APPENDIX B

RADIATION SURVEY, LABORATORY ANALYTICAL, AND DATA VALIDATION RESULTS

Instrumentation and Minimum Detectable Concentration Calculations

A1.1 Instrumentation

Since NECR is a mine site, small piles of ore rocks may be scattered about the site, and there are some localized areas (hot spots) where the Ra-226 concentration in soil is significantly elevated compared to adjacent areas. Shine from such nearby localized hot spots may interfere with gamma radiation level measurement at an area of interest, as the high-energy gamma radiation can travel long distances in air, up to 50 feet, before it loses its energy by ionizing air molecules or other airborne particulates. Therefore, any such shine interference was reduced by placing the 2x2 NaI detectors in a 0.5-inch thick lead collimator, which was housed in a marlex casing for protection. A Ludlum Model 19 μR meter (exposure rate meter) was also used to identify surface soil sample locations to retrieve the desired range of concentrations from background to about 25 pCi/g for the correlation survey and soil sampling.

Prior to any gamma radiation survey in the field, the instruments were either calibrated in accordance with the SOP-01 or by the vendor. The instrument calibrations included operation calibration for Ludlum 2221 Scaler/Ratemeter, the 2x2 NaI detector high voltage and background calibration, the 2x2 NaI detector efficiency calibration using Department of Energy (DOE) uranium ore calibration pads, and establishing operational function check parameters. The calibration certificates are included in Appendix A-1, *Calibration/Function Checks*. As specified in SOP-02 and SOP-03 of the RSEWP, daily operational function checks of instruments were performed. The daily function check forms are included in Appendix A-2.

A1.2 Instrumentation Minimum Detectable Concentration

Minimum Detectable Concentration (MDC) is the activity level that the instrumentation is expected to detect 95% of the time. The RSEWP specified a gamma radiation survey instrument MDC of 50% of the Derived Concentration Guideline Limit (DCGL). The $DCGL_W$ was specified in the RSEWP to be 1.24 pCi/g corresponding to the 10^{-4} risk criterion assuming a residential exposure scenario. Therefore, an instrumentation MDC of 0.61 pCi/g (50% of the 1.24 pCi/g) was specified for the static gamma radiation survey.

MDCs for the static survey were calculated using the equation provided in Section 9.1 of SOP-01 in the RSEWP (equation 6-7 from the MARSSIM [EPA, 2000a]).

A1.2.1 Calculation

MDC for Static Gamma Radiation Measurement (for a 0.05 probability for both false positive and false negative errors)

$$MDC = C \times [3 + 4.65 (B^{0.5})]$$

Where,

C = Detector calibration factor, pCi/gm/cpm (for this survey as determined above).

B = Number of background counts that are expected to occur while performing a sample measurement.

Example:

a. If the background count from the function check for the bare detector (#408522-33) is 7861 cpm, and the C, slope value is 0.00139 pCi/gm/cpm (721 cpm/pCi/gm), then the MDC for a one-minute static measurement would be:

$$MDC = (0.0014\ pCi/gm/cpm) \times [3 + 4.65\ (7862\ cpm)^{0.5}] = 0.58\ pCi/gm$$

b. If the background count from the function check for the collimated detector (#408522-33) is 2889 cpm, and the C, slope value is 0.0023 pCi/gm/cpm (432 cpm/pCi/gm), then the MDC for a one-minute static measurement would be:

$$MDC = (0.0023\ pCi/gm/cpm) \times [3 + 4.65\ (2889\ cpm)^{0.5}] = 0.58\ pCi/gm$$

A1.2.2 MDC for Scan Gamma Radiation survey

The scan MDC is assumed for a scan rate of about one foot per second, three-second interval (based on detector focuses on about 36 inches diameter area at about 18 inches from ground surface). Also, a surveyor efficiency (p) of 0.5 is assumed. First calculate the Minimum Detectable Count Rate (MDCR) as follow:

$$MDCR = d' \times (bi^{0.5}) \times (60/i)$$

Where,

d' = value for true positive and false positive proportion. A value of 1.38 will be used for 95% true and 60% false positive proportion.
bi = number of background counts in the interval i (bi = (bkg cpm) x (i , scan interval) x 60/i)
i = 3 for one ft per second scan rate for an observation area of about 36 inch diameter.

For the bare detector (#408522-33) background count of 7861 cpm, the MDCR for one-foot per second scan rate (three second interval) would be:

$$MDCR\ cpm = (1.38) \times [(7861\ cpm) \times (3\ secs) \times (1\ min/60\ sec)]^{0.5} \times (60\ sec\ per\ min/3\ secs) = 547\ cpm.$$

Then calculate the $MDCR_{surveyor}$ using surveyor efficiency (p) of 0.5 as follow:

$$MDCR_{surveyor} = MDCR/(p^{0.5}) = 547\ cpm/(0.5^{0.5}) = 773\ cpm.$$

From the $MDCR_{surveyor}$, calculate the scan MDC using the following:

$$Scan\ MDC = (MDCR_{surveyor}\ cpm) \times (C,\ pCi/gm/cpm)$$

Where,

C = Detector calibration factor, pCi/gm/cpm (for this survey as determined by calibration at DOEs Grants calibration pad GPL)

For a C of 0.00139 pCi/gm/cpm (721 cpm/pCi/gm), the Scan MDC would be:

$$Scan\ MDC = (547\ cpm) \times (0.00139\ pCi/gm/cpm) = 1.07\ pCi/gm$$

The detector background counting rates (determined during the daily instrument function checks), and the detector efficiency were determined using DOE's calibration pad GPL (87.78 pCi/g) at the Grants calibration Pad Site. The calculated scan MDCs ranged from 1.02 to 1.07 pCi/g for the bare SPA-3, 2x2 NaI detector #408522-33 used during the field scan gamma radiation survey at the Site. The calculated MDC is just slightly above the specified MDC of 1.0 pCi/g in the RSEWP.

Instrument Calibration Worksheets
Instrument Daily Function Check Logs

Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER AVM ENVIRONMENTAL SERVICES ORDER NO. 260080 / 304342

Mfg. Ludlum Measurements, Inc. Model 19 Serial No. 76248

Mfg. Model Serial No.

Cal. Date 26-Jul-06 Cal Due Date 26-Jul-07 Cal. Interval 1 Year Materface 202-016

Check mark [✓] applies to applicable instr. and/or detector IAW mfg. spec. T. 70 °F RH 43 % Alt 699.8 mm Hg

☐ New Instrument Instrument Received ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☐ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 2.2 VDC

☐ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☑ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 900 V Input Sens. 38 mV Det. Oper. V at mV Threshold Dial Ratio = mV

☐ HV Readout (2 points) Ref./Inst. / V Ref./Inst. / V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
5000	4000 uR/hr	4300	4000
5000	1000 uR/hr	1100	1000
500	400 uR/hr = 20,800 cpm	400	400
500	100 uR/hr	100	100
250	200 uR/hr = 36,200 cpm	200	200
250	100 uR/hr	100	100
50	2080 cpm	40	40
50	1770 cpm	10	10
25	3620 cpm	20	20
25	905 cpm	5	5

*Uncertainty within ± 10% C.F. within ± 20% 50, 25 **Range(s) Calibrated Electronically**

Dial Readout	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. Calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: ☐ S-394 ☐ 1122 ☐ 781

137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5105 ☐ 11008 ☑ T879 ☐ E552 ☐ E551 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

Alpha S/N ☐ Beta S/N ☐ Other

Ludlum 500 S/N 189506 ☐ Oscilloscope S/N ☑ Multimeter S/N 57390613

Calibrated By: William Tinsley Date 26-July-06

Reviewed By: W J Rhoir Date 27 July 06

Certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.
LM C22A 06/02/2006

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

AVM Environmental Services Inc.
Grants NM, 87020

Rate Meter/Scaler Calibration

Model Ludlum 2221 S/N 68782

Calibration Source Ludlum Pulser 500 S/N 114513 (cal. June 9, 06)

Threshold (input sensitivity), Found at 100 mV Left or Set at 100 mV

Window, In/Out Out Window N/A mV

Pulser Amplitude Set @ 200 mV

Range/Mode	Calibration Point (Pulser Setting) cpm x multiplier	As Found Reading	Left or Set Reading
Digital Rate Meter	260 cpm x 1	261 CPM	261 CPM
	260 CPM x 10	2601 CPM	2601 CPM
	260 CPM x 100	25,950 CPM	25,950 CPM
	260 cpm x 1000	259,503 CPM	259,503 CPM
Scaler 1 minute Intergration	260 CPM x 1	260 counts	260 counts
	260 CPM x 10	2596 counts	2596 counts
	260 CPM x 100	25956 counts	25956 counts
	260 CPM x 1000	259578 counts	259578 counts

HV Set @ 900 VDC

Date 7/20/06 Calibrated By [signature] / [signature]

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

Model No. / Serial No. 5001 / 114513

CUSTOMER AVM ENVIRONMENTAL SERVICES CUSTOMER PO N/A ORDER NO. 257138 / 303202

Cal. Date 14-Jun-06 Cal Due Date 14-Jun-07 Cal. Interval 1 Year Procedure M500, Rev. 5

☐ New Instrument Instrument Received ☑ Within Tolerance ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See Comments

T. 71 °F RH 42 % Alt 702.8 mm Hg ☑ Meter Zeroed ☑ Mechanical Check

PULSE WIDTH			
	As Found	As Left	Acceptable Range (µs) ± 10%
NEG PULSE	1.5	1.7	1.5 - 1.9
POS PULSE	1.4	1.6	< 2.25

PULSE AMPLITUDE							
Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range ± 10%	Reference Amplitude	As Found Amplitude Reading	As Left Amplitude Reading	Acceptable Range ± 10%
1 V	1 V	1 V	0.9 - 1.1	4 V	4.2 V	4.2 V	3.6 - 4.4
100 mV	100 mV	100 mV	90 - 110	400 mV	420 mV	420 mV	360 - 440
10 mV	10 mV	10 mV	9 - 11	40 mV	42 mV	42 mV	36 - 44
1 mV	1.1 mV	1.1 mV	0.9 - 1.1	4 mV	4.3 mV	4.2 mV	3.6 - 4.4

PULSE FREQUENCY (PERIOD)			
Pulser Range	As Found Period	As Left Period	Acceptable Range ± 2%
x 10K	6.704	6.666	6.534 - 6.8
x 1K	67.04	66.66	65.34 - 68
x 100	670.4	666.6	653.4 - 680
x 10	6704	6666	6534 - 6800
x 1	67.04	66.66	65.34 - 68
x 0.1	90	90	88.2 - 91.8 Counts

Reference Voltage	As Found Voltage Reading	As Left Voltage Reading	Acceptable Range ± 5%
500 V	500	500	475 - 525
2000 V	1990	1990	1900 - 2100

CPM Reading	As Found cpm Reading	As Left cpm Reading	Acceptable Range ± 10%
MAX	992	992	981 - 999
MIN	1	1	0 - 1*

* READING OF 0-99 IS ACCEPTABLE FOR INSTRUMENTS WITH A S/N 100000 AND BELOW AND MAIN BOARD = 5208-066

COMMENTS:

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978.

Reference Instruments:

Frequency Counter	Model	1900 A	S/N	280869	Cal Date 6-7-06
Oscilloscope	Model	V-1560	S/N	9084101	Cal Date 2-2-06
Voltmeter	Model	Fluke 75	S/N	57390613	Cal Date 12-19-05

Calibrated By: William Tenaly Date 14-June-06

Viewed By: [illegible] Date 14 June 06

AC Inst. Only ☑ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.
FORM C16-1 04/09/2003

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter Ludlum 2221 S/N 68782
Detector SPA-3 S/N 408522-33

Source: Uranium Ore in Can Strength: 1%

Scaler/Ratemeter Threshhold set @ 100 mV, Window IN/OUT Out, Window N/A mV

HV	Reading, CPM (Source)	Reading, CPM (Background)
500	6751	322
550	17174	769
600	36973	1351
650	53201	2565
700	67819	3750
750	82852	4673
800	89072	5411
850	91533	5710
900	92051	5728
950	92806	5742
1000	93251	5759
1050	93172	5862
1100	98695	5950
1150	111462	6072
1200	139290	6456
1250	173405	7309
1300		9575
1350		12206
1400		

HV Set @ 900 VDC (Instrument)

Background reading at designated function check location in office.

Count #	Reading (CPM) Bare	Collimate
1	7768	2819
2	7823	2923
3	7851	2860
4	8034	2846
5	7832	2997
Average	7861	2889

20% Range 6369-9433 2311-3467

Count Readings with 1 percent U_3O_8 can directly under shielded probe on designated function check location in office.

Count #	Reading (CPM)
1	94520
2	94703
3	94951
4	94709
5	95028
Average	910

VDC (DVM Fluke 8020)

Input Sensitivity (THR), mV 100

Function Check with 1 percent U_3O_8 ore in can. Can Directly under the detector.
Acceptable Function check range is: 75834 to 113750 CPM

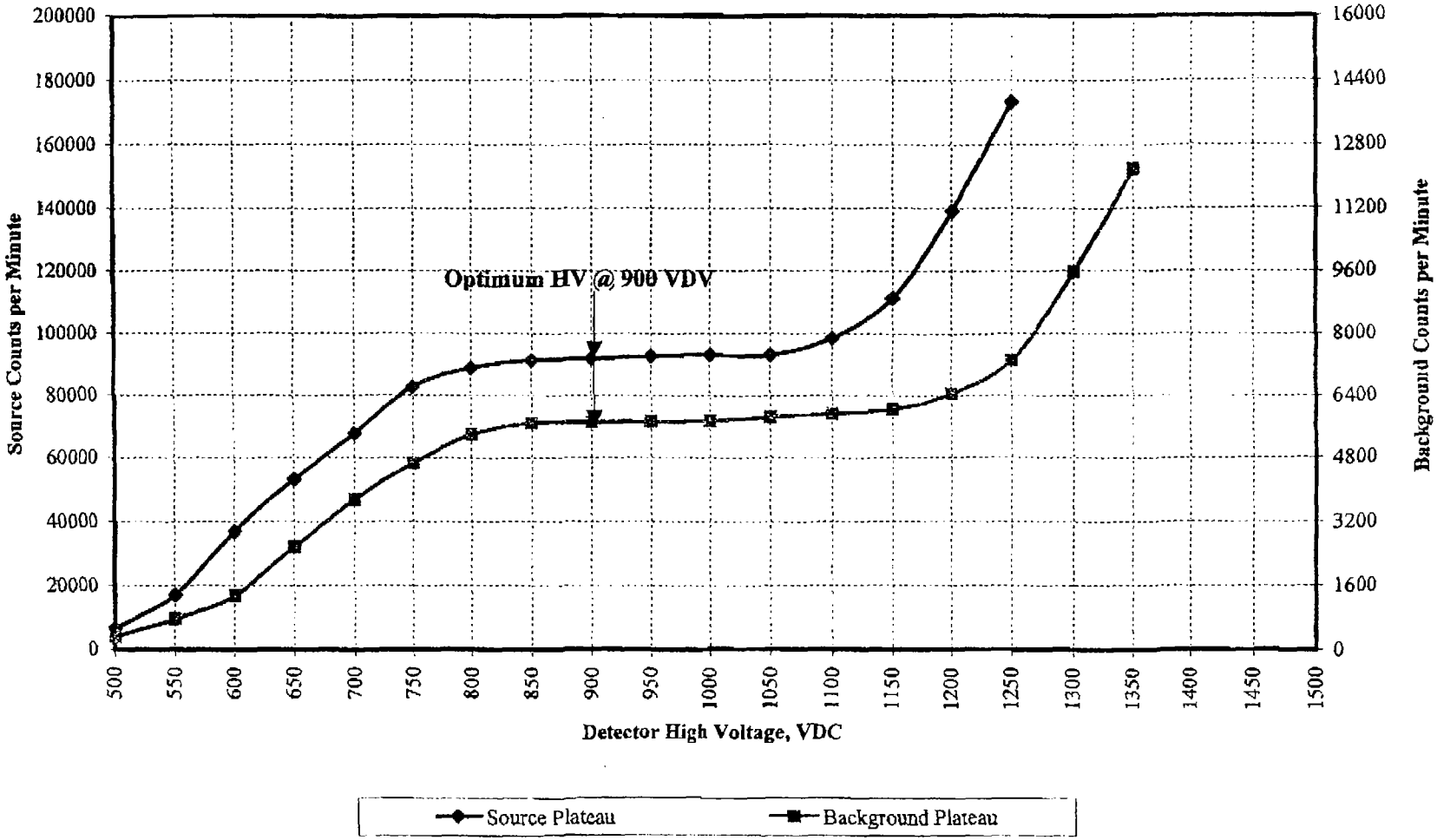
Count Readings for Calibration Pad GPL (87.78 pCi/gm Ra-226)

	Bare (Uncollimated)		Collimated	
#1	62540	cpm	36994	cpm
#2	63982	cpm	38766	cpm
#3	63513	cpm	37880	cpm
#4	63013	cpm	38075	cpm
#5	63261	cpm	37685	cpm
Average	63262	cpm	37880	cpm
Eff(avg cpm/87.78 pCi/gm	721	cpm/pCi/gm	432	cpm/pCi/gm

Date 7-21-06
8-4-06 (Cal Pad)

By [signature]

Detector High Voltage Plateau
SPA-3 #408522-33 with Ludlum 2221 #68782
1% Uranium Ore in Sealed Can



Certificate of Calibration

Ratemeter / Scaler Certificate of Calibration

ERG
Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224

Manufacturer: Ludlum Model: 2221 Serial No.: 117336

All Ranges Calibrated Electronically; Ludlum Pulser Generator S.N. ☐ 97743 ☑ 201932

Reset ☑ Audio ☑ Mechanical ☑ Battery ☑ Threshold / Window Operation ☑

High Voltage 500v ☑ 1000v ☑ 1500v ☑

Instrument found within tolerance (+/- 10%) Yes ☑ No ☐

Reference Setting	Ratemeter	Instrument "As found reading"
400 Kcpm	400Kcpm	+/-10%
100 Kcpm	100Kcpm	
40 Kcpm	40Kcpm	
10 Kcpm	10Kcpm	
4 Kcpm	4Kcpm	
1 Kcpm	1Kcpm	
400 cpm	400cpm	
100 cpm	100cpm	

Reference Setting	Integrated Counts (1-minute count)	Log Scale Count Rate	Instrument "As found reading"
400 Kcpm	399397	400Kcpm	+/-10%
40 Kcpm	39944	40Kcpm	
4 Kcpm	3995	4Kcpm	
400 cpm	400	400cpm	

The calibration system conforms to the requirements of ANSI N323-1997

Calibrated By: [signature] Calibration Date: 8/3/06

Calibration Due: 8/3/07

Reviewed By: [signature] Date: 8/4/06

ERG Form 1.02B

AVM Environmental Services Inc.
Scaler/Ratemeter - Detector Calibration Form

Scaler/Ratemeter Ludlum 2221 S/N 68782
Detector SPA-3 S/N 408522-30

Source: Uranium Ore in Can Strength: 1%

Scaler/Ratemeter Threshhold set @ 100 mV, Window IN/OUT Out, Window N/A mV

HV	Reading, CPM (Source)	Reading, CPM (Background)
500	15554	594
550	33800	1194
600	55071	3000
650	75568	4451
700	85994	4933
750	91776	5245
800	93842	5402
850	95218	5550
900	95413	5595
950	95465	5610
1000	97605	5750
1050	105064	5900
1100	128553	6204
1150	157153	7450
1200	190000	8763
1250		10502
1300		12579
1350		
1400		

Background reading at designated function check location in office.

Count #	Reading (CPM) Bare	Collimat
1	7920	2779
2	7894	2840
3	7943	2887
4	7746	2899
5	7807	2886
Average	7862	2858
20% range	6290-9434	2286-343

Count Readings with 1 percent U_3O_8 can directly under shielded probe on designated function check location in office.

Count #	Reading (CPM)
1	95318
2	95188
3	95202
4	95016
5	95264
Average	95198

HV Set @ 900 VDC (Instrument) 908 VDC (DVM Fluke 80201

Input Sensitivity (THR), mV 100

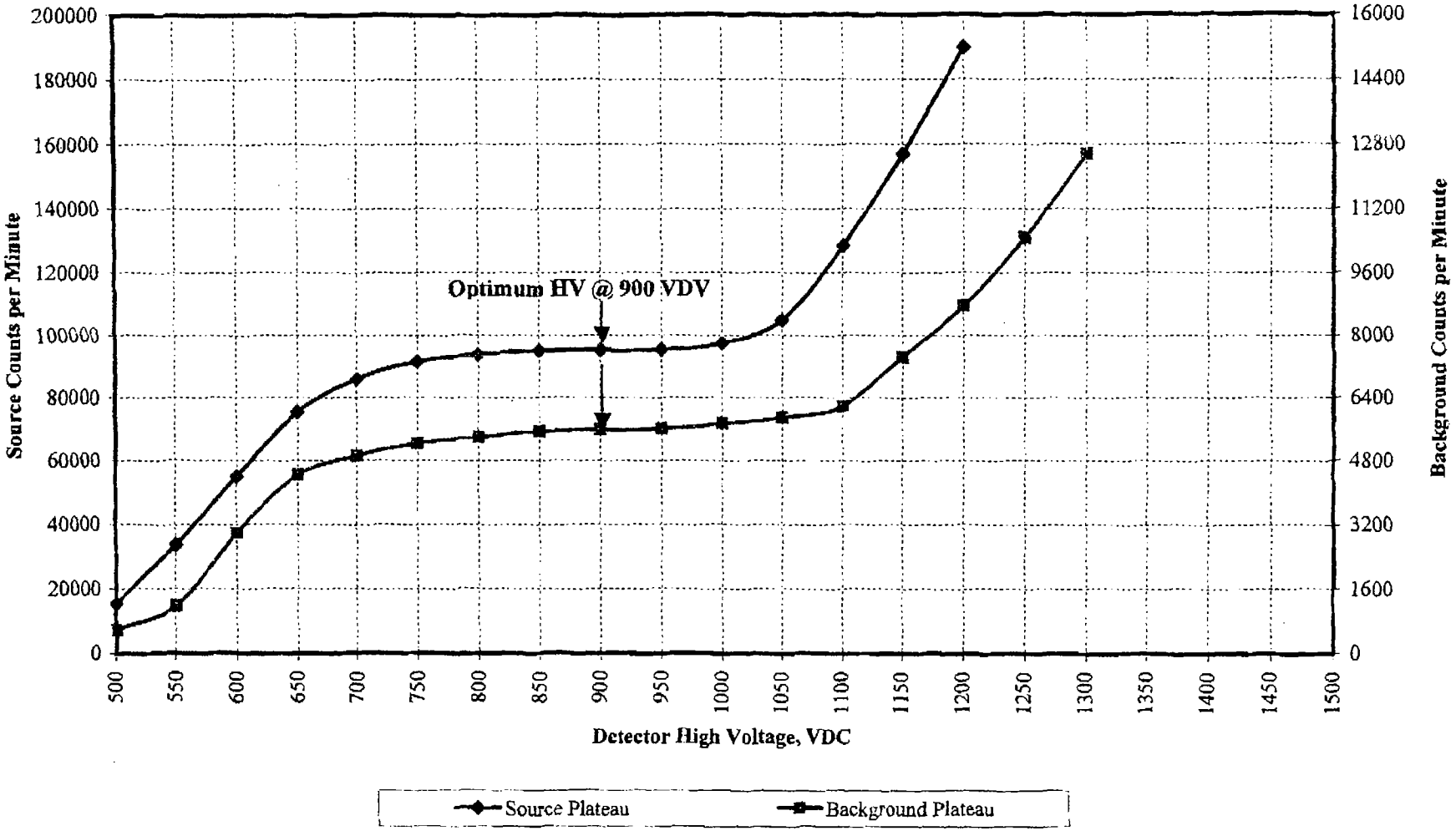
Function Check with 1 percent U_3O_8 ore in can. Can Directly under the detector.
Acceptable Function check range is: 76158 to 114238 CPM

Count Readings for Calibration Pad GPL (87.78 pCi/gm Ra-226)

	Bare (Uncollimated)			Collimated	
#1	61908	cpm	#1	35952	cpm
#2	61050	cpm	#2	36265	cpm
#3	61885	cpm	#3	36477	cpm
#4	62715	cpm	#4	36297	cpm
#5	61908	cpm	#5	36077	cpm
Average	61893	cpm	Average	36214	cpm
Eff(avg cpm/87.78 pCi/gm	705	cpm/pCi/gm	Eff	413	cpm/pCi/gm

Date 7-21-06 By [signature]

Detector High Voltage Plateau
SPA-3 #408522-30 with Ludlum 2221 #68782
1% Uranium Ore in Sealed Can



Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 325-235-5494
501 OAK STREET FAX NO. 325-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER ENVIRONMENTAL RESTORATION GRP ORDER NO. 262705

Mfg. Ludlum Measurements, Inc. Model 2221 Serial No. 228808

Mfg. Model Serial No.

Cal. Date 2-Oct-06 Cal Due Date 2-Oct-07 Cal. Interval 1 Year Meterface 202-159

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 74 °F RH 34 % Alt 704.8 mm Hg

☑ New Instrument Instrument Received ☐ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☑ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☑ Window Operation ☑ Geotropism
☑ Audio ck. ☐ Alarm Setting ck. ☑ Batt. ck. (Min. Volt) 4.4 VDC
☑ Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. ☐ Calibrated in accordance with LMI SOP 14.9 rev 02/07/97.

Instrument Volt Set 900 V Input Sens. 10 mV Det. Oper. V at mV Threshold Dial Ratio 100 - 10 mV

☑ HV Readout (2 points) Ref./Inst. 500 / V Ref./Inst. 2000 / V

COMMENTS:

Firmware #: 261027

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 1K	400kcpm		400
X 1K	100kcpm		100
X 100	40kcpm		400
X 100	10kcpm		100
X 10	4kcpm		400
X 10	1kcpm		100
X 1	400cpm		400
X 1	100cpm		100

*Uncertainty within ± 10% C.F. within ± 20% ALL Range(s) Calibrated Electronically

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*		REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
Digital Readout	400kcpm		40074 (0)	Log Scale	500kcpm		450k
	40kcpm		4007 (0)		50kcpm		47.5k
	4kcpm		400 (0)		5kcpm		5k
	400cpm		40 (0)		500cpm		500
	40cpm		4 (0)		50cpm		52

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978 State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: ☐ S-394 ☐ 1122 ☐ 781
Cs-137 Gamma S/N ☐ 1162 ☐ G112 ☐ M565 ☐ 5105 ☐ T1008 ☐ T879 ☐ E552 ☐ E551 ☐ 720 ☐ 734 ☐ 1616 ☐ Neutron Am-241 Be S/N T-304

☐ Alpha S/N ☐ Beta S/N ☐ Other

☑ m 500 S/N 38120 ☐ Oscilloscope S/N ☑ Multimeter S/N 84260131

Calibrated By: Lenna Ortega Date 2-Oct-06

Reviewed By: Diana De Leon Date 3 Oct 06

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc
ORM C22A 06/02/2006

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed:

AVM Environmental Services, Inc.
Micro R Meter Function Check Form
UNC's NECR Mine Site

Micro R Meter: Ludlum 19, SR#76248

Function Check Source ID: 1% U_3O_8 Ore in Sealed can Calibrated by Ludlum on 7/26/06

Function Check @ Calibration 90 uR/hr. Established on July 31, 2006 NP.

Acceptable Function Check Reading (uR/hr) Range (20%) 72 to 108

Date	Physical Check	Cal Date	Battery(1) Volts or OK	BKG Reading uR/hr	Source Reading (2) uR/hr	Within Acceptable Range Y or N	Cal Due	Tech
7-31-06	OK	7-26-06	OK	9 uR/hr @ AVM's office	90	Y	7-26-07	NP
8-16-06	OK	7-26-06	OK	8 uR/hr @ UNC office	90	Y	7-26-07	VP
8-17-06	OK	7-26-06	OK	8 uR/hr @ UNC office	90	Y	7-26-07	VP
8-18-06	OK	7-26-06	OK	9 uR/hr UNC office	90	Y	7-26-07	NP
11-13-06	OK	7-26-06	OK	8 uR/hr @ UNC office	92	Y	7-26-07	ANP
11-14-06	OK	7-26-06	OK	9 uR/hr UNC office	91	Y	7-26-07	NP
11-15-06	OK	7-26-06	OK	9 uR/hr UNC office	92	Y	7-26-07	NP
11-16-06	OK	7-26-06	OK	10 uR/hr UNC office	92	Y	7-26-07	NP
11-20-06	OK	7-26-06	OK	9 uR/hr office	91	Y	7-27-07	NP
11-28-06	OK	7-26-06	OK	9 uR/hr	92	Y	7-27-07	NP

Note: (1) Battery Voltage must be within BAT TEST Range (2) Function Check Source must be placed in the circle on the front side of the meter

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check
UNC's NECR Mine Site

Scaler/Ratemeter ID: Ludlum 2221, SR# 68782

2" x 2" Detector ID: SPA-3, SR# 408522-33

Function Check Source ID: 1% U_3O_8 Ore in Sealed can

Acceptable background Count (cpm) Range (20%) 6389 to 9433 (Bare) 3311 to 3467 (Collimated)

Acceptable Source Count (cpm) Range (20%) 75834 to 113750

Date	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	Threshhold mV[2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	Static MDC pCi/gm	Tech
8-4-06	OK	8-3-07	5.7	900	100	out	—	7795 (Bare) 2904 (Col)	94833	Y	06	[illegible]
8-16-06	OK	8-3-07	5.7	900	101	out	—	7780 (Bare) 2928 (collimated)	94785	Y	"	VP
8-17-06	OK	8-3-07	5.7	897	100	out	—	7092 (Bare) 2575 (collimated)	92656	Y	"	VP
8-18-06	OK	8-3-07	5.6	900	100	out	—	7195 (bare) 2855 (collimated)	92500	Y	"	VP
11-07-06	OK	8-3-07	5.7	901	100	out	—	2804 (collimated)	93992	Y	"	VP
11-08-06	OK	8-3-07	5.6	899	100	out	—	2846 (coll)	93724	Y	"	VP
11-09-06	OK	8-3-07	5.5	900	100	out	—	2858 (coll)	92357	Y	"	[illegible]
11-10-06	OK	8-3-07	6.2	901	100	out	—	2820 (col)	93618	Y	"	[illegible]
11-13-06	OK	8-3-07	6.1	902	100	out	—	2895 (col)	96602	Y	"	[illegible]
11-14-06	OK	8-3-07	6.0	901	100	out	—	2802 (col)	94681	Y	"	[illegible]
11-15-06	OK	8-3-07	5.4	902	100	out	—	7450 (Bare) 2866 (col)	94432	Y	"	[illegible]
11-16-06	OK	8-3-07	5.8	901	100	out	—	7800 B. 2814 col	94118	Y	"	[illegible]
11-17-06	OK	8-3-06	5.8	901	100	out	—	7960 (Bare) 2844 col	94356	Y	"	[illegible]
11-20-06	OK	8-3-06	5.8	901	100	out	—	7320 Bare	94836	Y	"	[illegible]
11-27-06	OK	8-3-06	5.7	901	100	out	—	7401 Bare 2814 (col)	94833	Y	"	[illegible]
11-28-06	OK	8-3-07	5.6	901	100	out	—	7348 Bare 2844 Col.	94948	Y	"	[illegible]
12-1-06	OK	8-3-07	5.7	901	100	out	—	2835 7400	94001	Y	"	[illegible]

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 100 mV; (3) Window Position must be OUT; (4) C.C. for Eberline ESP scaler must be 1.0+00

AVM Environmental Services, Inc.
Scaler/Ratemeter - 2" x 2" NaI Detector Function Check
UNC's NECR Mine Site

Scaler/Ratemeter ID: Ludlum 2221, S/N# 68782 Function Check Source ID: 1% U_3O_8 Ore in Sealed can

2" x 2" Detector ID: SPA-3, S/N# 408522-30

Acceptable background Count (cpm) Range (20%) 6290 cpm 2286 cpm to 9434 (Bare detector) 3430 cpm (collimated

Acceptable Source Count (cpm) Range (20%) 76158 to 114238

Date	Physical Check	Cal Due	Battery[1] Volts or OK	HV Volts	Threshhold mV [2]	Window In or OUT[3]	C.C.[4]	BKG Counts cpm	Source Counrts cpm	Within Acceptable Range Y or N	Half-life MDC pCi/gm	Tech
7-21-06	OK	07/07	5.7	900	100	out	N/A	7918	95190	Y	0.6	MP
↓	✓	✓	✓	✓	✓	✓	✓	2842 (Collimated	✓	Y	0.6	✓
8-16-06	OK	08/07	6.0	900	102	OUT	N/A	7933 (Bare) 2800 (collimated)	95009	Y	0.6	UP
8-17-06	ok	08/07	5.9	899	101	out	N/A	7127 (Bare) 2844 (collimated)	94278	Y	0.6	UP
8-18-06	ok	08/07	5.9	901	100	out	N/A	7934 (Bare) 2834 (collimated)	98333	Y	0.6	UP
11-07-06	ok	08/07	6.2	902	101	Out	N/A	3061 (collimated)	97253	Y	0.6	UP
11-08-06	ok	08/07	6.2	901	100	out	N/A	3042 (col)	97622	Y	0.6	UP
11-9-06	ok	08/07	6.2	901	100	out	N/A	2705 (collimated)	98357	Y	0.6	UP
11-10-06	ok	08/07	6.1	901	100	out	N/A	2813 (col)	98102	Y	0.6	MP
11-14-06	ok	08/03/07	6.2	900	100	out	N/A	2905 (col)	97942	Y	0.6	MP
11-15-06	ok	08/03/07	6.3	902	100	out	N/A	7313 (Bare) 2855 (col)	97314	Y	0.6	MP
11-16-06	ok	8/3/07	6.2	900	100	out	N/A	7605 Bare 2832 col	98224	Y	0.6	MP
11-16-06	ok	8/3/07	6.2	900	100	out	N/A	7911 Bare 3348 col	97876	Y	0.6	MP
11-28-06	ok	8/3/07	6.0	900	100	out	N/A	7806 Bare 3825 col	97560	Y	0.6	MP

Note: (1) Battery Voltage for Ludlum 2221 must be >5.3 volts; (2) Threshhold must be at 100 mV; (3) Window Position must be OUT; (4) C.C. for Eberline ESP scaler must be 1.0+00

Gamma Radiation Level to Surface Soil Ra-226 Correlation
Field Data Update for Backup Detector

Gamma Radiation Level to Surface Soil Ra-226 Correlation

A correlation between the gamma radiation levels in CPM and surface soil Ra-226 concentrations was performed prior to the field gamma radiation survey for a site-specific calibration of the 2x2 NaI detectors. The results were provided in *Results of Background and Radium Correlation Sampling Northeast Church Rock Mine Site Technical Memorandum* (MWH, 2006b). The gamma radiation CPM equivalent to the Ra-226 field screening level (FSL) was necessary prior to conducting the actual surveys in order to identify area boundaries and identify locations above the FSL during the radiation survey. This required performing the necessary gamma radiation level measurements and soil sampling for Ra-226 to determine a correlation between gamma radiation level CPM and Ra-226 concentration in surface soils.

The FSL (2.24 pCi/g) for Ra-226 was defined as the $DCGL_w$ (1.24 pCi/g) above the mean background Ra-226 concentration (1.0 pCi/g), as discussed in more detail in Section 2.4.

The gamma radiation survey and surface soil sample locations were identified to retrieve the desired range of concentrations in surface soils with no subsurface soil contamination. The selected sampling locations were all on relatively flat terrain, and were large enough so that moving around several steps in each direction did not affect the readings significantly. The contamination distribution for the gamma radiation survey using this correlation procedure is assumed to be in the surface soil and fairly homogenous within the detector observation area. Any subsurface contamination deeper than six inches during the field survey would skew the radiation survey results and possibly cause an over-estimation of the equivalent surface soil Ra-226 concentration.

The gamma radiation level measurements and Ra-226 soil sampling for the correlation were conducted from August 16 through August 18, 2006 in accordance with SOP-02 of the RSEWP. Results of the correlation gamma radiation level survey and soil sampling are presented in detail in the correlation technical memorandum (MWH, 2006b). In addition to obtaining a correlation for a bare (unshielded) detector, a correlation was also developed for a lead collimated detector by obtaining gamma radiation level measurements for both bare (uncollimated) and collimated detectors at each location. A radiation survey in the arroyo for bed sediment would require different geometry of the survey system detector compared to surface soils in a fairly plain geometry. During the radiation survey for the Unnamed Arroyo bed sediments, gamma radiation shine from the arroyo banks would also interfere with the survey. Therefore, a separate correlation with soil samples and gamma radiation levels was developed for surveying in the arroyo sediment bed.

During the August 16 to 18, 2006 correlation radiation survey and soil sampling, gamma radiation level measurements with the primary SPA-3 detector (#408522-33) were collected at 15 soil sampling locations, as indicated in SOP-02 of the RSEWP. Gamma radiation level measurements with the backup SPA-3 detector (#408522-30) were performed at only four locations for correlation. Following a review of the correlation technical memorandum (MWH, 2006b), the EPA commented that unless additional correlation data is obtained (to meet the minimum quantity as indicated in SOP-2 of the RSEWP) correlation data from this instrument (#408522-30) should not be used as screening data. Therefore, on November 7, 2006, gamma radiation levels were obtained with the collimated backup detector (#408522-30) from the remainder of the correlation soil sampling locations to complete correlation in order to enable use of the backup detector, as necessary, during the field survey. The field survey form containing this data is included in Appendix B. Table 2.1, *Gamma Radiation Levels vs. Ra-226 Soil Concentrations, Mine Site*, includes the gamma radiation level measurements for the backup detector on November 7, 2006, as well as the correlation field data and soil sampling results performed during August 16 to 18, 2006. The correlation technical

memorandum (MWH, 2006b) included field data and results of the correlation for the Unnamed Arroyo bed sediments. However, no gamma radiation survey was performed in the Unnamed Arroyo, as the August 2006 correlation sampling indicated that all fifteen locations in the sediment bed exceeded the FSL (MWH, 2006b).

Gamma radiation levels versus surface soil Ra-226 concentrations linear regressions for the 19 locations with surface soil Ra-226 concentrations ranging from background to 185 pCi/g, and the 15 locations with Ra-226 concentrations ranging up to 10.3 pCi/g, as specified in the SOP-02, for bare and collimated detector SPA-3 #408522-33 were presented in the correlation technical memorandum (MWH, 2006b). These figures are included in Appendix B as Figure B-1, *Gamma Radiation Level to Ra-226 Concentration Regression Analysis for On-site Areas, Entire Range* and Figure B-2, *Gamma Radiation Level to Ra-226 Concentration Regression Analysis for On-site Areas, Background to 10 pCi/g Range.* The R^2 values for all of these linear regressions for detector #408522-33 exceeded the specified value of 0.80.

Linear regression analysis for gamma radiation levels (obtained on November 7, 2006) to surface soil Ra-226 concentrations for all 19 locations with surface soil Ra-226 concentrations ranging from background to 185 pCi/g, as well as for 15 locations with Ra-226 concentrations ranging up to 10.3 pCi/g for the collimated backup detector SPA-3 #408522-30 are summarized on Figure B-3, *Gamma Radiation Level to Ra-226 Concentration Regression Analysis for On-site Areas, Background to 10 pCi/g Range*, and Figure B-4, *Gamma Radiation Level to Ra-226 Concentration Regression Analysis for On-site Areas, Background to 10 pCi/g Range.* The R^2 values for all of these liner regressions exceeded the specified value of 0.80.

Based on linear regressions, the following equations were initially used to calculate surface soil Ra-226 concentrations from the gamma radiation level measurements obtained in CPM at the NECR:

1. Surface Soil Ra-226 pCi/g = (0.0021 x CPM) – 7.4151 (R^2 = 0.866) for collimated SPA-3 #408522-33 (low range shown on Figure B-2) for use with gamma radiation levels below 10,000 CPM, which were expected to be below 10 pCi/g.
   (2.24 pCi/g FSL is equivalent to 4600 CPM)

2. Surface Soil Ra-226pCi/g = (0.0020 x CPM) – 7.5289 f (R^2 = 0.873) for collimated SPA-3 #408522-30 (low range shown on Figure B-4) for use with gamma radiation levels below 10,000 CPM, which were expected to be below 10 cPi/g..
   (2.24 pCi/g FSL equivalents to 4884 CPM)

3. Surface Soil Ra-226pCi/g = (0.0026 x CPM) – 11.592 (R^2 = 0.974) for collimated SPA-3 #408522-33 (entire range shown on Figure B-1) for use with gamma radiation levels above 10,000 CPM, which were expected to be above 10 pCi/g..
   (2.24 pCi/g FSL equivalents to 5320 CPM)

4. Surface Soil Ra-226pCi/g = (0.0024 x CPM) – 11.567 (R^2 = 0.972) for collimated SPA-3 #408522-30 (entire range shown on Figure B-3) for use with gamma radiation levels above 10,000 CPM, which were expected to be above 10pCi/g.
   (2.24 pCi/g FSL equivalents to 5753 CPM)

5. Surface Soil Ra-226pCi/g = (0.0005 x CPM) – 6.0697 (R^2 = 0.847) for bare SPA-3 #408522-33 (shown on Figure B-2) for use with gamma radiation levels below 40,000 CPM. (2.24 pCi/g FSL equivalents to 16,619 CPM)

6. Surface Soil Ra-226pCi/g = (0.0009 x CPM – 16.284 (R^2 = 0.966) for bare SPA-3 #408522-33 (shown on Figure B-1) for use with gamma radiation levels above 40,000 CPM. (2.24 pCi/g FSL equivalents to 20,582 CPM)

No linear regression equation is included above for the bare (uncollimated) detector #408522-30 since this detector was not used for any uncollimated radiation survey.

The static gamma radiation reading counts obtained with the collimated 2x2 NaI detectors were initially converted to surface soil Ra-226 concentrations using applicable linear regression equations (e.g., #1 through #4) shown above. Surface soil samples submitted for laboratory analysis were collected from 218 of the 819 static gamma radiation survey points in the on-site areas. The results showed that the converted Ra-226 surface soil concentrations were generally higher, by an average of about 56%, than the laboratory soil sampling results at these 218 locations. The primary reason for the higher converted Ra-226 surface soil results is due to the presence of elevated levels of Ra-226 in subsurface soils, as deep as 20 feet in the on-site areas as confirmed by the subsurface soil sampling. As discussed in Section 2.2.2, the gamma radiation survey was designed and correlated for surface soil Ra-226 characterization. Significant levels of subsurface Ra-226 were not expected at most of the survey areas on the Site. Gamma radiation levels due to elevated Ra-226 in subsurface soils were converted to equivalent surface soil concentrations using appropriate regression equations, as described in the following paragraph.

An analysis of numerous linear regressions for gamma radiation levels to surface soil Ra-226 correlations was performed and provided to EPA on February 15, 2007. This analysis included a linear regression for 101 points with gamma radiation levels over 10,000 CPM within the on-site areas with elevated levels of Ra-226 in subsurface soil. This resulted in a correlation that would account for, and minimize, interferences at locations with elevated readings (above 10,000 CPM) due to the presence of significant subsurface Ra-226 concentrations within the initial area boundaries. The analysis also included a linear regression of 18 points with low-level gamma radiation readings (below 10,000 CPM) within the NECR-1 step-out area where elevated levels of Ra-226 in subsurface soil was not expected. On February 16, 2007, EPA agreed with the analysis and notified that the field gamma radiation survey results equal to or less than 10,000 CPM were converted to surface soil Ra-226 concentrations according to the linear regression for the 18 points at the NECR-1 step-out survey area. The field gamma radiation survey results over 10,000 CPM were converted according to the linear regression for the 101 points with gamma radiation levels over 10,000 CPM within the on-site areas. Efficiencies and background counting rates of the two collimated 2x2 NaI detectors (primary SPA-3 #408522-33 and the backup #408522-30) are similar (<5% difference), as shown in the calibration certificates provided in Appendix B-1; therefore, EPA also agreed that these correlations would be appropriate for both of the collimated detectors.

The field gamma radiation survey results and soil sampling results for the applicable correlations are provided in Table 2.2, *Gamma Radiation Levels Versus Surface Soil Ra-226 Concentrations Regression Data.* The summarized linear regression for <10,000 CPM and >10,000 CPM are shown on Figure B-5, *Gamma Radiation Levels vs Surface Soil Ra-226 Concentration Regression Data, NECR-1 Step Out Survey Points for <10K CPM Correlation with Collimated 2x2 NaI Detector,* and Figure B-6, *Gamma Radiation Level to Surface Soil Ra-226 Regression On-site Areas >10K Survey Points for >10K CPM Correlation with Collimated 2x2 NaI Detector,* respectively, included in Appendix B. All static gamma radiation survey readings

were converted to surface soil Ra-226 concentration using the following equations, and are discussed in Section 3.1:

- Surface soil Ra-226 pCi/g = (0.0024 x CPM) – 11.608 (R^2 = 0.98) for collimated 2x2 NaI detectors (shown on Figure B-5 of Appendix B) with gamma radiation levels below 10,000 CPM. (2.24 pCi/g FSL equivalents to 5,770 CPM)

- Surface soil Ra-226 pCi/g = (0.0016 x CPM) – 13.909 (R^2 = 0.74) or collimated 2x2 NaI detectors (shown on Figure B-6 of Appendix B) with gamma radiation levels above 10,000 CPM. (2.24 pCi/g FSL equivalents to 10,093 CPM)

The first linear regression analysis shown above was used to estimate low levels of surface soil Ra-226 concentrations (i.e., near the FSL) in areas such as the step-outs where Ra-226 impacts were expected to be in surface soil only with gamma radiation levels generally below 10,000 CPM, yielded a regression with a low R^2 value significantly below the specified value of 0.80. This could be due to elevated variance and error associated with measurements at low levels. Therefore, two survey points collected from the step-out survey area (where Ra-226 contamination is in surface soil only) with Ra-226 concentrations above 10,000 CPM were included in the liner regression to improve the R^2 value. Although, this biased regression produced an R^2 value of 0.98, the data obtained by the field instrumentation was of estimated quality for field screening purposes.

The second linear regression analysis shown above which was used for correlation at locations with gamma radiation measurements above 10,000 CPM for the on-site areas, had an R^2 value of 0.74, lower than the 0.80 value specified in the RSEWP. A revision to the correlation was necessary to minimize interference and over estimation of surface soil Ra-226 from significantly elevated levels of subsurface Ra-226.

The field gamma radiation survey measurements provided data of a quality sufficient for field screening. The data collected with field instruments have the potential for error and low accuracy and are considered to be estimated values, especially, in areas with different contamination distribution than the instrument calibration/correlation assumptions. This was the case for most of the on-site survey areas, where significantly elevated levels of Ra-226 are present in the subsurface. The initial correlation was developed prior to the field survey for Ra-226 in surface soils (less than six inches deep) with fairly homogeneous distribution. The initial correlation did not expect and account for the elevated gamma radiation shine from the subsurface Ra-226, and thus, the Ra-226 concentrations for surface soils determined by the gamma radiation survey using the initial correlations were higher compared to the single point soil sampling results. The correlations were revised and biased to account for the elevated gamma radiation levels in the subsurface, and to obtain more representative Ra-226 surface soil concentrations and improve the quality of the gamma radiation survey data. However, the revised correlation, which would account for subsurface Ra-226 interference, does not account for any variation in gamma radiation shine interference due to variation in subsurface Ra-226 concentrations at different on-site area locations. Therefore, the data obtained by field instrumentation with revised correlations is estimated data suitable for field screening purposes.

AVM Environmental Services, Inc.
Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form For Correlation

Instrumentation : Scaler/Ratemeter Ludlum 2221 (128800) , Detector SPA-3 # 408522-30

Instrument Calibration Date: 8-3-06 , Instrument Daily Function Check Performed: ✓

Survey Area/Unit Description NECR Onsite Area

Survey Date	Survey Point & Sample ID/Description	Survey Point Coordinate (State Plain, NAD 1983) Northing (ft)	Easting (ft)	Gamma Rad Level (cpm) SPA-3, SR# 408522-30 Lead Collimated	Average	Comments/Notes
11-02-06	NECR-COR-A-01	1694684.2	2519931.2	4128 4096 4102	4109	
"	NECR-COR-A-02	1694640.6	2520126.9	7109 7192 7144	7148 ~~7165~~	
"	NECR-COR-A-03	1694656.8	2520172.1	6705 6664 6735	6702	
"	NECR-COR-A-04	1694584.9	2520152.3	5177 5034 5118	5110	
"	NECR-COR-A-05	1694612.9	2520123.6	5503 5434 5409	5449	
"	NECR-COR-A-06	1694712.1	2520161.1	4294 4298 4276	4289	
"	NECR-COR-A-07	1694730.6	2520240.4	4755 4687 4602	4681	
"	NECR-COR-A-09	1694765.2	2520377.4	7422 7506 7468	7464	
"	NECR-COR-A-11	1694226.3	2520612.6	5104 5061 5033	5068	
"	NECR-COR-A-12	1693999.1	2520533.3	6402 6432 6483	6439	
"	NECR-COR-A-13	1694022.9	2520577.1	7168 7206 7251	7208	
"	NECR-COR-A-14	1694020.2	2520615.7	8802 8754 8780	8779	
"	NECR-COR-A-16	1694980.1	2521129.5	6835 6744 6808	6797	
"	NECR-COR-A-17	1695105.8	2522020.1	77091 76034 76010	76378	
"	NECR-COR-A-18	1695882.2	2522579.6	31615 31448 30580	31201	

Technician Signature [signature] , Reviewed by [signature]

Table 1
Gamma Radiation Level to Surface Soil Ra-226 Concentration Field Data for NECR

Survey Date	Gamma Rad Survey Point & Sample ID/Description	Survey Point Coordinate (State Plane, NAD 1983, NM West)		Gamma Rad Level (cpm) DETECTOR: SPA-3, SR# 408522-33				Gamma Rad Level (cpm) DETECTOR: SPA-3, SR# 408522-30 (1)				Soil Sample Ra-226 (pCi/gm)		Comments/Notes
				Lead Collimated		Bare (Uncollimated)		Lead Collimated		Bare (Uncollimated)				
		Northing (ft)	Easting (ft)	cpm	Average	cpm	Average	cpm	Average	cpm	Average	Conc.	Error	
08/17/06	NECR-COR-A-01	1,694,683.9	2,519,931.2	3,808 3,856 3,857	3,840	13,992 13,892 13,573	13,819	4,128 4,096 4,102	4,109	- - -	-	1.9	0.3	16-17 uR/hr, soil sample @1428
08/17/06	NECR-COR-A-02	1,694,640.9	2,520,126.9	6,794 6,728 6,779	6,767	22,199 22,519 22,478	22,399	7,109 7,192 7,144	7,148	- - -	-	5.4	0.8	23-26 uR/hr soil sample @1440
08/17/06	NECR-COR-A-03	1,694,656.8	2,520,172.2	6,315 6,332 6,337	6,335	21,525 21,524 21,764	21,604	6,705 6,664 6,738	6,702	- - -	-	4.5	0.7	25 uR/hr, soil sample @1450
08/17/06	NECR-COR-A-04	1,694,583.1	2,520,152.4	4,809 4,825 4,873	4,835	17,193 16,869 16,990	17,016	5,177 5,034 5,118	5,110	- - -	-	1.8	0.4	20 uR/hr, soil sample @1500
08/17/06	NECR-COR-A-05	1,694,613.0	2,520,123.6	5,256 5,122 5,057	5,145	18,268 18,357 18,639	18,421	5,505 5,434 5,409	5,449	- - -	-	3.7	0.8	22 uR/hr, soil sample @1514
08/17/06	NECR-COR-A-06	1,694,711.4	2,520,161.0	4,111 4,074 3,922	4,036	15,318 15,219 15,430	15,322	4,274 4,298 4,296	4,289	- - -	-	1.1	0.3	24 uR/hr, soil sample @1527
08/17/06	NECR-COR-A-07	1,694,729.7	2,520,240.3	4,339 4,502 4,390	4,410	16,467 16,555 16,839	16,630	4,755 4,687 4,602	4,681	- - -	-	1.5	0.4	29-20 uR/hr, soil sample @1540
08/17/06	NECR-COR-A-08	1,694,706.7	2,520,341.8	5,798 5,861 5,977	5,879	23,850 23,686 23,959	23,842	6,279 6,231 6,262	6,237	24,386 24,319 24,249	24,318	3.5	0.7	28 uR/hr, soil sample @1604
08/17/06	NECR-COR-A-09	1,694,764.8	2,520,377.4	7,045 7,188 6,960	7,064	29,257 29,505 28,775	29,168	7,422 7,508 7,468	7,466	- - -	-	6.6	0.9	32 uR/hr, soil sample @1615
08/17/06	NECR-COR-A-10	1,694,612.8	2,520,381.7	21,588 21,377 21,623	21,529	64,550 65,569 64,350	64,820	22,975 22,448 22,801	22,740	65,453 65,176 65,334	65,468	31.6 32.3	3.6 3.7	75 uR/hr, soil sample @1635, Dup sample designated as NECR-COR-A-50 @1640
08/18/06	NECR-COR-A-11	1,694,226.8	2,520,612.1	4,750 4,881 4,737	4,789	20,267 20,165 19,996	20,143	5,104 5,067 5,033	5,068	- - -	-	1.9	0.6	22 uR/hr, soil sample @0848
08/18/06	NECR-COR-A-12	1,693,999.4	2,520,533.1	6,061 6,205 5,993	6,086	25,597 25,634 25,241	25,491	6,402 6,432 6,485	6,439	- - -	-	6.8	0.9	32 uR/hr, soil sample @0914
08/18/06	NECR-COR-A-13	1,694,023.0	2,520,577.0	6,662 6,547 6,871	6,693	27,457 27,275 27,667	27,466	7,168 7,206 7,251	7,208	- - -	-	8.9	1.1	32 uR/hr, soil sample @0922
08/18/06	NECR-COR-A-14	1,694,020.4	2,520,615.8	8,258 8,314 8,354	8,309	29,400 29,178 29,031	29,203	8,802 8,754 8,780	8,779	- - -	-	10.3	1.3	28 uR/hr, soil sample @0930
08/18/06	NECR-COR-A-15	1,693,866.4	2,520,610.5	7,086 7,361 7,349	7,265	30,194 29,917 29,735	29,949	7,616 7,681 7,649	7,649	29,230 29,721 30,080	29,677	9.2 8.8	1.1 0.5	32 uR/hr, soil sample @0945, Dup sample designated as NECR-COR-A-55 @0950
08/18/06	NECR-COR-A-16	1,694,980.0	2,521,128.8	6,441 6,580 6,287	6,436	24,754 24,852 23,833	24,480	6,838 6,744 6,808	6,797	- - -	-	6.2	0.4	40 uR/hr, soil sample @1014
08/18/06	NECR-COR-A-17	1,695,105.6	2,522,020.4	71,402 71,884 72,894	72,060	208,986 205,275 214,062	209,441	72,091 76,034 76,010	76,378	- - -	-	185.0	8.7	220 uR/hr, soil sample @1037
08/18/06	NECR-COR-A-18	1,695,882.4	2,522,579.5	29,639 28,306 28,737	28,894	92,060 91,682 91,822	91,855	31,655 31,448 30,500	31,201			40.4	1.9	110 uR/hr, soil sample @1103
08/18/06	NECR-COR-A-19	1,695,550.1	2,516,985.6	3,676 3,902 3,618	3,732	11,798 12,139 12,150	12,029	3,941 3,894 3,992	3,942	12,310 12,145 12,271	12,242	1.0	0.1	Near NECRBKG30 @ backg area, 15 uR/hr, soil sample @1206

Note (1) Gamma radiation level measurements with Detector #408522-30 for locations NECR-COR-A-01, 02, 03, 04, 05, 06, 07, 09, 11, 12, 13, 14, 16, and 18 were performed on November 7, 2006

Figure A-1
Gamma Radiation Level to Ra-226 Concentration Regression Analysis for Onsite Areas
Entire Range(all 19 Locations), SPA-3 #408522-33 2x2 NaI Detector

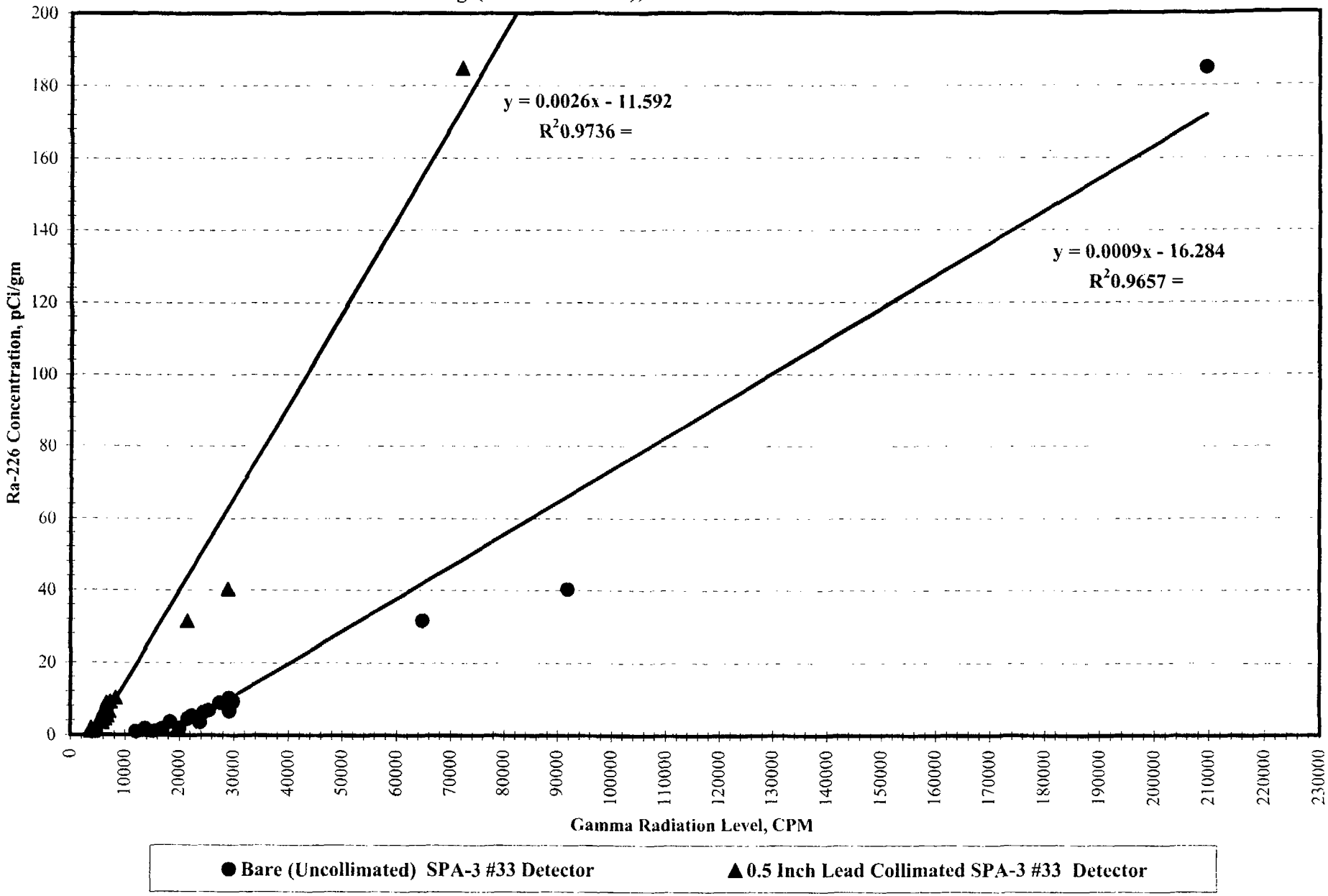


Figure A-2
Gamma Radiation Level to Ra-226 Concentration Regression Analysis for Onsite Areas
Background to 10 pCi/gm Range, SPA-3 #408522-33 2x2 NaI Detector

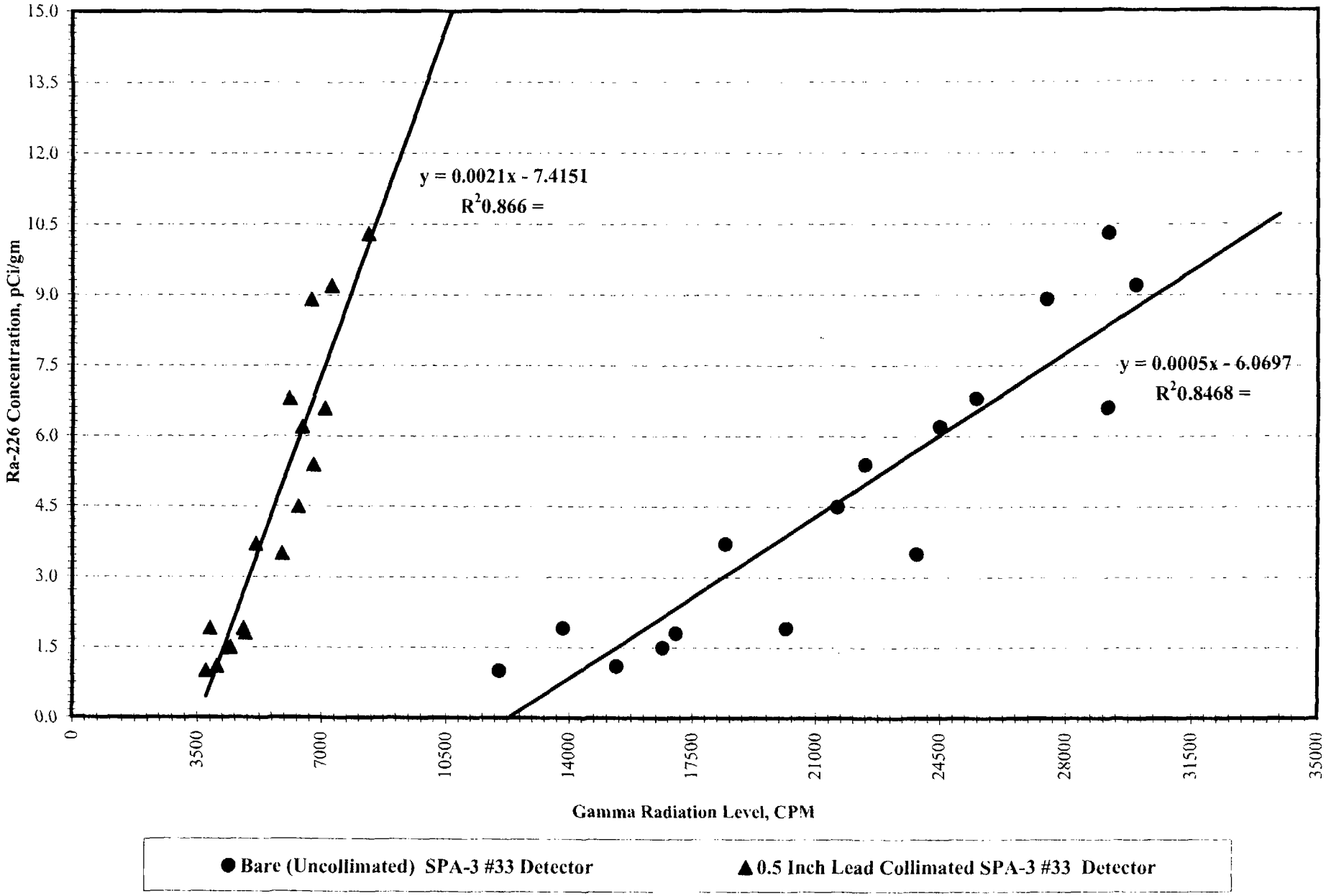


Figure A-3
Gamma Radiation Level to Ra-226 Concentration Regression Analysis for Onsite Areas
Entire Range, SPA-3 #408522-30 2x2 NaI Detector

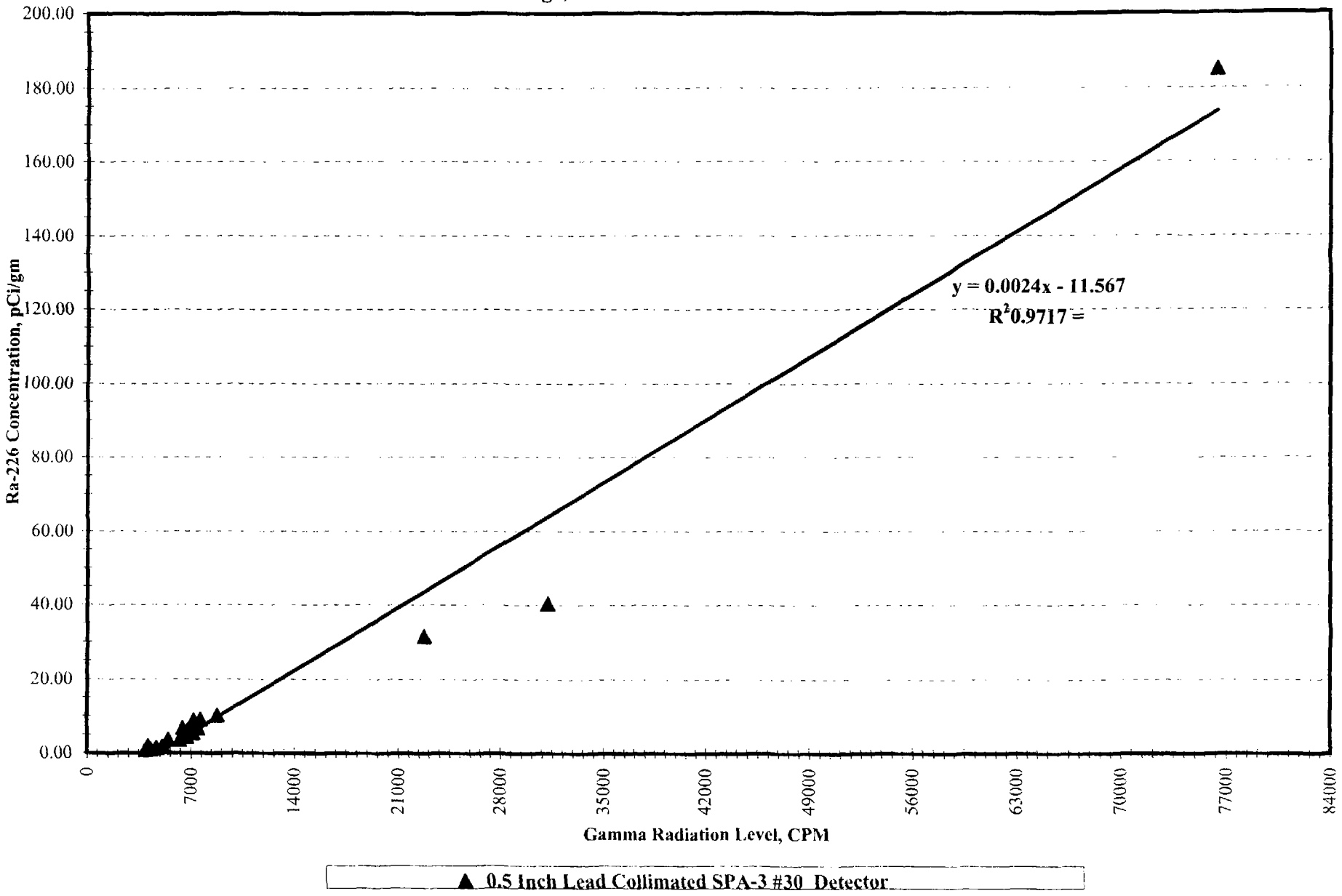


Figure A-4
Gamma Radiation Level to Ra-226 Concentration Regression Analysis for Onsite Areas
Background to 10 pCi/gm Range, SPA-3 #408522-30 2x2 NaI Detector

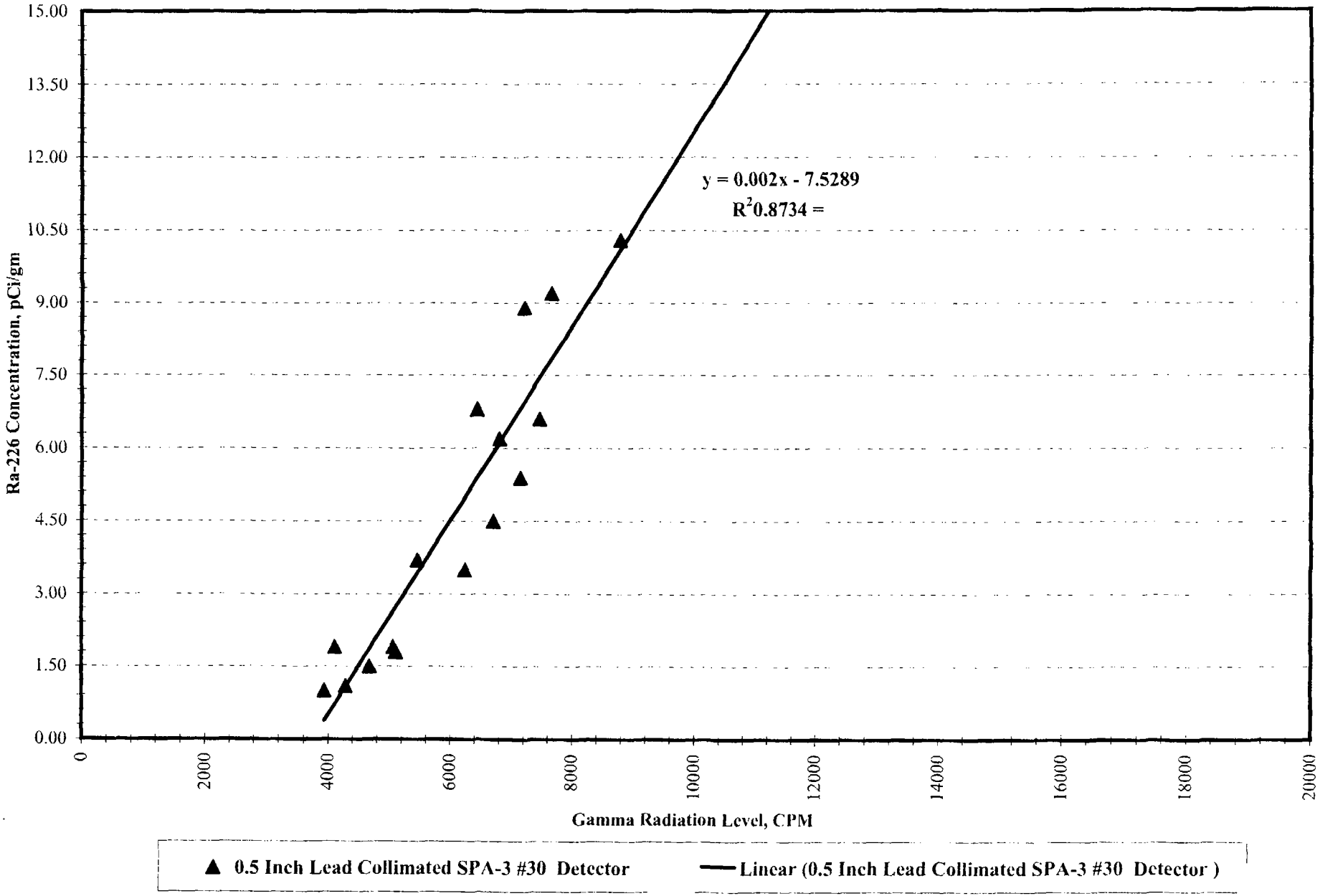


Figure A-5
Gamma Radaiation Level to Surface Soil Ra-226 Concentration Regression
NECR-1 Step Out Survey Points for <10K CPM Correlation with Collimated 2x2 NaI Detector

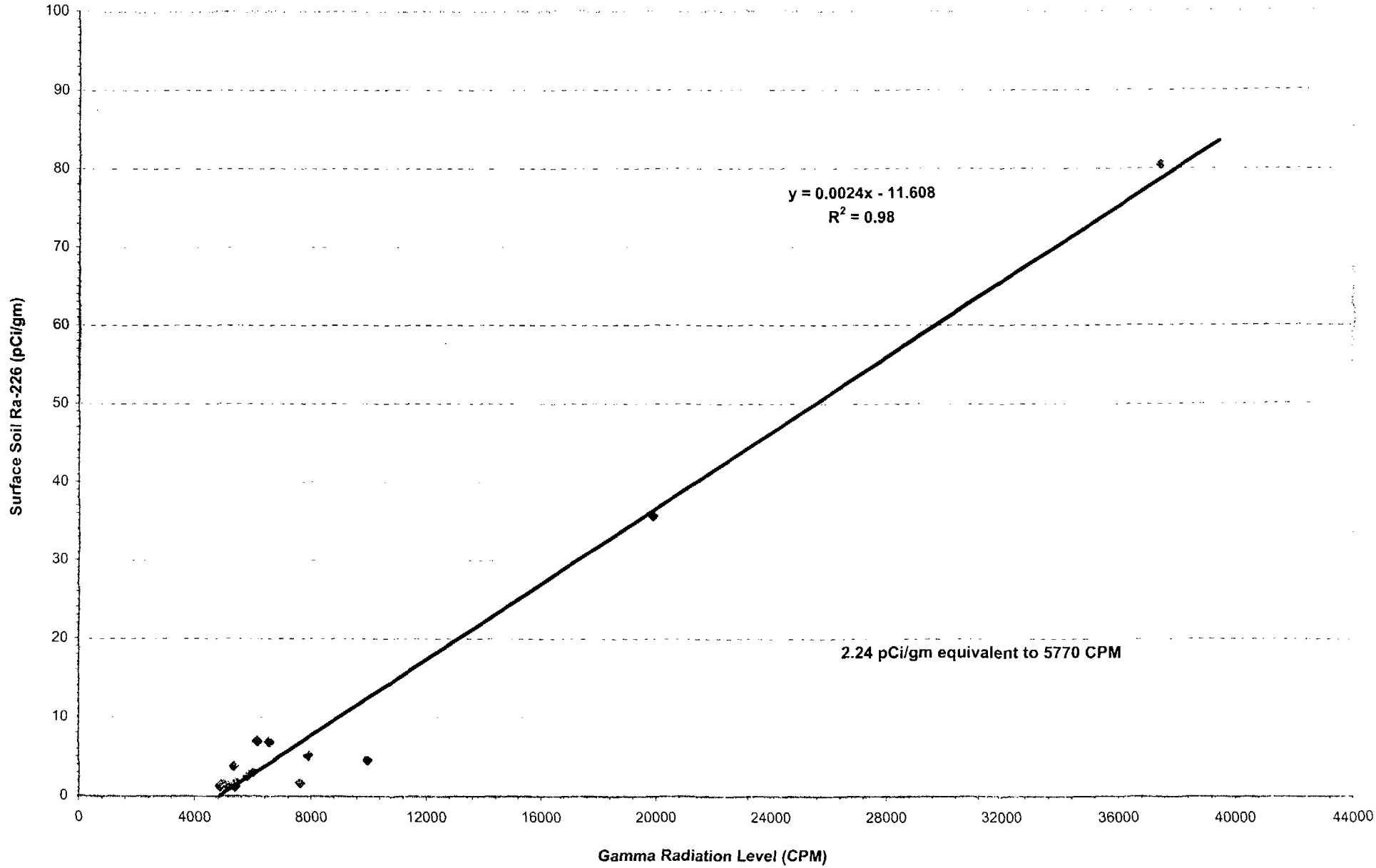
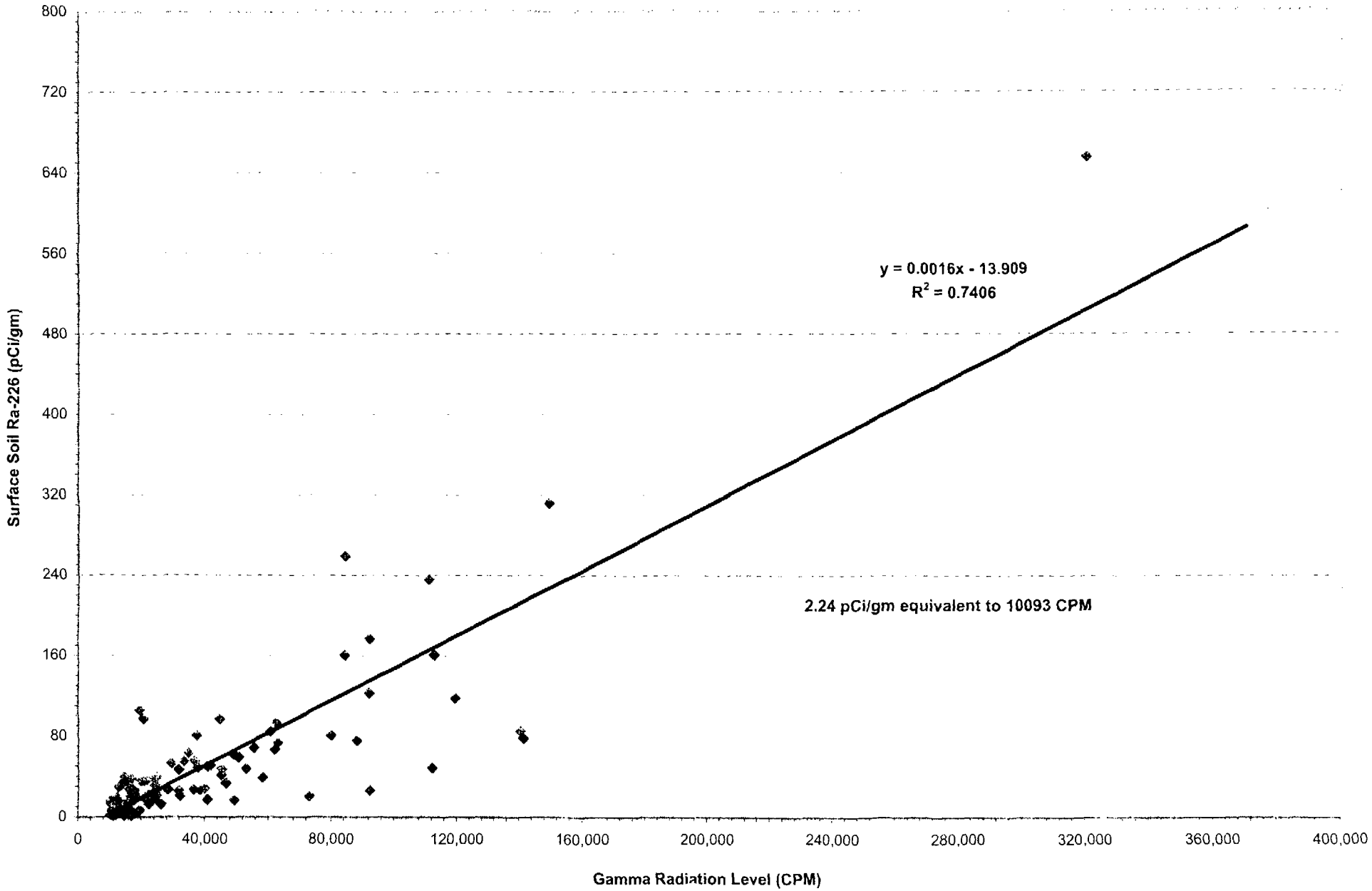


Figure A-6
Gamma Radiation Level to Surface Soil Ra-226 Regression
On Site Areas >10K Survaey Pointds for >10K CPM Correlation with Collimated 2x2 NaI Detector



Static Gamma Radiation Field Forms

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2" NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 Onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-07-06	NECR 1-137			29493	blue
11-07-06	NECR 1-[illegible]			21500	
11-07-06	NECR-1-135			34742	Blue
11-07-06	NECR-1-134			26907	
11-07-06	NECR-1-133			33570	Blue
11-07-06	NECR-1-132			34165	
11-07-06	NECR-1-131			45205	Blue
11-07-06	NECR-1-130			53449	red
11-07-06	NECR-1-129			19695	blue
11-07-06	NECR-1-128			24809	
~~11-07-06~~	~~NECR-1-127~~				~~blue~~
11-07-06	NECR-1-109			18421	
11-07-06	NECR-1-110			8220	
11-07-06	NECR-1-111			7679	
11-07-06	NECR-1-112			69475	
11-07-06	NECR-1-113			79793	
11-07-06	NECR-1-114			19204	
11-07-06	NECR-1-115			23626	
11-07-06	NECR-1-116			22297	
11-07-06	NECR-1-117			7309	
11-07-06	~~NECR-1-118~~			19873	
11-07-06	NECR-1-119			7647	
11-07-06	NECR-1-101			10437	blue
11-07-06	NECR-1-100			8633	
11-07-06	NECR-1-99			7204	
11-07-06	NECR-1-98			19799	
11-07-06	NECR-1-97			10754	
11-07-06	NECR-1-96			27587	
11-07-06	NECR-1-95			88148	blue
11-07-06	NECR-1-94			26588	
11-07-06	NECR-1-93			14402	blue

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782) Detector SPA-3, 2"x2" NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description NECR-1 onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-7-06	NECR-1-92			6827	blue
11-7-06	NECR-1-91			21054	
11-7-06	NECR-1-90			60717	blue
11-7-06	NECR-1-75			38489	
11-7-06	NECR-1-76			51493	
11-7-06	NECR-1-77			13265	
11-7-06	NECR-1-78			14469	
11-7-06	NECR-1-79			23748	
11-7-06	NECR-1-80			43850	
11-7-06	NECR-1-81			56281	
11-7-06	NECR-1-82			8975	
11-7-06	NECR-1-83			145474	
11-7-06	NECR-1-84			10375	
11-7-06	NECR-1-85			12551	
11-7-06	NECR-1-86			19431	
11-7-06	NECR-1-87			6101	
11-7-06	NECR-1-88			10556	
11-7-06	NECR-1-106			7051	
11-7-06	NECR-1-105			5852	
11-7-06	NECR-1-104			18823	
11-7-06	NECR-1-103			16490	blue
11-7-06	NECR-1-102			3777	
11-7-06	NECR-1-120			11851	
11-7-06	NECR-1-121			24860	
11-7-06	NECR-1-122			23760	
11-7-06	NECR-1-123			11268	
11-7-06	NECR-1-124			7852	
11-7-06	NECR-1-141			7820	
11-7-06	NECR-1-140			9890	blue
11-7-06	NECR-1-139			~~480~~202*	48202
11-7-06	NECR-1-138			37798	blue

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2"x2" NaI #133

Instrument Calibration Date: 5-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 Onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-7-06	NECR-1-156			13907	gr
11-7-06	NECR-1-155			12924	gr
11-8-06	NECR-1-154			7733	gr
* 11-8-06	NECR-1-153			6566	gr
11-8-06	NECR-1-152			7752	gr
11-8-06	NECR-1-151			11364	gr
11-8-06	NECR-1-150			14110	gr
11-8-06	NECR-1-149			71156	gr
11-8-06	NECR-1-148			18496	gr
11-8-06	NECR-1-147			35327	gr
11-8-06	NECR-1-146			~~300~~ 20300	gr
11-8-06	NECR-1-145			38198	gr
11-8-06	NECR-1-144			49257	gr
11-8-06	NECR-1-143			31568	gr
11-8-06	NECR-1-142			10596	gr
11-8-06	NECR-1-127			62399	blue
11-8-06	NECR-1-126			41946	blue
slow * 11-8-06	NECR-1-108			79701	
11-8-06	NECR-1-107			22186	gr
11-8-06	NECR-1-89			21626	gr
11-8-06	NECR-1-74			44786	gr
11-8-06	NECR-1-64			43422	
11-8-06	NECR-1-54			53886	
11-8-06	NECR-1-43			39276	gr
11-8-06	NECR-1-33			47725	gr
11-8-06	NECR-1-23			24299	gr
11-8-06	NECR-1-53			16935	gr
11-8-06	NECR-1-125			9426	gr
11-8-06	NECR-1-73			5637	
* 11-8-06	NECR-1-63			6388	
11-8-06	NECR-1-52			6751	

Technieian Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68783) Detector SPA-3, 2x2 NaI #33

Instrument Calibration Date: 8-3-06 Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Description NECR-1 Bunsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-8-06	NECR-1-72			35498	
11-8-06	NECR-1-71			8163	
11-8-06	NECR-1-70			17802	Blue
11-8-06	NECR-1-69			26006	
11-8-06	NECR-1-68			26252	Blue
11-8-06	NECR-1-67			16829	Blue off concrete pad
11-8-06	NECR-1-66			41761	
11-8-06	NECR-1-65			40047	
11-8-06	NECR-1-55			37553	
11-8-06	NECR-1-56			15136	
11-8-06	NECR-1-57			35129	
11-8-06	NECR-1-58			48986	off concrete pad
11-8-06	NECR-1-59			24949	
11-8-06	NECR-1-60			11705	
11-8-06	NECR-1-61			4396	concrete sample
11-8-06	NECR-1-62			10902	
11-8-06	NECR-1-51			8537	
11-8-06	NECR-1-50			4572	corner of blue bldg. ~~concrete pad~~
11-8-06	NECR-1-49			12820	Blue
11-8-06	NECR-1-48			13183	
11-8-06	NECR-1-47			24256	Blue
11-8-06	NECR-1-46			50688	Blue
11-8-06	NECR-1-45			51944	
11-8-06	NECR-1-44			53006	Blue
11-8-06	NECR-1-34			49355	
11-8-06	NECR-1-35			45420	
11-8-06	NECR-1-36			38039	
11-8-06	NECR-1-37			19606	
11-8-06	NECR-1-38			21243	
11-8-06	NECR-1-39			11917	
11-8-06	NECR-1-40			9768	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2224 (68782), Detector SPA-3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 Onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-8-06	NECR-1-41			17532	
11-8-06	NECR-1-42			8022	
11-8-06	NECR-1-32			17145	
11-8-06	NECR-1-31			16751	off concrete pad
11-8-06	NECR-1-30			8914	Blue
11-8-06	NECR-1-29			16286	
11-8-06	NECR-1-28			16041	Blue
11-8-06	NECR-1-27			20946	
11-8-06	NECR-1-26			55532	Blue
11-8-06	NECR-1-25			58768	
11-8-06	NECR-1-24			39603	
11-8-06	NECR-1-15			65159	
11-8-06	NECR-1-16			80015	Blue
11-8-06	NECR-1-17			72378	
11-8-06	NECR-1-18			18184	Blue
11-8-06	NECR-1-19			15502	
11-8-06	NECR-1-20			31670	Blue
11-8-06	NECR-1-21			13018	
11-8-06	NECR-1-22			6581	
11-8-06	NECR-1-14			6339	Green
11-8-06	NECR-1-13			10469	on concrete
11-8-06	NECR-1-12			9282	
11-8-06	NECR-1-11			8225	
11-8-06	NECR-1-10			49353	on road
11-8-06	NECR-1-9			22595	
11-8-06	NECR-1-4			12376	
11-8-06	NECR-1-5			8766	blue
11-8-06	NECR-1-6			7241	
11-8-06	NECR-1-3			17937	green
11-8-06	NECR-1-7			7381	green
11-8-06	NECR-1-8			7187	green

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI, #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 Onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-8-06	NECR-1-2			8481	Green
11-8-06	NECR-1-1			11507	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68184), Detector SPA-3, 2x2 NaI, # 405522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 SO,

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-13-06	NECR-1 # 201			14153	51899
11-13-06	NECR-1 # 202			7961	36959
11-13-06	NECR-1 # 203			13606	55218
11-13-06	NECR-1 # 204			8432	36149
11-13-06	NECR-1 #205			36494	111121
11-13-06	NECR-1 # 206			6654	26130
11-13-06	NECR-1 #207			5977	23185
11-13-06	NECR-1 #208			6103	23157
11-13-06	NECR-1 #209			5940	21283
11-13-06	NECR-1 # 210			5482	20387
11-13-06	NECR-1 # 211			5684	20294
11-13-06	NECR-1 # 212			5786	20867
11-13-06	NECR-1 # 213			7087	23427
"	NECR-1 # 240			5073	18097
"	NECR-1 # 239			5115	17713
"	NECR-1 # 238			5080	18064
"	NECR-1 # 237			5863	19560
"	NECR-1 # 236			6067	20517
"	NECR-1 # 235			5595	21068
"	NECR-1 # 234			7750	26350
"	NECR-1 # 233			7928	31308
"	NECR-1 # 232			23723	74632
"	NECR-1 # 231			20281	66828
"	NECR-1 # 230			6557	26520
"	NECR-1 # 256			9588	32923
"	NECR-1 # 257			5471	21344
"	NECR-1 # 258			14804	47769
"	NECR-1 # 259			5944	21710
"	NECR-1 # 260			~~60184~~	~~21444~~ 21595
"	NECR-1 # 261			5966	20909
11-13-06	NECR-1 #262			5383	18601

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Description NECR-1, SD

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	EPA Specimen Comments/Notes
		Northing	Easting		
11-13-06	NECR-1 #157			10339	42463
11-13-06	NECR-1 #158			7204	37517
11-13-06	NECR-1 #159			25545	92213
11-13-06	NECR-1 #160			37512	130507
11-13-06	NECR-1 #161			30446	107023
11-13-06	NECR-1 #162			10548	48017
11-13-06	NECR-1 #163			16230	57564
11-13-06	NECR-1 #164			19872	60484
11-13-06	NECR-1 #165			10040	41852
11-13-06	NECR-1 #166			8919	32276
11-13-06	NECR-1 #167			6956	26705
11-13-06	NECR-1 #168			8529	30618
11-13-06	NECR-1 #169			8396	27332
11-13-06	NECR-1 #170			7520	29286
11-13-06	NECR-1 #171			8180	32570
* 11-13-06	NECR-1 #186			7940	28349
11-13-06	NECR-1 #185			5775	23289
11-13-06	NECR-1 #184			5330	20464
11-13-06	NECR-1 #183			8326	27381
11-13-06	NECR-1 #182			6038	22652
11-13-06	NECR-1 #181			7019	26515
11-13-06	NECR-1 #180			8416	31242
11-13-06	NECR-1 #179			11081	43015
11-13-06	NECR-1 #178			12550	46505
11-13-06	NECR-1 #177			10183	40879
11-13-06	NECR-1 #176			23564	82650
11-13-06	NECR-1 #175			61150	176051
11-13-06	NECR-1 #174			9405	46783
11-13-06	NECR-1 #173			9954	46951
* 11-13-06	NECR-1 #172			7060	31722

Technician Signature _____, Reviewed by _____

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Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (65782), Detector SPA-3, 2x2 NaI, #408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description NECR-150

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-13-06	NECR-1 #263			5352	18325
11-13-06	NECR-1 #264			5220	17468
11-13-06	NECR-1 # 265			4908	17108
	266	3948996.6	~~725~~ 725823		
	267	"	725826.6		
	268	"	725850.9		
	269	3949017.6	725835.9		
	270	"	725863.2		
	~~271~~	~~"~~			
	271	3949038.7	725857.0		
	272	"	725875.3		
	273	3949080.9	725510.2		
	274	"	725534.5		
	275	"	725558.8		
	276	3949059.8	725838.9		
	277	"	725863.2		

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI, # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Description NECR-150

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-14-06	NECR-1 266	3948996.6	725802.3	7610	Appears to be filling in at end
"	" 267	"	725826.6	9057	
"	" 268	"	725850.9	21443.	
"	" 269	3949017.6	725~~884~~ 831.4	7047	725911.9
"	" 270		725863.2	10077	
"	" 271	3949038.7	725851.0	8904.	
"	" 272	"	725875.3	5967.	923.375 88
"	" 273	3949059.8	~~725838.9~~	6368.	725863.2
"	" 274	"	725 ~~865.2~~ 816.8	16578	
"	" 275	"	725887.5	6410.	
"	" 276	~~3949080.9~~	725851.0	5614	
"	" 277	"	~~725875.3~~	9384.	
"	" 278	"	725 ~~825.0~~	10609.	725924
"	" 279	"	725972.	7905	
"	" 282	3949102	725948.0	8298	
"	" 281	"	725911	37406	grey tint on the cran.
"	" 280	"	725863	18294	
"	" 283	3949123.1	725875	8327.	
"	" 284	"	725923	8666.	
"	" 285	"	725972	6452	4
"	" 288	3949144.2	725948	27874	
"	" 287	"	725899	15234 *	2 min 7617 cpm
"	" 286	"	725851	12891 *	2 min 6445 cpm
"	" 289	3949165.3	725875	5400	
"	" 290	"	725923	9467	
"	" 291	"	725972	14088	
"	# 294	3949186.4	725948	6353	
"	293	"	725899	6158	
"	292.	"	725851	5050	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782) Detector SPA 3, 2x2 NaI, # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ___ No.

Survey Area/Unit Description NECR-1 SO

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-16-06	NECR-1-293			5863	
"	NECR-1-294			6835	
"	NECR-1-295			7101	
"	NECR-1-296			20349	
"	NECR-1-297			8397	
"	NECR-1-298			8367	
"	NECR-1-299			24537	
"	NECR-1-300			6387	
"	NECR-1-301			12180	
"	NECR-1-302			6428	
"	NECR-1-303			5243	
"	NECR-1-304			8326	
"	NECR-1-305			7381	
"	NECR-1-306			5827	
"	NECR-1-307			5331	
"	NECR-1-308			6076	
* "	NECR-1-309			5799	
"	NECR-1-310			6602	
"	NECR-1-311			20578	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68M), Detector SPA-3 #33

Instrument Calibration Date: 8-3-06 ; Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription NECR-1, 50s South Side.

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-28-06	NECR-1 - 312			8602	
"	313			8483	
"	314			8858	
12-1-06	NECR-1 - 315			9876	
"	316			4865	
"	317			9901	
"	318			62291	
"	319			20850	
"	320			6899	
"	321			18342	
"	322			7021	
"	323			5789	
"	324			14578	
"	325			22182	
"	326			7908	
"	327			5887	
"	328			5775	
"	329			7666	
"	330			14672	
"	331			8792	
"	332			11642	
"	333			8579	
"	334			11592	
"	335			9754	
"	338			5242	
"	339			9561	
"	340			6942	
"	341			5808	
"	342			5971	
"	343			5474	
Note: ~~#336~~ #337 was not scanned for further South if can be obtained					

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-1 SOS Southside

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
12-1-06	NECR-1-344			6583	
"	345			6521	
"	346			6820	
"	347			8779	
"	348			6451	
"	349			5976	
"	350			6852	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (65782), Detector SPA-3, 2×2 NaI, # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ___ No.

Survey Area/Unit Decsription NECR-2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-9-06	NECR 2-40			37549	GR
11-9-6	NECR 2-39			19939	Rd
11-9-6	NECR-2-49			51947	GR
11-9-6	NECR-2-48			15967	Rd
11-9-6	NECR-2-57			60240	GR
11-9-6	NECR-2-56			7314	BLUE
11-9-6	NECR 2-65			55096	GR
11-9-6	NECR-2-72			33150	GR
11-9-6	NECR-2-64			7019	Rd
11-9-6	NECR-2-71			14523	BLUE
11-9-6	NECR-2-63			10520	
11-9-6	NECR-2-55			11111	
11-9-6	NECR-2-47			17041	
11-9-6	NECR-2-38			19234	
11-9-6	NECR-2 28			18668	
11-9-6	NECR-2-27			21016	
11-9-6	NECR-2-26			41158	
11-9-6	NECR-2-25			32328	
11-9-6	NECR-2-24			13046	
11-9-6	NECR-2-23			9472	
11-9-6	NECR-2-15			20677	Blue
11-9-6	NECR-2-08			7080	
11-9-6	NECR-2-16			8266	
11-9-6	NECR-2-17			36878	
11-9-6	NECR-2-37			8943	
11-9-6	NECR-2-46			11566	
11-9-6	NECR-2-36			22723	
11-9-6	NECR-2-35			84399	
11-9-6	NECR-2-34			16780	
11-9-6	NECR-2-42			9070	
11-9-6	NECR-2-43			143215	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3 2x2 NaI # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription NECR-2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-9-06	NECR2-58			4086	GR
11-9-06	NECR2-07			4736	GR
"	" -13			3831	GR
"	" -14			5753	GR
"	" -22			5391	GR
"	" -33			4837	BL
"	" -32			5068	GR
"	" -41			4652	GR
"	" -50			6122	BL
"	" -59			7950	RD
"	" -66			4622	GR
"	" -67			11626	GR
"	" -68			15477	GR
"	" -69			12599	BL
"	" -73			9176	GR
"	" -74			9150	GR
"	" -75			6003	GR
"	" -31			12034	GR
"	" -21			6764	GR
"	" -12			6484	GR
"	" -06			5926	GR
"	" -03			8719	GR
"	" -02			6418	GR
"	" -05			25943	RD
"	" -11			58213	RD
"	" -30			24444	GR
"	" -20			24011	BL
"	" -10			99457	RD
"	" -04			6256	BL
"	" -19			34105	RD
"	" -29			21005	RD

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (680-12) Detector SPA-3, 2x2 NaI #408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription NECR-2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-9-06	NECR-2-44			23195	
11-9-6	NECR-2-45			35142	
11-9-6	NECR-2-54			8739	
11-9-6	NECR-2-53			10395	
11-9-6	NECR-2-52			22046	
11-9-6	NECR-2-51			18901	
11-9-6	NECR-2-60			20112	
11-9-6	NECR-2-61			46882	
~~11-9-6~~	~~NECR-2~~				
11/10/06	NECR-2-62			13887	
11/10/06	NECR-2-69			12576	13 checked 11/10/06
11/10/06	NECR-2-70			11172	drums noted in
11/10/06	NECR-2-18			17871	blue
11/10/06	NECR-2-9			5307	contact drum only
11/10/06	NECR-2-1			5209	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter ludlum 2221 (6782), Detector SPA-3, 2x2 NaI #33

Instrument Calibration Date: 8-3-04, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-2, 50

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-14-06	NECR-2-76	3948457	724924	7113	
"	-77	"	724951	6352	
"	-78	"	724975	5122	
"	-79	"	724999	5544	
"	-80	"	725024	5454	
"	-81	"	725049	5634	
"	-82	3948436	~~724936~~	6048	
"	-83	"	725077	5587	
"	-84	"	724986	6869	
"	-85	3948415	724999	5349	
"	86	"	725024	5989	
"	87	3948415	725049	6205	
"	88	3948394	725038	7012	
"	89	3948394	725013	6343	
"	90	3948373	725024	6232	
"	91	3948373	725049	6787	
"	92	3948351	725038	15635	
"	93	~~3948481~~	724938	7061	3948481
"	94	"	724963	5585	
"	95	"	724987	5776	
"	96	"	725013	5429	
"	97	"	725038	5178	
11-16-06	NECR-2-98	"	725062	4862	
"	99	"	725086	5054	
"	100			4742	
"	101			4824	
"	102			4976	
"	103			4999	
"	104			5174	
"	105			5504	
"	106			6941	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 222 (68782) Detector SPA-3, 2x2 NaI, #408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription NECR-2 SO

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-16-06	NECR-2-107			5877	
"	NECR-2-108			5775	
"	NECR-2-109			4945	
"	NECR-2-110			5300	
"	NECR-2-111			6935	
"	NECR-2-112			11055	
"	NECR-2-113			7521	
"	NECR-2-114			20672	
"	NECR-2-115			7858	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (6873) Detector SPA-3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description NECR-2, SOs

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-28-06	NECR-2 - 116			7268	
"	-117			7488	
"	-118			7459	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782) Detector SPA-3, # 408522 # 33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Sand fill #1

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/10/06	SF#1 -1			5556	
11/10/06	SF1 -2			3616	
11/10/06	SF1 - 3			3717	
11/10/06	SF1 -8			3769	
11/10/06	SF1 -7			9517	
11/10/06	SF1 -6			5787	
11/10/06	SF1 - 5			8811	
11/10/06	SF1 -4			4585	
11/10/06	SF1 -9			4954	blue
11/10/06	SF1 -10			5391	
11/10/06	SF1 - 11			7125	blue
11/10/06	SF1 -12			7203	
11/10/06	SF1 -13			4898	
11/10/06	SF1 - 19			5401	
11/10/06	SF1 -18			11335	
11/10/06	SF1 - 17			4933	blue
11/10/06	SF1 - 16			5152	
11/10/06	SF1 - 15			28900	
11/10/06	SF1 - 14			6176	
11/10/06	SF1 - 20			4978	
11/10/06	SF1 - 21			4459	blue
11/10/06	SF1 -22			5168	
11/10/06	SF1 -23			10646	
11/10/06	SF1 - 24			12287	
11/10/06	SF1 - 25			8823	moved - clay
11/10/06	SF1 - 31			8919	32 [illegible]
11/10/06	SF1 - 30			12777	blue
11/10/06	SF1 - 29			5714	
11/10/06	SF1 - 28			4103	blue
11/10/06	SF1 -27			4975	blue
11/10/06	SF1 -26			5086	

Technician Signature [illegible], Reviewed by [illegible]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68482) Detector SPA-3, #408522 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Sandfill #1

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/10/06	SF1-33			10244	
11/10/06	SF1-40			03649	
11/10/06	SF1-47			4665	
11/10/06	SF1-41			4649	blue
11/10/06	SF1-54			41325	
11/10/06	SF1-60			5223	
11/10/06	SF1-61			7147	
11/10/06	SF1-66			4673	
11/10/06	SF1-34			7376	
11/10/06	SF1-35			4299	
11/10/06	SF1-36			3833	
11/10/06	SF1-37			6511	
11/10/06	SF1-45			6032	
11/10/06	SF1-44			6711	Blue
11/10/06	SF1-43			10879	Blue
11/10/06	SF1-42			15910	
11/10/06	SF1-48			9809	Blue
11/10/06	SF1-49			49290	
11/10/06	SF1-50			12659	
11/10/06	SF1-51			6237	blue
11/10/06	SF1-52			4406	
11/10/06	SF1-58			8058	
11/10/06	SF1-63			32153	blue
11/10/06	SF1-64			8593	
11/10/06	SF1-69			23833	
11/10/06	SF1-72			6120	
11/10/06	SF1-68			45274	Blue
11/10/06	SF1-67			7028	
11/10/06	SF1-62			48250	
11/10/06	SF1-57			15436	
11/10/06	SF1-56			56195	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2 x 2 NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Landfill-1, onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/10/06	SF-1 #55			3079	
11/10/06	SF-1 #70			6174	
11/10/06	SF-1 #74			5637	
11/10/06	SF-1 #75			4337	
11/10/06	SF-1 #76			4219	
11/10/06	SF-1 #73			5139	
11/10/06	SF-1 #65			6155	
11/10/06	SF-1 ~~#54~~			5197	
11/10/06	SF-1 #53			5277	
11/10/06	SF-1 #46			5155	
11/10/06	SF-1 #39			7114	
11/10/06	SF-1 #38			9557	
11/10/06	SF-1 #32			5666	
11/10/06	SF-1 #71			10523	
~~11/10/06~~					

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 ( ) Detector SPA-3, 2x2 NaI 40522#33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Sand hill #2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/10/06	Sand hill #2 #7			5265	
11/10/06	Sand hill #9			6426	
11-10-06	SF2 #1 (SF2)			~~5347~~	Stopped SF2-6 by
11-10-06	Sand hill #2 #2			14634	
11-10-06	Sand hill #1			4813	
11-10-06	Sand hill #3			4124	blue
11-10-06	Sand hill #6			4285	blue
11-10-06	Sand hill #10			5385	blue
11-10-06	Sand hill #2 #14			4094	blue
11-10-06	" #4			5211	blue
11-10-06	" #5			7707	
11/10/06	SF2 #15			6792	blue
11/10/06	SF2 #7			10515	blue
11/10/06	SF2 #11			15448	blue
11/10/06	SF2 #8			7597	
11/10/06	SF2 #12			10586	blue
11/10/06	SF2 #13			20647	blue
11/10/06	SF2 #20			18347	
11/10/06	SF2 #21			6484	moved b/c cliff
11/10/06	SF2 #18			6032	moved "
11/10/06	SF2 #16			3197	
11/10/06	SF2 #19			24945	blue

Technician Signature [signature], Revicwed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Sealer/Ratemeter Ludlum 2221 (228808) Detector SPA 3 2"x2" NaI (#30)

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ___ No.

Survey Area/Unit Description Sandfill No. 3 (onsite area)

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-09-06	SANDFILL 3 - 28			10797	
11-09-06	SANDFILL 3 - 27			8730	blue
11-09-06	SANDFILL 3 - 22			5414	blue
11-09-06	SANDFILL 3 - 23			22347	
11-09-06	SANDFILL 3 - 24			16201	blue
11-09-06	SANDFILL 3 - 25			24640	blue
11-09-06	SANDFILL 3 - 26			21274	blue
11-09-06	SANDFILL 3 - 21			25727	
11-09-06	SANDFILL 3 - 20			48099	
11-09-06	SANDFILL 3 - 14			10120	
11-09-06	SANDFILL 3 - 18 dwm 11/9/06			14648	
11-09-06	SANDFILL 3 - 17			5074	blue - ridge
11-09-06	SANDFILL 3 - 12			5935	ridge
11-09-06	SANDFILL 3 - 4			5280	ridge ~~11~~ dwm 11/9/06
11-09-06	SANDFILL 3 - 1			64666	ridge
11-09-06	SANDFILL 3 - 13			24495	
11-09-06	SANDFILL 3 - 14			92167	blue
11-09-06	SANDFILL 3 - 15			43425	
11-09-06	SANDFILL 3 - 10			15681	blue
11-09-06	SANDFILL 3 - 09			16019	blue
11-09-06	SANDFILL 3 - 08			14637	blue
11-09-06	SANDFILL 3 - 05			62004	blue
11-09-06	SANDFILL 3 - 02			10387	blue
11-09-06	SANDFILL 3 - ~~03~~ 3 dwm 11/9/06			11640	
11-09-06	SANDFILL 3 - 11			8166	
11-09-06	SANDFILL 3 - 16			9885	
11-09-06	SANDFILL 3 - 7			10445	
11-09-06	SANDFILL 3 - 6			15867	blue
		Start 10:45 am	finish 12:00 pm		

Technician Signature [illegible], Reviewed by [illegible]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68788), Detector SPA-3, 2x2 NaI, # 40-522-30

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Sand Hill-3 50

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-16-06	Sand Hill-3-29			5469	
"	" 30			7612	
"	" 31			5934	
"	" 32			5478	
"	" 33			7298	
"	" 34			5184	
"	" 35			4485	
"	" 36			5008	
11-17-06	" 37			4997	
"	" 38			4352	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68752), Detector SPA-3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Landfill-3, SOs

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-28-06	SF3-40			6652	
"	-41			5724	
"	-42			4948	
"	-43			5812	
"	-39			17982	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (228508), Detector SPA-3 #408522 #30

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Pond 1-2, ONSite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-9-06	Pond 1-2 #82			92284	
"	" #85			24915	
"	" #81			35022	~~blue~~
"	" #76			10358	blue
"	" #77			112122	blue
"	" #78			48662	
"	" #71			40879	
"	" #62			13864	
"	" #26			72749	
"	" #37			8143	
"	" #50			16747	blue
"	" #61			68437	blue
"	" #70			48348	
"	" #69			112771	blue
"	" #60			92295	
"	" #49			25210	blue
"	" #36			19222	
"	" #25			26902	
"	" #16			11908	
"	" #15			8918	
"	" #24			28230	blue
"	" #35			141363	
"	" #48			75125	
"	" #59			264301	
"	" #68			79437	
"	" #58			320161	blue
"	" #47			62918	blue
"	" #67			19517	
"	" #83			8859	
"	" #79			14503	
"	" #72			6489	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter [illegible] 2221(228502), Detector SPA-3 408522 30

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated X Yes or ___ No.

Survey Area/Unit Decsription Pond 1-2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-10-06	POND 1-2 #63			5911	
"	" #51			7555	
"	" #38			6744	
"	" #8			6187	
"	" #6			37608	
"	" #7			7641	
"	" #13			12151	
"	" #14			44649	blue
"	" #22			33905	
"	" #33			7591	
"	" #46			94508	
"	" #57			22989	
"	" #34			36539	
"	" #23			48888	Blue
"	" #80			15174	
"	#74			7598	
"	" #73			8154	
"	" #65			8502	
"	" #64			7871	
"	#62			6558	
"	" #39			5322	
"	" #28			8411	
"	#27			32643	
"	" #40			6334	blue
"	" #41			7325	blue
"	" #54			10271	
"	" #53			7715	
"	" #55			9984	
"	" #56			14024	blue
"	" #45			[illegible]33	
"	#32			[illegible]	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221/223803, Detector SPA-3 408027 30

Instrument Calibration Date: 8 2 06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated X Yes or ____ No.

Survey Area/Unit Decsription Pond 1-2

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-16-06	Pond 1-2 #21			6387	
"	" #12			5565	
"	" #5			5373	
"	" #2			4260	
"	" #1			4330	
"	" #3			5472	
"	" #9			5461	
"	" #17			6452	
"	" #18			7521	
"	" #10			6577	
"	" #4			5610	
"	" #11			6902	blue
"	" #20			8732	blue
"	" #31			7134	
"	" #44			15041	
"	" #43			111328	
"	" #30			39539	
"	" #19			17022	blue
"	" #29			17837	
"	" #66			71850	
"	" #84			12841	
11-17-06	" #42			11158	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2" NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Description POND-3

START @ 3:30pm Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-7-06	POND-3-3			14774	
11-7-06	POND-3-2			8225	
11-7-06	POND-3-1			21120	blue
11-7-06	POND-3-5			10598	
11-7-06	POND-3-6			13688	
11-7-06	POND-3-7			84406	blue
11-7-06	POND-3-8			9176	
11-7-06	POND-3-4			8031	
11-7-06	POND-3-9			8939	
11-7-06	POND-3-10			10533	
11-7-06	POND-3-17			6493	
11-7-06	POND-3-16			~~105~~10185	
11-7-06	POND-3-15			12441	blue
11-7-06	POND-3-14			191805	
11-7-06	POND-3-13			51324	blue
11-7-06	POND-3-12			12978	
11-7-06	POND-3-11			8277	
11-7-06	POND-3-18			9632	
11-7-06	POND-3-19			15329	
11-7-06	POND-3-20			20579	
11-7-06	POND-3-21			20599	
11-7-06	POND-3-22			16408	
11-7-06	POND-3-23			10490	
11-7-06	POND-3-24			12075	
11-7-06	POND-3-32			9632	
11-7-06	POND-3-31			~~14079~~ - 17609	
11-8-06	POND-3-30			17619	
11-8-06	POND-3-29			149128	blue
11-8-06	POND-3-28			37176	
11-8-06	POND-3-27			11737	blue
11-8-06	POND-3-26			8923	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68284), Detector SPA-3, 2x2 NaI #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description POND 3, Onsite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-8-06	POND-3 -- 25			6343	
11-8-06	POND-3 -- 33			6491	
11-8-06	POND-3 -- 34			10990	
11-8-06	POND-3 -- 35			12609	
11-8-06	POND-3 -- 36			12938	
11-8-06	POND-3 -- 37			14837	
11-8-06	POND-3 -- 38			73114	Blue
11-8-06	POND-3 -- 39			26927	
11-8-06	POND-3 -- 40			14619	
11-8-06	POND-3 -- 48			~~19200~~ ← 19020	
11-8-06	POND-3 -- 47			47734	
11-8-06	POND-3 -- 46			23486	
11-8-06	POND-3 -- 43			11628	#44 & #45 are in water
11-8-06	POND-3 -- 42			8802	Blue
11-8-06	POND-3 -- 41			5902	
11-8-06	POND-3 -- 49			6120	
11-8-06	POND-3 -- 50			90038	
11-8-06	POND-3 -- 51			25334	
11-8-06	POND-3 -- 54			9367	#52 & #53 are in water
11-8-06	POND-3 -- 55			40556	
11-9-06	POND-3 -- 61			40887	Blue
11-9-06	POND-3 -- 60			9044	
11-9-06	POND-3 -- 59			38463	Blue
11-9-06	POND-3 -- 58			17038	
11-9-06	POND-3 -- 57			12207	Blue
11-9-06	POND-3 -- 56			6072	
11-9-06	POND-3 -- 62			5080	
11-9-06	POND-3 -- 67			5170	
11-9-06	POND-3 -- 71			8454	
11-9-06	POND-3 -- 72			6594	
11-9-06	POND-3 -- 73			7572	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI, #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Description POND 3, ONSITE AREA

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-9-06	POND-3-70			21270	
11-9-06	POND-3-69			29797	
11-9-06	POND-3-68			13478	
11-9-06	POND-3-63			16625	BLUE
11-9-06	POND-3-64			13079	
11-9-06	POND-3-65			24776	BLUE
11-9-06	POND-3-66			19312	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (C4784), Detector SPA-3, 2x2 NaI # 408522-33

Instrument Calibration Date: 8-3-04, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or _____ No.

Survey Area/Unit Decsription POND-3 SO

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-16-06	POND-3-74			15883	
"	POND-3-75			6707	
"	POND-3-76			8057	
"	POND-3-77			6163	
"	POND-3-78			10638	
"	POND-3-79			6146	
"	POND-3-80			10045	
"	POND-3-81			7323	
"	POND-3-82			6400	
"	~~POND-3-83~~				
"	~~POND-3-84~~				

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI, # 408522-23

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Pond-3 SO

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-17-06	Pond 3/3 #83			9045	
"	" #84			7028	
"	" 85			6728	
"	" 86			6858	
"	" 87			5853	
"	" 88			5035	
"	" 89			5338	
"	" 90			4837	
"	" 91			5238	
"	" 92			5872	
"	" 93			5458	

Technician Signature HH/[illegible], Reviewed by [illegible]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (228808), Detector SPA-3, 2"x2" NaI #30

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated X Yes or ____ No.

Survey Area/Unit Decsription Sediment Pad :- ONSite Area

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-09-06	SEDPAD-27			18,861	
11-09-06	SEDPAD-23			28304	
11-09-06	SEDPAD-29			49847	
11-09-06	SED-PAD-28			33476	
11-09-06	SEDPAD-24			40518	wash
11-09-06	SEDPAD-25			21621	blue
11-09-06	SEDPAD-26			36363	blue
11-09-06	SEDPAD-22			87831	blue
11-09-06	SEDPAD-21			140404	blue
11-09-06	SEDPAD-20			22537	blue
11-09-06	SEDPAD-19			28154	
11-09-06	SEDPAD-18			16887	blue, wash
11-09-06	SEDPAD-10			7037	blue
11-09-06	SEDPAD-11			12946	
11-09-06	SEDPAD-12			119627	blue
11-09-06	SEDPAD-13			23842	
11-09-06	SEDPAD-14			110907	blue
11-09-06	SEDPAD-15			46708	blue
11-09-06	SEDPAD-16			32486	
11-09-06	SEDPAD-17			10882	
11-09-06	SEDPAD-09			8503	
11-09-06	SEDPAD-08			~~3107~~ 2um 11/9/06 701	blue
11-09-06	SEDPAD-07			19678	
11-09-06	SEDPAD-06			58230	blue
11-09-06	SEDPAD-05			22191	blue
11-09-06	SEDPAD-04			7279	
11-09-06	SEDPAD-01			13604	
11-09-06	SEDPAD-02			10535	
11-09-06	SEDPAD-03			8757	
	Started 11/09/06 09:30		finished	11/09/06	10:30am

Technician Signature Leah Wolf Martin, Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SDA-3, 2x2 NaI # 408522.30

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Sediment Pond Step out

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-17-06	Sed Pond #30			4844	
"	" " 31			5015	
"	" " 32			4499	
"	" 33			5341	
"	" " 34			4192	
"	" " 35			5397	
"	" " 36			6099	
"	" " 37			4997	
"	" " 38			5458	
"	" 39			7091	
"	" " 40			5576	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221(18782) Detector SPA-3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ____ Yes or ✓ No.

Survey Area/Unit Decsription Vanthole 8/3

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-28-06	VH8 1			11591	
"	" 2			17428	
"	" 3			43246	in Sump
"	" 4			63134	
"	" 5			43002	
"	" 6			62224	Berm
"	" 7			35341	Berm
"	" 8			44967	Berm
"	" 9			96977	Berm
"	" 10			50093	Berm
"	" 11			70053	Berm
"	" 12			33682	Berm
"	" 13			48082	Berm
"	" 14			30871	
"	" 15			109314	
"	" 16			36571	
"	" 17			123717	
"	" 18			53573	
"	" 19			155342	
"	" 20			119493	
"	" 21			22271	
"	" 22			31906	
"	" 23			43824	
"	" 24			43650	
"	" 25			51748	
"	" 26			38302	
"	" 27			27621	
"	" 28			14631	
"	" 29			32155	
"	" 30			43502	
"	" 31			18200	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68182), Detector SPA #3 #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

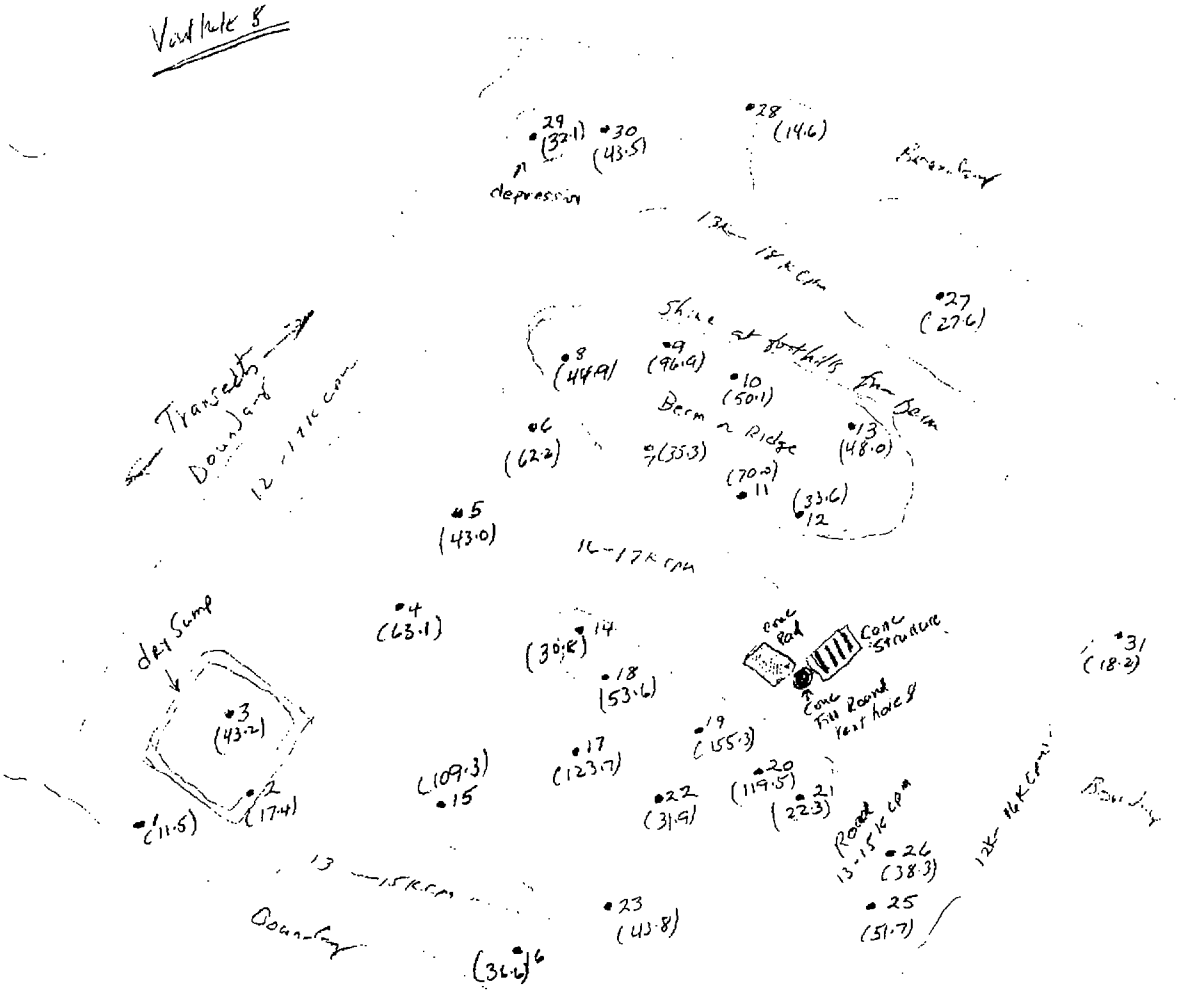
2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Decsription Vent hole 8/3

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-28-06	VH3-32			21351	Haulage Rd.
"	" 33			28730	
"	" 34			42160	middle of VH-3
"	" 35			20810	

Technician Signature [signature], Reviewed by [signature]

Vault hole 8



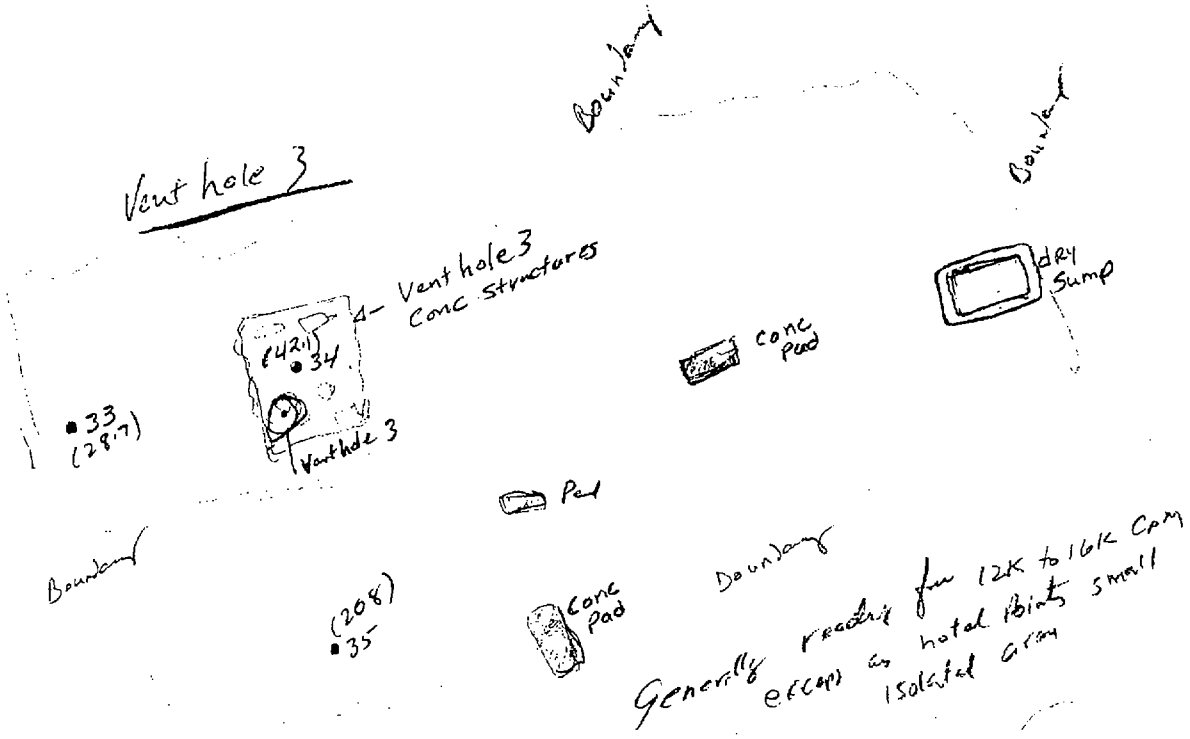
SPA-3 Bare
Transect @ = 10' at 30, 2:1.0 ft/sec
Generally Reads for ≈ 12k-17k cpm
except in noted areas, except noted berms at ridge, shown points are small isolated areas.

Bkg · 13.5

Scan 17k

Bare (uncollimated) 2x2 NaI Detector
4108522-33

8/3/06


Vent hole 3
Boundary
Boundary
Vent hole 3
Conc Structures
(421)
34
Vent hole 3
33
(287)
Conc Pad
Dry Sump
Pad
Boundary
Boundary
(208)
35
Conc Pad
Generally reading for 12K to 16K CPM
except on hotal points small
isolated area

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3 # 33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Decsription Trailer Park Scan / Static

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-20-06	TP-1			42600	
"	-2			51040	
"	-3			33200	
"	-4			40166	
"	-5			20640	
"	-6			23165	
"	-7			51140	
"	-8			40170	
"	-9			224480	
"	-10			26810	
"	-11			23110	
"	-12			27060	
"	-13			124460	
"	-14			35940	
"	-15			39710	
"	-16			43430	
"	-17			34810	
"	-18			21020	
"	-20			27105	
"	-21			21460	
"	-22			48200	
"	-23			18100	
"	-24			62250	
"	-25			46388	
"	-26			18015	
"	-27			17070	
"	-28			22980	
"	-29			21940	
"	-30			20130	
"	-31			20110	
"	-32			32300	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3 #33

Instrument Calibration Date: 8-3-04, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Decsription Trailer Park, Scan / Static

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-20-04	TP-33			23300	
"	TP-34			20380	
"	TP-35			21840	

Technician Signature _____, Reviewed by _____

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter ludlum 2221 (68782), Detector SPA-3, #33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

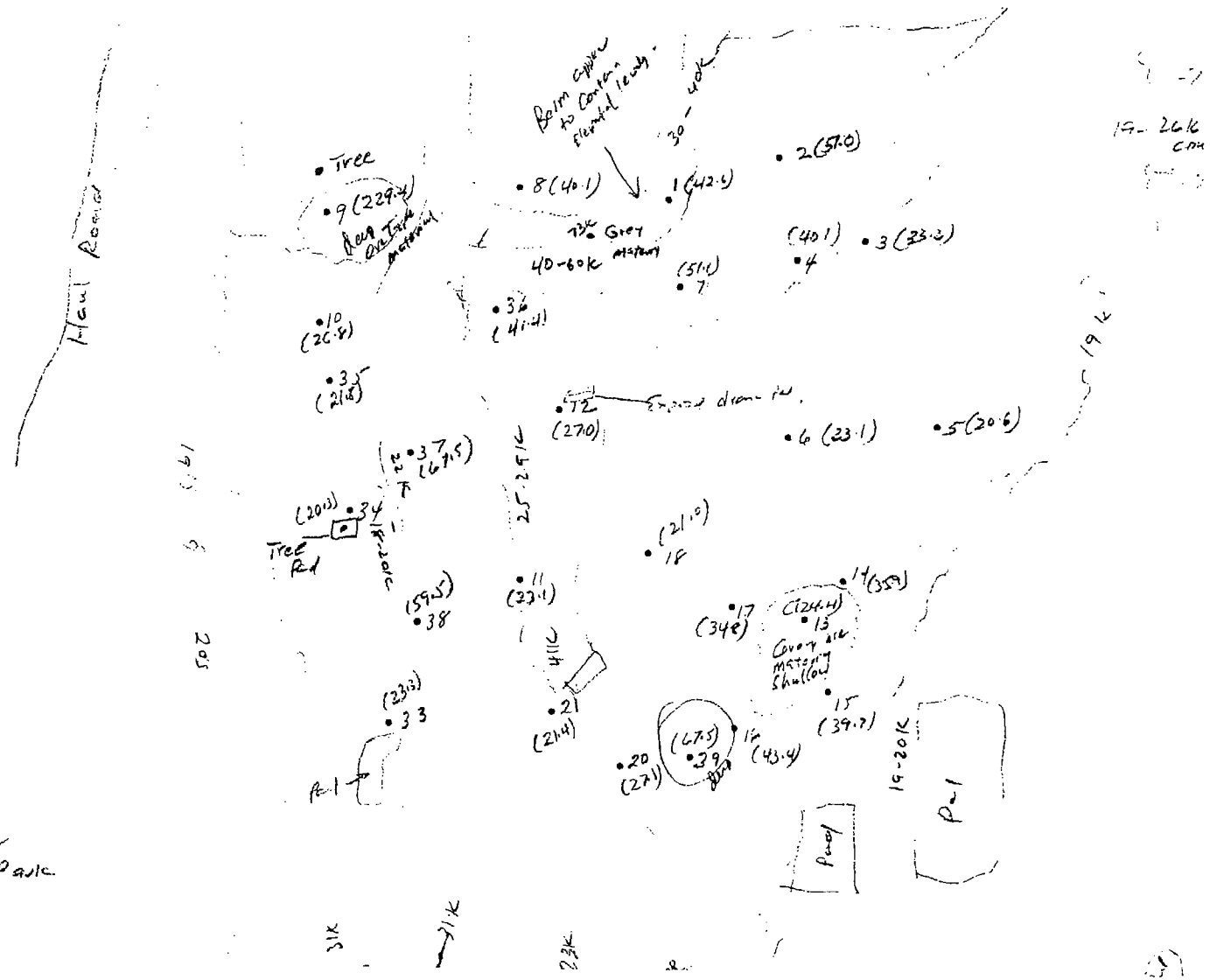
2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Decsription Trailer Park

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-27-06	TP-36	3448,929.4	725,743.5	4142.0	
11-27-06	TP-37	" 906.5	728.8	67531	
11-27-06	TP-38	" 879.6	730.3	59576	
11-27-06	TP-39	" 858.7	778.1	67501	
11-27-06	TP-40	" 814.6	770.7	49696	
11-27-06	TP-41	" 782.5	732.8	170865	

Technician Signature [signature], Reviewed by [signature]

Trailer Park, NECR



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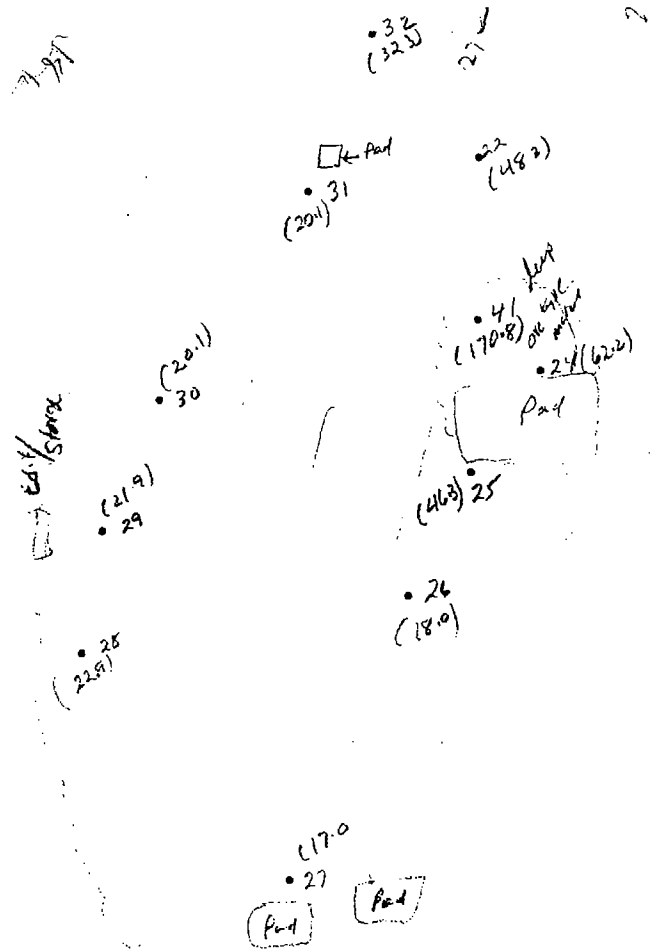
Trailer Park



Bare (uncollimated) SHA-3 2x2 Nal
805322-33

Notes: Transect Scan ≈ 10'
about 25 transects
East & West foot hills starts about 1916 cpm
@ Elevated Rocky @ Foothills, New Road Rte
1-7, 9, 34, 36 35, 37 etc + 410 K cpm (15+ pinto)
Pad @ 41 42 filled with elevated material
General flat area within trailer Park (unfilled)
in 20 - 25K, important due to wind blown
or erosion of filled material
Area ~~Rocky~~ @ #13 bounded by 14, 15, 16 4
17 high Gray material
most of the elevated material @

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Trailer Park

NECR Mine Site

Home Sites Coordinate, UTM 1983, distance-meters

ID	Easting	Northing	NW		NE		SW		SE	
			Easting	*Northing*	*Easting*	*Northing*	*Easting*	*Northing*	*Easting*	*Northing*
H1	725,604.4	3,949,469.0	725,581.9	3,949,491.5	725,626.9	3,949,491.5	725,581.9	3,949,446.5	725,626.9	3,949,446.5
H2	725,579.9	3,949,435.3	725,557.4	3,949,457.7	725,602.4	3,949,457.7	725,557.4	3,949,412.8	725,602.4	3,949,412.8
H3	725,595.5	3,949,395.5	725,573.0	3,949,418.0	725,618.0	3,949,418.0	725,573.0	3,949,373.0	725,618.0	3,949,373.0
H4	725,692.1	3,949,431.8	725,669.6	3,949,454.2	725,714.6	3,949,454.2	725,669.6	3,949,409.3	725,714.6	3,949,409.3
H5	725,683.3	3,949,418.8	725,660.8	3,949,441.2	725,705.7	3,949,441.2	725,660.8	3,949,396.3	725,705.7	3,949,396.3
H6	725,726.2	3,949,327.5	725,703.7	3,949,350.0	725,748.7	3,949,350.0	725,703.7	3,949,305.0	725,748.7	3,949,305.0
H7	725,706.8	3,949,298.5	725,684.3	3,949,321.0	725,729.3	3,949,321.0	725,684.3	3,949,276.0	725,729.3	3,949,276.0
H8	725,921.1	3,949,360.3	725,898.6	3,949,382.7	725,943.6	3,949,382.7	725,898.6	3,949,337.8	725,943.6	3,949,337.8
H9	725,932.3	3,949,327.0	725,909.8	3,949,349.5	725,954.7	3,949,349.5	725,909.8	3,949,304.5	725,954.7	3,949,304.5

Gamma Radiation Survey @ UNC's NECR Mine Site
Scan/Walkthrough Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, 2x2 NaI, #408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Description Homesites

Survey Date	Survey Area-Transect ID/Description	Gamma Radiation Reading Range CPM	Comments/Notes
11/15/06	H9 North	13700-17400	undisturbed ground, 14K near hogan. debris, concrete, and cinder blocks around hogan, lower rdg near structures.
"	"		rdg from 14500 - 19000 cpm bare in H9 generally around 16500 structures.
"	H8	14000-16500 bare.	high rdg off gravel in driveway (21K)
"	H7	14500-17000	Elevated Rdg SW corner of Homesite. 34K
"	H6	14500-2000	21K high hogan. Fine stuff. Scrub
"	H5 H4	13500 to 15000 CPM	No significant deviation. total of 10 sample locations with highest Reading between both homes.
"	H1	13000 to 14000 CPM	12.8K to 14K. No significant deviation. Sample located based on traffic around homesite.
"	H2	12600 to 13500 CPM	Low Rdg for 12.6K to 13.5K. Samples located based on homesite area use and traffic
"	H3	12500 to 14000 cpm	12.5K to 14K CPM with No significant deviation, Samples based on traffic and use of homesite yard

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (187284), Detector SPA-3 # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ___ Yes or ✓ No.

Survey Area/Unit Description Home Sites

Survey Date	Soil Sample Pond Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/15/06	H9-1	3949319.8	725926.9	17057	
"	H9-2	3949318.6	725945.1	18128	
"	H9-3.	3949315.7	725951.5	18609	
"	H9-4	3949312.3	725945.1	18115	
"	H9-5	3949312.1	725920.2	16910	
"	H8-1	3949373.5	725932.7	18235	
"	H8-2	3949372.4	725935.0	19201	
"	H8-3	3949361.5	725934.5	18271	
"	H8-4	3949339.2	725916.3	18232	
"	H8-5	3949359.1	725903.3	18032	
"	H7-1	3949283.0	725728.9	17088	
"	H7-2	3949281.8	725689.1	24045	
"	H7-3	3949273.5	725682.8	34047	
"	H7-4	3949297.0	725720.2	13024	
"	H7-5	3949321.8	725685.3	20174	
	H6-1	3949321.1	725707.6	19867	
"	H6-2	3949334.5	725726.1	20100	
"	H6-3	3949342.6	725728.0	20665	
"	H6-4	3949351.1	725726.8	18754	
"	H6-5	3949331.3	725719.5	20893	
"	H5-1	3949412.5	725667.2	13931	
"	H5-2	3949400.5	725678.3	15019	
"	H5-3	3949398.3	725705.0	14931	
"	H5-4	3949417.1	725690.7	13240	
"	H5-5	3949431.8	725696.0	15959	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, #408522-3

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated _____ Yes or ✓ No.

Survey Area/Unit Description Home Sites.

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11/15/06	H4-1	3949434.4	725683.5	14077	
"	H4-2	3949438.9	725697.0	15112	
"	H4-3	3949445.7	725703.8	15049	
"	H4-4	3949455.4	725704.7	16175	
"	H4-5	3949447.1	725712.9	15439	
"	H3-1	3949380.8	725582.2	13426	
"	H3-2	3949375.9	725584.2	14124	
"	H3-3	3949391.5	725596.6	13349	
"	H3-4	3949409.7	725601.9	13360	
"	H3-5	3949411.4	725595.3	13875	
"	H2-1	3949423.0	725574.1	13082	
"	H2-2	3949414.9	725580.6	12914	
"	H2-3	3949439.7	725569.4	12981	
"	H2-4	3949416.2	725565.8	13256	
"	H2-5	3949411.4	725595.3	12976	
"	H1-1	3949463.6	725610.7	13251	
"	H1-2	3949447.6	725607.7	13027	
"	H1-3	3949455.5	725598.9	13292	
"	H1-4	3949460.8	725590.7	13201	
"	H1-5	3949475.3	725620.7	12831	

Technician Signature [signature], Reviewed by [signature]

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (18784), Detector SPA-3, # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Description Arroyo Bank

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
~~NECR-50~~	~~K4~~				
~~11-17-06~~	~~NECR-50~~			8814	HH
	172				HH
11-17-06	ABI-1			8814	DX Plant Area
"	-2			6028	"
"	-3			6445	"
"	-4			7017	"
"	-5			6701	"
"	-6			7321	"
"	-7			6108	"
"	-8			6682	"
"	-9			7018	"
"	-10			5361	"
"	-11			6542	"
"	-12			5594	"
"	-13			7909	Arroyo Bank Area
"	-14			5182	
"	-15			5965	
"	-16			8571	
"	-17			7206	
"	-18			6397	
"	-19			6684	
"	-20			6123	
"	-21			5419	
"	-22			6275	
"	-23			5431	
"	-24			5628	
"	-25			4820	
"	-26			5480	
"	-27			5089	
"	-28			4961	

Technician Signature HH, Reviewed by

Gamma Radiation Survey @ UNC's NECR Mine Site
Static Gamma Radiation Survey Field Form

Instrumentation : Scaler/Ratemeter Ludlum 2221 (68782), Detector SPA-3, # 408522-33

Instrument Calibration Date: 8-3-06, Instrument Daily Function Check Performed: ✓

2"x2" NaI Detector Collimated ✓ Yes or ____ No.

Survey Area/Unit Decsription Arroyo Banks.

Survey Date	Survey Point ID/Description	Survey Point Coordinate NAD 1983 NM State Plane, feet		Gamma Radiation Reading, CPM	Comments/Notes
		Northing	Easting		
11-17-06	AB - 29			~~5084~~	4913 Arroyo Bank Area
"	AB - 30			4826	
"	-31			4584	
"	-32			5043	
"	-33			4889	
"	-34			5705	
"	-35			9940	
"	-36			6174	
"	-37			4904	
"	-38			4807	

Technician Signature [signature], Reviewed by [signature]

SAMPLE SUMMARY TABLES

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
NECR-1			
1	NECR1-005	COPCs	
2	NECR1-016	COPCs	
3	NECR1-018	COPCs	
4	NECR1-020	COPCs	EPA split
5	NECR1-023	COPCs	
6	NECR1-026	COPCs	
7	NECR1-028	COPCs, Agronomics	
8	NECR1-030	COPCs	duplicate
9	NECR1-044	COPCs, Agronomics	
10	NECR1-046	COPCs	
11	NECR1-047	COPCs	EPA split
12	NECR1-049	COPCs	
13	NECR1-065	COPCs	EPA split
14	NECR1-067	COPCs	
15	NECR1-068	COPCs	
16	NECR1-070	COPCs	
17	NECR1-090	COPCs	
18	NECR1-092	COPCs	
19	NECR1-093	COPCs	
20	NECR1-095	COPCs	
21	NECR1-101	COPCs	
22	NECR1-103	COPCs	duplicate
23	NECR1-126	COPCs	EPA split
24	NECR1-127	COPCs, Agronomics	
25	NECR1-129	COPCs	
26	NECR1-131	COPCs	
27	NECR1-133	COPCs	EPA split
28	NECR1-135	COPCs	
29	NECR1-137	COPCs	
30	NECR1-138	COPCs	
31	NECR1-140	COPCs	
NECR-1 Stepouts			
1	NECR1-164	COPCs	
2	NECR1-173	COPCs	
3	NECR1-184	COPCs	
4	NECR1-207	COPCs	
5	NECR1-238	COPCs	
6	NECR1-240	COPCs, SPLP	duplicate
7	NECR1-262	COPCs	EPA split
8	NECR1-265	COPCs	
9	NECR1-266	COPCs	
10	NECR1-281	COPCs	
11	NECR1-289	COPCs	EPA split
12	NECR1-293	COPCs	
13	NECR1-307	COPCs, SPLP	
14	NECR1-316	COPCs	
15	NECR1-323	COPCs	EPA split
16	NECR1-326	COPCs	

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
NECR-2			
1	NECR2-004	COPCs	
2	NECR2-015	COPCs, Agronomics	EPA split
3	NECR2-017	COPCs	EPA split
4	NECR2-018	COPCs	EPA split?
5	NECR2-020	COPCs	
6	NECR2-027	COPCs	
7	NECR2-033	COPCs	
8	NECR2-035	COPCs	EPA split
9	NECR2-037	COPCs	EPA split
10	NECR2-039	COPCs	duplicate
11	NECR2-050	COPCs	
12	NECR2-052	COPCs	
13	NECR2-056	COPCs, Agronomics	
14	NECR2-069	COPCs	
15	NECR2-071	COPCs	EPA split
NECR-2 Stepouts			
1	NECR2-083	COPCs	
2	NECR2-096	COPCs, SPLP	
3	NECR2-103	COPCs	
4	NECR2-109	COPCs, SPLP	EPA split
Ponds 1 and 2			
1	POND1/2-011	COPCs	
2	POND1/2-014	COPCs	
3	POND1/2-019	COPCs	duplicate
4	POND1/2-020	COPCs, Agronomics	
5	POND1/2-023	COPCs	EPA split
6	POND1/2-024	COPCs	EPA split
7	POND1/2-035	COPCs, SPLP	duplicate, EPA split
8	POND1/2-041	COPCs	EPA split
9	POND1/2-042	COPCs	
10	POND1/2-047	COPCs, Agronomics	
11	POND1/2-050	COPCs	
12	POND1/2-056	COPCs	
13	POND1/2-058	COPCs, SPLP	EPA split
14	POND1/2-061	COPCs	EPA split
15	POND1/2-069	COPCs	
16	POND1/2-071	COPCs	ss for subsurface loc
17	POND1/2-076	COPCs	
18	POND1/2-077	COPCs	
19	POND1/2-082	COPCs	ss for subsurface loc
Pond 1 and 2 Boundary Confirmation			
1	POND1/2-009	COPCs	
2	POND1/2-012	COPCs	
3	POND1/2-032	COPCs	
4	POND1/2-063	COPCs	

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
Pond 3/3a			
1	POND3/3a-001	COPCs	
2	POND3/3a-007	COPCs	EPA split
3	POND3/3a-014	COPCs, SPLP	
4	POND3/3a-015	COPCs	
5	POND3/3a-027	COPCs	EPA split
6	POND3/3a-029	COPCs	EPA split
7	POND3/3a-037	COPCs	
8	POND3/3a-038	COPCs	EPA split
9	POND3/3a-042	COPCs	
10	POND3/3a-046	COPCs, Agronomics	
11	POND3/3a-057	COPCs, SPLP, Agronomics	
12	POND3/3a-059	COPCs	duplicate, EPA split
13	POND3/3a-061	COPCs	
14	POND3/3a-063	COPCs	
15	POND3/3a-065	COPCs	
Sediment Pad			
1	SEDPAD-005	COPCs	EPA split
2	SEDPAD-006	COPCs	
3	SEDPAD-008	COPCs	
4	SEDPAD-011	COPCs, SPLP	
5	SEDPAD-012	COPCs	
6	SEDPAD-014	COPCs	EPA split
7	SEDPAD-015	COPCs	EPA split
8	SEDPAD-018	COPCs, SPLP	
9	SEDPAD-020	COPCs	
10	SEDPAD-021	COPCs, Agronomics	
11	SEDPAD-022	COPCs	duplicate, EPA split
12	SEDPAD-025	COPCs	EPA split
13	SEDPAD-026	COPCs	
Sand Backfill No. 1			
1	SAND1-009	COPCs	EPA split
2	SAND1-011	COPCs	
3	SAND1-017	COPCs, Agronomics	
4	SAND1-021	COPCs	
5	SAND1-027	COPCs	
6	SAND1-028	COPCs, Agronomics	EPA split
7	SAND1-030	COPCs	
8	SAND1-041	COPCs	
9	SAND1-043	COPCs	EPA split
10	SAND1-044	COPCs	
11	SAND1-049	COPCs	duplicate
12	SAND1-050	COPCs	
13	SAND1-051	COPCs	
14	SAND1-063	COPCs	EPA split
15	SAND1-068	COPCs	EPA split
Sand Backfill No. 1 Boundary Confirmation			
1	SAND1-032	COPCs	
2	SAND1-053	COPCs	

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
3	SAND1-065	COPCs	
Sand Backfill No. 2			
1	SAND2-003	COPCs, SPLP	
2	SAND2-004	COPCs	
3	SAND2-006	COPCs	EPA split
4	SAND2-007	COPCs	
5	SAND2-010	COPCs, SPLP	
6	SAND2-011	COPCs	EPA split
7	SAND2-012	COPCs	duplicate, EPA split
8	SAND2-014	COPCs, Agronomics	
9	SAND2-015	COPCs	EPA split
10	SAND2-016	COPCs	
11	SAND2-017	COPCs	
12	SAND2-019	COPCs	EPA split
13	SAND2-020	COPCs	
Sand Backfill No. 3			
1	SAND3-002	COPCs	EPA split
2	SAND3-005	COPCs	
3	SAND3-006	COPCs	
4	SAND3-008	COPCs	EPA split
5	SAND3-009	COPCs	
6	SAND3-010	COPCs	EPA split
7	SAND3-014	COPCs	duplicate, EPA split
8	SAND3-017	COPCs, SPLP, Agronomics	
9	SAND3-022	COPCs	EPA split
10	SAND3-024	COPCs	
11	SAND3-025	COPCs	
12	SAND3-026	COPCs	
13	SAND3-027	COPCs, Agronomics	
Sand Backfill No. 3 Boundary Confirmation			
1	SAND3-004	COPCs	
2	SAND3-012	COPCs	
Non-Economic Material Storage Area			
1	NEMSA-001	COPCs, Agronomics	
2	NEMSA-002	COPCs	
3	NEMSA-003	COPCs, Agronomics	
4	NEMSA-004	COPCs	
5	NEMSA-005	COPCs	
Boneyard			
1	YARD-001	COPCs, Agronomics	
2	YARD-002	COPCs	
3	YARD-003	COPCs	
4	YARD-004	COPCs, Agronomics	
5	YARD-005	COPCs, Agronomics	

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
Home Sites			
1	HOME1-001	COPCs	
2	HOME1-002	COPCs	
3	HOME1-003	COPCs	
4	HOME1-004	COPCs	
5	HOME1-005	COPCs	
6	HOME2-001	COPCs	
7	HOME2-002	COPCs	
8	HOME2-003	COPCs	
9	HOME2-004	COPCs	duplicate
10	HOME2-005	COPCs	
11	HOME3-001	COPCs	
12	HOME3-002	COPCs	
13	HOME3-003	COPCs	
14	HOME3-004	COPCs	
15	HOME3-005	COPCs	
16	HOME4-001	COPCs	
17	HOME4-002	COPCs	duplicate
18	HOME4-003	COPCs	
19	HOME4-004	COPCs	
20	HOME4-005	COPCs	
21	HOME5-001	COPCs	
22	HOME5-002	COPCs	
23	HOME5-003	COPCs	
24	HOME5-004	COPCs	
25	HOME5-005	COPCs	
26	HOME6-001	COPCs	
27	HOME6-002	COPCs	
28	HOME6-003	COPCs	
29	HOME6-004	COPCs	
30	HOME6-005	COPCs	
31	HOME7-001	COPCs	
32	HOME7-002	COPCs	
33	HOME7-003	COPCs	
34	HOME7-004	COPCs	
35	HOME7-005	COPCs	
36	HOME8-001	COPCs	
37	HOME8-002	COPCs	
38	HOME8-003	COPCs	
39	HOME8-004	COPCs	
40	HOME8-005	COPCs	
41	HOME9-001	COPCs	
42	HOME9-002	COPCs	
43	HOME9-003	COPCs	
44	HOME9-004	COPCs	
45	HOME9-005	COPCs	

Table B.1 Surface Soil Sample Summary			
Surface Sample Number	**Location Identification**	**Analytical Suite**	**Notes**
Vent Holes 3 & 8			
1	VENT8-002	COPCs	duplicate
2	VENT8-006	COPCs	
3	VENT8-019	COPCs	EPA split
4	VENT8-031	COPCs	
5	VENT3-034	COPCs	EPA split
Trailer Park			
1	TP-001	COPCs	EPA split
2	TP-009	COPCs	
3	TP-013	COPCs	
4	TP-024	COPCs	duplicate
5	TP-027	COPCs	EPA split

Table B.2 Subsurface Soil Sample Summary				
Sample ID	Lab ID	Depth (fbgs)	Analytical Suite	Notes
NECR-1 Soil Borings				
NECR1-SB-016	C06111057-012	0.5	COPCs	
NECR1-SB-016 [5.0]	C06111057-014	5.0	COPCs	
NECR1-SB-016 [10.0]	C06111057-015	10.0	COPCs	
NECR1-SB-016 [15.0]	C06111057-016	15.0	COPCs	
NECR1-SB-016 [20.0]	C06111057-017	20.0	COPCs	
NECR1-SB-046	C06111057-003	0.5	COPCs	
NECR1-SB-046 [5.0]	C06111057-044	5.0	COPCs	
NECR1-SB-046 [10.0]	C06111057-045	10.0	COPCs	
NECR1-SB-046 [15.0]	C06111057-046	15.0	COPCs	
NECR1-SB-046 [20.0]	C06111057-047	20.0	COPCs	
NECR1-SB-046 [25.0]	C06111057-048	25.0	COPCs	
NECR1-SB-046 [30.0]	C06111057-049	30.0	COPCs	
NECR1-SB-90 [5.0]	C06111057-021	5.0	COPCs	
NECR1-SB-90 [10.0]	C06111057-022	10.0	COPCs	
NECR1-SB-90 [15.0]	C06111057-023	15.0	COPCs	
NECR1-SB-90 [20]	C06111057-024	20.0	COPCs	
NECR1-SB-90 [25]	C06111057-025	25.0	COPCs	
NECR1-SB-90 [30.0]	C06111057-026	30.0	COPCs	
NECR1-SB-90 [35.5]	C06111057-027	35.0	COPCs	
NECR1-SB-90 [40]	C06111057-028	40.0	COPCs	
NECR1-SB-90 [45]	C06111057-029	45.0	COPCs	
NECR1-SB-095 [0.5]	C06111057-078	0.5	COPCs	
NECR1-SB-095 [5.0]	C06111057-018	5.0	COPCs	
NECR1-SB-095 [10.0]	C06111057-019	10.0	COPCs	
NECR1-SB-095 [14.0]	C06111057-020	14.0	COPCs	
NECR1-SB-131 [5.0]	C06111057-117	5.0	COPCs	
NECR1-SB-131 [10.0]	C06111057-118	10.0	COPCs	
NECR1-SB-131 [15.0]	C06111057-119	15.0	COPCs	
NECR1-SB-131 [20]	C06111057-120	20.0	COPCs	
NECR1-SB-131 [24]	C06111057-121	24.0	COPCs, TPH, VOCs	
NECR1-TP-138	C06120405-010	3.5-4.0		
NECR-2 Test Pits				
NECR 2-TP-015	C06110906-021	0.5-1.0	COPCs	
NECR 2-TP-020	C06110906-018	1.0-1.5	COPCs	
NECR 2-TP-035	C06110906-015	1.0-1.5	COPCs	
NECR 2-TP-039	C06110906-019	1.0-1.5	COPCs	duplicate
NECR 2-TP-052	C06110906-016	1.5-2.0	COPCs	
NECR 2-TP-052	C06110906-017	4.0-5.0	COPCs	
Sand Backfill No. 1 Test Pits				
SAND1-TP-030	C06120405-011	1-1.5	COPCs, SPLP	
SAND1-TP-030	C06120405-020	3.5-4.0	COPCs	
SAND1-TP-043	C06120405-012	1-1.5	COPCs	
SAND1-TP-049	C06120405-013	1-1.52	COPCs	
SAND1-TP-049	C06120405-014	3.5-4	COPCs	duplicate
SAND1-TP-063	C06120405-016	0.5-1.0	COPCs, SPLP	
SAND1-TP-063	C06120405-017	1.5-2.0	COPCs	
SAND1-TP-068	C06120405-018	0.5-1.0	COPCs	
SAND1-TP-068	C06120405-019	1.5-2.0	COPCs	
Sand Backfill No. 2 Test Pits				
SAND 2-TP-008	C06110906-026	0.5-1.0	COPCs	
SAND 2-TP-011	C06110906-022	0.5-1.0	COPCs	
SAND 2-TP-012	C06110906-023	1.5-2.0	COPCs	
SAND 2-TP-017	C06110906-024	1.5-2.0	COPCs	

Table B.2 Subsurface Soil Sample Summary				
Sample ID	Lab ID	Depth (fbgs)	Analytical Suite	Notes
SAND 2-TP-019	C06110906-025	1.0-1.5	COPCs	
Sand Backfill No. 3 Test Pits				
SAND3-TP-005	C06120235-066	0.5-1.0	COPCs	
SAND3-TP-005	C06120235-067	1.5-2.0	COPCs	
SAND3-TP-006	C06120235-068	0.5-1.0	COPCs	
SAND3-TP-009	C06120235-069	0.5-1.0	COPCs, SPLP	
SAND3-TP-014	C06120235-070	0.5-1.0	COPCs	
SAND3-TP-014	C06120235-075	1.0-1.5	COPCs	
SAND3-TP-025	C06120235-071	0.5-1.0	COPCs	
Ponds 1 and 2 Soil Borings				
1/2-SB-71 [10.0]	C06111057-071	10.0	COPCs	
1/2-SB-71 [15.0]	C06111057-072	15.0	COPCs	
1/2-SB-82	C06111057-073	0.5	COPCs	
1/2-SB-82 [5.0]	C06111057-074	5.0	COPCs	
1/2-SB-82 [10.0]	C06111057-075	10.0	COPCs	
1/2-SB-82 [15]	C06111057-076	15.0	COPCs	
1/2-SB-82 [20]	C06111057-077	20.0	COPCs	
Pond12-SB-071	C06111057-069	0.5	COPCs	
Pond12-SB-71 [5.0]	C06111057-070	5.0	COPCs	
Ponds 1 and 2 Test Pits				
POND12-TP-030	C06120235-057	2.0-3.0	COPCs	
POND12-TP-030	C06120235-058	4.5-5.0	COPCs	
POND12-TP-035	C06120235-059	1.0-1.5	COPCs	
POND12-TP-035	C06120235-060	2.0-2.5	COPCs	
POND12-TP-035	C06120235-061	9.0-9.5	COPCs	
POND12-TP-058	C06120235-062	4.5-5.0	COPCs	
POND12-TP-058	C06120235-063	8.5-9.0	COPCs	
Pond 3/3a Soil Borings				
3/3a-SB-61	C06111057-111	0.5	COPCs	
3/3a-SB-61 [5.5]	C06111057-112	5.5	COPCs	
3/3a-SB-61 [10.0]	C06111057-113	10.0	COPCs	
3/3a-SB-61 [15.0]	C06111057-114	15.0	COPCs	
3/3a-SB-61 [20.0]	C06111057-115	20.0	COPCs	
3/3a-SB-61 [25.0]	C06111057-116	25.0	COPCs	
Pond 3/3a Test Pits				
POND3-TP-007	C06120336-042	5.0-5.5	COPCs	
POND3-TP-007	C06120336-043	9.0-9.5	COPCs	
POND3-TP-014	C06120336-044	6.5-7.0	COPCs	
POND3-TP-014	C06120336-045	8.5-9.0	COPCs	
POND3-TP-029	C06120336-046	3.0-3.5	COPCs	
POND3-TP-029	C06120336-047	6.0-6.5	COPCs	
POND3-TP-029	C06120336-048	9.0-9.5	COPCs	
POND3-TP-037	C06120336-049	0-0.5	COPCs	
POND3-TP-037	C06120336-050	5.0-5.5	COPCs	
POND3-TP-037	C06120336-051	8.5-9.0	COPCs	
Sediment Pad Test Pits				
SEDPAD-TP-006	C06120405-001	1.5-2.0	COPCs	
SEDPAD-TP-006	C06120405-002	3.0-3.5	COPCs	
SEDPAD-TP-012	C06120405-003	1.0-1.5	COPCs	
SEDPAD-TP-012	C06120405-004	1.5-2.0	COPCs	
SEDPAD-TP-014	C06120405-005	0.5-1.0	COPCs	
SEDPAD-TP-014	C06120405-006	1.0-1.5	COPCs	
SEDPAD-TP-021	C06120405-007	5.0-5.5	COPCs	
SEDPAD-TP-021	C06120405-008	10.0-10.5	COPCs	
SEDPAD-TP-026	C06120405-009	0.5-1.0	COPCs	

Table B.2 Subsurface Soil Sample Summary				
Sample ID	**Lab ID**	**Depth (fbgs)**	**Analytical Suite**	**Notes**
Unnamed Arroyo Soil Borings				
ARROYO-SB-001	C06120235-072	0-1.0	COPCs	
ARROYO-SB-001	C06120235-073	1.0-2.0	COPCs	
ARROYO-SB-001	C06120235-074	2.0-3.0	COPCs	
ARROYO-SB-002	C06120336-001	0-1.0	COPCs	
ARROYO-SB-002	C06120336-002	1.0-2.0	COPCs	
ARROYO-SB-002	C06120336-003	2.0-3.0	COPCs	
ARROYO-SB-003	C06120336-004	0-1.0	COPCs	
ARROYO-SB-003	C06120336-005	1.0-2.0	COPCs	
ARROYO-SB-003	C06120336-006	2.0-3.0	COPCs	
ARROYO-SB-004	C06120336-007	0-1.0	COPCs	
ARROYO-SB-004	C06120336-008	1.0-2.0	COPCs	
ARROYO-SB-004	C06120336-009	2.0-3.0	COPCs	
ARROYO-SB-005	C06120336-010	0-1.0	COPCs	
ARROYO-SB-005	C06120336-011	1.0-2.0	COPCs	
ARROYO-SB-005	C06120336-012	2.0-3.0	COPCs	
ARROYO-SB-006	C06120336-013	0-1.0	COPCs	
ARROYO-SB-006	C06120336-014	1.0-2.0	COPCs	
ARROYO-SB-006	C06120336-015	2.0-3.0	COPCs	
ARROYO-SB-007	C06120336-016	0-1.0	COPCs	
ARROYO-SB-007	C06120336-017	1.0-2.0	COPCs	
ARROYO-SB-007	C06120336-018	2.0-3.0	COPCs	
ARROYO-SB-008	C06120336-019	0-1.0	COPCs	
ARROYO-SB-008	C06120336-020	1.0-2.0	COPCs	duplicate
ARROYO-SB-008	C06120336-021	2.0-3.0	COPCs	duplicate
ARROYO-SB-009	C06120336-024	0-1.0	COPCs	
ARROYO-SB-009	C06120336-025	1.0-2.0	COPCs	
ARROYO-SB-009	C06120336-026	2.0-3.0	COPCs	
ARROYO-SB-010	C06120336-027	0-1.0	COPCs	
ARROYO-SB-010	C06120336-028	1.0-2.0	COPCs	
ARROYO-SB-010	C06120336-029	2.0-3.0	COPCs	
NEMSA Soil Borings				
NEMSA-TP-001	C06110906-027	0-0.5	COPCs	
NEMSA-TP-001	C06110906-028	1.0-1.5	COPCs	
NEMSA-TP-001	C06110906-029	4.0-5.0	COPCs	
NEMSA-TP-001	C06110906-030	6.0-6.5	COPCs	
NEMSA-TP-002	C06120336-030	0-0.25	COPCs	
NEMSA-TP-002	C06120336-031	0.25-0.75	COPCs	
NEMSA-TP-002	C06120336-032	5.5-6.0	COPCs	
NEMSA-TP-002	C06120336-033	7.0-7.5	COPCs	
NEMSA-TP-003	C06120336-034	0-0.5	COPCs	
NEMSA-TP-003	C06120336-035	1.5-2.0	COPCs	
NEMSA-TP-003	C06120336-036	4.0-4.5	COPCs	
NEMSA-TP-004	C06120336-037	0-0.5	COPCs	
NEMSA-TP-004	C06120336-052	1.0-1.5	COPCs	
NEMSA-TP-004	C06120336-053	6.0-6.5	COPCs	
NEMSA-TP-004	C06120336-038	8.5-9.0	COPCs	
NEMSA-TP-005	C06120336-039	0-0.5	COPCs	
NEMSA-TP-005	C06120336-040	4.0-4.5	COPCs	
NEMSA-TP-005	C06120336-041	8.0-8.5	COPCs	
Boneyard Test Pits				
YARD-TP-001	C06110906-031	0-0.5	COPCs, TCLP	TCLP SamplD C06120227-001
YARD-TP-001	C06120235-021	1.0-1.5	COPCs	
YARD-TP-002	C06120235-023	0-0.5	COPCs	
YARD-TP-002	C06120235-024	1.5-2.0	COPCs, TCLP	TCLP SamplD C06120227-002

Table B.2 Subsurface Soil Sample Summary				
Sample ID	**Lab ID**	**Depth (fbgs)**	**Analytical Suite**	**Notes**
YARD-TP-002	C06120235-025	9.5-10.0	COPCs, TCLP	TCLP SampID C06120227-011
YARD-TP-003	C06120235-026	0-0.5	COPCs	
YARD-TP-003	C06120235-027	1.0-1.5	COPCs, TCLP	TCLP SampID C06120227-010
YARD-TP-004	C06120235-022	0-0.5	COPCs	
YARD-TP-004	C06120235-028	0.5-1.0	COPCs, TCLP	TCLP SampID C06120227-003
YARD-TP-004	C06120235-029	5.5-6.0	COPCs, TCLP	TCLP SampID C06120227-004
YARD-TP-004	C06120235-030	7.0-7.5	COPCs, TCLP	TCLP SampID C06120227-007
YARD-TP-004	C06120235-031	9.5-10.0	COPCs, TCLP	duplicate, TCLP SampID C06120227-006
YARD-TP-005	C06120235-033	0-0.5	COPCs	
YARD-TP-005	C06120235-034	2.5-3.0	COPCs, TCLP	TCLP SampID C06120227-005
YARD-TP-005	C06120235-035	4.5-5.0	COPCs, TCLP	TCLP SampID C06120227-008
YARD-TP-005	C06120235-036	8.5-9.0	COPCs, TCLP	TCLP SampID C06120227-009

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