-06	9.448e-06	4.111e-08	5.368e-08
0.6616	1.920e+03	6.179e-02	1.091e-01	1.198e-04	2.115e-04

ATTACHMENT 4.1

Page : 2 DOS File : SOIL.MS5 Run Date: October 20, 2004 Run Time: 12:54:38 PM Duration : 00:00:01

.

•

<u>Energy</u>	<u>Activity</u>	Fluence Rate	Fluence Rate	Exposure Rate	Exposure Rate
<u>MeV</u>	photons/sec	MeV/cm <sup>2</sup> /sec	MeV/cm <sup>2</sup> /sec	mR/hr	mR/hr
		No Buildup	With Buildup	No Buildup	With Buildup
TOTALS:	2.075e+03	6.182e-02	1.091e-01	1.200e-04	2.118e-04

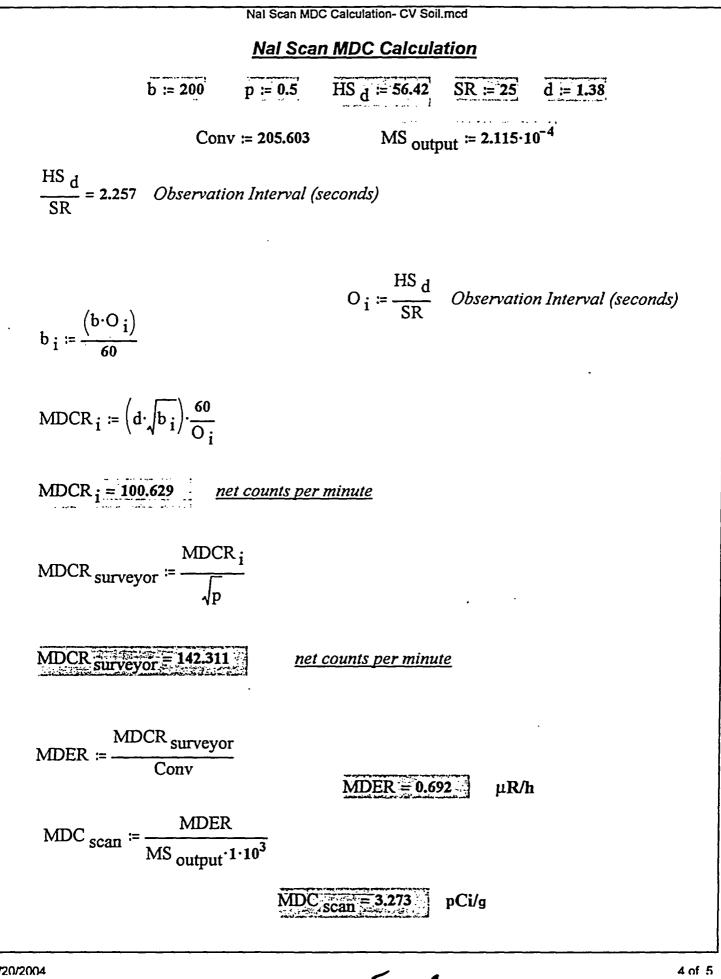
.

.

.

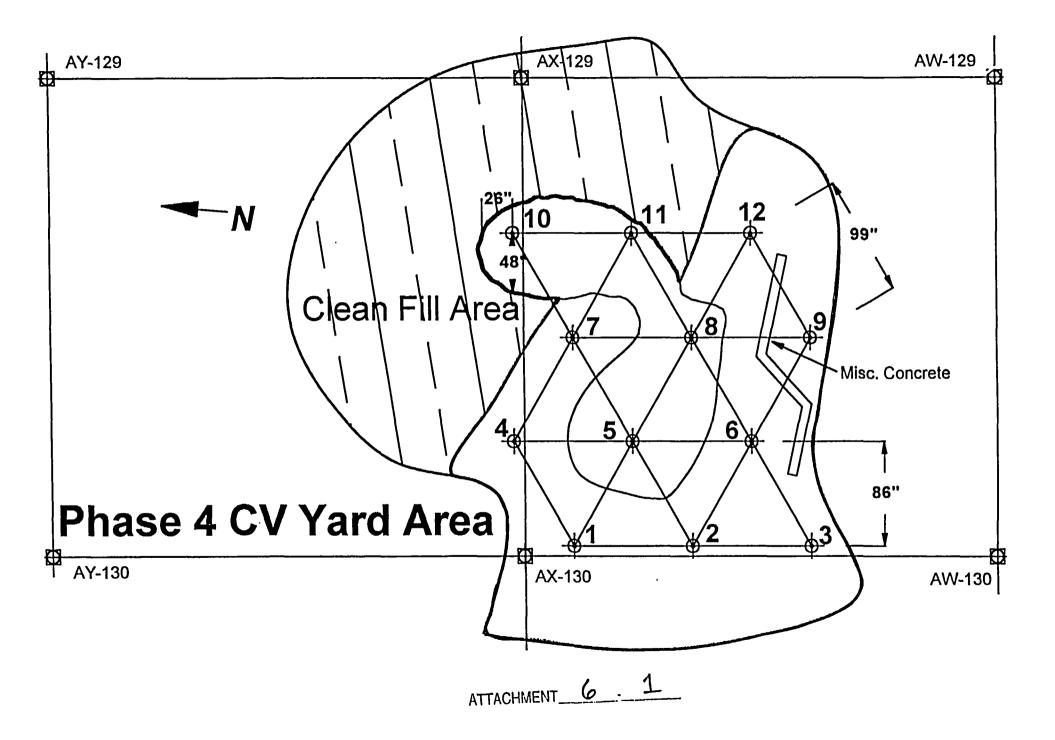
ATTACHMENT 4.2

.



#### where:

- b = background in counts per minute
- $b_i$  = background counts in observation interval
- Conv = Nal manufacturers reported response to energy of contaminant (cpm/uR/h)
- d = index of sensitivity (Table 6.5 MARSSIM), 1.38 = 95% of correct detection's, 60% false positives
- $HS_d = hot \, spot \, diameter \, (in \, centimeters)$
- MDC<sub>scan</sub> = Minimum Detectable Concentration for scanning (pCi/g)
- MDCR<sub>i</sub> = Minimum Detectable Count Rate (ncpm)
- MDCR<sub>surveyor</sub> = MDCR<sub>i</sub> corrected by human performance factor (ncpm)
- MDER = Minimum Detectable Exposure Rate (uR/h)
- $MS_{output} = MicroShield output exposure rate for 1 pCi/g of contaminant (mR/h)$
- $O_i = observation Interval (seconds)$
- p = human performance factor
- SR = scan rate in centimeters per second





## Site Summary

Site Name:	CV Yard Area (OL1-3)	ANA	Jalay
Planner(s):	BHB	1911	10101

## **Contaminant Summary**

NOTE: Surface soil DCGLw units are pCi/g. Building surface DCGLw units are dpm/100 cm<sup>2</sup>.

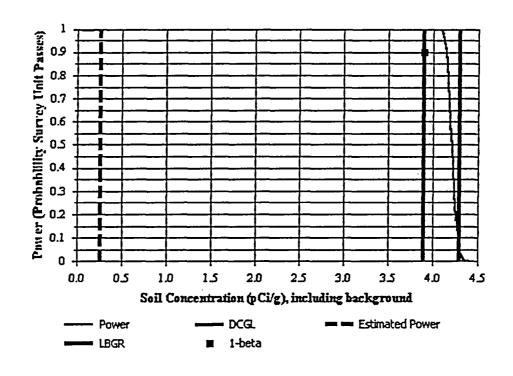
Contaminant	Туре	DCGLw	Screening Value Used?	Area (m²)	Area Factor		
Cs-137	Surface Soil	4.30	No	10,000 1	- 1 - 1		



## **Survey Plan Summary**

Site:	CV Yard Area	(OL1-3) 04 5 048 119104	
Planner(s):	BHB	s bildler	
Survey Unit Name:	Phase 4 Soil i	n SW Sector	
Comments:			
Area (m²):	66	Classification:	1
Selected Test:	Sign	Estimated Sigma (pCi/g):	0.14
DCGL (pCi/g):	4.30	Sample Size (N):	. 11
LBGR (pCi/g):	3.9	Estimated Conc. (pCi/g):	0.3
Alpha:	0.050	Estimated Power:	1
Beta:	0.100	EMC Sample Size (N):	11
Scanning Instrumenta	tion:	2" by 2" Nai (Cs-137 w)	

## **Prospective Power Curve**







\_\_\_\_\_

## **Contaminant Summary**

Contaminant	DCGL <del>w</del> (pCl/g)	Inferred Contaminant	Ratio	Modified DCGLw - (pCl/g)	Scan MDC (pCl/g)
Cs-137	4.30	N/A .	N/A	N/A	3.3
Contaminant	:	Survey Unit Estimate (Mean ± 1-Sigma) (pCl/g)		Reference Area Est (Mean ± 1-Sigm (pCl/g)	
Cs-137		0.26 ± 0.14		0.28 ± 0.39	

Elevated Measurement Con Elevated Measurement Con Enter in a description for the	mparison (l scanning inst		S No additional samples are re scan MDU is less than the D	quired because the actual LuiLw.
measured contaminant. Click results. All entered and calcu			ОК	]
Scanning Instrumentation De	scription: 2*			
Contaminant Sc Cs-137	an MDC 3.3	-	r Scarr MDC س MDC: [	NUREG-1507
			<u></u>	
Statistical D	esign		Hot Spot D	esign
N: [	11 .	e e e e e La constante de la constante de	Actual Scan MDC:	3.3
Bounded Area (m <sup>2</sup> ):	6.		Area Factor.	N/A
Area Factor.	1		Bounded Area (m²):	N/A
DCGLw.	430	بىيە (ياھو يېرىد يارى). يىلى بېرىيىنىغو يېرىيىن	Post-EMCN:	11
Scan MDC Required:	N/A -			
	nable Trainin )	g Card He	lp	BACK

•

ATTACHMENT 6.5

.

•

# ORIGINIAL

				Exhibit 1 Survey Unit Inspection C	heck St	utig	NAL		
		SI	CTION 1	- SURVEY UNIT INSP	ECTIO	N DESCRIPTION			
Surve	y Unit #	OL1		Survey Unit Location		Phase 4 – CV Excavat	ion (SW	corner)	
Date	11/3/04	Time	1440	Inspection Team Mer	nbers	D. S	arge		
			SECTIO	N 2-SURVEY UNIT IN	ISPEC	TION SCOPE		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
-	Inspec	tion Requ	uirements	(Check the appropriate	Yes/N	o answer.)	Yes	No	N/A
1. Ha	ve sufficient surve	eys (i.e., po	st remediatio	on, characterization, etc.) bee	n obtain	ed for the survey unit?	· X		-
2. Do	the surveys (from	Question	1) demonstra	ate that the survey unit will m	ost likely	pass the FSS?	x		
3. lst	he physical work	(i.e., remed	liation & hou	sekeeping) in or around the s	urvey ur	nit complete?	X		
4. Ha	ve all tools, non-p	ermanent e	equipment, a	nd material not needed to pe	rform the	FSS been removed?		X	
5. Are	the survey surface	ces relative	ly free of loo	se debris (i.e., dirt, concrete d	dust, me	tal filings, etc.)?		X	
6. Are	the survey surface	ces relative	ly free of liqu	uids (i.e., water, moisture, oil,	etc.)?		X		
7. Are	the survey surface	es free of	all paint, whi	ch has the potential to shield	radiatior	17	X		
8. Ha	ve the Surface Me	asurement	Test Areas	(SMTA) been established? (F	Refer to I	Exhibit 2 for instructions.)	X		
9. Ha	ve the Surface Me	asurement	Test Areas	(SMTA) data been collected?	(Refer i	o Exhibit 2 for instructions.)	X		
10. Are	the survey surface	es easily a	ccessible? (	No scaffolding, high reach, et	c. is nee	ded to perform the FSS)	X		
11. Is i	ghting adequate I	o perform t	he FSS?			·	X		
12. is t	he area industrial	y safe to pe	erform the F	SS? (Evaluate potential fall &	trip haz	ards, confined spaces, etc.)	X		
13. Ha	ve photographs b	een taken s	howing the	overall condition of the area?		<u> </u>	X		
14. Ha	ve all unsatisfacto	ry condition	ns been resc	lved?				X	
respons	f a "No" answer ble site departme s necessary.	s obtained nt, as appli	above, the icable. Docu	inspector should immediatel iment actions taken and/or ju	y correc stificatio	t the problem or initiate corr ns in the "Comments" section	ective action below. A	ons throu Attach add	igh the ditional
Comme				<u> </u>					
•	nse to Questic ump Pump, ho		power con	ds are present to remov	ve resid	lual water until perform	ance of I	-ss.	
	lotified D & D	•		•		•			
•	nse to Questic								
	oncrete walls prior to perform			firt residue in some are	eas. No	otified D & D of neces	sity of cl	eaning	walls
	<u> </u>						<u> </u>		
Survey	Unit Inspecto	r (print/si	gn)   D. S	sarge 1 (la. Hig			Date	11/3	/04
Surve	y Designer (pri	nt/sign)	F	B. Brown	1	3. BROSEY	Date	11-4	-24

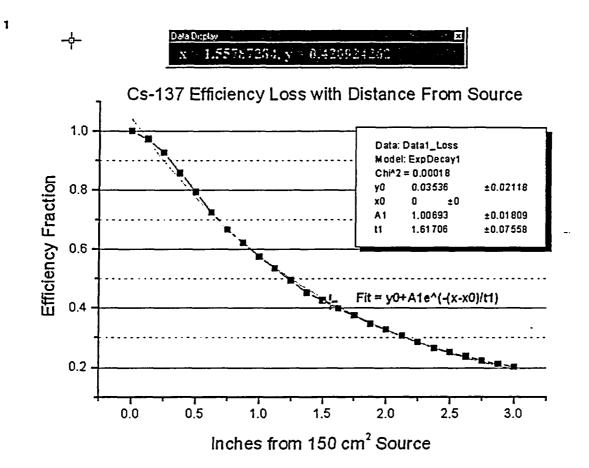
ATTACHMENT 7.1

0	RIGI	VAL	face Meas	EXH urement Te	IBIT 3			ita Sheet				
SMTA Number		SMTA-OL					nit Nurr			0		
SMTA Location	South Wa	ll of the P	hase 4 a	rea (SW (	Com	er o	f CV E	xcavatio	n)			
Survey Unit Inspe	ctor		D. S	arge				Date	11/	/3/04	Time	1440
STATES OF	SECT	ON 2 - C	ALIPER	INFORM	ATIO	N 8	PERS	SONNEL	INVO	LVED 🧦		
Caliper Manufacti	urer	N	litotoyo			Cali	per Mo	del Nun	nber	(	CD-6" CS	6
Caliper Serial Nu	nber	76	63893		Ca	libra	tion D	ue Date	(as ap	olicable)	1	V/A
Rad Con Technic				<u>p /</u>				Date	11/	/3/04	Time	1440
Survey Unit Inspe			Sarge /			<u> </u>				Date		/3/04
						ME	NT RE	SULTS	• • • •			
SMTA Grid Map (Insert F	& Measure Results in V				n				Соп	nments		
	13	19 m	25	31		•				i with calip nplate in v		
2	14	20	26	32				South V				Juanons
						•				obtained		
17375 <b>-</b> 9-1	15	- 21	27	33.			measi 16, 12	ured as 2, 7, 26,	follows 38, 50,	(in mm): and 49.	52, 42, 2	4, 33, 32,
<b>234</b>	18	22	- 28	34			Avera	ige dept	h: 30.9	mm.		
AND SUILS	e tree	23	29	25								
12	18	24	30	36								
Ave	erage Mea	surement	<b>-</b> mm	<b>I</b>								
			Addition	al Measu	reme	ents	Requi	red				

ATTACHMENT 2.2

		Sur	face Measu	EXH rement Te:		3 ea (SMTA) D	ata Sheet		UKIU	ina	
SMTA Number		SMTA-OL				ey Unit Nur				L1	
SMTA Location	South Tu	unnel Wall o	of the Pha	ase 4 are	a (S	SW Comer	of CV E	xcavati	on)		
Survey Unit Inspe			D. S	-			Date		/3/04	Time	1450
	SEC	TION 2 - C	ALIPER I	NFORM	ATIC	DN & PER	SONNE	L INVO	LVED		
Caliper Manufact			litotoyo			Caliper M				CD-6" CS	\$
Caliper Serial Nu			53893		Ca	alibration D		<u> </u>			V/A
Rad Con Technic		arge		no la			Date	11	/3/04	Time	1450
Survey Unit Inspe			Y	<u>Lapp</u>	-				Date		/3/04
		in the second				EMENT RE	SULIS		· · · · ·		
SMTA Grid Map (Insert I		White Bloc			n			Cor	nments		
MI ST	13,	19	25	31					n with calij		
2	14	20	26	32					mplate in V Wall (Out		
	5								otained thr ; (in mm): 4		
332 99	<b>.</b> 	·[····21	27	33			0, 35, 10			-0, 17, 1	4, 12, 00,
<b>. . . . . . . . . .</b>	16	22	28	34		Aver	age depi	th: 39 <i>.</i> 5	i mm.		
<b>1</b>	1	g - 23 j	29	25							
<b>12.0</b>	18	24	30	36							
Av	erage Me	asurement	- mm								
<u> </u>	<u> </u>		Addition	al Measu	rem	ents Requ	ired				

ATTACHMENT 7 3



ATTACHMENT 8 1



## Site Summary

Site Name: Phase 4 CV Yard Concrete

Planner(s): BHB

## **Contaminant Summary**

NOTE: Surface soil DCGLw units are pCi/g. Building surface DCGLw units are dpm/100 cm<sup>2</sup>.

Contaminant	Туре	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Gross Activity	Building Surface	33,265	No	0.5 BHA 1 11 B 2 4 9 16 25 36	10.1 10.1 3.4 2 1.5 1.2

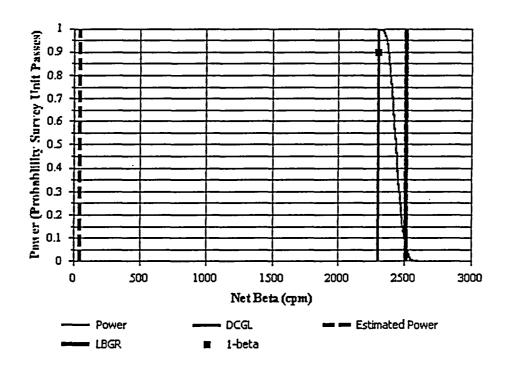
11/8/2004 9 ВИЗ ИЛУ/94 АТТАСНМЕНТ\_\_\_\_\_



## Survey Plan Summary

Site:	Phase 4 CV Yard Concrete		
Planner(s):	ВНВ		
Survey Unit Name:	Misc. Concrete in Phase 4 Are	28	
Comments:	CV Yard Mix		
Area (m²):	8	Classification:	1
Selected Test:	WRS	Estimated Sigma (cpm):	101
DCGL (cpm):	2,515	Sample Size (N/2):	10
LBGR (cpm):	2,300	Estimated Conc. (cpm):	48
Alpha:	0.050	Estimated Power:	1.00
Beta:	0.100	EMC Sample Size (N):	10

## **Prospective Power Curve**





\_\_\_\_\_

## **Contaminant Summary**

	DCGLw
Contaminant	(dpm/100 cm²)
Gross Activity	33,265

## Beta Instrumentation Summary

Total	Beta DCGLw (dpm/100 c Efficiency: Beta DCGLw (cpm):		33,265 0.06 2,515			
ID	Туре			Mode		Area (cm²)
29	GFPC			Beta		126
Conta	minant	Energy'	Fraction <sup>2</sup>	Inst. Eff.	Surf. Eff.	Total Eff.
Gross	Activity	187.87	1.0000	0.48	0.13	0.0602

Gross Survey Unit Mean (cpm):  $354 \pm 101$  (1-sigma) Count Time (min): 1

Material	Number of	Average	Standard	MDC
	BKG Counts	(cpm)	Deviation (cpm)	(dpm/100 cm <sup>2</sup> )
Concrete	31	306	34.5	1,116

COMPASS v1.0.0

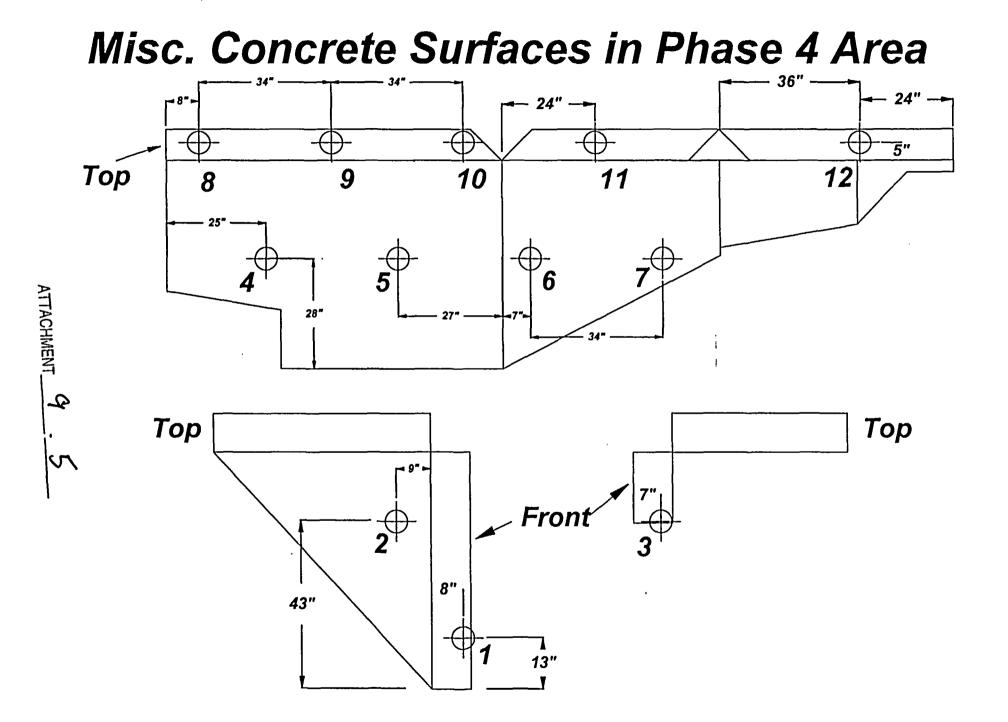
11/8/2004 9 BHS 11/9/04

I) Enter Scanning Instrument E	ificiencies 2) Enter	Scan MDC Parameters	3) View EMC Re
	Scan MDC R	equired per Contami	nent
Contaminant	DCGLW	Area Factor	Scan MDC Required
Gross Activity	33,265	10.10	335,976
1 <u>Statistic</u>	al Design 2: 10	_	lot Spot Design an MDC: 2.204
Bounded Area (m	j: <u>.</u> 8	Are	a Factor: N/A
Area Facto	or. 10.10	Bounded A	Area (m²): N/A
DCGLw	33,265	Past	EMC N/2: 10
i	335,976	COMPASS	
* dpm/100 cm <sup>2</sup>			

VICOMPASS - DOD Woodd for Balding States Americanity 711

9 BHS 11/9/04 ATTACHMENT +0 - 4

**--** . . ..



Pha Pha	se 4 Yard Are	a Soil Sampl	<b>es</b>
Sample No.	Cs-137 (pCl/g)	Co-60 (pCi/g)	Location Code
SXSL8040	0.31	0.16	SP-1
SXSL8041	0.18	0.19	SP-2
SXSL8042	0.11	0.14	SP-3
SXSL8043	0.51	0.15	SP-4
SXSL8044	0.25	0.14	SP-5
SXSL8045	0.17	0.17	SP-6
SXSL8046	0.21	0.15	SP-7
SXSL8047	0.16	0.13	SP-8
SXSL8043	0.16	<sup>•</sup> 0.17	SP-8 QC
SXSL8049	0.14	0.13	SP-9
SXSL8050	0.16	0.18	SP-10
Mean=>	0.215		
Sigma=>	0.112	]	

•

.

.

Phase 4 Yard Area Soil Samples										
Sample No.	Cs-137 (pCl/g)	Co-60 (pCi/g)	Location Code							
SXSL8040	0.31	0.16	SP-1							
SXSL8041		0.19	SP-2							
SXSL8042	0.11	0.14	SP-3							
SXSL8043	0.51	0.15	SP-4							
SXSL8044	0.25	0.14	SP-5							
SXSL8045	0.17	0.17	SP-6							
SXSL8046	0.21	0.15	SP-7							
SXSL8047		0.13	SP-8							
SXSL8043		0.17	SP-8 QC							
SXSL8049		0.13	SP-9							
SXSL8050		0.18	SP-10							
Mean=>	0.260									
Sigma=>	0.140									
Only Positive Cs-137 Values Retained										

:

1

;

ATTACHMENT 10 1

Phase 4 CV Yard Concrete Measurements SR-173											
D. Houtz	Instrument 126218	Date	Time	Detector	Counts	Count Time (sec)	Mode	Designator		FSS-1122	BHB
										Shielded	Unshield
1	NW FP1S	10/26/2004	14:19	1	3.84E+02		SCL	Shielded	β	3.84E+02	
_ 2	NW FP1U	10/26/2004		1	6.37E+02		_SCL	Unshielded	β		6.37E+0
-3	NW FP2S	10/26/2004	14:22	1	3.40E+02	60	SCL	Shielded	β	3.40E+02	
4	NW FP2U	10/26/2004		1	4.90E+02	60	_SCL	Unshielded	β		4.90E+0
5	SW FP3S	10/26/2004	14:26	1	3.71E+02	60	SCL	Shielded	β	3.71E+02	
6	SW FP3U	10/26/2004	14:27	1	4.39E+02		_SCL_	Unshielded	β		4.39E+0
7	SW FP4S	10/26/2004	14:29	1	3.56E+02	60	SCL	Shielded	β	3.56E+02	
8	SW FP4U	10/26/2004	14:30	1	4.23E+02	60 _	SCL	Unshielded	β		4.23E+0
9	SW FP5S	10/26/2004	14:32	1	2.81E+02	60	SCL	Shielded	β	2.81E+02	
10	SW FP5U	10/26/2004	14:33	1	3.96E+02	60	SCL	Unshielded	β		3.96E+0
11	SW FP6S	10/26/2004	14:35	1	2.34E+02	60	SCL	Shielded	β	2.34E+02	
12	SW FP6U	10/26/2004	14:37	1	3.11E+02	60	SCL	Unshielded	β		3.11E+0
13	STW FP7S	10/26/2004	14:40	1	2.81E+02	60	SCL	Shielded	β	2.81E+02	
14	STW FP7U	10/26/2004	14:42	1	3.34E+02	60	SCL	Unshielded	β		3.34E+0
15	STW FP8S	10/26/2004	14:43	1	2.43E+02	60	SCL	Shielded	ß	2.43E+02	
16	STW FP8U	10/26/2004	14:45	1	3.09E+02	60	SCL	Unshielded	β		3.09E+0
17	STW FP9S	10/26/2004	14:46	1	2.62E+02	60	SCL	Shielded	ß	2.62E+02	
18	STW FP9U	10/26/2004	14:48	1	2.90E+02	60	SCL	Unshielded	ß		2.90E+0
19	STW FP10S	10/26/2004	14:49	1	2.72E+02	60	SCL	Shielded	ß	2.72E+02	
20	STW FP10U	10/26/2004	14:51	1	3.28E+02	60	SCL	Unshielded	ß		3.28E+0
21	STW FP11S	10/26/2004	14:52	1	2.15E+02	60	SCL	Shielded	ß	2.15E+02	
22	STW FP11U	10/26/2004	14:53	1	2.86E+02	60	SCL		ß		2.86E+0
23	STW FP12S	10/26/2004	14:55	1	2.20E+02	60	SCL	Shielded	ß	2.20E+02	
24	STW FP12U	10/26/2004	14:56	1	2.80E+02	60	SCL	Unshielded	ß		2.80E+0
25	STW FP13S	10/26/2004	14:58	1	2.45E+02	60	SCL		ß	2.45E+02	
26	STW FP13U	10/26/2004	14:59	1	3.24E+02	60	SCL	Shielded	ß		3.24E+0
27	STW FP14S	10/26/2004	15:01	1	2.45E+02	60	SCL	Unshielded	ß	2.45E+02	
28	STW FP14U	10/26/2004	15:02	1	2.96E+02	60	SCL	Shielded	ß		2.96E+0
29	STW FP15S	10/26/2004		1	2.53E+02	60	SCL		ß	2.53E+02	
30	STW FP15U	10/26/2004		1	2.68E+02	60	SCL	Shielded	ß	h	2.68E+0
31	STW FP16S	10/26/2004		1	2.84E+02	60	SCL		B	2.84E+02	
32	STW FP16U	10/26/2004		1	2.51E+02	60	SCL		ß		2.51E+02
						· · ·			لسب	<u> </u>	
								Minim	um 🚍	2.15E+02	2.51E+0
										3.84E+02	6.37E+02
										2.80E+02	3.54E+02
											1.015+01

--- . .

Sigma ⇒ 5.38E+01 1.01E+02

ATTACHMENT\_11\_1\_

						te Backgroun	d Me	asurements			
37122N21	Instrument 95348		_	Detector		Count Time (sec)	Mode	· · · · · · · · · · · · · · · · · · ·		FSS-0	DI BHB
0	BKGND	1/4/2002	8:52	1	7.26E+03	1800	SCL	Inital Backgroun	•		
1	Source Check BKGND	1/4/2002 1/4/2002	9:07 10:05	1	1.79E+05	60 1800	SCL SCL	Source	β		
2		1/4/2002		2 2	4.40E+01 1.51E+05	1800 60	SCL	Inital Backgroun		Concrete CF(com)	كالمالدين كالإنتاء فنجرة
14	Source Check CON A1S	1/4/2002		1	2.78E+02	60	SCL	Source Shielded		Shield	
15 16	CON A1U	1/4/2002		1	3.88E+02	60	SCL	Unshielded	B	_2.78E+	3.88E+02
17	CON A2S	1/4/2002		1	2.39E+02	60	SCL	Shielded	B	2.39E+	
18	CON A2U	1/4/2002		1	2.22E+02	60	SCL	Unshielded	B		2.22E+02
19	CON A3S		13:28	1	2.39E+02	60	SCL	Shielded	ß	2.39E+	
20	CON A3U	1/4/2002	13:30	1	2.62E+02	60	SCL	Unshielded	ß		2.62E+02
21	CON A4S		13:36	1	2.45E+02	60	SCL	Shielded	ß	2.45E+	
22	CON A4U	1/4/2002		1	2.71E+02	60	SCL	Unshielded	ß		2.71E+02
23	CON A5S		13:58	1	2.00E+02	60	SCL	Shielded	B	2.00E+	
24	CON ASU	1/4/2002			2.82E+02	60	SCL	Unshielded	B		2.82E+02
25 26	CON A6S CON A6U	1/4/2002 1/4/2002		1	1.84E+02 3.10E+02	60 60	SCL SCL	Shielded Unshielded	B	1.84E+	
20	CON ARS		14:09	<u> </u>	1.98E+02	60	SCL	Shielded	β	1.98E+0	3.10E+02
28	CON A7U	1/4/2002		1	3.15E+02	60	SCL	Unshielded	Б	1.3024	3.15E+02
29	CON A8S	1/4/2002		1	2.34E+02	60	SCL	Shielded	ß	2.34E+	
30	CON A8S	1/4/2002		1	2.31E+02	60	SCL	Shielded	ß	2.31E+0	
31	CON A8U	1/4/2002		1	2.88E+02	60	SCL	Unshielded	ß		2.88E+02
32	CON A9S	1/4/2002	14:31	1	2.65E+02	60	SCL	Shielded	ß	2.65E+0	02
33	CON A9U	1/4/2002		1	2.89E+02	60	SCL	Unshielded	ß		2.89E+02
34	CON A10S		14:42	1	2.46E+02	60	SCL	Shielded	ß	2.46E+0	02
	CON A10U	1/4/2002		1	3.16E+02	60	SCL	Unshielded	ß		3.16E+02
36	CON A11S	1/4/2002		1	1.95E+02	60	SCL	Shielded	B	1.95E+0	
<u> </u>	CON A11U CON A12S	1/4/2002		1	2.94E+02 2.21E+02	<u>60</u> _	SCL SCL	Unshielded	B		2.94E+02
38	CON A125	1/4/2002		1	2.21E+02 2.84E+02	60	SCL	Shielded Unshielded	P	2.21E+0	
40	CON A13S	1/4/2002		1	1.74E+02	60	SCL	Shielded	B	1.74E+0	2.84E+02
41	CON A13U	1/4/2002		1	2.94E+02	60	SCL	Unshielded_	В	1.746-1	2.94E+02
42	CON A14S	1/4/2002		1	1.96E+02	60	SCL	Shielded	ß	1.96E+0	
43	CON A14U	1/4/2002	15:26	1	3.33E+02	60	SCL	Unshielded	ß		3.33E+02
44	CON A15S	1/4/2002	15:28	1	2.16E+02	60	SCL	Shielded	β	2.16E+0	2
45	CON A15U	1/4/2002			3.45E+02	60	SCL	Unshielded	ß		3.45E+02
46	CON A16S		15:30	1	1.83E+02	60	SCL	Shielded	ß	1.83E+0	
47	CON A16U	1/4/2002		1	3.13E+02	60	SCL	Unshielded	ß		3.13E+02
48	CON A17S		15:33	1	1.82E+02	60	SCL	Shielded Unshielded	B	1.82E+0	
<u>49</u> 50	CON A17U CON A18S	1/4/2002		1	3.22E+02 1.84E+02	60 60	SCL SCL	Shielded	B	1.84E+0	3.22E+02
51	CON A18U	1/4/2002		1	3.24E+02	60	SCL	Unshielded	β β	1.04270	3.24E+02
52	CON A19S	1/4/2002		1	1.91E+02	60	SCL	Shielded		1.91E+0	
53	CON A19U	1/4/2002			3.07E+02	60	SCL	Unshielded	β β		3.07E+02
54	CON A20S	1/4/2002	15:40	1	1.94E+02	60	SCL	Shielded	ß	1.94E+0	
55	CON A20U	1/4/2002	15:41	1	3.33E+02	60	SCL	Unshielded	ß		3.33E+02
56	CON A21S	1/4/2002			2.23E+02	60	SCL	Shielded	ß	2.23E+0	2
57	CON A21U	1/4/2002			2.92E+02	60	SCL	Unshielded	ß		2.92E+02
58	CON A22S	1/4/2002			1.72E+02	60	SCL	Shielded	B	1.72E+0	
<u> </u>	CON A22U	1/4/2002		<u>    1                                </u>	2.80E+02 1.94E+02	<u>    60                                </u>	SCL SCL	Unshielded	ß	1045-0	2.80E+02
60 61		1/4/2002 <sup>-</sup> 1/4/2002 <sup>-</sup>			1.94E+02 3.29E+02	60 60	SCL	Shielded Unshielded	β	<u>1.94E+0</u>	2 3.29E+02
62		1/4/2002			1.87E+02	60	SCL	Shielded	β	1.87E+0	
63		1/4/2002			3.48E+02	60	SCL	Unshielded	B	1.07.240	3.48E+02
64		1/4/2002 1			2.07E+02	60	SCL	Shielded	ß	2.07E+0	
65		1/4/2002 1			3.72E+02	60	SCL	Unshielded	β		3.72E+02
66		1/4/2002 1		1	2.09E+02	60	SCL	Shielded	B	2.09E+0	2
67		1/4/2002 1			3.26E+02	60	SCL	Unshielded	β		3.26E+02
68		1/4/2002 1			2.07E+02	60	SCL	Shielded	ß	2.07E+0	
69		1/4/2002 1			3.30E+02	60	SCL	Unshielded	B		3.30E+02
70		1/4/2002 1			2.30E+02	60 60	SCL	Shielded	B	2.30E+0	
71 72		1/4/2002 1 1/4/2002 1			3.06E+02 2.13E+02	<u>60</u>	SCL SCL	Unshielded Shielded	ß	2.13E+0	3.06E+02
72		1/4/2002 1			2.13C+02 2.58E+02	60	SCL	Unshielded	ß	2.132+0	2.58E+02
74		1/4/2002 1		the second s	2.33E+02	60	SCL	Shielded	ß	2.33E+0	
75		1/4/2002 1			2.89E+02	60	SCL	Unshielded	ß		2.89E+02
76		1/4/2002 1			1.84E+02	60	SCL	Shielded	ß	1.84E+0	
77		1/4/2002 1			2.63E+02	60	SCL	Unshielded	ß		2.63E+02
	Source Check	1/4/2002 1	7:27	1	1.70E+05	60	SCL		ß		
										um ⇒ 1.72E+0	
									lavim	um ⇒ 2.78E+0	2 3.88E+02
									Ме	an ⇒ 2.11E+0 ma ⇒ 2.69E+0	2 3.06E+02

1

\_-

•

ATTACHMENT 11.2