Cabrera Services, Inc.

Instrumentation Logbook

WRAMC Forest Glen Annex Radiological Characterization Survey, 08-3800.04/02 November 2009

04 Aug 2006 Rev 0

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

Instrument Pass/Fail Criteria

I. Quantitative Instruments [2929, 2224-1 / 2360 (if required)]

Make	Model	SN	Criteria (cpm) -3s	-2s	+2s	+3s
Ludlum	2360/43-68	184906/PR116721				
Ludlum	2360/43-68	225241/PR160790				
Ludlum	2360/43-37	145474/PR066273				
Ludlum	2929/43-10-1	152275/PR155350				

II. Qualitative Instruments [MicroRem, Model 3/44-9, 2221/44-20, etc]

Make	Model	SN	Criteria (cpm) -20%	+20%
Ludlum	19	167164		
Ludlum	3/44-9	187558/PR193572		

Project#_____

CABRERA SERVICES
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Source Data Page

Source	Activity (dpm or µCi)	S/N	Half Life (years)	Assay Date (if NIST)	Vendor
Pu-239	0.01636 µCi (3.63E+04 dpm)	48262	2.41E+04	01/09/04	WRAMC HPO
Tc-99	0.009699 µCi (2.15E+04 dpm)	971-115-3	2.11E+05	01/29/04	WRAMC HPO
~~Cs-137~~	~~0.9642 µCi (2.14E+06 dpm)~~	~~1264-31-7~~	~~30.17~~	~~09/06/07~~	~~WRAMC HPO~~
Cs-137	0.0193 uCi ( )	48323	30.17	01/04/04	WRAMC HPO

Project#_____

CABRERA SERVICES
RADIOLOGICAL • ENVIRONMENTAL • REMEDIATION

Instrument Inventory Log

Make	Model	Probe	S/N	Cal Cert Rcv'd?	Date Rec'd	Date Returned	Comments
Ludlum	19	N/A	167164	Y	10/14/09		
Ludlum	2360	43-68	184906/PR116721	Y	10/14/09		
Ludlum	2360	43-68	225241/PR160790	Y	10/14/09		
Ludlum	2360	43-37	145474/PR066273	Y	10/14/09		
Ludlum	3	44-9	187558/PR193572	Y	10/14/09		
Ludlum	2929	43-10-1	152275/PR155350	Y	10/14/09		

Project#_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Make	Model	S/N	Probe	S/N	Cal Date
Ludlum	2360	184906	43-68	PR116721	9/18/2009
Bkg Count Time	**Source #1 Count Time**	**Source #2 Count Time**	**Source #1 ID**	**Source #2 ID**	**Cal Due Date**
2 min	2 min	2 min	Pu-239	Tc-99	Sep-10

Date(s) 11/16/09 [4/245]

Intial QC's	1	2	3	4	5	6	7	8	9	10	Init.
Bkgd	4/285	0/271	3/226	1/244	0/222	0/234	2/240	2/244	1/247	2/248	AW
Source #1	15523	15777	15,613	15,589	15,586	15,740	15,630	15445	15,583	15,653	AW
Source #2	9659	9354	9427	9382	9482	9560	9533	9455	9408	9303	AW

Daily QC's

Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
11/16/09	1/250	15,745	9388	Yes / No	N/A	AW
11/17/09	1/238	15,628	9347	Yes / No	N/A	AW
11/18/09	~~2/262~~ AW 1/233	15,792	9508	Yes / No	N/A	AW
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
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				Yes / No		

Project# 08-3800.04 Project Name: WRAMC Forest Glen Rad Survey

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL • ENVIRONMENTAL • REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL • ENVIRONMENTAL • REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Make	Model	S/N	Probe	S/N	Cal Date
Ludlum	2360	225241	43-68	PR160790	9/18/2009

Bkg Count Time	Source #1 Count Time	Source #2 Count Time	Source #1 ID	Source #2 ID	Cal Due Date
2 min	2 min	2 min	Pu-239	Tc-99	Sep-10

Date(s)	11/16/09										
Intial QC's	1	2	3	4	5	6	7	8	9	10	Init.
Bkgd	6/280	4/258	1/236	1/246	0/272	4/248	2/283	4/268	0/249	1/263	AW
Source #1	16364	16,473	16,468	16,611	16,216	16360	16,674	16,443	16,477	16,824	AW
Source #2	9,179	9,182	9,226	8,622	9,316	9108	9215	9455	9413	9,332	AW

Daily QC's

Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
11/16/09	1/253	16,424	9239	Yes / No	N/A	AW
11/17/09	2/267	16,1090	9456	Yes / No	N/A	AW
11/18/09	2/252	16,393	9384	Yes / No	N/A	AW
				Yes / No		
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Project# 08-3800.04 Project Name: WRAMC Forest Glen Rad Survey

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
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Project#( )_____Project Name:_____ ( )

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL • ENVIRONMENTAL • REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr (circle one)

Make	Model	S/N	Probe	S/N	Cal Date
Ludlum	2360	145474	43-37	PR066273	9/18/2009
Bkg Count Time	**Source #1 Count Time**	**Source #2 Count Time**	**Source #1 ID**	**Source #2 ID**	**Cal Due Date**
~~2~~ 2.5 min	2 min	2 min	Pu-239	Tc-99	Sep-10

Date(s)											
Intial QC's	1	2	3	4	5	6	7	8	9	10	Init.
Bkgd	10/372	10/297	12/302	7/291	9/264	15/287	12/340	12/325	14/355	11/384	AJ
Source #1	4565	4720	4764	4728	4973	5007	4692	5462	5928	6147	AJ
Source #2	6107	6131	6819	6969	7095	6501	6565	6616	6488	6521	AJ

Daily QC's

Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
11/16/09	10/366	5941	6742	Yes / No	N/A	AJ
11/17/09	8/301	4734	6669	Yes / No	N/A	MB
11/18/09	8/362	5038	6714	Yes / No	N/A	MB
				Yes / No		
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Project# 08-3800.04 Project Name: WRAMC Forest Glen Rad Survey

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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CABRERA SERVICES
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HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or urem/hr
(circle one)

Make	Model	S/N	Probe	S/N	Cal Date
Ludlum	19	152275	N/A	N/A	9/18/2009
Bkg Count Time	**Source #1 Count Time**	**Source #2 Count Time**	**Source #1 ID**	**Source #2 ID**	**Cal Due Date**
1 min	1 min	1 min	Cs-137	N/A	**Sep-10**

Date(s)	11/16/09										
Intial QC's	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Init.**
Bkgd	4	5	3	4	3	4	4	3	3	4	AW
Source #1	6	7	7	6	6	7	7	6	7	6	AW
Source #2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	AW

Daily QC's

Date	Bkgd	Source #1 (Cs-137) y	Source #2 N/A	Battery OK?	Comments	Init.
11/16/09	~~4~~ AW 4	7	N/A	Yes / No	N/A	AW
11/17/09	5	7	N/A	Yes / No	N/A	MB
11/18/09	4	7	N/A	Yes / No	N/A	AW
				Yes / No		
				Yes / No		
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Project# 08-3800.04 Project Name: WRAMC Forest Glen Rad Survey

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Cs-137) y	Source #2 N/A	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
				Yes / No		
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				Yes / No		
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				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		

Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Cs-137) γ	Source #2 N/A	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
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				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		

Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL • ENVIRONMENTAL • REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

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				Yes / No		
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				Yes / No		

Project#_____ Project Name:_____

CABRERA SERVICES
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HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
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				Yes / No		
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Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Cs-137) y	Source #2 N/A	Battery OK?	Comments	Init.
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
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				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
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				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		

Project#_____ Project Name:_____

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr (circle one)

Make	Model	S/N	Probe	S/N	Cal Date
Ludlum	2929	152275	43-10-1	PR155350	9/18/2009
Bkg Count Time	**Source #1 Count Time**	**Source #2 Count Time**	**Source #1 ID**	**Source #2 ID**	**Cal Due Date**
5 min	3 min	3 min	Pu-239	Tc-99	**Sep-10**

Date(s)	11/16/09										
Intial QC's	α 1 β	α 2 β	α 3 β	α 4 β	α 5 β	α 6 β	α 7 β	α 8 β	α 9 β	α 10 β	**Init.**
Bkgd	3 / 192	0 / 167	1 / 137	0 / 166	0 / 164	0 / 184	0 / 162	1 / 173	0 / 185	0 / 164	MB
Source #1	43227 / 868	43101 / 860	42840 / 873	42963 / 856	42742 / 881	43247 / 854	43810 / 879	43040 / 840	42990 / 844	43256 / 837	MB
Source #2	0 / 12955	1 / 13090	1 / 13046	0 / 13026	0 / 12988	1 / 13259	0 / 13281	0 / 13100	0 / 13032	0 / 13063	MB

Daily QC's

Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK? N/A	Comments	Init.
11/16/09	0 / 166	42621	13112	Yes / No	N/A	MB
11/17/09	2 / 169	43131	13057	Yes / No	N/A	MB
11/18/09	1 / 167	43153	13171	Yes / No	N/A	MB
11/19/09	1 / 163	43453	13904	Yes / No	N/A	AW
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		
				Yes / No		

Project# 09-3906.09 Project Name: WRAMC Forest Glen Rad Survey

CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

Daily QC's						
Date	Bkgd	Source #1 (Pu-239) α	Source #2 (Tc-99) β	Battery OK?	Comments	Init.
				Yes / No		
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Project# _____ Project Name: _____

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RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
(circle one)

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CABRERA SERVICES
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HP INSTRUMENT QC FIELD LOG

units: cpm or µrem/hr
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