Chiappone, Frank

From: Jerry Riggi [jmriggi@gw.dec.state.ny.us]
Sent: Wednesday, September 10, 2008 1:17 PM
To: Frank Chiappone
Cc: Thomas Papura
Subject: Bausch and Lomb, Suntru Street Remediation

Mr Chiappone,

The NYSDEC radiation staff has reviewed the Final Report for the Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street, Rochester, New York. Based on the report, NYSDEC staff observations and surveys, and sample results, we grant approval to backfill the excavation at the Suntru Street location. Please provide us with notification upon completion of work at the site.

Sincerely,
Jerry Riggi

Jerry M Riggi
NYSDEC
Bureau of Hazardous Waste and Radiation Management
(518) 402-8575
jmriggi@gw.dec.state.ny.us

MJW
CORPORATION

August 18, 2008

Mr. Frank Chiappone
Bausch & Lomb World Headquarters
One Bausch & Lomb Place
Rochester, New York 14604-2701

Subject: Final Report for the Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street Rochester, New York

Dear Mr. Chiappone:

The MJW Corporation is pleased to provide you with three (3) hard copies of the subject final report per your request. Should you have any questions regarding the enclosed material please contact me at your convenience.

MJW appreciates this opportunity to provide our expert radiological services to B&L. We enjoyed working with you on this important project and look forward to working with you in the future.

Very truly yours,
MJW Corporation Inc.

David A. Dooley, Ph.D., CHP
President

2008-1705.003

University Park, 1900 Sweet Home Road
Amherst, New York 14228-3359
Voice: (716) 631-8291 fax: (716) 631-5631 toll free: 1-888-MJW-CORP www.mjwcorp.com

Final Report for the Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street Rochester, New York

August 18, 2008

Submitted to:

Bausch & Lomb World Headquarters
One Bausch & Lomb Place
Rochester, New York 14604-2701

Submitted by:

MJW Corporation Inc.
University Park.
1900 Sweet Home Road
Amherst, New York 14228-8291
Phone: (716) 631-8291 / Fax: (716) 631-5631

MJW CORPORATION

Final Report for the Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street, Rochester, New York

Introduction

Following the attempted remediation of the subject pits in 2008 (See References 1-3), MJW Corporation performed additional remedial activities aimed at final closure of the subject pits at the B&L Suntru Street site. This report details those activities and provides recommendations based on the overland gamma surveys of dirt removed from the pit and soil samples collected and analyzed from the removed soil piles. The goal of this work was to determine the extent of possible thorium contamination remaining in the excavation above naturally occurring levels and to back up overland gamma surveys of removed soils with several composite soil samples taken of the removed soil. Bermed plastic laydown areas were created to store the soil while soil sample results and the final disposition of these soils was decided.

Work Plan

The site work was performed in accordance with the NYSDEC approved work plan dated April 9, 2008 (Reference 4). The only modification made was that the number of soil samples collected overall was reduced due to overland gamma surveys of excavated soils, using very sensitive equipment, showing minimal activity above background levels. The work site activity log is shown in Attachment 7.

Lay Down Area Overland Gamma Survey Method Details

The overland gamma surveys were performed with an unshielded 2"x 2" NaI probe (Ludlum model 44-10) connected to a Ludlum 2241-2 survey meter set in "rate" mode. See Attachments 2 and 5 for instrument calibration and operability (source check) information, respectively.

Background overland gamma surveys were performed of the laydown areas by walking the across the areas in a straight line aided by yellow flags placed on a stanchion at the end of each traverse which was done in approximately 3 foot increments. Further, the survey meter radiological data was polled every 2 seconds and automatically tagged with corresponding GPS location for that data point and the information was stored on a laptop computer. To increase the accuracy of the GPS device supporting the survey an external antenna was used. The NaI probe was positioned approximately 0.3 meters from ground surface with a survey speed of approximately 0.5 m/s. With the survey meter held in this position it was able to detect even very low levels of activity present in a six foot diameter circle around the meter. Attachment 8 shows the raw and net radiological data and the GPS data for the background surveys for the laydown areas 1 and 2.

The GPS device used with the overland gamma survey equipment and computer was the Magellan Mobile Mapper CE with an external antenna (s/n 0115470143215). This GPS unit typically used data from 10 orbital satellites for ground positioning information with as many as 12 in "view" at any one time.

A Bicron microRem® tissue equivalent survey meter as also used to provide tissue equivalent dose rate information at ~ one meter above the ground surface. Instrument calibration information and operability checks for the Bicron instrument are also shown in Attachments 1

and 4, respectively. This survey instrument provides the most realistic measure of any potential radiation exposure to workers or members of the general public due to the presence of gamma-emitting radioactive material that may be on the site. Area background readings averaged 5-7 microRem per hour. The highest readings obtained at 3 feet above the highest activity material in the dirty pile was approximately 11 microRem/hr.

Screening of Excavated Soils

Soils were excavated using a 0.5 yard bucket on a Volvo Model EC140B excavator. The company operating the excavator was Marcor Remediation, Inc. Soils were lifted out of the excavation starting with the bottom of the excavation and working to the sides. As each bucket was removed, the operator held the bucket at the surface to allow radiological screening to occur to determine whether the bucket contents were placed in the "clean" or the "dirty" pile. A Ludlum Model 3 survey meter with a Ludlum 44-2 one inch NaI probe was used to perform this screening step. The calibration and operability check data for the Model 3 is shown in Attachments 3 and 6, respectively. The calibration data show that a 44-9 probe was used. In this instance, the 44-2 probe was substituted for the 44-9 and operability checked to provide a "go/ no go" measurement and not a definitive quantifiable measurement. Background for the Model 3 and the 44-2 probe ranged from1200 to 1800 CPM. Excavated soils surveyed that exceeded 2000 CPM were placed in the "dirty" pile; otherwise it was placed in the "clean" pile.
Laydown area 1 was configured such that "dirty" soils were placed on the SW portion and "clean" soils on the NE portion of the area. No "dirty" soils were placed in laydown area 2, only "clean" soils. The soil pile areas are shown graphically in Attachment 10.

Overland Gamma Survey Results

Once sufficient soils had been removed such that no additional above background material was being removed and several yards of material had been placed into laydown area 2 with no "dirty" soils indentified upon screening, excavation of soils from the pit was suspended. MJW's overland gamma survey instrumentation was then used to perform a walkover of the soil piles after the excavator operator leveled the material out to allow better access and to lessen the thickness of the material to about 1-1.5 feet.

The numerical results of the overland gamma survey of the laydown areas after soil excavation are shown Attachment 9 to this report. The Attachment 9 data layout is identical to the baseline data of Attachment 8. Attachment 10 shows a graphic of the soil pile locations per the GPS data and the radiological data associated with the measurements recorded during the walkovers. The baseline surveys of the two lay down areas were nearly identical with very similar minimum, maximum and average count per minute (CPM) results. The baseline data can be seen as the small green colored dots that traverse the areas. The larger colored dots represent the data collected after the soil was present. The legend at the lower right of the graph shows the count rate levels broken down into 3000 CPM intervals with varying colors. The second lay down area that was surveyed after the last of the soils were removed from the excavation without any positive indications of activity, approximate those of the baseline surveys to within about 10-12 %. The "dirty" soil placed in the SW portion of lay down area one were, at a maximum of 13,594 CPM, about 30-35 % above the baseline survey maximum for the same area without excavated soil.

Soil Sampling Results

The radiological analytical results for the soil samples collected from the composite samples collected are shown in Attachment 13. Analysis of the samples by gamma spectroscopy and isotopic thorium was performed by Outreach Laboratory located in Broken Arrow, OK. The data also contains the completed chain of custody form used to track the samples from shipment through receipt. Federal Express was the carrier. A total of seven composite samples were collected. Each composite consisted of at least 5 and on average 8 separate portions of soil from varying locations with a total per sample weight of about 0.5 kilograms. Two samples were taken from the "clean" pile soils, three from the "dirty" pile soils and two were collected from the bottom of the excavation after we had no more positive indications of activity above background on soils being removed to lay down area number 2. It should be understood that Th-232 is the only isotope of concern here since in nature more than 99% of naturally occurring elemental thorium exists in this form. Th-230 is part of the uranium 238 decay chain while thorium 228 is part of the thorium 232 decay chain and in nature is in equilibrium (at the same concentration as) with it's parent thorium 232. Reference 1 reports that the native soils near the excavation site have a thorium 232 concentration of about 0.5 pCi/gram. The average background concentration reported for thorium-232 in the Western New York area is about 1 pCi/g (USACE, 2000). The local soils tested in the area of the excavation therefore appear to be below the normal background concentrations for thorium-232 encountered for soils in WNY and in general for New York State. For example, average naturally occurring thorium concentrations in soils world wide are reported as 9 ppm or about 1 pCi/g (Eisenbud and Gesell, 1997).

The soil sample analytical results are shown in Table 1. Results are given in pCi/g gram and not all nuclides analyzed are reported in Table 1. Samples were analyzed between July 15 and July 29, 2008.

Table 1. Results of Soil Sample Analysis for Suspect Thorium Contamination (pCi/g +/- error)

Nuclide	K-40	Pb-212	Bi-214 (Ra-226)	Ac-228 (Ra-228)	Th-228	Th-230	Th-232
Sample ID							
Clean Pile 1	19.5±3.37	1.29±0.192	0.704±0.272	1.38±0.200	0.263±0.098	1.11±0.172	0.158±0.081
Clean Pile 2	20.5±2.48	1.97±0.254	0.668±0.140	1.67±0.207	1.64±0.176	2.44±0.211	2.04±0.186
Dirty Pile 1	19.3±2.77	5.39±0.450	0.829±0.180	4.76±0.31	1.03±0.318	0.074±0.148	1.16±0.249
Dirty Pile 2	13.0±2.20	2.73±0.780	0.552±0.06	3.15±0.31	3.81±0.316	3.50±0.312	4.16±0.326
Dirty Pile 3	13.3±1.67	1.88±0.197	0.720±0.100	1.83±0.195	2.80±0.282	3.82±0.332	2.75±0.266
Pit Floor 1	15.2±2.21	3.1±0.290	0.564±0.152	2.62±0.254	2.81±0.207	2.82±0.213	3.56±0.228
Pit Floor 2	16.0±2.57	2.56±0.301	0.51±0.132	2.02±0.235	2.99±0.205	2.24±0.187	2.93±0.202

Th-232 concentrations in soils samples averaged 1.1 pCi/g for the "clean" piles, 2.69 pCi/g for the "dirty" pile, and 3.25 pCi/g for the floor of the excavation. Using a normal background for Th-232 of 0.5 to 1 pCi/g and a bench mark to meet of 2.8 pCi/g of Th-232 above background concentrations, the concentration averages should not exceed 3.3 to 3.8 pCi/g. All average values calculated from the sample data meet this criterion.

Final Report for the Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street, Rochester, New York

Summary

Subsurface soils were excavated from a legacy thorium slurry operation to measure and test the soils for the presence of residual Th-232. Soils were excavated, screened for possible radiological content and separate based on the screening measurements into "clean" and "dirty" piles onto prepared surfaces consisted of bermed poly. After several instances of no additional positive indications of activity at the screening stage, a final 1/2 yard of soil was removed and sampled along with the other piles. All soil samples were multiple part composites. The removed soils were also scanned by an overland gamma walkover which gave indications of areas that exceeded background levels. The highest reading did not exceed normal background by more than a factor of about 1.5. The same was true for measurements made using a Bicron microRem tissue-equivalent survey meter over these same areas.

The results of the survey show that the overland gamma measurements of the excavated soils and the sample were indistinguishable from area background concentrations. Further, this conclusion is supported and confirmed by the results of radiological analysis of 7 composite soil samples obtained from excavated soils which shows average thorium 232 concentrations for all material removed regardless of how it was segregated below the NYSDEC benchmark of 2.8 pCi/g above the natural Th-232 background. For this reason it is our professional opinion that the excavated soils pose no health risk to workers or to the general public and can be returned to the excavation as part of the final step of this remedial effort.

References

1) Karam, P. Andrew, 2006, Report of Suntru Street Radiological Survey Performed for Bausch and Lomb, December 11 and 12, 2006.
2) Karam, P. Andrew, 2007, Remediation Plan for the Bausch & Lomb Suntru Street Facility, November 27, 2007.
3) Karam, A. Phillip, 2008, Remedial Activities at the Bausch & Lomb Property on Suntru Street, February, 2008.
4) MJW Corporation, 2008, Work Plan for the Analysis and Closure of the Legacy Thorium Slurry Pits at the Bausch & Lomb Glass Plant Located on Suntru Street, Rochester, New York. April 9, 2008. 2008-1705.
5) U.S. Army Corp of Engineers (USACE), 2000, Record of Decision for the Linde Site, Tonawanda New York. March.
6) Eisenbud, M. and Gesell, T, 1997, Environmental Radioactivity, Fourth Edition, Academic Press.

Attachment 1

Calibration Certificate for Bicron MicoRem Survey Meter

MJW Technical Services
243 Root St.
Suite 100
Olean, New York 14760
Voice: (716) 372-5300
Fax: (716) 372-5307

Certificate Of Calibration

This Certificate will be accompanied by Calibration Charts or Readings where Applicable

Customer	Instrument
Customer Name: MJW Corporation	Manufacturer: Bicron
Address: University Park 1900 Sweet Home Road Amherst, NY 14228	Model: Micro Rem Serial Number: B378A
	Detector Manufacturer: Bicron
Contact Name: David Dooley	Det. Model: Internal Scintillator Serial Number: N/A
Customer PO/ CC. Number: / Work Order Number: 2007-322	Meterface: 0 - 200 urem/hr Calibration Method: Source

Instrument Received: ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other (See Comments)

☑ Geotropism ☑ Meter Zero ☑ Mech. Ck. ☑ HV Readout ☑ Battery Check ☐ Reset

☐ Audio ☐ Window Status ☐ FS Response ☑ Linearity ☐ Background Subtract ☐ Alarm Set

Temperature: 71.6 F Humidity: 69 % Pressure: 28.7 in Hg Altitude: 1455 ft

Instrument Calibration

Multiplier\Range	Calibration Point	Instrument Response	
		Before Calibration	After Calibration
X 0.1	4 uR/hr	4 uR/hr	4 uR/hr
X 0.1	16 uR/hr	16 uR/hr	16 uR/hr
X 1	40 uR/hr	40 uR/hr	40 uR/hr
X 1	160 uR/hr	150 uR/hr	150 uR/hr
X 10	400 uR/hr	400 uR/hr	400 uR/hr
X 10	1600 uR/hr	1600 uR/hr	1600 uR/hr
X 100	4000 uR/hr	4000 uR/hr	4000 uR/hr
X 100	16000 uR/hr	15800 uR/hr	15800 uR/hr
X 1K	40000 uR/hr	40000 uR/hr	40000 uR/hr
X 1K	160000 uR/hr	162000 uR/hr	162000 uR/hr

Reference Instruments and / or Sources

Pulser: LUD500-2 220100

Cs-137 7753CM Cs-137 7020CM

Comments

Electronic calibration results:

As found

16k cpm @ 0.60v = 160 urem/hr on x1 range
4k cpm @ 0.60v = 40 urem/hr on x1 range
1.6k cpm @ 0.60v = 16 urem/hr on x0.1 range
400 cpm @ 0.60v = 4 urem/hr on x0.1 range

As left

16k cpm @ 0.60v = 160 urem/hr on x1 range
4k cpm @ 0.60v = 40 urem/hr on x1 range
1.6k cpm @ 0.60v = 16 urem/hr on x0.1 range
400 cpm @ 0.60v = 4 urem/hr on x0.1 range

Statement of Certification

MJW Technical Sevices, 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 ANS/NCSL Z540-1-1994 and ANSI N323. The instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW technical Services is not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By: [signature]

Reviewed By: [signature] Date 8/30/07

Calibration Date: 08/27/2007 Calibration Due: 08/27/2008

Attachment 2

Calibration Certificate for Ludlum 2241-2 with 44-10 Probe

MJW Technical Services
243 Root St.
Suite 100
Olean, New York 14760
Voice: (716) 372-5300
Fax: (716) 372-5307

Certificate Of Calibration

This Certificate will be accompanied by Calibration Charts or Readings where Applicable

Customer

Customer Name: MJW Corporation

Address: University Park
1900 Sweet Home Road
Amherst, NY 14228

Contact Name: David Dooley

Customer PO/ CC. Number:

Work Order Number: 2007-303

Instrument

Manufacturer: Ludlum Measurements, Inc.

Model: 2241-2 Serial Number: 206098

Detector Manufacturer: Ludlum Measurements, Inc.

Det. Model: 44-10 Serial Number: PR112642

Meterface: Digital Calibration Method: Electronic

Instrument Received: ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other (See Comments)

☑ Geotropism ☐ Meter Zero ☑ Mech. Ck. ☐ HV Readout ☑ Battery Check ☑ Reset

☑ Audio ☐ Window Status ☑ FS Response ☐ Linearity ☐ Background Subtract ☐ Alarm Set

Temperature: 73.4 F Humidity: 65 % Pressure: 723.9 mm Hg Altitude: 1451 ft

Instrument Calibration

Multiplier\Range	Calibration Point	Instrument Response	
		Before Calibration	After Calibration
Ratemeter Mode	200 cpm	200 cpm	200 cpm
Ratemeter Mode	2 Kcpm	1999 cpm	1999 cpm
Ratemeter Mode	20 Kcpm	19900 cpm	19900 cpm
Ratemeter Mode	200 Kcpm	199000 cpm	199000 cpm
Ratemeter Mode	800 cpm	796 cpm	796 cpm
Ratemeter Mode	8 Kcpm	7900 cpm	7900 cpm
Ratemeter Mode	80 Kcpm	79500 cpm	79500 cpm
Ratemeter Mode	800 Kcpm	795000 cpm	795000 cpm
Scaler Mode	200 cpm	200 cpm	200 cpm
Scaler Mode	2 Kcpm	1992 cpm	1992 cpm
Scaler Mode	20 Kcpm	19891 cpm	19891 cpm
Scaler Mode	200 Kcpm	198763 cpm	198763 cpm
Scaler Mode	800 cpm	793 cpm	793 cpm
Scaler Mode	8 Kcpm	7960 cpm	7960 cpm
Scaler Mode	80 Kcpm	79609 cpm	79609 cpm
Scaler Mode	800 Kcpm	795888 cpm	795888 cpm

Reference Instruments and / or Sources

Pulser: LUD500-2	220100	
Cs-137	C7-806	

Comments

DETECTOR SETUPS:

DET #1 (RED) 44-9

Calibration Constant	100 E-2
Dead Time	0
High Voltage	900
Input Sensitivity	10 mV
Detector Color	RED

DET #2 (YELLOW) 44-10

Calibration Constant	100 E-2
Dead Time	0
High Voltage	825
Input Sensitivity	10 mV
Detector Color	YELLOW

Cs137 Efficency @1/4" = 8.8% 4PI

Statement of Certification

MJW Technical Sevices, 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 ANS/NCSL Z540-1-1994 and ANSI N323. The instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW technical Services is not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:

Reviewed By: Date 7-30-07

Calibration Date: 07/30/2007

Calibration Due: 07/30/2008

Attachment 3

Calibration Certificate for Ludlum Model 3 with 44-9 Probe

MJW Technical Services
243 Root St.
Suite 100
Olean, New York 14760
Voice: (716) 372-5300
Fax: (716) 372-5307

Certificate Of Calibration

This Certificate will be accompanied by Calibration Charts or Readings where Applicable

Customer

Customer Name: MJW Corporation

Address: University Park
1900 Sweet Home Road
Amherst, NY 14228

Contact Name: David Dooley

Customer PO/ CC. Number:

Work Order Number: 2007-315

Instrument

Manufacturer: Ludlum Measurements, Inc.

Model: 3 Serial Number: 208946

Detector Manufacturer: Ludlum Measurements, Inc.

Det. Model: 44-9 Serial Number: PR088363

Meterface: 202-002 Calibration Method: Electronic

Instrument Received: ☑ Within Toler. +-10% ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other (See Comments)

☑ Geotropism ☑ Meter Zero ☑ Mech. Ck. ☐ HV Readout ☑ Battery Check ☑ Reset

☑ Audio ☐ Window Status ☑ FS Response ☐ Linearity ☐ Background Subtract ☐ Alarm Set

Temperature: 73.1 F Humidity: 57 % Pressure: 721.4 mm Hg Altitude: 1455 ft

Instrument Calibration

Multiplier\Range	Calibration Point	Instrument Response	
		Before Calibration	After Calibration
X 0.1	0.1 Kcpm	0.1 Kcpm	0.1 Kcpm
X 0.1	0.4 Kcpm	0.4 Kcpm	0.4 Kcpm
X 1	1 Kcpm	1 Kcpm	1 Kcpm
X 1	4 Kcpm	4 Kcpm	4 Kcpm
X 10	10 Kcpm	10 Kcpm	10 Kcpm
X 10	40 Kcpm	40 Kcpm	40 Kcpm
X 100	100 Kcpm	100 Kcpm	100 Kcpm
X 100	400 Kcpm	400 Kcpm	400 Kcpm

Reference Instruments and / or Sources

Pulser: LUD500-2 220099

Sr-90 C7-638

Comments

Inst. Voltage: 900 V Input Sensitivity: 29 mV

Sr90 efficiency @ 0.25" = 33.4%

Statement of Certification

MJW Technical Sevices, 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 ANS/NCSL Z540-1-1994 and ANSI N323. The Instrument listed above was inspected prior to shipment and it met all the manufacturer's published operating specifications. (MJW technical Services is not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated By:

Reviewed By:

Date 8/17/07

Calibration Date: 08/15/2007

Calibration Due: 08/15/2008

Attachment 4

Operational Check for Bicron MicroRem Survey Meter

ATTACHMENT 3

M.J.W. CORPORATION, INC.
FIELD SOURCE CHECK FORM

SITE: Bausch & Lomb, Suntron Rd.

DATE: 7/8/2008 TIME: 9:13 AM

RATEMETER/SCALER

MODEL NUMBER Micro-Rem CAL. DATE 8/27/07

SERIAL NUMBER B378A CAL. DUE DATE 8/27/08

BATTERY: OK ✓ NOT OK ____ OTHER ____

COMMENTS: ____

PROBE

MODEL NUMBER N/A CAL. DATE ____

SERIAL NUMBER ____ CAL. DUE DATE ____

CONVERSIONS ____ OTHER ____

SOURCE

TYPE Zirconium Sand SOURCE STRENGTH ____

SERIAL NUMBER #31 DATE ____

CAL. DATE ____ OTHER Response Check Only

SOURCE CHECK

HV SET @ ____ CAL. HV ____

SOURCE CPM ____ CAL. SOURCE TYPE ____

BACKGROUND CPM ____ CAL. BACKGROUND ____

EFF. (CPM/DPM) ____ CAL EFFICIENCY ____

PERFORMED BY [signature]

REMARKS ____

Attachment 5

Operational Check for Ludlum 2241-2 and 44-10 Probe

ATTACHMENT 3

M.J.W. CORPORATION, INC.
FIELD SOURCE CHECK FORM

SITE: Bausch & Lomb, Suntrn Rd.

DATE: 7/8/2008 TIME: 9:20 Am

RATEMETER/SCALER

MODEL NUMBER 2241-2 CAL. DATE 7/30/07

SERIAL NUMBER 206098 CAL. DUE DATE 7/30/08

BATTERY: OK S NOT OK ____ OTHER ____

COMMENTS: ____

PROBE

MODEL NUMBER 44-10 CAL. DATE 7/30/07

SERIAL NUMBER PR256142 CAL. DUE DATE 7/30/08

CONVERSIONS ____ OTHER ____

SOURCE

TYPE Zirconium Sand SOURCE STRENGTH ____

SERIAL NUMBER #31 DATE ____

CAL. DATE ____ OTHER Response check only

SOURCE CHECK

HV SET @ ____ CAL. HV ____

SOURCE CPM ____ CAL. SOURCE TYPE ____

BACKGROUND CPM ____ CAL. BACKGROUND ____

EFF. (CPM/DPM) ____ CAL EFFICIENCY ____

PERFORMED BY Susan J. Jensen

REMARKS ____

Attachment 6

Operational Check for Ludlum Model 3 and 44-9 Probe

ATTACHMENT 3

M.J.W. CORPORATION, INC.
FIELD SOURCE CHECK FORM

SITE: Bausch + Lomb, Suntrup Rd.

DATE: 7/8/2008 TIME: 9:12 AM

RATEMETER/SCALER

MODEL NUMBER 3 CAL. DATE 8/15/07

SERIAL NUMBER 208946 CAL. DUE DATE 8/15/08

BATTERY: OK ✓ NOT OK ____ OTHER ____

COMMENTS: ____

PROBE

MODEL NUMBER 44-2 CAL. DATE 8/15/07

SERIAL NUMBER PR231753 CAL. DUE DATE 8/15/08

CONVERSIONS ____ OTHER ____

SOURCE

TYPE Zirconium Sand SOURCE STRENGTH ____

SERIAL NUMBER #31 DATE ____

CAL. DATE ____ OTHER Response check only

SOURCE CHECK

HV SET @ ____ CAL. HV ____

SOURCE CPM ____ CAL. SOURCE TYPE ____

BACKGROUND CPM ____ CAL. BACKGROUND ____

EFF. (CPM/DPM) ____ CAL EFFICIENCY ____

PERFORMED BY [signature]

REMARKS ____

Attachment 7

On Site Log of Activities – 07/08/08

Bausch & Lomb Thorium Pit Onsite Log

08:15 Arrived onsite
08:45 Held Safety Briefing for all present
09:00 Assembled OGS backpack and marked off grid for first lay down area baseline survey.
09:25 Performed baseline survey of first ~40x20' lay down area located to the north of the excavation. Laydown area was bermed using crushed stone and plastic placed on area and over berm and secured with stone. Plastic was long enough to cover entire berm contents.

- Counts in laydown area ranged from 5,798 to 9,855 CPM

09:30 Each bucket of soil removed from the pit was monitored at the surface with a 1x1 NaI on a 3' pole and material removed was put on a "clean" pile or a "dirty" pile in the first lay down area. The clean material was put on the west side and the dirty on the east side of the laydown area. This operation continued until the excavator was put out of service.
11:30 Backhoe hydraulic line ruptured.
13:45 Backhoe repaired work recommenced.
13:50 A second 40 x 20' laydown area was constructed and prepared similar to the first. This laydown area was oriented ~90 degrees from the previous area oriented ~ north/south. The clean material removed was placed on the south end of the area.
14:20 Performed baseline survey of second lay down area.

- Counts in laydown area ranged from 6,500 to 8,500 CPM

14:30 Soil removal continued until native soil appeared to be noticeable in the pit floor. Additional soil removed showed no sign of containing any activity above background.
14:50 Excavator operator leveled material in first laydown area for walk-over scan
15:02 Performed walkover survey of first lay down area containing pit material.

1. Highest reading over pit material "dirty" end = 13,594 CPM gross.
2. Highest reading over pit material "clean" end = 9,909 CPM gross.

15:30 Excavator operator leveled material in second laydown area for walk-over scan
15:48 Performed walkover survey of second lay down area containing pit material.

1. Highest reading over "clean" pit material = 9,891 CPM gross

16:00 Performed clean up of area, covered pit soils, replaced security fencing
16:15 Pressure washed excavator bucket and surveyed – No readings above background.
16:30 Packed up all gear
16:45 Left site and locked gate

Attachment 8

Baseline Surveys of Laydown Areas 1 and 2

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area
Baseline Survey
Max: 9,855 CPM Min: 5,798 CPM Ave: 6,878 CPM*
*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
9:21:02	77°37'17.27W"	43°10'9.70N"	7323	445
9:21:03	77°37'17.27W"	43°10'9.70N"	8370	1492
9:21:05	77°37'17.27W"	43°10'9.70N"	6126	-752
9:21:07	77°37'17.27W"	43°10'9.70N"	6315	-563
9:21:09	77°37'17.27W"	43°10'9.70N"	6500	-378
9:21:11	77°37'17.27W"	43°10'9.70N"	7186	308
9:21:13	77°37'17.28W"	43°10'9.70N"	7153	275
9:21:15	77°37'17.27W"	43°10'9.70N"	6749	-129
9:21:17	77°37'17.27W"	43°10'9.70N"	8049	1171
9:21:19	77°37'17.25W"	43°10'9.71N"	7216	338
9:21:21	77°37'17.22W"	43°10'9.73N"	7437	559
9:21:23	77°37'17.19W"	43°10'9.75N"	7088	210
9:21:25	77°37'17.16W"	43°10'9.78N"	7321	443
9:21:27	77°37'17.12W"	43°10'9.79N"	6424	-454
9:21:29	77°37'17.10W"	43°10'9.80N"	6578	-300
9:21:31	77°37'17.07W"	43°10'9.82N"	6956	78
9:21:33	77°37'17.05W"	43°10'9.84N"	7582	704
9:21:35	77°37'17.01W"	43°10'9.85N"	7488	610
9:21:37	77°37'16.97W"	43°10'9.87N"	8113	1235
9:21:39	77°37'16.94W"	43°10'9.89N"	8517	1639
9:21:41	77°37'16.90W"	43°10'9.91N"	8190	1312
9:21:43	77°37'16.87W"	43°10'9.93N"	7922	1044
9:21:45	77°37'16.83W"	43°10'9.95N"	7155	277
9:21:47	77°37'16.79W"	43°10'9.98N"	6064	-814
9:21:49	77°37'16.75W"	43°10'9.99N"	7378	500
9:21:51	77°37'16.73W"	43°10'10.01N"	8171	1293
9:21:53	77°37'16.71W"	43°10'10.02N"	7786	908
9:21:55	77°37'16.69W"	43°10'10.02N"	9592	2714
9:21:57	77°37'16.66W"	43°10'10.01N"	8999	2121
9:21:59	77°37'16.68W"	43°10'10.01N"	9855	2977
9:22:01	77°37'16.67W"	43°10'10.04N"	7621	743
9:22:03	77°37'16.65W"	43°10'10.06N"	7931	1053
9:22:05	77°37'16.62W"	43°10'10.07N"	7471	593
9:22:07	77°37'16.61W"	43°10'10.09N"	8312	1434
9:22:09	77°37'16.60W"	43°10'10.08N"	8192	1314
9:22:11	77°37'16.59W"	43°10'10.10N"	7570	692
9:22:13	77°37'16.61W"	43°10'10.12N"	8506	1628
9:22:15	77°37'16.63W"	43°10'10.14N"	7993	1115
9:22:17	77°37'16.65W"	43°10'10.13N"	8770	1892
9:22:19	77°37'16.69W"	43°10'10.10N"	8476	1598
9:22:21	77°37'16.73W"	43°10'10.08N"	6605	-273
9:22:23	77°37'16.75W"	43°10'10.08N"	7456	578
9:22:25	77°37'16.80W"	43°10'10.04N"	7332	454
9:22:27	77°37'16.83W"	43°10'10.02N"	5798	-1080
9:22:29	77°37'16.87W"	43°10'10.00N"	6641	-237
9:22:31	77°37'16.90W"	43°10'9.98N"	6625	-253
9:22:33	77°37'16.94W"	43°10'9.96N"	8559	1681

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area
Baseline Survey
Max: 9,855 CPM Min: 5,798 CPM Ave: 6,878 CPM*
*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
9:22:35	77°37'16.97W"	43°10'9.95N"	8530	1652
9:22:37	77°37'17.00W"	43°10'9.93N"	7628	750
9:22:39	77°37'17.02W"	43°10'9.92N"	7899	1021
9:22:41	77°37'17.05W"	43°10'9.90N"	7672	794
9:22:43	77°37'17.08W"	43°10'9.88N"	6989	111
9:22:45	77°37'17.09W"	43°10'9.87N"	8477	1599
9:22:47	77°37'17.13W"	43°10'9.85N"	6987	109
9:22:49	77°37'17.16W"	43°10'9.83N"	6612	-266
9:22:51	77°37'17.19W"	43°10'9.81N"	7142	264
9:22:53	77°37'17.21W"	43°10'9.80N"	7654	776
9:22:55	77°37'17.24W"	43°10'9.78N"	6952	74
9:22:57	77°37'17.27W"	43°10'9.77N"	6300	-578
9:22:59	77°37'17.28W"	43°10'9.76N"	7489	611
9:23:01	77°37'17.32W"	43°10'9.74N"	8028	1150
9:23:03	77°37'17.33W"	43°10'9.75N"	7972	1094
9:23:05	77°37'17.36W"	43°10'9.78N"	6866	-12
9:23:07	77°37'17.37W"	43°10'9.79N"	7458	580
9:23:09	77°37'17.35W"	43°10'9.80N"	7254	376
9:23:11	77°37'17.32W"	43°10'9.82N"	6761	-117
9:23:13	77°37'17.29W"	43°10'9.84N"	6819	-59
9:23:15	77°37'17.26W"	43°10'9.86N"	8301	1423
9:23:17	77°37'17.22W"	43°10'9.88N"	7741	863
9:23:19	77°37'17.18W"	43°10'9.90N"	8029	1151
9:23:21	77°37'17.15W"	43°10'9.92N"	7072	194
9:23:23	77°37'17.11W"	43°10'9.94N"	7200	322
9:23:25	77°37'17.08W"	43°10'9.96N"	8288	1410
9:23:27	77°37'17.05W"	43°10'9.98N"	7650	772
9:23:29	77°37'17.01W"	43°10'10.00N"	7326	448
9:23:31	77°37'16.98W"	43°10'10.02N"	7298	420
9:23:33	77°37'16.95W"	43°10'10.04N"	7656	778
9:23:35	77°37'16.91W"	43°10'10.06N"	8196	1318
9:23:37	77°37'16.88W"	43°10'10.08N"	8395	1517
9:23:39	77°37'16.85W"	43°10'10.10N"	6780	-98
9:23:41	77°37'16.81W"	43°10'10.11N"	7541	663
9:23:43	77°37'16.78W"	43°10'10.13N"	7296	418
9:23:45	77°37'16.75W"	43°10'10.16N"	8541	1663
9:23:47	77°37'16.71W"	43°10'10.18N"	7741	863
9:23:49	77°37'16.71W"	43°10'10.19N"	7421	543
9:23:51	77°37'16.74W"	43°10'10.20N"	7198	320
9:23:53	77°37'16.76W"	43°10'10.22N"	7519	641
9:23:55	77°37'16.77W"	43°10'10.20N"	7445	567
9:23:57	77°37'16.80W"	43°10'10.18N"	7238	360
9:23:59	77°37'16.85W"	43°10'10.15N"	7585	707
9:24:01	77°37'16.87W"	43°10'10.14N"	7404	526
9:24:03	77°37'16.91W"	43°10'10.12N"	9358	2480
9:24:05	77°37'16.95W"	43°10'10.10N"	7478	600
9:24:07	77°37'16.97W"	43°10'10.09N"	8852	1974

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area

Baseline Survey

Max: 9,855 CPM Min: 5,798 CPM Ave: 6,878 CPM*

*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
9:24:09	77°37'17.02W"	43°10'10.05N"	7138	260
9:24:11	77°37'17.06W"	43°10'10.03N"	8126	1248
9:24:13	77°37'17.10W"	43°10'10.01N"	8128	1250
9:24:15	77°37'17.13W"	43°10'9.99N"	6726	-152
9:24:17	77°37'17.17W"	43°10'9.97N"	6646	-232
9:24:19	77°37'17.21W"	43°10'9.95N"	7554	676
9:24:21	77°37'17.24W"	43°10'9.93N"	7177	299
9:24:23	77°37'17.28W"	43°10'9.92N"	6711	-167
9:24:25	77°37'17.31W"	43°10'9.90N"	8115	1237
9:24:27	77°37'17.35W"	43°10'9.88N"	6395	-483
9:24:29	77°37'17.38W"	43°10'9.86N"	7015	137
9:24:31	77°37'17.40W"	43°10'9.85N"	6326	-552
9:24:33	77°37'17.43W"	43°10'9.85N"	7453	575
9:24:35	77°37'17.44W"	43°10'9.85N"	6496	-382
9:24:37	77°37'17.44W"	43°10'9.85N"	7756	878
9:24:39	77°37'17.45W"	43°10'9.86N"	7475	597
9:24:41	77°37'17.41W"	43°10'9.93N"	6724	-154
9:24:43	77°37'17.32W"	43°10'9.97N"	6840	-38
9:24:45	77°37'17.23W"	43°10'10.01N"	7980	1102
9:24:47	77°37'17.14W"	43°10'10.05N"	7826	948
9:24:49	77°37'17.05W"	43°10'10.09N"	8614	1736
9:24:51	77°37'16.95W"	43°10'10.13N"	7416	538
9:24:53	77°37'16.89W"	43°10'10.19N"	8227	1349
9:24:55	77°37'16.80W"	43°10'10.23N"	8404	1526
9:24:57	77°37'16.71W"	43°10'10.28N"	7103	225

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

Second Laydown Area
Baseline Survey
Max: 8,642 CPM Min: 5,909 CPM Ave: 7,149 CPM*
*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:14:57	77°37'17.11W"	43°10'9.09N"	5909	-1240
14:14:59	77°37'17.16W"	43°10'9.11N"	6940	-209
14:15:01	77°37'17.20W"	43°10'9.14N"	6966	-183
14:15:03	77°37'17.24W"	43°10'9.16N"	6120	-1029
14:15:05	77°37'17.27W"	43°10'9.18N"	7140	-9
14:15:07	77°37'17.30W"	43°10'9.21N"	6469	-680
14:15:09	77°37'17.33W"	43°10'9.23N"	6412	-737
14:15:11	77°37'17.36W"	43°10'9.25N"	7631	482
14:15:13	77°37'17.39W"	43°10'9.28N"	8319	1170
14:15:15	77°37'17.41W"	43°10'9.30N"	6174	-975
14:15:17	77°37'17.43W"	43°10'9.33N"	7089	-60
14:15:19	77°37'17.46W"	43°10'9.35N"	7178	29
14:15:21	77°37'17.47W"	43°10'9.38N"	6531	-618
14:15:23	77°37'17.48W"	43°10'9.41N"	6933	-216
14:15:25	77°37'17.49W"	43°10'9.44N"	6763	-386
14:15:27	77°37'17.50W"	43°10'9.47N"	6288	-861
14:15:29	77°37'17.52W"	43°10'9.50N"	6806	-343
14:15:31	77°37'17.52W"	43°10'9.54N"	6868	-281
14:15:33	77°37'17.48W"	43°10'9.56N"	7399	250
14:15:35	77°37'17.46W"	43°10'9.55N"	7701	552
14:15:37	77°37'17.45W"	43°10'9.52N"	6543	-606
14:15:39	77°37'17.42W"	43°10'9.50N"	6925	-224
14:15:41	77°37'17.42W"	43°10'9.47N"	8188	1039
14:15:43	77°37'17.41W"	43°10'9.45N"	7382	233
14:15:45	77°37'17.40W"	43°10'9.42N"	7354	205
14:15:47	77°37'17.38W"	43°10'9.40N"	7247	98
14:15:49	77°37'17.37W"	43°10'9.37N"	6371	-778
14:15:51	77°37'17.36W"	43°10'9.35N"	5948	-1201
14:15:53	77°37'17.34W"	43°10'9.33N"	7338	189
14:15:55	77°37'17.32W"	43°10'9.31N"	7801	652
14:15:57	77°37'17.30W"	43°10'9.29N"	8460	1311
14:15:59	77°37'17.27W"	43°10'9.27N"	6581	-568
14:16:01	77°37'17.24W"	43°10'9.26N"	6674	-475
14:16:03	77°37'17.24W"	43°10'9.24N"	7220	71
14:16:05	77°37'17.20W"	43°10'9.22N"	6346	-803
14:16:07	77°37'17.17W"	43°10'9.19N"	7297	148
14:16:09	77°37'17.14W"	43°10'9.18N"	6449	-700
14:16:11	77°37'17.12W"	43°10'9.16N"	7391	242
14:16:13	77°37'17.09W"	43°10'9.14N"	7609	460
14:16:15	77°37'17.06W"	43°10'9.12N"	7738	589
14:16:17	77°37'17.05W"	43°10'9.11N"	6836	-313
14:16:19	77°37'17.03W"	43°10'9.12N"	7702	553
14:16:21	77°37'17.00W"	43°10'9.12N"	7261	112
14:16:23	77°37'17.02W"	43°10'9.13N"	6484	-665
14:16:25	77°37'17.05W"	43°10'9.15N"	7620	471
14:16:27	77°37'17.08W"	43°10'9.17N"	7361	212
14:16:29	77°37'17.11W"	43°10'9.19N"	6290	-859

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

Second Laydown Area
Baseline Survey
Max: 8,642 CPM Min: 5,909 CPM Ave: 7,149 CPM*
*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:16:31	77°37'17.15W"	43°10'9.22N"	7820	671
14:16:33	77°37'17.18W"	43°10'9.24N"	7096	-53
14:16:35	77°37'17.20W"	43°10'9.26N"	7352	203
14:16:37	77°37'17.23W"	43°10'9.28N"	6935	-214
14:16:39	77°37'17.26W"	43°10'9.30N"	6471	-678
14:16:41	77°37'17.28W"	43°10'9.32N"	7297	148
14:16:43	77°37'17.30W"	43°10'9.34N"	7319	170
14:16:45	77°37'17.31W"	43°10'9.36N"	7523	374
14:16:47	77°37'17.33W"	43°10'9.38N"	7610	461
14:16:49	77°37'17.35W"	43°10'9.40N"	7536	387
14:16:51	77°37'17.37W"	43°10'9.42N"	7766	617
14:16:53	77°37'17.38W"	43°10'9.45N"	7333	184
14:16:55	77°37'17.38W"	43°10'9.48N"	7081	-68
14:16:57	77°37'17.39W"	43°10'9.51N"	7005	-144
14:16:59	77°37'17.41W"	43°10'9.54N"	6109	-1040
14:17:01	77°37'17.42W"	43°10'9.57N"	7215	66
14:17:03	77°37'17.39W"	43°10'9.59N"	6406	-743
14:17:05	77°37'17.35W"	43°10'9.57N"	7548	399
14:17:07	77°37'17.34W"	43°10'9.55N"	6944	-205
14:17:09	77°37'17.32W"	43°10'9.52N"	7454	305
14:17:11	77°37'17.32W"	43°10'9.48N"	6647	-502
14:17:13	77°37'17.31W"	43°10'9.46N"	7543	394
14:17:15	77°37'17.30W"	43°10'9.44N"	6868	-281
14:17:17	77°37'17.28W"	43°10'9.41N"	6226	-923
14:17:19	77°37'17.27W"	43°10'9.39N"	6937	-212
14:17:21	77°37'17.25W"	43°10'9.37N"	6951	-198
14:17:23	77°37'17.23W"	43°10'9.34N"	7522	373
14:17:25	77°37'17.21W"	43°10'9.32N"	7550	401
14:17:27	77°37'17.18W"	43°10'9.30N"	7440	291
14:17:29	77°37'17.15W"	43°10'9.28N"	7358	209
14:17:31	77°37'17.12W"	43°10'9.26N"	7045	-104
14:17:33	77°37'17.09W"	43°10'9.23N"	7586	437
14:17:35	77°37'17.07W"	43°10'9.21N"	6781	-368
14:17:37	77°37'17.04W"	43°10'9.19N"	7496	347
14:17:39	77°37'17.01W"	43°10'9.17N"	7804	655
14:17:41	77°37'16.99W"	43°10'9.15N"	6750	-399
14:17:43	77°37'16.96W"	43°10'9.13N"	7257	108
14:17:45	77°37'16.94W"	43°10'9.14N"	7271	122
14:17:47	77°37'16.93W"	43°10'9.14N"	7129	-20
14:17:49	77°37'16.96W"	43°10'9.18N"	6528	-621
14:17:51	77°37'16.98W"	43°10'9.19N"	6221	-928
14:17:53	77°37'17.01W"	43°10'9.21N"	6073	-1076
14:17:55	77°37'17.04W"	43°10'9.23N"	7655	506
14:17:57	77°37'17.04W"	43°10'9.24N"	7634	485
14:17:59	77°37'17.08W"	43°10'9.27N"	6575	-574
14:18:01	77°37'17.10W"	43°10'9.29N"	7752	603
14:18:03	77°37'17.14W"	43°10'9.31N"	8117	968

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

Second Laydown Area
Baseline Survey
Max: 8,642 CPM Min: 5,909 CPM Ave: 7,149 CPM*
*used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:18:05	77°37'17.16W"	43°10'9.33N"	8465	1316
14:18:07	77°37'17.19W"	43°10'9.35N"	6964	-185
14:18:09	77°37'17.21W"	43°10'9.37N"	7290	141
14:18:11	77°37'17.23W"	43°10'9.39N"	7131	-18
14:18:13	77°37'17.26W"	43°10'9.41N"	8538	1389
14:18:15	77°37'17.28W"	43°10'9.44N"	7591	442
14:18:17	77°37'17.30W"	43°10'9.45N"	6919	-230
14:18:19	77°37'17.31W"	43°10'9.48N"	7258	109
14:18:21	77°37'17.32W"	43°10'9.50N"	7331	182
14:18:23	77°37'17.33W"	43°10'9.53N"	7433	284
14:18:25	77°37'17.35W"	43°10'9.56N"	6315	-834
14:18:27	77°37'17.33W"	43°10'9.60N"	6215	-934
14:18:29	77°37'17.28W"	43°10'9.59N"	6989	-160
14:18:31	77°37'17.26W"	43°10'9.56N"	6512	-637
14:18:33	77°37'17.25W"	43°10'9.53N"	6595	-554
14:18:35	77°37'17.23W"	43°10'9.51N"	7207	58
14:18:37	77°37'17.22W"	43°10'9.48N"	8363	1214
14:18:39	77°37'17.20W"	43°10'9.45N"	8623	1474
14:18:41	77°37'17.18W"	43°10'9.42N"	7394	245
14:18:43	77°37'17.16W"	43°10'9.40N"	8555	1406
14:18:45	77°37'17.13W"	43°10'9.37N"	6844	-305
14:18:47	77°37'17.10W"	43°10'9.35N"	6720	-429
14:18:49	77°37'17.07W"	43°10'9.34N"	8303	1154
14:18:51	77°37'17.03W"	43°10'9.31N"	8642	1493
14:18:53	77°37'17.00W"	43°10'9.28N"	6090	-1059
14:18:55	77°37'16.97W"	43°10'9.26N"	7041	-108
14:18:57	77°37'16.94W"	43°10'9.24N"	7093	-56
14:18:59	77°37'16.91W"	43°10'9.22N"	7283	134
14:19:01	77°37'16.88W"	43°10'9.20N"	7175	26
14:19:03	77°37'16.83W"	43°10'9.20N"	7034	-115

Attachment 9

Surveys of Pit Soils in Laydown Areas 1 and 2

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area
With Pit Soil Survey
Max:13,594 CPM Min: 5,893 CPM Ave: 8155 CPM
6,878 CPM used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:55:25	77°37'16.66W"	43°10'10.00N"	7900	1022
14:55:27	77°37'16.75W"	43°10'9.89N"	7671	793
14:55:29	77°37'16.85W"	43°10'9.84N"	6225	-653
14:55:31	77°37'16.94W"	43°10'9.79N"	7693	815
14:55:33	77°37'17.03W"	43°10'9.73N"	8067	1189
14:55:35	77°37'17.12W"	43°10'9.68N"	7592	714
14:55:37	77°37'17.21W"	43°10'9.64N"	6872	-6
14:55:39	77°37'17.31W"	43°10'9.66N"	7075	197
14:55:41	77°37'17.32W"	43°10'9.67N"	6930	52
14:55:43	77°37'17.31W"	43°10'9.68N"	7573	695
14:55:45	77°37'17.37W"	43°10'9.72N"	7187	309
14:55:47	77°37'17.40W"	43°10'9.77N"	7065	187
14:55:49	77°37'17.40W"	43°10'9.78N"	7378	500
14:55:51	77°37'17.36W"	43°10'9.73N"	7802	924
14:55:53	77°37'17.32W"	43°10'9.70N"	6840	-38
14:55:55	77°37'17.32W"	43°10'9.71N"	6874	-4
14:55:57	77°37'17.32W"	43°10'9.71N"	6692	-186
14:55:59	77°37'17.32W"	43°10'9.71N"	8316	1438
14:56:01	77°37'17.35W"	43°10'9.70N"	6815	-63
14:56:03	77°37'17.34W"	43°10'9.71N"	7356	478
14:56:05	77°37'17.36W"	43°10'9.72N"	7344	466
14:56:07	77°37'17.36W"	43°10'9.74N"	6933	55
14:56:09	77°37'17.35W"	43°10'9.74N"	7923	1045
14:56:11	77°37'17.34W"	43°10'9.73N"	7770	892
14:56:13	77°37'17.33W"	43°10'9.72N"	7438	560
14:56:15	77°37'17.33W"	43°10'9.72N"	6690	-188
14:56:17	77°37'17.36W"	43°10'9.74N"	7318	440
14:56:19	77°37'17.38W"	43°10'9.74N"	7005	127
14:56:21	77°37'17.36W"	43°10'9.72N"	6580	-298
14:56:23	77°37'17.37W"	43°10'9.73N"	7019	141
14:56:25	77°37'17.37W"	43°10'9.73N"	7421	543
14:56:27	77°37'17.37W"	43°10'9.73N"	7649	771
14:56:29	77°37'17.35W"	43°10'9.72N"	8381	1503
14:56:31	77°37'17.36W"	43°10'9.74N"	7121	243
14:56:33	77°37'17.34W"	43°10'9.72N"	6475	-403
14:56:35	77°37'17.29W"	43°10'9.68N"	7095	217
14:56:37	77°37'17.29W"	43°10'9.67N"	6391	-487
14:56:39	77°37'17.28W"	43°10'9.65N"	7247	369
14:56:41	77°37'17.16W"	43°10'9.67N"	7466	588
14:56:43	77°37'17.07W"	43°10'9.72N"	7929	1051
14:56:45	77°37'16.98W"	43°10'9.77N"	7036	158
14:56:47	77°37'16.90W"	43°10'9.82N"	6927	49
14:56:49	77°37'16.82W"	43°10'9.86N"	6913	35
14:56:51	77°37'16.78W"	43°10'9.88N"	7122	244
14:56:53	77°37'16.76W"	43°10'9.89N"	7503	625
14:56:55	77°37'16.68W"	43°10'9.94N"	7736	858
14:56:57	77°37'16.65W"	43°10'9.99N"	8134	1256
14:56:59	77°37'16.64W"	43°10'10.03N"	7497	619

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area
With Pit Soil Survey
Max:13,594 CPM Min: 5,893 CPM Ave: 8155 CPM
6,878 CPM used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:57:01	77°37'16.66W"	43°10'10.01N"	7543	665
14:57:03	77°37'16.70W"	43°10'9.98N"	7784	906
14:57:05	77°37'16.73W"	43°10'9.96N"	8023	1145
14:57:07	77°37'16.75W"	43°10'9.96N"	6896	18
14:57:09	77°37'16.81W"	43°10'9.91N"	8209	1331
14:57:11	77°37'16.86W"	43°10'9.88N"	6918	40
14:57:13	77°37'16.92W"	43°10'9.85N"	8125	1247
14:57:15	77°37'16.96W"	43°10'9.82N"	8358	1480
14:57:17	77°37'16.99W"	43°10'9.81N"	7480	602
14:57:19	77°37'17.05W"	43°10'9.77N"	7351	473
14:57:21	77°37'17.09W"	43°10'9.74N"	8072	1194
14:57:23	77°37'17.13W"	43°10'9.72N"	7870	992
14:57:25	77°37'17.17W"	43°10'9.69N"	8379	1501
14:57:27	77°37'17.21W"	43°10'9.67N"	7185	307
14:57:29	77°37'17.25W"	43°10'9.65N"	5893	-985
14:57:31	77°37'17.28W"	43°10'9.67N"	6704	-174
14:57:33	77°37'17.31W"	43°10'9.70N"	7499	621
14:57:35	77°37'17.34W"	43°10'9.74N"	7009	131
14:57:37	77°37'17.34W"	43°10'9.72N"	7511	633
14:57:39	77°37'17.32W"	43°10'9.72N"	7804	926
14:57:41	77°37'17.27W"	43°10'9.73N"	8318	1440
14:57:43	77°37'17.23W"	43°10'9.74N"	9380	2502
14:57:45	77°37'17.22W"	43°10'9.75N"	11959	5081
14:57:47	77°37'17.18W"	43°10'9.77N"	13345	6467
14:57:49	77°37'17.16W"	43°10'9.79N"	12638	5760
14:57:51	77°37'17.12W"	43°10'9.80N"	10745	3867
14:57:53	77°37'17.10W"	43°10'9.82N"	10182	3304
14:57:55	77°37'17.07W"	43°10'9.83N"	10428	3550
14:57:57	77°37'17.06W"	43°10'9.84N"	10072	3194
14:57:59	77°37'17.01W"	43°10'9.86N"	9712	2834
14:58:01	77°37'16.98W"	43°10'9.89N"	8970	2092
14:58:03	77°37'16.96W"	43°10'9.90N"	9201	2323
14:58:05	77°37'16.93W"	43°10'9.92N"	9388	2510
14:58:07	77°37'16.90W"	43°10'9.94N"	10449	3571
14:58:09	77°37'16.87W"	43°10'9.95N"	10036	3158
14:58:11	77°37'16.84W"	43°10'9.97N"	8440	1562
14:58:13	77°37'16.81W"	43°10'9.98N"	8109	1231
14:58:15	77°37'16.78W"	43°10'10.00N"	8449	1571
14:58:17	77°37'16.75W"	43°10'10.01N"	9086	2208
14:58:19	77°37'16.72W"	43°10'10.03N"	8788	1910
14:58:21	77°37'16.67W"	43°10'10.06N"	7682	804
14:58:23	77°37'16.63W"	43°10'10.09N"	8258	1380
14:58:25	77°37'16.66W"	43°10'10.12N"	7371	493
14:58:27	77°37'16.71W"	43°10'10.16N"	6637	-241
14:58:29	77°37'16.71W"	43°10'10.17N"	7205	327
14:58:31	77°37'16.68W"	43°10'10.16N"	6541	-337
14:58:33	77°37'16.70W"	43°10'10.12N"	7375	497
14:58:35	77°37'16.73W"	43°10'10.09N"	6757	-121

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

First Laydown Area
With Pit Soil Survey
Max:13,594 CPM Min: 5,893 CPM Ave: 8155 CPM
6,878 CPM used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
14:58:37	77°37'16.77W"	43°10'10.07N"	7419	541
14:58:39	77°37'16.79W"	43°10'10.04N"	9546	2668
14:58:41	77°37'16.82W"	43°10'10.03N"	8622	1744
14:58:43	77°37'16.85W"	43°10'10.01N"	8879	2001
14:58:45	77°37'16.86W"	43°10'10.01N"	9113	2235
14:58:47	77°37'16.91W"	43°10'9.98N"	9172	2294
14:58:49	77°37'16.94W"	43°10'9.96N"	9318	2440
14:58:51	77°37'16.94W"	43°10'9.95N"	9910	3032
14:58:53	77°37'16.99W"	43°10'9.93N"	8811	1933
14:58:55	77°37'17.00W"	43°10'9.92N"	7687	809
14:58:57	77°37'17.05W"	43°10'9.89N"	8933	2055
14:58:59	77°37'17.09W"	43°10'9.87N"	12092	5214
14:59:01	77°37'17.12W"	43°10'9.85N"	11141	4263
14:59:03	77°37'17.15W"	43°10'9.83N"	10455	3577
14:59:05	77°37'17.18W"	43°10'9.82N"	11687	4809
14:59:07	77°37'17.21W"	43°10'9.80N"	12515	5637
14:59:09	77°37'17.24W"	43°10'9.78N"	13594	6716
14:59:11	77°37'17.26W"	43°10'9.77N"	13085	6207
14:59:13	77°37'17.29W"	43°10'9.75N"	8378	1500
14:59:15	77°37'17.31W"	43°10'9.74N"	8112	1234
14:59:17	77°37'17.36W"	43°10'9.74N"	7127	249
14:59:19	77°37'17.38W"	43°10'9.76N"	7608	730
14:59:21	77°37'17.35W"	43°10'9.79N"	7301	423
14:59:23	77°37'17.32W"	43°10'9.80N"	7476	598
14:59:25	77°37'17.29W"	43°10'9.82N"	8200	1322
14:59:27	77°37'17.26W"	43°10'9.84N"	8703	1825
14:59:29	77°37'17.22W"	43°10'9.85N"	9593	2715
14:59:31	77°37'17.19W"	43°10'9.87N"	7418	540
14:59:33	77°37'17.18W"	43°10'9.87N"	8526	1648
14:59:35	77°37'17.13W"	43°10'9.90N"	8948	2070
14:59:37	77°37'17.10W"	43°10'9.92N"	7632	754
14:59:39	77°37'17.06W"	43°10'9.94N"	7479	601
14:59:41	77°37'17.03W"	43°10'9.95N"	7525	647
14:59:43	77°37'17.02W"	43°10'9.96N"	8084	1206
14:59:45	77°37'16.97W"	43°10'9.99N"	8260	1382
14:59:47	77°37'16.94W"	43°10'10.01N"	8264	1386
14:59:49	77°37'16.91W"	43°10'10.03N"	7889	1011
14:59:51	77°37'16.88W"	43°10'10.05N"	7281	403
14:59:53	77°37'16.85W"	43°10'10.07N"	7678	800
14:59:55	77°37'16.83W"	43°10'10.08N"	8190	1312
14:59:57	77°37'16.79W"	43°10'10.10N"	6649	-229
14:59:59	77°37'16.77W"	43°10'10.13N"	7442	564
15:00:01	77°37'16.74W"	43°10'10.15N"	7050	172
15:00:03	77°37'16.74W"	43°10'10.17N"	6801	-77

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

Second Laydown Area
With Pit Soil Survey
Max: 9,892 CPM Min: 5,991 CPM Ave: 7929
7149 CPM used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
15:44:11	77°37'17.23W"	43°10'9.43N"	6280	-869
15:44:13	77°37'17.21W"	43°10'9.41N"	5993	-1157
15:44:15	77°37'17.17W"	43°10'9.40N"	5991	-1158
15:44:17	77°37'17.15W"	43°10'9.39N"	6382	-767
15:44:19	77°37'17.12W"	43°10'9.37N"	7884	735
15:44:21	77°37'17.11W"	43°10'9.36N"	7948	799
15:44:23	77°37'17.08W"	43°10'9.34N"	8087	938
15:44:25	77°37'17.05W"	43°10'9.31N"	8216	1067
15:44:27	77°37'17.03W"	43°10'9.31N"	8134	985
15:44:29	77°37'17.02W"	43°10'9.28N"	8263	1114
15:44:31	77°37'16.99W"	43°10'9.26N"	7357	208
15:44:33	77°37'16.97W"	43°10'9.24N"	8342	1193
15:44:35	77°37'16.95W"	43°10'9.23N"	7504	355
15:44:37	77°37'16.94W"	43°10'9.21N"	6874	-275
15:44:39	77°37'16.94W"	43°10'9.17N"	6895	-254
15:44:41	77°37'16.97W"	43°10'9.18N"	6067	-1082
15:44:43	77°37'16.99W"	43°10'9.20N"	6827	-322
15:44:45	77°37'17.02W"	43°10'9.22N"	7252	103
15:44:47	77°37'17.05W"	43°10'9.24N"	8493	1344
15:44:49	77°37'17.07W"	43°10'9.25N"	9028	1879
15:44:51	77°37'17.08W"	43°10'9.27N"	9454	2305
15:44:53	77°37'17.10W"	43°10'9.29N"	9892	2743
15:44:55	77°37'17.12W"	43°10'9.30N"	9461	2312
15:44:57	77°37'17.14W"	43°10'9.32N"	8339	1190
15:44:59	77°37'17.16W"	43°10'9.33N"	7916	767
15:45:01	77°37'17.18W"	43°10'9.35N"	8542	1393
15:45:03	77°37'17.20W"	43°10'9.36N"	8109	960
15:45:05	77°37'17.22W"	43°10'9.37N"	7647	498
15:45:07	77°37'17.23W"	43°10'9.39N"	7596	447
15:45:09	77°37'17.26W"	43°10'9.37N"	7847	698
15:45:11	77°37'17.25W"	43°10'9.36N"	7616	467
15:45:13	77°37'17.23W"	43°10'9.34N"	7706	557
15:45:15	77°37'17.20W"	43°10'9.32N"	8544	1395
15:45:17	77°37'17.18W"	43°10'9.32N"	8342	1193
15:45:19	77°37'17.17W"	43°10'9.30N"	9619	2470
15:45:21	77°37'17.14W"	43°10'9.28N"	9198	2049
15:45:23	77°37'17.12W"	43°10'9.27N"	8485	1336
15:45:25	77°37'17.10W"	43°10'9.26N"	8713	1564
15:45:27	77°37'17.08W"	43°10'9.24N"	7914	765
15:45:29	77°37'17.07W"	43°10'9.22N"	8040	891
15:45:31	77°37'17.05W"	43°10'9.21N"	7883	734
15:45:33	77°37'17.04W"	43°10'9.20N"	7333	184
15:45:35	77°37'17.00W"	43°10'9.17N"	6977	-172
15:45:37	77°37'17.00W"	43°10'9.13N"	7864	715
15:45:39	77°37'17.05W"	43°10'9.13N"	7204	55
15:45:41	77°37'17.07W"	43°10'9.14N"	7688	539
15:45:43	77°37'17.09W"	43°10'9.17N"	6901	-248

Bausch and Lomb, Suntru Street

Date of Survey: 07/08/2008

Second Laydown Area
With Pit Soil Survey
Max: 9,892 CPM Min: 5,991 CPM Ave: 7929
7149 CPM used to calculate Net CPM

Time	Longitude	Latitude	Total CPM	Net CPM
15:45:45	77°37'17.11W"	43°10'9.20N"	8035	886
15:45:47	77°37'17.12W"	43°10'9.21N"	7005	-144
15:45:49	77°37'17.13W"	43°10'9.23N"	8590	1441
15:45:51	77°37'17.16W"	43°10'9.25N"	9027	1878
15:45:53	77°37'17.18W"	43°10'9.27N"	8814	1665
15:45:55	77°37'17.21W"	43°10'9.28N"	8857	1708
15:45:57	77°37'17.22W"	43°10'9.30N"	8981	1832
15:45:59	77°37'17.24W"	43°10'9.31N"	9883	2734
15:46:01	77°37'17.27W"	43°10'9.33N"	7250	101
15:46:03	77°37'17.29W"	43°10'9.34N"	6873	-276

Attachment 10

2-D Overland Gamma Survey Graphic Results for Pit Soils

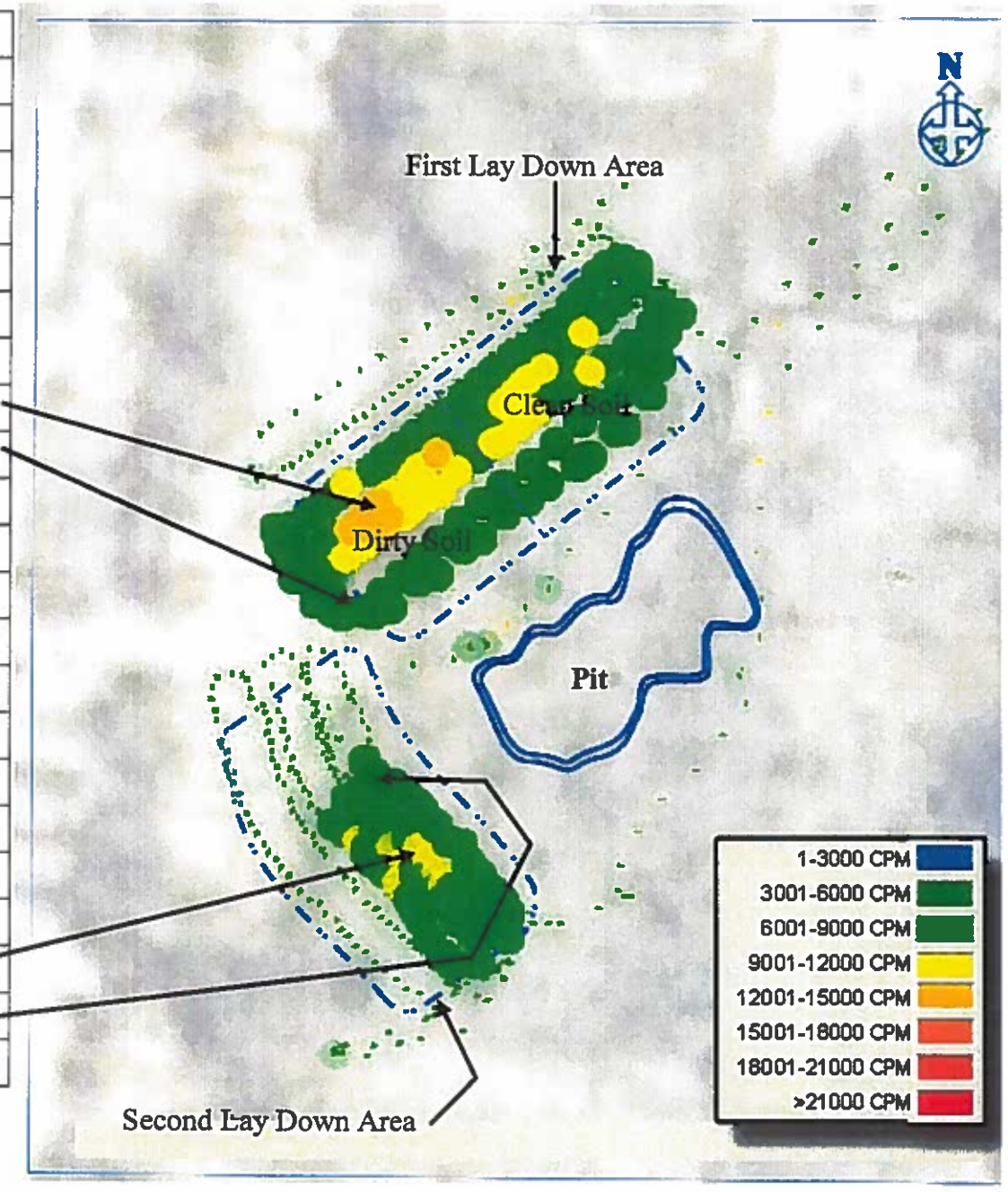
MJW CORPORATION

Radiation Survey Form

Radiation Survey No: _070808-01___ Date: ___7/8/08__ Surveyor: ___Stuart Jensen_____
Instr.: _Ludlum 2241-2_____sn: _206098__ Probe: _44-10__ sn: _PR256142__ Cal Due Date: _7/30/08_
Instr.: ___N/A_____ sn: _____ Probe: _____ sn:_____ Cal Due Date: _____
Smear Counter Background __N/A__α _____β Alpha Eff.: _____ Beta Eff.: _____
Reason for Survey: _____Soil Characterization _____

Survey Results:

	First Lay Down Area
	Baseline
	MAX: 9,855 CPM
	MIN: 5,798 CPM
	AVE: 6,878 CPM
	First Lay Down Area
	With Pit Soil
	MAX:13,594 CPM
	MIN: 5,893 CPM
	AVE:8,155 CPM
	Second Lay Down
	Area - Baseline
	MAX: 8,642 CPM
	MIN: 5,909 CPM
	AVE: 7,149 CPM
	Second Lay Down
	Area – With Pit Soil
	MAX: 9,892 CPM
	MIN: 5.991 CPM
	AVE: 7,929 CPM

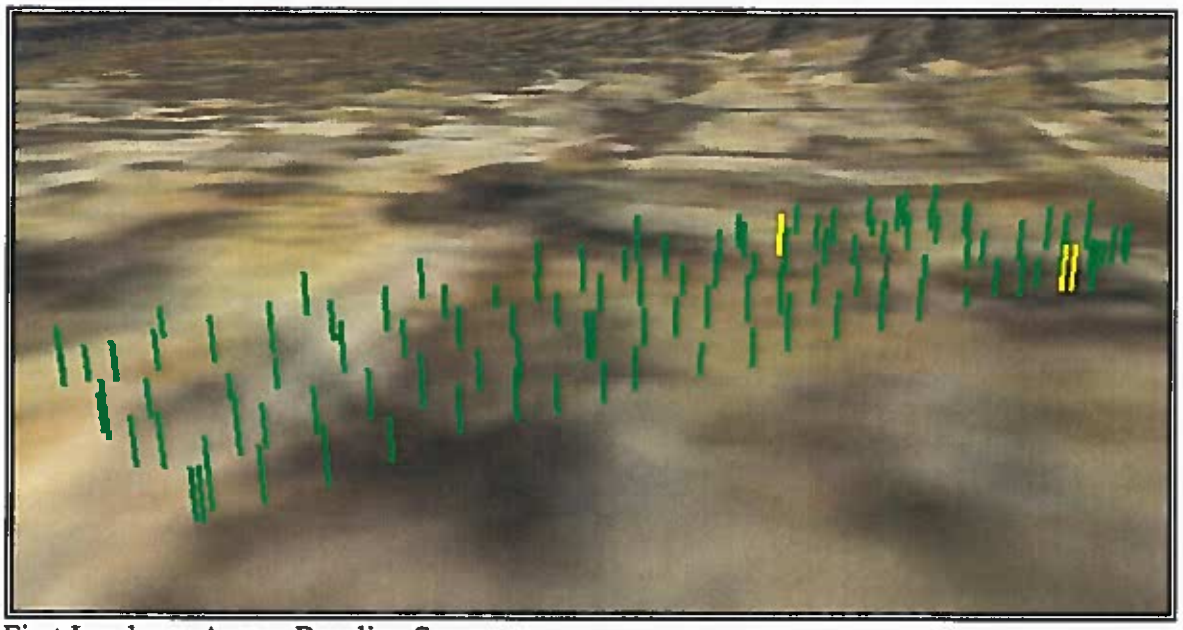


○ Smears
□ Dose Rates
△Air Samples

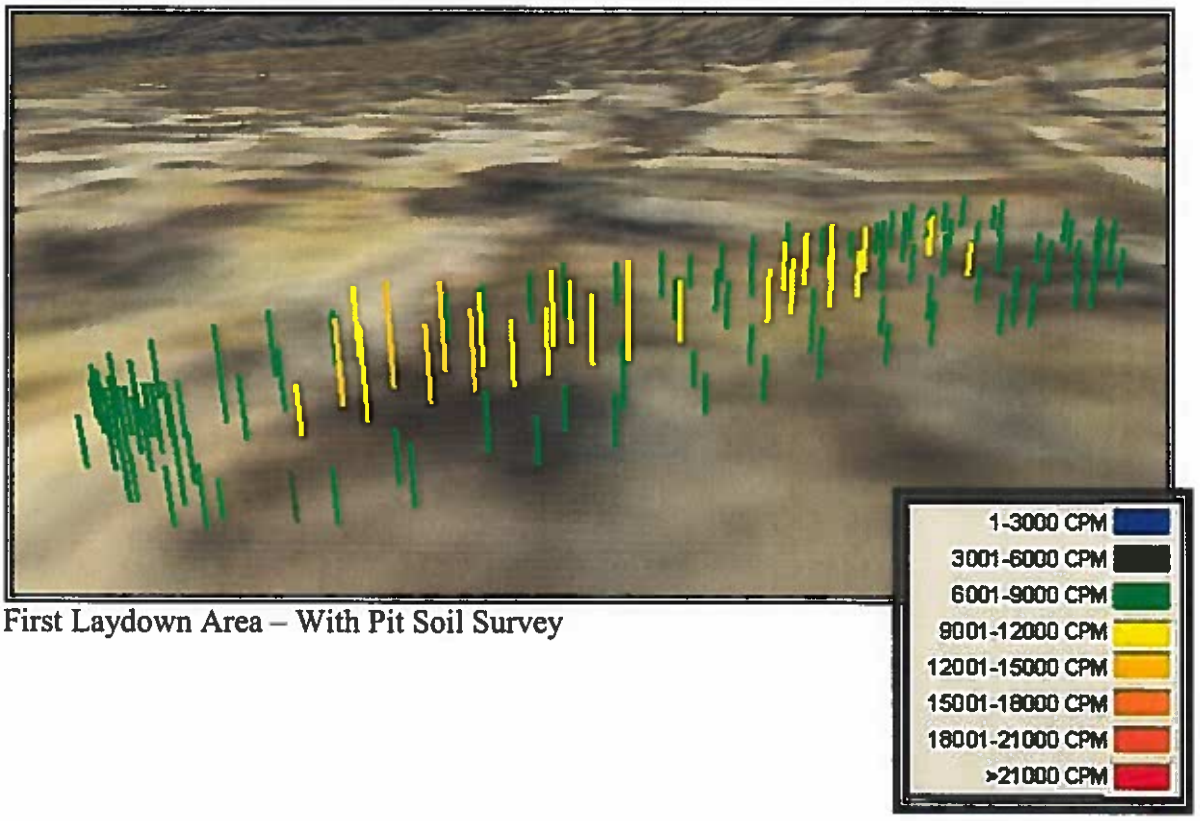
Reviewed by: MW Stuart Jensen _____ Date: 8/18/0
PRINT SIGNATURE

Attachment 11

3-D Overland Gamma Survey Graphic Results for Pit Soils-1st Laydown Area



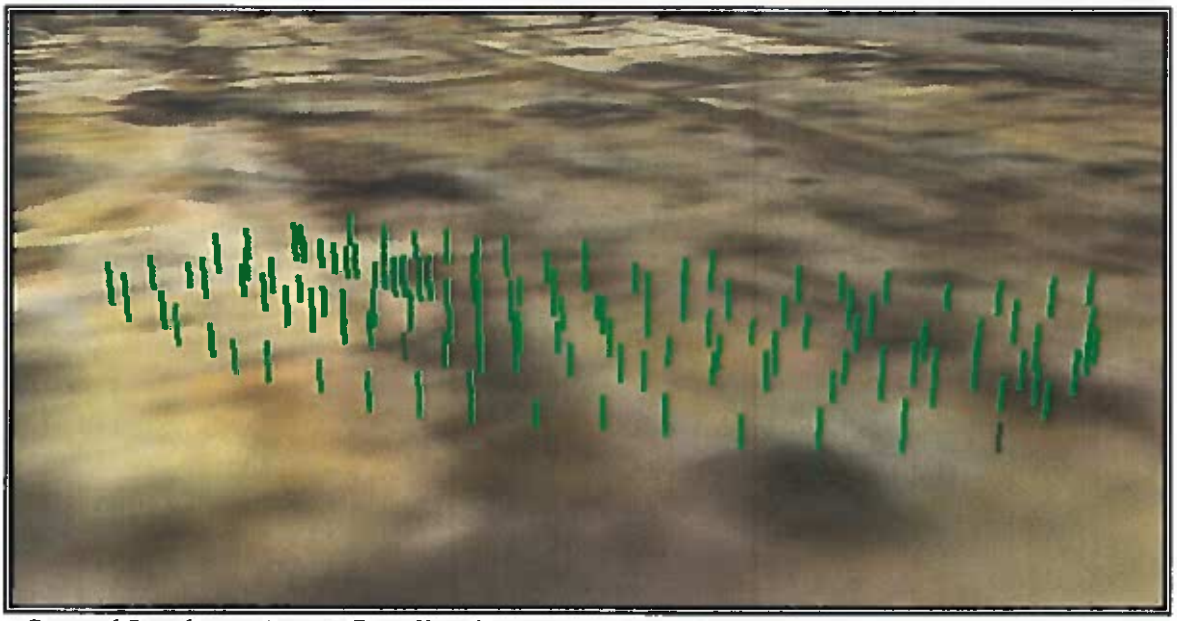
First Laydown Area – Baseline Survey



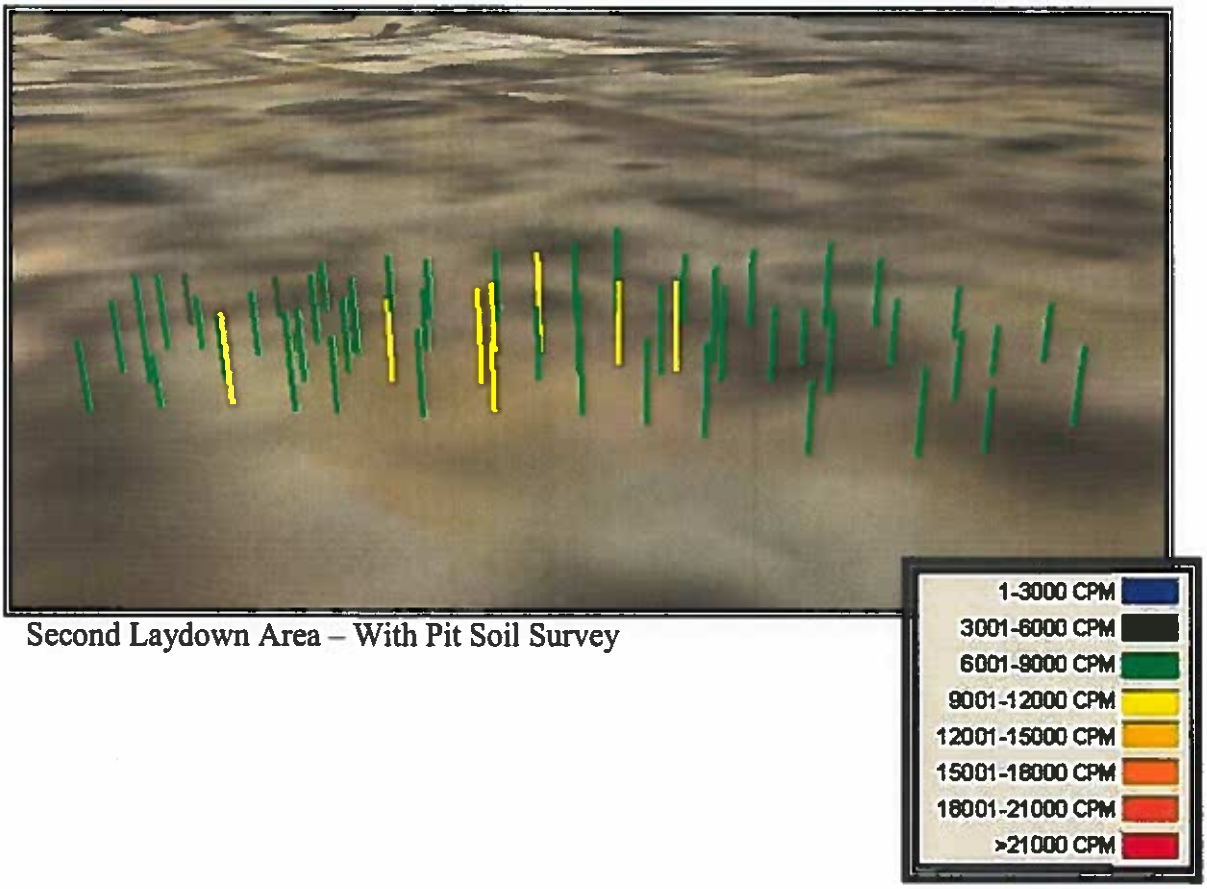
First Laydown Area – With Pit Soil Survey

Attachment 12

3-D Overland Gamma Survey Graphic Results for Pit Soils –2nd Laydown Area



Second Laydown Area – Baseline Survey



Second Laydown Area – With Pit Soil Survey

Attachment 13

Soil Sample Analytical Data – Outreach Labs

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

July 31, 2008

MJW Corporation Inc.
Dr. David A. Dooley
1900 Sweet Home Road
Amherst, NY 14228

CLIENT PROJECT NAME: 2008-1705 B&L Pit
OUTREACH LAB ID: 20080601

Dear Dr. Dooley:

Please find enclosed the analytical report for your samples received in our laboratory on July 11, 2008 for the above captioned project. Seven solid samples were received in good condition. They were dried and ground and analyzed for radionuclides by Gamma Spectroscopy and Isotopic-Thorium with an expedited turn time, per your chain of custody.

All Quality Control for the requested analyses is reported on the analytical report. The method blank, laboratory control standard, and matrix spike and matrix spike duplicates were within method control limits with the exception of the DUP RPD for K-40.

Unless notified otherwise, non-hazardous, non-radioactive samples will be disposed 30 days after the report date. All others will be returned to you.

Thank you for choosing Outreach Laboratory and if you have any questions, please call us at 918-251-2515.

Laboratory Director

ODEQ ID #9517
NRC ODEQ LIC. #27522-01

ACCREDITED IN ACCORDANCE WITH nelac
CERT. ID #OK001
See Certified
Parameter List

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	MJW Corporation
Client Project:	2008-1705 B&L Pit
Lab Number:	20080601
Date Reported:	7/30/2008
Date Received:	7/11/08
Page Number:	1 of 4

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20080601-01**						
Client ID:	**PF-001**						
Date Sampled:	**7/8/2008 3:26:00 PM**						
Matrix:	**Solid**						
		Radiochemical Analyses					
K-40	HASL 300	15.2 +/- 2.21	pCi/g	0.71		7/15/2008	SD
Tl-208	HASL 300	0.818 +/- 0.095	pCi/g	0.074		7/15/2008	SD
Bi-212	HASL 300	1.96 +/- 0.580	pCi/g	0.664		7/15/2008	SD
Pb-212	HASL 300	3.10 +/- 0.290	pCi/g	0.208		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.564 +/- 0.152	pCi/g	0.189		7/15/2008	SD
Pb-214	HASL 300	0.47 +/- 0.123	pCi/g	0.140		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	2.62 +/- 0.254	pCi/g	0.288		7/15/2008	SD
Th-234 (U238)	HASL 300	0 +/- 0.175	pCi/g	0.408		7/15/2008	SD
Thorium-232	LANL ER 200 M	3.56 +/- 0.228	pCi/g	0.047	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	2.82 +/- 0.213	pCi/g	0.158	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	2.81 +/- 0.207	pCi/g	0.081	7/16/2008	7/29/2008	SD
Lab ID:	**20080601-02**						
Client ID:	**PF-002**						
Date Sampled:	**7/8/2008 3:31:00 PM**						
Matrix:	**Solid**						
		Radiochemical Analyses					
K-40	HASL 300	16.0 +/- 2.57	pCi/g	0.57		7/15/2008	SD
Tl-208	HASL 300	0.677 +/- 0.102	pCi/g	0.918		7/15/2008	SD
Bi-212	HASL 300	1.28 +/- 0.478	pCi/g	0.51		7/15/2008	SD
Pb-212	HASL 300	2.56 +/- 0.301	pCi/g	0.174		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.51 +/- 0.132	pCi/g	0.133		7/15/2008	SD
Pb-214	HASL 300	0.56 +/- 0.095	pCi/g	0.102		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	2.02 +/- 0.235	pCi/g	0.321		7/15/2008	SD
Th-234 (U238)	HASL 300	0.68 +/- 0.389	pCi/g	0.58		7/15/2008	SD
Thorium-232	LANL ER 200 M	2.93 +/- 0.202	pCi/g	0.035	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	2.24 +/- 0.187	pCi/g	0.157	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	2.99 +/- 0.205	pCi/g	0.052	7/16/2008	7/29/2008	SD
Lab ID:	**20080601-03**						
Client ID:	**CP1-001**						
Date Sampled:	**7/8/2008 3:32:00 PM**						
Matrix:	**Solid**						
		Radiochemical Analyses					
K-40	HASL 300	19.5 +/- 3.37	pCi/g	1.92		7/15/2008	SD
Tl-208	HASL 300	0.467 +/- 0.124	pCi/g	0.140		7/15/2008	SD

BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
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FAX (918) 251-0008

Client:	MJW Corporation
Client Project:	2008-1705 B&L Pit
Lab Number:	20080601
Date Reported:	7/30/2008
Date Received:	7/11/08
Page Number:	2 of 4

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Bi-212	HASL 300	1.64 +/- 0.421	pCi/g	1.920		7/15/2008	SD
Pb-212	HASL 300	1.29 +/- 0.192	pCi/g	0.139		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.704 +/- 0.272	pCi/g	0.313		7/15/2008	SD
Pb-214	HASL 300	0.57 +/- 0.124	pCi/g	0.160		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	1.38 +/- 0.200	pCi/g	0.391		7/15/2008	SD
Th-234 (U238)	HASL 300	2.34 +/- 0.888	pCi/g	1.04		7/15/2008	SD
Thorium-232	LANL ER 200 M	0.158 +/- 0.081	pCi/g	0.104	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	1.11 +/- 0.172	pCi/g	0.199	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	0.263 +/- 0.098	pCi/g	0.119	7/16/2008	7/29/2008	SD

Lab ID: 20080601-04
Client ID: CP2-001
Date Sampled: 7/8/2008 3:50:00 PM
Matrix: Solid

Radiochemical Analyses

K-40	HASL 300	20.5 +/- 2.48	pCi/g	0.70		7/15/2008	SD
Tl-208	HASL 300	0.601 +/- 0.107	pCi/g	0.110		7/15/2008	SD
Bi-212	HASL 300	1.23 +/- 0.56	pCi/g	0.69		7/15/2008	SD
Pb-212	HASL 300	1.97 +/- 0.254	pCi/g	0.215		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.668 +/- 0.140	pCi/g	0.144		7/15/2008	SD
Pb-214	HASL 300	0.69 +/- 0.190	pCi/g	0.130		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	1.67 +/- 0.207	pCi/g	0.30		7/15/2008	SD
Th-234 (U238)	HASL 300	0 +/- 2.110	pCi/g	2.72		7/15/2008	SD
Thorium-232	LANL ER 200 M	2.04 +/- 0.186	pCi/g	0.057	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	2.44 +/- 0.211	pCi/g	0.159	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	1.64 +/- 0.176	pCi/g	0.109	7/16/2008	7/29/2008	SD

Lab ID: 20080601-05
Client ID: DP-001
Date Sampled: 7/8/2008 3:40:00 PM
Matrix: Solid

Radiochemical Analyses

K-40	HASL 300	19.3 +/- 2.77	pCi/g	1.0		7/15/2008	SD
Tl-208	HASL 300	1.62 +/- 0.15	pCi/g	0.11		7/15/2008	SD
Bi-212	HASL 300	3.52 +/- 0.8	pCi/g	0.9		7/15/2008	SD
Pb-212	HASL 300	5.39 +/- 0.45	pCi/g	0.24		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.829 +/- 0.18	pCi/g	0.2		7/15/2008	SD
Pb-214	HASL 300	0.64 +/- 0.16	pCi/g	0.18		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	4.76 +/- 0.31	pCi/g	0.28		7/15/2008	SD
Th-234 (U238)	HASL 300	0.4 +/- 0	pCi/g	0.3		7/15/2008	SD
Thorium-232	LANL ER 200 M	1.16 +/- 0.249	pCi/g	0.156	7/16/2008	7/29/2008	SD

BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	MJW Corporation
Client Project:	2008-1705 B&L Pit
Lab Number:	20080601
Date Reported:	7/30/2008
Date Received:	7/11/08
Page Number:	3 of 4

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Thorium-230	LANL ER 200 M	0.074 +/- 0.148	pCi/g	0.301	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	1.03 +/- 0.318	pCi/g	0.392	7/16/2008	7/29/2008	SD

Lab ID: 20080601-06
Client ID: DP-002
Date Sampled: 7/8/2008 3:45:00 PM
Matrix: Solid

Radiochemical Analyses

K-40	HASL 300	13.0 +/- 2.2	pCi/g	0.7		7/15/2008	SD
Tl-208	HASL 300	1.01 +/- 0.11	pCi/g	0.07		7/15/2008	SD
Bi-212	HASL 300	1.61 +/- 0.5	pCi/g	0.5		7/15/2008	SD
Pb-212	HASL 300	2.73 +/- 0.78	pCi/g	0.2		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.552 +/- 0.06	pCi/g	0.1		7/15/2008	SD
Pb-214	HASL 300	0.660 +/- 0.10	pCi/g	0.1		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	3.15 +/- 0.31	pCi/g	0.2		7/15/2008	SD
Th-234 (U238)	HASL 300	0 +/- 0.5	pCi/g	1.3		7/15/2008	SD
Thorium-232	LANL ER 200 M	4.16 +/- 0.326	pCi/g	0.028	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	3.50 +/- 0.312	pCi/g	0.213	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	3.81 +/- 0.316	pCi/g	0.101	7/16/2008	7/29/2008	SD

Lab ID: 20080601-07
Client ID: DP-003
Date Sampled: 7/8/2008 3:47:00 PM
Matrix: Solid

Radiochemical Analyses

K-40	HASL 300	13.3 +/- 1.67	pCi/g	0.560		7/15/2008	SD
Tl-208	HASL 300	0.714 +/- 0.050	pCi/g	0.057		7/15/2008	SD
Bi-212	HASL 300	1.06 +/- 0.48	pCi/g	0.59		7/15/2008	SD
Pb-212	HASL 300	1.88 +/- 0.197	pCi/g	0.101		7/15/2008	SD
Bi-214 (Ra226)	HASL 300	0.720 +/- 0.100	pCi/g	0.106		7/15/2008	SD
Pb-214	HASL 300	0.654 +/- 0.097	pCi/g	0.116		7/15/2008	SD
Ac-228 (Ra228)	HASL 300	1.83 +/- 0.195	pCi/g	0.269		7/15/2008	SD
Th-234 (U238)	HASL 300	1.86 +/- 1.0	pCi/g	1.61		7/15/2008	SD
Thorium-232	LANL ER 200 M	2.75 +/- 0.266	pCi/g	0.067	7/16/2008	7/29/2008	SD
Thorium-230	LANL ER 200 M	3.82 +/- 0.332	pCi/g	0.249	7/16/2008	7/29/2008	SD
Thorium-228	LANL ER 200 M	2.80 +/- 0.282	pCi/g	0.166	7/16/2008	7/29/2008	SD

BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
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Client:	MJW Corporation
Client Project:	2008-1705 B&L Pit
Lab Number:	20080601
Date Reported:	7/30/2008
Date Received:	7/11/08
Page Number:	4 of 4

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	MS %REC	MSD %REC	MSD RPD	Date
Ac-228 (Ra228)					NC				7/15/2008
Americium-241		82.0	89.0	7.6					7/15/2008
Bi-212					NC				7/15/2008
Bi-214 (Ra226)					1.2				7/15/2008
Cesium-137		87.0	94.0	7.6					7/15/2008
Cobalt-60		94.0	91.0	2.3					7/15/2008
K-40					22.2				7/15/2008
Pb-212					14.1				7/15/2008
Pb-214					5.0				7/15/2008
Th-234 (U238)					NC				7/15/2008
Thorium-228	0.286	106.0			17.5	71.5	98.5	31.8	7/29/2008
Thorium-230	0	121.0			2.9	103.0	104.0	1.1	7/29/2008
Thorium-232	0.113	94.4			7.7	99.3	109.0	9.6	7/29/2008
Tl-208					NC				7/15/2008

Lab Approval: 

BDL = Below Detection Limit

CHAIN OF CUSTODY

Outreach Laboratory
Reaching beyond the standard.
311 North Aspen
Broken Arrow, OK 74012
Phone: (918) 251-2515
Fax: (918) 251-0008
www.outreachlab.com

Results To:

Company	MJW Corporation Inc.				
Name	David Dooley				
Address	University Park, 1900 Sweet Home Road				
City	Amherst	State	NY	Zip	14228
Phone	716-631-8291	Fax	716-631-5631		

Bill To:

Company	MJW Corporation Inc.				
Name	David Dooley				
Address	University Park, 1900 Sweet Home Road				
City	Anherst	State	NY	Zip	14228

ANALYSIS REQUESTED

PO #
Project # 2008-1705
Project Name B&L Thorium Pit Remediation
Requested Turnaround Time 7 day -10 per SG. 7/11/08
(Additional Charges May Apply)
Sampler Signature

Lab Sample ID	Client Sample ID	Date Sampled	Time Sampled	Matrix	# Containers	Container Size Plastic or Glass	Preservative # 1. HNO_3 pH<2 2. Ice <4°C 3. HCl pH<2 4. H_2SO_4 pH<2 5. NaOH pH>11	Alpha Spectroscopy ☆	Gamma Spectroscopy	Detector Limit 1pCi/g						Remarks (I.E. Filtered, Unfiltered, Grab, Composite)
1	PF-001	7/8/2008	15:26	Soil	#1	Qt.-P	N/A	X	X	X						Composite
2	PF-002	7/8/2008	15:31	Soil	#2	Qt.-P	N/A	X	X	X						Composite
3	CP1-001	7/8/2008	15:32	Soil	#3	Qt.-P	N/A	X	X	X						Composite
4	CP2-001	7/8/2008	15:50	Soil	#4	Qt.-P	N/A	X	X	X						Composite
5	DP-001	7/8/2008	15:40	Soil	#5	Qt.-P	N/A	X	X	X						Composite
6	DP-002	7/8/2008	15:45	Soil	#6	Qt.-P	N/A	X	X	X						Composite
7	DP-003	7/8/2008	15:47	Soil	#7	Qt.-P	N/A	X	X	X						Composite
								☆ ISOTH per Stewart Jensen 7/9/08								

RELINQUISHED BY David K. Dooley DATE 7/10/08 TIME 0900 RECEIVED BY: [signature] DATE 7/11/08 TIME 1102

RELINQUISHED BY _____ DATE _____ TIME _____ RECEIVED BY: _____ DATE _____ TIME _____

My signature on this chain of custody form indicates that I am authorized by the above company to release samples for analysis.

The company agrees to pay the entire balance upon receipt of sample data and it is understood and agreed that any balance carried over thirty (30) days is subject to a 1.5% per month (18% per annum) late charge. In the event of default, the company becomes legally liable for any reasonable attorney and/or collection fees and all related costs necessary to remit the entire balance to Outreach Technologies, Inc. (Outreach Laboratory).

SAMPLE RETURN/DISPOSAL: All non-hazardous samples shall be disposed of 30 days after issue of final report. All others will be returned at client's expense.

Method of Transport:

Sample Condition Upon Receipt:

20080601

Custody Seals Intact: Y N

Cooler Temperature: _____

Attachment 14

Soil Sample Analytical Data – NYSDEC

****
***** G A M M A S P E C T R U M A N A L Y S I S *****
****

Filename: C:\GENIE2K\CAMFILES\2008 Samples\BL07080803.CNF

Report Generated On : 8/1/2008 10:52:47 AM

Sample Title : B&L "Cold Pile"
Sample Description : Suntru Street Remediation
Sample Identification : BL07080803
Sample Type : Soil
Sample Geometry : tub

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 1 - 4096
Identification Energy Tolerance : 1.000 keV

Sample Size : 6.646E+002 gms

Sample Taken On : 7/8/2008 3:45:00 PM
Acquisition Started : 8/1/2008 9:48:19 AM

Live Time : 3600.0 seconds
Real Time : 3600.9 seconds

Dead Time : 0.02 %

Energy Calibration Used Done On : 3/3/2005
Efficiency Calibration Used Done On : 1/24/2002
Efficiency ID : Labsoc 500ml TUB

****
***** P E A K A N A L Y S I S R E P O R T *****
****

Detector Name: DET02
Sample Title: B&L "Cold Pile"
Peak Analysis Performed on: 8/1/2008 10:52:47 AM
Peak Analysis From Channel: 1
Peak Analysis To Channel: 4096

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
	1	10-	18	14.32	6.80	1.06	1.25E+003	104.43	6.09E+002
	2	27-	35	31.73	15.51	1.58	3.19E+002	96.96	9.00E+002
	3	89-	98	93.79	46.56	1.01	1.17E+002	77.45	6.03E+002
M	4	145-	159	150.15	74.75	1.13	7.63E+002	69.33	1.05E+003
m	5	145-	159	154.77	77.06	1.14	1.22E+003	81.08	9.04E+002
M	6	164-	191	169.00	84.18	1.40	1.44E+002	45.18	8.49E+002
m	7	164-	191	175.06	87.21	1.40	4.61E+002	55.60	8.82E+002
m	8	164-	191	180.40	89.89	1.41	3.56E+002	51.49	8.30E+002
m	9	164-	191	186.90	93.13	1.41	4.29E+002	52.96	8.37E+002
	10	253-	264	259.01	129.21	1.63	1.44E+002	92.94	8.05E+002
	11	368-	377	372.28	185.88	1.09	1.36E+002	68.77	4.64E+002
	12	416-	423	418.97	209.23	1.16	1.48E+002	59.72	3.68E+002
M	13	472-	488	477.91	238.71	1.24	2.16E+003	95.11	3.19E+002
m	14	472-	488	483.14	241.33	1.24	2.21E+002	38.38	3.16E+002
	15	536-	546	540.54	270.04	2.19	1.52E+002	58.01	2.86E+002
	16	551-	561	555.67	277.61	1.07	6.69E+001	54.85	2.87E+002
M	17	585-	606	591.00	295.28	1.28	2.05E+002	34.40	1.93E+002
m	18	585-	606	601.00	300.29	1.28	1.35E+002	29.65	1.81E+002
	19	650-	662	656.76	328.18	1.22	1.32E+002	55.45	2.40E+002
	20	672-	683	677.13	338.37	1.42	4.23E+002	61.02	2.03E+002
	21	698-	711	704.89	352.25	1.41	3.30E+002	62.86	2.39E+002
	22	923-	933	926.94	463.31	1.61	1.50E+002	42.72	1.26E+002
	23	952-	960	955.72	477.71	1.36	7.35E+001	35.46	1.13E+002
	24	1016-	1028	1022.23	510.98	1.60	2.73E+002	50.85	1.42E+002
	25	1160-	1173	1167.00	583.38	1.45	6.28E+002	65.96	1.67E+002
	26	1214-	1224	1219.36	609.57	1.82	2.83E+002	47.35	1.16E+002
	27	1450-	1461	1455.10	727.46	1.30	1.42E+002	37.44	8.18E+001
	28	1582-	1595	1590.07	794.95	1.06	7.32E+001	33.74	7.68E+001
	29	1668-	1676	1671.29	835.57	0.67	1.31E+000	23.77	6.17E+001
	30	1718-	1727	1721.26	860.55	1.24	5.90E+001	29.11	6.50E+001
	31	1815-	1830	1822.92	911.39	1.89	5.20E+002	52.69	5.80E+001
M	32	1925-	1946	1930.81	965.34	1.81	8.88E+001	20.73	3.60E+001
m	33	1925-	1946	1938.81	969.34	1.81	2.54E+002	32.74	3.90E+001
	34	2153-	2161	2157.45	1078.65	1.26	1.69E+001	16.91	2.51E+001
	35	2236-	2247	2240.86	1120.36	2.35	5.99E+001	25.68	4.11E+001
	36	2915-	2930	2922.97	1461.35	2.00	7.22E+002	57.60	3.58E+001
	37	3524-	3536	3530.91	1765.21	1.38	5.14E+001	17.51	9.61E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

****
***** N U C L I D E M D A R E P O R T *****
****

Detector Name: DET02
Sample Geometry: tub
Sample Title: B&L "Cold Pile"
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	BE-7	477.60*	10.52	5.1640E-001	5.16E-001	7.0598E-001
+	K-40	1460.83*	10.67	5.9751E-001	5.98E-001	1.0636E+001
	MN-54	834.85*	99.98	4.8710E-002	4.87E-002	1.5279E-003
	CO-57	122.06	85.60	5.6087E-002	5.61E-002	1.1184E-002
		136.47	10.68	4.6167E-001		9.6658E-002
		692.03	0.16	4.1854E+001		-3.4859E+000
	CO-60	1173.24	99.97	7.2246E-002	6.70E-002	2.3131E-002
		1332.50	99.99	6.7029E-002		2.3590E-003
	Y-88	898.04	93.70	7.9942E-002	5.62E-002	-3.7306E-002
		1836.06	99.20	5.6159E-002		-1.8211E-003
	CD-109	88.04*	3.61	1.1761E+000	1.18E+000	3.7911E+000
	SN-113	255.05	1.82	3.2130E+000	9.59E-002	1.0145E+000
		391.69	64.00	9.5905E-002		3.5018E-002
	I-131	80.18	2.62	1.7655E+001	4.85E-001	-8.9872E+000
		284.30	6.05	6.3317E+000		5.2663E-002
		364.48	81.20	4.8482E-001		1.1751E-001
		636.97	7.26	6.2000E+000		5.4350E-001
		722.89	1.80	3.6669E+001		-7.2458E+000
	CS-134	475.35	1.46	4.4607E+000	9.02E-002	2.1437E+000
		563.23	8.38	7.9973E-001		-1.1774E-001
		569.32	15.43	4.3213E-001		-2.3663E-002
		604.70	97.60	9.5682E-002		-4.7774E-002
		795.84	85.40	9.0179E-002		9.2099E-002
		801.93	8.73	7.7602E-001		-2.4423E-001
		1038.57	1.00	6.3439E+000		8.7023E-001
		1167.94	1.80	3.9490E+000		-2.9131E-001
		1365.15	3.04	2.1472E+000		6.6160E-001
	CS-136	66.91	12.50	1.5385E+000	2.06E-001	-4.8795E-001
		86.29	6.30	3.4114E+000		8.0893E+000
		153.22	7.46	2.1824E+000		6.5846E-001
		163.89	4.61	3.3636E+000		-3.2568E-001
		176.55	13.56	1.2563E+000		-5.6272E-001
		273.65	12.66	1.6939E+000		-4.1035E-002
		340.57	48.50	5.2709E-001		-1.3719E-001
		818.50	99.70	2.0615E-001		1.0010E-001
		1048.07	79.60	2.6346E-001		7.8865E-002
		1235.34	19.70	1.5423E+000		6.1018E-001
	CS-137	661.66	85.10	7.5118E-002	7.51E-002	3.0590E-002
	HG-203	279.20	81.00	9.5988E-002	9.60E-002	9.5552E-002
	Tl-207	897.80	0.26	2.4772E+001	2.48E+001	-3.3298E+000
+	Tl-208	72.81	2.09	3.2093E+000	7.58E-002	9.3160E-003
		74.97*	3.51	1.2811E+000		6.2035E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	Tl-208	84.45*	0.42	9.6279E+000	7.58E-002	9.3636E+000
		84.94	0.80	7.3688E+000		4.7053E+000
		87.30*	0.29	1.3984E+001		4.5077E+001
		211.40	0.18	3.2280E+001		4.5281E+001
		233.36	0.31	2.0043E+001		-5.0080E+000
		252.61	0.69	7.1420E+000		-6.8682E+000
		277.35*	6.31	6.8077E-001		5.1305E-001
		510.77*	22.60	2.5095E-001		6.7794E-001
		583.19*	84.50	7.5821E-002		6.2804E-001
		722.04	0.20	4.1524E+001		-6.2608E+000
		763.13	1.81	3.8659E+000		-8.7982E-001
		860.56*	12.42	3.9526E-001		5.3765E-001
		927.60	0.13	4.5100E+001		-2.3426E+001
		982.70	0.20	2.6628E+001		-1.7175E+001
		1093.90	0.40	1.6203E+001		2.6880E+000
	BI-211	72.87	1.27	5.2811E+000	5.53E-001	1.5330E-002
		351.06	12.91	5.5262E-001		1.9826E-002
	PB-211	404.85	3.78	1.4492E+000	1.45E+000	-8.1994E-001
		427.09	1.76	2.9576E+000		1.2435E+000
		832.01	3.52	1.8768E+000		-1.0161E+000
	BI-212	39.86	1.09	3.8106E+000	1.31E+000	1.8030E+000
		72.87	0.13	5.1592E+001		1.4976E-001
		288.07	0.31	1.5842E+001		-7.7451E+000
		327.96	0.14	4.1504E+001		4.9908E+001
		452.83	0.31	1.7349E+001		-3.6425E+000
		727.33	6.58	1.3136E+000		2.5170E+000
		785.37	1.10	6.2595E+000		1.5993E+000
		893.41	0.38	1.7173E+001		9.3799E+000
		952.12	0.17	3.7260E+001		5.5124E+000
		1078.62	0.56	1.1656E+001		7.2645E+000
		1512.70	0.29	1.7455E+001		-1.3538E+000
		1620.50	1.49	4.5729E+000		4.0055E+000
+	PB-212	74.82*	10.41	4.3197E-001	8.92E-002	2.0917E+000
		77.11*	17.50	2.3915E-001		1.9864E+000
		87.18*	6.10	6.7171E-001		2.1652E+000
		89.78*	1.46	2.7217E+000		7.0779E+000
		115.18	0.59	7.6858E+000		2.0517E+000
		238.63*	43.30	8.9222E-002		2.1068E+000
		300.09*	3.28	1.0232E+000		2.1072E+000
		415.20	0.14	3.6400E+001		-2.9671E+001
+	BI-214	76.86*	0.58	7.1911E+000	1.12E-001	5.9729E+001
		79.29	0.98	6.7983E+000		-3.0963E+000
		386.77	0.31	1.6987E+001		-1.9340E+000
		388.88	0.37	1.4519E+001		5.1948E+000
		454.77	0.30	1.7987E+001		3.2969E-001
		609.31*	46.10	1.1168E-001		5.4418E-001
		665.45	1.46	4.4544E+000		2.6085E+000
		703.11	0.47	1.3762E+001		3.0534E+000
		719.86	0.38	1.6391E+001		-1.7924E+001
		768.36	4.94	1.5364E+000		1.1098E+000
		786.10	0.31	2.2267E+001		7.4924E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	BI-214	806.17	1.22	5.0602E+000	1.12E-001	8.5155E-001
		934.06	3.03	2.0473E+000		9.6312E-001
		964.08	0.36	3.2088E+001		-2.2342E+000
		1051.96	0.31	1.9379E+001		-5.7096E+000
		1069.96	0.28	2.1861E+001		-1.7445E+000
		1120.29*	15.10	3.2388E-001		5.3301E-001
		1155.19	1.69	4.2832E+000		8.9640E-001
		1207.68	0.45	1.7445E+001		1.1283E+001
		1238.11	5.79	1.5117E+000		1.5037E+000
		1280.96	1.43	4.8092E+000		-4.3630E-001
		1377.67	4.00	1.5070E+000		-1.1589E+000
		1385.31	0.76	7.9332E+000		-3.0994E+000
		1401.50	1.27	4.6559E+000		-2.6577E+000
		1407.98	2.15	2.9540E+000		-7.3564E-001
		1509.23	2.11	2.6256E+000		1.0168E+000
		1538.50	0.38	1.4795E+001		8.9188E+000
		1583.22	0.69	1.0806E+001		-3.1107E-001
		1661.28	1.15	4.2997E+000		2.4126E+000
		1729.59	2.92	1.9575E+000		1.6363E+000
		1847.42	2.11	2.3656E+000		6.1073E-001
>		2118.55	1.14	0.0000E+000		0.0000E+000
+	PB-214	53.23	1.20	3.8029E+000	1.35E-001	-5.0328E-003
		74.82*	4.80	9.3686E-001		4.5364E+000
		77.11*	8.00	5.2315E-001		4.3453E+000
		86.83	1.00	6.2788E+000		1.9055E+001
		87.35*	1.80	2.2764E+000		7.3377E+000
		89.78*	0.67	5.9310E+000		1.5424E+001
		242.00*	7.43	5.0144E-001		1.2990E+000
		258.87	0.52	9.5841E+000		-4.2242E+000
		274.80	0.47	1.2512E+001		-3.1432E-001
		295.22*	19.30	1.7698E-001		5.3923E-001
		351.93*	37.60	1.3528E-001		5.0523E-001
		462.00	0.22	3.0705E+001		3.9105E+001
		480.43	0.32	1.9867E+001		2.2134E+001
		487.09	0.42	1.2473E+001		-6.7296E+000
		580.13	0.35	3.4328E+001		-7.1390E+000
		785.96	1.07	6.4500E+000		2.1703E+000
		839.04	0.59	1.1532E+001		4.4756E+000
	RN-219	271.23	10.80	5.3020E-001	5.30E-001	4.8978E-001
		401.81	6.37	8.3577E-001		2.3177E-001
	Rn-220	549.76	0.11	5.0182E+001	5.02E+001	-3.1408E+001
	Ra-223	81.07	15.20	3.4313E-001	2.26E-001	-1.9944E-001
		83.79	25.20	2.2618E-001		-2.8344E-002
		94.25	3.01	1.7854E+000		-1.3251E+000
		94.87	5.74	9.2884E-001		-7.8033E-001
		122.32	1.19	3.8122E+000		3.8588E-001
		144.23	3.22	1.4430E+000		2.4212E-001
		154.21	5.62	8.2972E-001		2.1781E-001
		269.46	13.70	4.1749E-001		4.0774E-001
		323.87	3.93	1.4387E+000		1.6890E-001
		338.28	2.79	2.6229E+000		7.9516E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	Ra-223	445.03	1.27	4.1689E+000	2.26E-001	6.5020E-001
+	Ra-224	81.07	0.13	4.0746E+001	9.09E-001	-2.3683E+001
		83.79*	0.21	1.8894E+001		1.8375E+001
		240.99*	4.10	9.0869E-001		2.3540E+000
+	RA-226	186.21*	3.28	1.2409E+000	2.40E-001	1.2009E+000
		1764.49*	15.80	2.4001E-001		5.7623E-001
	TH-227	50.13	8.00	5.7815E-001	5.78E-001	-7.8471E-002
		79.72	1.89	3.4580E+000		-1.6050E+000
		85.43	2.08	2.8531E+000		1.0597E+000
		88.47	3.40	1.8112E+000		-9.1407E-001
		93.93	1.37	4.0864E+000		-1.9982E+000
		210.65	1.11	5.1175E+000		3.8516E+000
		235.97	12.30	8.8327E-001		-5.7812E-002
		256.25	7.00	7.2838E-001		3.3236E-001
		286.12	1.54	3.1870E+000		-1.0344E+000
		300.00	2.66	2.3653E+000		-1.3938E-001
		304.52	1.20	4.6854E+000		-5.3802E-001
		329.85	2.70	2.1529E+000		-5.6759E-002
		334.38	1.05	6.6331E+000		-1.6800E+000
+	AC-228	57.77	0.47	1.0603E+001	2.10E-001	1.7052E-001
		89.96*	1.96	2.0274E+000		5.2723E+000
		93.35*	3.19	1.2795E+000		3.2743E+000
		99.51	1.26	3.5527E+000		-8.2810E+000
		105.60	0.74	6.2439E+000		1.7455E+000
		129.07*	2.42	1.9311E+000		1.8528E+000
		153.98	0.72	6.4540E+000		1.6943E+000
		209.25*	3.89	9.4007E-001		1.5101E+000
		270.24*	3.46	1.2194E+000		2.0810E+000
		328.00*	2.95	1.6001E+000		2.4564E+000
		332.37	0.40	1.4398E+001		-4.3890E+000
		338.32*	11.27	3.8444E-001		2.1188E+000
		409.46	1.92	2.9151E+000		9.0719E-001
		463.00*	4.40	9.9181E-001		2.4601E+000
		508.96	0.45	1.8693E+001		-1.0835E+000
		509.60	0.05	1.6775E+002		4.6213E+002
		562.50	0.87	7.5290E+000		-2.9283E-001
		726.86*	0.62	8.2525E+000		2.2588E+001
		755.32	1.00	6.8072E+000		1.5385E+000
		772.29	1.49	5.1004E+000		5.5603E+000
		782.14	0.49	1.4448E+001		3.0976E+000
		794.95*	4.25	1.2769E+000		1.8481E+000
		830.49	0.54	1.2640E+001		-4.3605E+000
		835.71*	1.61	2.8693E+000		9.0004E-002
		840.38	0.91	7.3082E+000		7.0295E-001
		904.19	0.77	8.8877E+000		1.0517E+000
		911.20*	25.80	2.1004E-001		2.3687E+000
		964.77*	4.99	7.4864E-001		2.1711E+000
		968.97*	15.80	2.4590E-001		1.9698E+000
		1247.08	0.50	1.4849E+001		-2.8447E+001
		1459.14	0.83	2.5717E+001		1.4088E+002
		1495.93	0.86	6.5961E+000		-1.6223E-002

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	AC-228	1501.57	0.46	1.1742E+001	2.10E-001	-8.5167E+000
		1580.53	0.60	1.0785E+001		-1.1045E+001
		1588.19	3.22	2.8620E+000		5.1588E+000
		1630.63	1.51	4.2112E+000		-5.1228E+000
		1638.28	0.47	1.2309E+001		6.6691E+000
	Th-230	67.67	0.38	1.4419E+001	1.44E+001	-1.3552E+001
		253.73	0.01	4.4291E+002		-4.3621E+002
	PA-231	27.36	10.30	3.8014E-001	3.80E-001	1.1329E-001
		90.89	1.28	5.0227E+000		1.8554E+001
		283.69	1.70	2.8683E+000		-2.0477E+000
		300.07	2.46	2.5581E+000		-1.5074E-001
		302.65	2.20	2.5793E+000		1.4800E-001
		330.06	1.40	4.1661E+000		-1.0983E-001
	TH-231	25.65	14.50	2.6032E-001	2.60E-001	-3.5205E-002
		84.22	6.60	8.8803E-001		-8.2740E-002
		89.94	0.94	6.8469E+000		1.6690E+001
	PA-234	62.70	1.50	3.6818E+000	1.92E-001	1.9655E+000
		94.65	14.40	3.7333E-001		-2.7709E-001
		98.43	23.30	1.9233E-001		-3.4091E-001
		99.85	3.20	1.4048E+000		-1.7878E+000
		111.30	5.44	8.5205E-001		4.5558E-001
		131.30	18.00	2.7927E-001		-1.7168E-002
		140.90	0.31	1.4744E+001		-8.4912E+000
		152.72	6.00	7.7851E-001		3.0619E-001
		186.15	1.76	3.0020E+000		-2.5118E-002
		203.12	1.23	4.1717E+000		-2.8045E+000
		226.94	10.00	5.3838E-001		-2.8560E-001
		249.22	2.50	2.0544E+000		-5.8257E-001
		293.79	2.99	2.0227E+000		-4.2273E-001
		369.50	2.47	1.9894E+000		-1.8801E-001
		569.32	11.80	5.5287E-001		-3.0275E-002
		699.03	3.60	1.7782E+000		5.1873E-001
		705.90	2.27	2.8619E+000		-1.9141E-001
		733.39	6.90	1.2067E+000		2.5912E-002
		742.81	2.06	3.1713E+000		1.4307E-001
		796.10	2.58	2.9411E+000		3.6098E+000
		805.80	2.52	2.4057E+000		-4.8191E-001
		831.50	4.12	1.6231E+000		-7.5976E-001
		880.50	10.20	5.7518E-001		-1.3664E-002
		883.24	9.60	6.1236E-001		-1.2893E-001
		925.20	9.60	6.0288E-001		2.5829E-002
		926.72	7.20	7.9688E-001		-7.3162E-001
		946.00	13.40	4.5678E-001		-8.6581E-002
		949.00	7.80	8.0012E-001		2.6683E-001
	PA-234M	94.65	0.14	3.7594E+001	7.21E+000	-2.7903E+001
		98.43	0.23	1.9484E+001		-3.4536E+001
		258.23	0.07	6.9113E+001		-2.3412E+001
		742.81	0.08	8.1661E+001		3.6841E+000
		766.38	0.29	2.4810E+001		5.7993E+000
		1001.03	0.84	7.2060E+000		1.7497E+000
	Th-234	63.29	4.80	1.1493E+000	1.06E+000	4.8015E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	Th-234	92.28	0.50	1.1870E+001	1.06E+000	8.3579E+000
		92.59	5.58	1.0638E+000		7.4907E-001
		95.86	0.80	6.6792E+000		-4.6855E+000
		108.42	0.18	2.5826E+001		3.7516E+000
		112.81	0.28	1.6582E+001		5.4523E+000
	U-234	53.20	0.12	3.7105E+001	3.71E+001	-4.9105E-002
+	U-235	89.96*	1.50	2.6491E+000	7.54E-002	6.8891E+000
		93.35*	11.00	3.7105E-001		9.4953E-001
		104.82	1.30	3.5193E+000		-1.2030E+000
		105.60	2.40	1.9252E+000		5.3818E-001
		108.70	1.20	3.8355E+000		-3.7076E-001
		109.16	1.54	2.9912E+000		-2.8914E-001
		143.76	10.96	4.2225E-001		-5.9383E-002
		163.36	5.08	8.7355E-001		-6.6458E-002
		185.71*	54.00	7.5371E-002		7.2940E-002
		202.11	1.08	4.7720E+000		1.4096E+000
		205.31	5.01	1.0908E+000		-1.6857E+000
		742.50	0.00	1.6327E+004		7.3660E+002
	AM-241	26.34	2.40	1.6129E+000	1.41E-001	3.9391E-001
		59.54	35.90	1.4112E-001		-1.3121E-001

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

****
***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****
****

Sample Title: B&L "Cold Pile"
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
BE-7	0.997	477.60*		10.52	7.05983E-001	3.46980E-001
K-40	0.957	1460.83*		10.67	1.06360E+001	1.18281E+000
Tl-208	0.894	72.81	@	2.09		
		74.97*	@	3.51	6.20347E+000	9.56379E-001
		84.45*	@	0.42	9.36358E+000	3.33398E+000
		84.94	@	0.80		
		87.30*	@	0.29	4.50766E+001	7.64498E+000
		211.40	@	0.18		
		233.36	@	0.31		
		252.61	@	0.69		
		277.35*	@	6.31	5.13046E-001	4.22788E-001
		510.77*	@	22.60	6.77937E-001	1.87271E-001
		583.19*		84.50	6.28042E-001	8.58704E-002
		722.04	@	0.20		
		763.13	@	1.81		
		860.56*		12.42	5.37652E-001	2.67541E-001
		927.60	@	0.13		
		982.70	@	0.20		
		1093.90	@	0.40		
PB-212	0.984	74.82*	@	10.41	2.09166E+000	3.20485E-001
		77.11*	@	17.50	1.98637E+000	2.79095E-001
		87.18*	@	6.10	2.16515E+000	3.63344E-001
		89.78*	@	1.46	7.07788E+000	1.31343E+000
		115.18	@	0.59		
		238.63*		43.30	2.10676E+000	2.04847E-001
		300.09*	@	3.28	2.10724E+000	4.98647E-001
		415.20	@	0.14		
BI-214	0.411	76.86*	@	0.58	5.97293E+001	9.45017E+000
		79.29	@	0.98		
		386.77	@	0.31		
		388.88	@	0.37		
		454.77	@	0.30		
		609.31*		46.10	5.44184E-001	1.02061E-001
		665.45	@	1.46		
		703.11	@	0.47		
		719.86	@	0.38		
		768.36	@	4.94		
		786.10	@	0.31		
		806.17	@	1.22		
		934.06	@	3.03		
		964.08	@	0.36		
		1051.96	@	0.31		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
BI-214	0.411	1069.96	@	0.28		
		1120.29*		15.10	5.33011E-001	2.31861E-001
		1155.19	@	1.69		
		1207.68	@	0.45		
		1238.11	@	5.79		
		1280.96	@	1.43		
		1377.67	@	4.00		
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98	@	2.15		
		1509.23	@	2.11		
		1538.50	@	0.38		
		1583.22	@	0.69		
		1661.28	@	1.15		
		1729.59	@	2.92		
		1847.42	@	2.11		
		2118.55	@	1.14		
PB-214	0.876	53.23	@	1.20		
		74.82*	@	4.80	4.53641E+000	2.54643E+000
		77.11*	@	8.00	4.34531E+000	2.45866E+000
		86.83	@	1.00		
		87.35*	@	1.80	7.33768E+000	4.25160E+000
		89.78*	@	0.67	1.54239E+001	8.74483E+000
		242.00*		7.43	1.29901E+000	2.53271E-001
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.39230E-001	1.01691E-001
		351.93*		37.60	5.05228E-001	1.07831E-001
		462.00	@	0.22		
		480.43	@	0.32		
		487.09	@	0.42		
		580.13	@	0.35		
		785.96		1.07		
		839.04	@	0.59		
Ra-224	0.926	81.07	@	0.13		
		83.79*	@	0.21	1.83755E+001	6.55177E+000
		240.99*		4.10	2.35399E+000	4.57259E-001
RA-226	0.931	186.21*		3.28	1.20087E+000	7.79588E-001
		1764.49*		15.80	5.76228E-001	2.39521E-001
AC-228	0.701	57.77	@	0.47		
		89.96*	@	1.96	5.27229E+000	1.24960E+000
		93.35*	@	3.19	3.27426E+000	7.87150E-001
		99.51	@	1.26		
		105.60	@	0.74		
		129.07*	@	2.42	1.85283E+000	1.21401E+000
		153.98	@	0.72		
		209.25*	@	3.89	1.51009E+000	6.24163E-001
		270.24*	@	3.46	2.08103E+000	8.15876E-001
		328.00*	@	2.95	2.45643E+000	1.07525E+000
		332.37	@	0.40		
		338.32*		11.27	2.11879E+000	3.64699E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
AC-228	0.701	409.46	@	1.92		
		463.00*	@	4.40	2.46008E+000	7.43464E-001
		508.96	@	0.45		
		509.60		0.05		
		562.50	@	0.87		
		726.86*	@	0.62	2.25884E+001	8.57181E+000
		755.32	@	1.00		
		772.29	@	1.49		
		782.14	@	0.49		
		794.95*	@	4.25	1.84810E+000	8.62289E-001
		830.49	@	0.54		
		835.71*	@	1.61	9.00036E-002	1.63846E+000
		840.38	@	0.91		
		904.19	@	0.77		
		911.20*		25.80	2.36869E+000	2.94952E-001
		964.77*	@	4.99	2.17105E+000	5.33995E-001
		968.97*		15.80	1.96976E+000	2.97002E-001
		1247.08	@	0.50		
		1459.14	@	0.83		
		1495.93	@	0.86		
		1501.57	@	0.46		
		1580.53	@	0.60		
		1588.19	@	3.22		
		1630.63	@	1.51		
		1638.28	@	0.47		
U-235	0.507	89.96*		1.50	6.88913E+000	1.24666E+000
		93.35*		11.00	9.49534E-001	8.80395E-001
		104.82	@	1.30		
		105.60	@	2.40		
		108.70	@	1.20		
		109.16	@	1.54		
		143.76		10.96		
		163.36		5.08		
		185.71*		54.00	7.29400E-002	4.74097E-002
		202.11	@	1.08		
		205.31	@	5.01		
		742.50	@	0.00		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000 sigma

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***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****

	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/gms)	Wt mean Activity Uncertainty
	BE-7		0.997	7.059827E-001	3.469804E-001
	K-40		0.957	1.063604E+001	1.182809E+000
X	MN-54		0.920		
X	CD-109		0.896		
	Tl-208	@	0.894	6.196001E-001	8.176216E-002
	PB-212	@	0.984	2.145840E+000	1.987559E-001
	BI-214	@	0.411	5.423702E-001	9.341203E-002
	PB-214	@	0.876	5.256427E-001	7.354676E-002
	Ra-224	@	0.926	1.401446E+000	4.728132E-001
	RA-226		0.931	5.457393E-001	2.387907E-001
	AC-228	@	0.701	2.268119E+000	1.671162E-001
	U-235	@	0.507	5.939444E-002	4.773966E-002

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 8/1/2008 10:52:47 AM
Peak Locate From Channel: 1
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
1	6.80	3.4795E-001	8.34
2	15.51	8.8479E-002	30.44
3	46.56	1.7346E-002	124.13
34	1078.65	4.6925E-003	100.11

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

****
***** G A M M A S P E C T R U M A N A L Y S I S *****
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Filename: C:\GENIE2K\CAMFILES\2008 Samples\BL07080802.CNF

Report Generated On	:	8/1/2008 9:47:16 AM
Sample Title	:	B&L "Hot Pile"
Sample Description	:	Suntru Street Remediation
Sample Identification	:	BL07080802
Sample Type	:	Soil
Sample Geometry	:	tub
Peak Locate Threshold	:	3.00
Peak Locate Range (in channels)	:	1 - 4096
Peak Area Range (in channels)	:	1 - 4096
Identification Energy Tolerance	:	1.000 keV
Sample Size	:	5.539E+002 gms
Sample Taken On	:	7/8/2008 3:40:00 PM
Acquisition Started	:	8/1/2008 8:46:13 AM
Live Time	:	3600.0 seconds
Real Time	:	3600.6 seconds
Dead Time	:	0.02 %

Energy Calibration Used Done On	:	3/3/2005
Efficiency Calibration Used Done On	:	1/24/2002
Efficiency ID	:	Labsoc 500ml TUB

****
***** P E A K A N A L Y S I S R E P O R T *****
****

Detector Name: DET02
Sample Title: B&L "Hot Pile"
Peak Analysis Performed on: 8/1/2008 9:47:16 AM
Peak Analysis From Channel: 1
Peak Analysis To Channel: 4096

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
	1	10-	18	14.32	6.80	1.04	6.26E+002	88.75	5.33E+002
M	2	145-	159	150.35	74.85	1.13	3.02E+002	44.05	3.82E+002
m	3	145-	159	154.81	77.08	1.13	4.83E+002	51.86	3.80E+002
M	4	171-	191	174.81	87.09	1.08	1.06E+002	35.12	3.97E+002
m	5	171-	191	180.28	89.83	1.08	9.87E+001	31.27	3.43E+002
m	6	171-	191	186.61	92.99	1.09	1.83E+002	37.01	2.78E+002
	7	254-	262	258.78	129.09	1.40	7.15E+001	48.48	2.41E+002
	8	368-	376	372.28	185.87	1.27	1.14E+002	46.51	2.00E+002
	9	473-	483	477.91	238.71	1.38	6.50E+002	74.82	3.09E+002
M	10	585-	607	591.05	295.31	1.25	1.72E+002	29.03	8.77E+001
m	11	585-	607	601.05	300.31	1.25	4.73E+001	18.28	8.02E+001
	12	673-	683	677.43	338.51	1.49	1.39E+002	39.21	1.03E+002
	13	701-	709	704.48	352.04	1.29	2.50E+002	41.62	8.41E+001
	14	1015-	1028	1021.77	510.74	2.19	2.01E+002	36.92	5.07E+001
	15	1161-	1173	1166.83	583.29	1.59	2.28E+002	38.31	5.30E+001
	16	1212-	1225	1219.12	609.44	1.51	1.84E+002	38.35	6.65E+001
	17	1450-	1461	1454.79	727.30	1.92	4.86E+001	25.61	4.54E+001
	18	1816-	1828	1822.81	911.33	1.85	1.69E+002	32.96	3.90E+001
	19	1934-	1945	1938.22	969.04	1.50	5.52E+001	29.32	6.08E+001
	20	2238-	2247	2241.59	1120.72	1.21	2.76E+001	22.99	4.24E+001
	21	2913-	2931	2922.64	1461.19	2.19	5.78E+002	48.40	2.35E+000
	22	3173-	3180	3176.85	1588.26	1.43	1.08E+001	10.98	9.23E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

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***** N U C L I D E M D A R E P O R T *****
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Detector Name: DET02
Sample Geometry: tub
Sample Title: B&L "Hot Pile"
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	BE-7	477.60	10.52	5.9317E-001	5.93E-001	-2.0673E-001
+	K-40	1460.83*	10.67	3.5414E-001	3.54E-001	1.0141E+001
	MN-54	834.85	99.98	6.9742E-002	6.97E-002	7.5121E-003
	CO-57	122.06	85.60	4.4276E-002	4.43E-002	-1.5717E-003
		136.47	10.68	3.8713E-001		3.1858E-001
		692.03	0.16	4.2193E+001		2.0602E+001
	CO-60	1173.24	99.97	8.3668E-002	5.07E-002	7.4070E-003
		1332.50	99.99	5.0674E-002		-7.1124E-003
	Y-88	898.04	93.70	7.6169E-002	5.85E-002	-3.1432E-002
		1836.06	99.20	5.8543E-002		-2.2228E-002
	CD-109	88.04*	3.61	9.5834E-001	9.58E-001	9.9759E-001
	SN-113	255.05	1.82	2.7333E+000	8.95E-002	7.7677E-001
		391.69	64.00	8.9477E-002		6.9787E-002
	I-131	80.18	2.62	1.4105E+001	4.15E-001	-1.5486E+001
		284.30	6.05	5.6286E+000		-4.6905E+000
		364.48	81.20	4.1471E-001		3.4486E-002
		636.97	7.26	5.4536E+000		-4.5537E+000
		722.89	1.80	3.0877E+001		-5.4883E+000
	CS-134	475.35	1.46	3.2341E+000	7.88E-002	1.0904E-001
		563.23	8.38	7.1996E-001		2.6351E-001
		569.32	15.43	3.7265E-001		-5.1392E-002
		604.70	97.60	8.7630E-002		-1.1879E-002
		795.84	85.40	7.8774E-002		1.9628E-002
		801.93	8.73	7.0318E-001		-4.2011E-001
		1038.57	1.00	6.7019E+000		1.0327E+000
		1167.94	1.80	4.4967E+000		-3.0138E-001
		1365.15	3.04	2.0333E+000		3.5580E-001
	CS-136	66.91	12.50	1.2059E+000	2.26E-001	-9.1143E-001
		86.29	6.30	2.6923E+000		2.1814E-001
		153.22	7.46	1.8342E+000		5.3205E-001
		163.89	4.61	2.8650E+000		1.4734E+000
		176.55	13.56	9.9837E-001		-7.9568E-003
		273.65	12.66	1.4144E+000		1.7198E+000
		340.57	48.50	4.1746E-001		6.8305E-001
		818.50	99.70	2.2642E-001		2.9065E-002
		1048.07	79.60	2.6632E-001		1.0558E-001
		1235.34	19.70	1.5888E+000		1.5306E+000
	CS-137	661.66	85.10	6.5105E-002	6.51E-002	4.4785E-003
	HG-203	279.20	81.00	8.3055E-002	8.31E-002	5.3155E-002
	Tl-207	897.80	0.26	2.3802E+001	2.38E+001	-6.7331E+000
+	Tl-208	72.81	2.09	2.5190E+000	5.31E-002	-4.4282E-001
		74.97*	3.51	9.4534E-001		2.8446E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	Tl-208	84.45	0.42	1.1195E+001	5.31E-002	-3.6441E-001
		84.94	0.80	5.8449E+000		-3.8599E-003
		87.30*	0.29	1.1395E+001		1.1862E+001
		211.40	0.18	2.5905E+001		1.4604E+001
		233.36	0.31	1.6117E+001		-1.8730E+001
		252.61	0.69	6.0934E+000		6.5579E-002
		277.35	6.31	7.5542E-001		3.0097E-001
		510.77*	22.60	2.1259E-001		5.1510E-001
		583.19*	84.50	5.3116E-002		2.6307E-001
		722.04	0.20	3.5591E+001		5.3662E-001
		763.13	1.81	3.3758E+000		-1.8690E+000
		860.56	12.42	5.0679E-001		4.1547E-001
		927.60	0.13	4.2838E+001		-2.2190E+001
		982.70	0.20	2.8913E+001		-1.2728E+001
		1093.90	0.40	1.6738E+001		-4.4663E+000
	BI-211	72.87	1.27	4.1452E+000	2.58E-001	-7.2868E-001
		351.06*	12.91	2.5817E-001		1.3315E+000
	PB-211	404.85	3.78	1.3445E+000	1.34E+000	6.1932E-002
		427.09	1.76	2.4633E+000		-1.7926E+000
		832.01	3.52	1.8309E+000		-8.8861E-001
	BI-212	39.86	1.09	3.4387E+000	1.07E+000	2.3825E+000
		72.87	0.13	4.0495E+001		-7.1186E+000
		288.07	0.31	1.4311E+001		6.9289E+000
		327.96	0.14	3.4431E+001		1.8133E+001
		452.83	0.31	1.4166E+001		-3.7925E+000
		727.33	6.58	1.0714E+000		4.9184E-001
		785.37	1.10	5.4026E+000		-2.0516E-002
		893.41	0.38	1.6792E+001		3.5100E+000
		952.12	0.17	4.0189E+001		2.4323E+001
		1078.62	0.56	1.1686E+001		1.4089E+000
		1512.70	0.29	1.6082E+001		-2.2228E+000
		1620.50	1.49	3.3764E+000		-1.8402E-001
+	PB-212	74.82*	10.41	3.1875E-001	1.15E-001	9.5914E-001
		77.11*	17.50	1.8985E-001		9.1089E-001
		87.18*	6.10	5.4735E-001		5.6977E-001
		89.78*	1.46	2.1209E+000		2.3554E+000
		115.18	0.59	5.9141E+000		7.0585E-001
		238.63*	43.30	1.1509E-001		7.1730E-001
		300.09*	3.28	8.3354E-001		8.8954E-001
		415.20	0.14	3.3964E+001		-2.7313E+001
+	BI-214	76.86*	0.58	5.7087E+000	1.10E-001	2.7390E+001
		79.29	0.98	5.3282E+000		-4.0234E+000
		386.77	0.31	1.5076E+001		6.0682E+000
		388.88	0.37	1.2797E+001		-2.6062E+000
		454.77	0.30	1.4172E+001		-6.1842E+000
		609.31*	46.10	1.1023E-001		4.2457E-001
		665.45	1.46	3.7117E+000		-1.5255E+000
		703.11	0.47	1.2056E+001		-3.7368E+000
		719.86	0.38	1.5562E+001		-3.5832E+000
		768.36	4.94	1.3569E+000		1.3312E+000
		786.10	0.31	1.9218E+001		-7.8335E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	BI-214	806.17	1.22	4.5830E+000	1.10E-001	-2.5999E+000
		934.06	3.03	2.0461E+000		9.3301E-001
		964.08	0.36	2.6173E+001		-6.4493E+000
		1051.96	0.31	1.8280E+001		-1.2797E+001
		1069.96	0.28	2.3368E+001		-1.6614E+001
		1120.29*	15.10	3.8800E-001		2.9512E-001
		1155.19	1.69	4.3628E+000		2.1893E-001
		1207.68	0.45	1.7587E+001		1.5219E+001
		1238.11	5.79	1.5510E+000		1.6559E+000
		1280.96	1.43	4.8095E+000		-2.3495E+000
		1377.67	4.00	1.6489E+000		-5.6337E-001
		1385.31	0.76	8.5839E+000		5.2998E+000
		1401.50	1.27	4.6900E+000		2.0928E+000
		1407.98	2.15	2.8753E+000		1.5422E+000
		1509.23	2.11	2.4372E+000		1.6188E+000
		1538.50	0.38	1.3110E+001		3.5224E+000
		1583.22	0.69	8.7660E+000		3.7295E+000
		1661.28	1.15	3.2370E+000		-1.0685E+000
		1729.59	2.92	1.7811E+000		-2.4618E-001
		1847.42	2.11	2.4984E+000		1.6696E-001
>		2118.55	1.14	0.0000E+000		0.0000E+000
+	PB-214	53.23	1.20	3.2080E+000	8.86E-002	-1.0173E+000
		74.82*	4.80	6.9130E-001		2.0802E+000
		77.11*	8.00	4.1531E-001		1.9926E+000
		86.83*	1.00	3.3389E+000		3.4757E+000
		87.35	1.80	2.7442E+000		2.8581E-001
		89.78*	0.67	4.6218E+000		5.1329E+000
		242.00	7.43	1.1357E+000		1.4261E-001
		258.87	0.52	8.3047E+000		-9.5722E-002
		274.80	0.47	1.0673E+001		6.6465E+000
		295.22*	19.30	1.4588E-001		5.4117E-001
		351.93*	37.60	8.8644E-002		4.5719E-001
		462.00	0.22	2.3170E+001		1.4866E+001
		480.43	0.32	1.4061E+001		-6.0885E+000
		487.09	0.42	1.1205E+001		2.5850E+000
		580.13	0.35	2.5013E+001		-3.9675E+000
		785.96	1.07	5.5671E+000		-2.2692E+000
		839.04	0.59	1.1041E+001		-1.8300E+000
	RN-219	271.23	10.80	4.3545E-001	4.35E-001	-1.0855E-001
		401.81	6.37	7.2224E-001		-3.8767E-001
	Rn-220	549.76	0.11	4.5309E+001	4.53E+001	-2.1714E+001
	Ra-223	81.07	15.20	2.7670E-001	1.83E-001	-3.4903E-001
		83.79	25.20	1.8318E-001		-5.6038E-002
		94.25	3.01	1.4620E+000		-5.2890E-001
		94.87	5.74	7.5031E-001		-4.1913E-001
		122.32	1.19	2.9876E+000		-3.1563E-001
		144.23	3.22	1.1636E+000		-3.4878E-001
		154.21	5.62	6.9959E-001		3.5525E-001
		269.46	13.70	3.4045E-001		3.8823E-002
		323.87	3.93	1.2212E+000		1.9543E-001
		338.28	2.79	2.0775E+000		3.1604E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	Ra-223	445.03	1.27	3.8379E+000	1.83E-001	1.8423E-001
	Ra-224	81.07	0.13	3.2858E+001	2.06E+000	-4.1448E+001
		83.79	0.21	2.1672E+001		-6.6298E+000
		240.99	4.10	2.0624E+000		5.5735E-001
	RA-226	186.21	3.28	1.4266E+000	4.88E-001	1.7307E+000
		1764.49	15.80	4.8819E-001		4.3458E-001
	TH-227	50.13	8.00	5.1050E-001	5.10E-001	5.7583E-002
		79.72	1.89	2.7112E+000		-2.7976E+000
		85.43	2.08	2.2552E+000		2.3016E-001
		88.47	3.40	1.4185E+000		-1.6659E+000
		93.93	1.37	3.2910E+000		-7.6890E-001
		210.65	1.11	4.1444E+000		1.9194E+000
		235.97	12.30	6.4785E-001		-2.9272E-001
		256.25	7.00	6.1701E-001		3.5894E-001
		286.12	1.54	2.8948E+000		1.2788E+000
		300.00	2.66	2.1428E+000		-1.4910E-001
		304.52	1.20	3.9365E+000		-8.4752E-001
		329.85	2.70	1.7807E+000		4.4380E-001
		334.38	1.05	5.3179E+000		-5.7578E+000
+	AC-228	57.77	0.47	8.6180E+000	1.97E-001	-5.2763E+000
		89.96*	1.96	1.5798E+000		1.7546E+000
		93.35*	3.19	9.3282E-001		1.2345E+000
		99.51	1.26	2.8438E+000		-3.8195E+000
		105.60	0.74	5.3283E+000		4.0038E+000
		129.07*	2.42	1.1927E+000		1.1018E+000
		153.98	0.72	5.4418E+000		2.7633E+000
		209.25	3.89	1.1915E+000		5.7306E-001
		270.24	3.46	1.3443E+000		6.4953E-002
		328.00	2.95	1.6225E+000		8.5451E-001
		332.37	0.40	1.1804E+001		-1.1574E+001
		338.32*	11.27	3.2551E-001		8.3748E-001
		409.46	1.92	2.7757E+000		2.0030E+000
		463.00	4.40	1.1882E+000		7.4728E-001
		508.96	0.45	1.6746E+001		-2.8729E+000
		509.60	0.05	1.5059E+002		3.3583E+002
		562.50	0.87	6.8230E+000		1.9478E+000
		726.86*	0.62	7.5539E+000		8.8041E+000
		755.32	1.00	5.8285E+000		-2.7337E+000
		772.29	1.49	4.3852E+000		3.0520E+000
		782.14	0.49	1.2624E+001		9.6131E+000
		794.95	4.25	1.5201E+000		-2.2782E-001
		830.49	0.54	1.2207E+001		-3.3955E-001
		835.71	1.61	4.2607E+000		2.8705E+000
		840.38	0.91	7.2667E+000		2.3934E+000
		904.19	0.77	8.6227E+000		-1.7769E+000
		911.20*	25.80	1.9689E-001		9.2349E-001
		964.77	4.99	1.9097E+000		-6.3892E-001
		968.97*	15.80	4.1122E-001		5.1283E-001
		1247.08	0.50	1.5775E+001		-2.3329E+001
		1459.14	0.83	2.6852E+001		1.2843E+002
		1495.93	0.86	5.8321E+000		9.6250E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	AC-228	1501.57	0.46	1.0302E+001	1.97E-001	-1.5925E+000
		1580.53	0.60	8.5576E+000		-5.0792E+000
		1588.19*	3.22	1.0995E+000		6.8940E-001
		1630.63	1.51	3.9873E+000		-3.7268E+000
		1638.28	0.47	1.2860E+001		6.9158E+000
	Th-230	67.67	0.38	1.1219E+001	1.12E+001	-1.9043E+001
		253.73	0.01	3.8000E+002		-1.4967E+002
	PA-231	27.36	10.30	3.3039E-001	3.30E-001	6.4674E-002
		90.89	1.28	3.9687E+000		8.3578E+000
		283.69	1.70	2.6053E+000		-3.9779E+000
		300.07	2.46	2.3174E+000		-1.6126E-001
		302.65	2.20	2.1535E+000		-4.3944E-001
		330.06	1.40	3.4457E+000		8.5879E-001
	TH-231	25.65	14.50	2.3386E-001	2.34E-001	8.3322E-002
		84.22	6.60	7.0900E-001		-2.3080E-002
		89.94	0.94	5.4296E+000		8.1967E+000
	PA-234	62.70	1.50	3.1072E+000	1.54E-001	3.9585E+000
		94.65	14.40	3.0572E-001		-1.1059E-001
		98.43	23.30	1.5408E-001		-1.8494E-001
		99.85	3.20	1.1286E+000		-6.1334E-001
		111.30	5.44	6.6163E-001		-1.9196E-001
		131.30	18.00	2.1925E-001		-8.5167E-002
		140.90	0.31	1.1857E+001		-5.6222E+000
		152.72	6.00	6.6060E-001		3.4299E-001
		186.15	1.76	2.6580E+000		3.2246E+000
		203.12	1.23	3.5470E+000		1.3830E+000
		226.94	10.00	4.5800E-001		3.8542E-001
		249.22	2.50	1.6900E+000		-2.0943E+000
		293.79	2.99	1.8781E+000		8.0907E-002
		369.50	2.47	1.7254E+000		-1.5377E-001
		569.32	11.80	4.7678E-001		-6.5754E-002
		699.03	3.60	1.6653E+000		-4.1330E-003
		705.90	2.27	2.4375E+000		-2.0572E-003
		733.39	6.90	1.0344E+000		8.1508E-003
		742.81	2.06	3.0487E+000		-2.5100E-001
		796.10	2.58	2.5851E+000		1.6489E+000
		805.80	2.52	2.2318E+000		-1.2746E+000
		831.50	4.12	1.5636E+000		-3.5416E-001
		880.50	10.20	6.5276E-001		3.6487E-001
		883.24	9.60	6.7411E-001		-6.7233E-002
		925.20	9.60	5.8794E-001		1.8353E-001
		926.72	7.20	7.6711E-001		-1.9303E-001
		946.00	13.40	4.6070E-001		-2.3005E-001
		949.00	7.80	8.5104E-001		3.7454E-001
	PA-234M	94.65	0.14	3.0786E+001	7.30E+000	-1.1137E+001
		98.43	0.23	1.5609E+001		-1.8735E+001
		258.23	0.07	5.8803E+001		-4.6066E+000
		742.81	0.08	7.8505E+001		-6.4633E+000
		766.38	0.29	2.1631E+001		-4.9757E+000
		1001.03	0.84	7.3029E+000		2.4343E+000
	Th-234	63.29	4.80	9.6292E-001	8.59E-001	1.0098E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	Th-234	92.28	0.50	9.5858E+000	8.59E-001	8.4886E+000
		92.59	5.58	8.5912E-001		7.6078E-001
		95.86	0.80	5.3568E+000		-3.3377E+000
		108.42	0.18	2.1449E+001		1.0718E+001
		112.81	0.28	1.2535E+001		-1.0528E+001
	U-234	53.20	0.12	3.1301E+001	3.13E+001	-9.9259E+000
+	U-235	89.96*	1.50	2.0643E+000	5.97E-002	2.2926E+000
		93.35*	11.00	2.7052E-001		3.5801E-001
		104.82	1.30	3.0347E+000		2.3935E+000
		105.60	2.40	1.6429E+000		1.2345E+000
		108.70	1.20	3.1853E+000		1.0760E+000
		109.16	1.54	2.4841E+000		8.3915E-001
		143.76	10.96	3.3564E-001		-2.6609E-001
		163.36	5.08	7.4658E-001		3.5749E-001
		185.71*	54.00	5.9713E-002		6.9355E-002
		202.11	1.08	4.0115E+000		3.2231E+000
		205.31	5.01	9.1062E-001		-1.5000E-001
		742.50	0.00	1.5696E+004		-1.2923E+003
	AM-241	26.34	2.40	1.4114E+000	1.18E-001	2.7170E-001
		59.54	35.90	1.1802E-001		-1.0976E-001

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****
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Sample Title: B&L "Hot Pile"
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
K-40	0.980	1460.83*		10.67	1.01411E+001	1.16300E+000
Tl-208	0.676	72.81	@	2.09		
		74.97*	@	3.51	2.84463E+000	5.62097E-001
		84.45	@	0.42		
		84.94	@	0.80		
		87.30*	@	0.29	1.18621E+001	4.40608E+000
		211.40	@	0.18		
		233.36	@	0.31		
		252.61	@	0.69		
		277.35	@	6.31		
		510.77*	@	22.60	5.15105E-001	1.60963E-001
		583.19*		84.50	2.63066E-001	5.19921E-002
		722.04	@	0.20		
		763.13	@	1.81		
		860.56		12.42		
		927.60	@	0.13		
		982.70	@	0.20		
		1093.90	@	0.40		
PB-212	0.984	74.82*	@	10.41	9.59140E-001	1.88817E-001
		77.11*	@	17.50	9.10893E-001	1.52621E-001
		87.18*	@	6.10	5.69769E-001	2.11174E-001
		89.78*	@	1.46	2.35544E+000	7.95045E-001
		115.18	@	0.59		
		238.63*		43.30	7.17296E-001	1.08994E-001
		300.09*	@	3.28	8.89537E-001	3.51868E-001
		415.20	@	0.14		
BI-214	0.410	76.86*	@	0.58	2.73902E+001	5.00305E+000
		79.29	@	0.98		
		386.77	@	0.31		
		388.88	@	0.37		
		454.77	@	0.30		
		609.31*		46.10	4.24566E-001	9.57235E-002
		665.45	@	1.46		
		703.11	@	0.47		
		719.86	@	0.38		
		768.36	@	4.94		
		786.10	@	0.31		
		806.17	@	1.22		
		934.06	@	3.03		
		964.08	@	0.36		
		1051.96	@	0.31		
		1069.96	@	0.28		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
BI-214	0.410	1120.29*		15.10	2.95115E-001	2.46461E-001
		1155.19	@	1.69		
		1207.68	@	0.45		
		1238.11	@	5.79		
		1280.96	@	1.43		
		1377.67	@	4.00		
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98	@	2.15		
		1509.23	@	2.11		
		1538.50	@	0.38		
		1583.22	@	0.69		
		1661.28	@	1.15		
		1729.59	@	2.92		
		1847.42	@	2.11		
		2118.55	@	1.14		
PB-214	0.725	53.23	@	1.20		
		74.82*	@	4.80	2.08019E+000	1.19565E+000
		77.11*	@	8.00	1.99263E+000	1.14205E+000
		86.83*	@	1.00	3.47569E+000	2.44855E+000
		87.35	@	1.80		
		89.78*	@	0.67	5.13289E+000	3.25017E+000
		242.00		7.43		
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.41171E-001	1.02789E-001
		351.93*		37.60	4.57194E-001	8.79676E-002
		462.00	@	0.22		
		480.43	@	0.32		
		487.09	@	0.42		
		580.13	@	0.35		
		785.96		1.07		
		839.04	@	0.59		
AC-228	0.333	57.77	@	0.47		
		89.96*	@	1.96	1.75456E+000	6.46263E-001
		93.35*	@	3.19	1.23452E+000	4.69168E-001
		99.51	@	1.26		
		105.60	@	0.74		
		129.07*	@	2.42	1.10182E+000	7.58340E-001
		153.98	@	0.72		
		209.25	@	3.89		
		270.24	@	3.46		
		328.00	@	2.95		
		332.37	@	0.40		
		338.32*		11.27	8.37481E-001	2.48346E-001
		409.46	@	1.92		
		463.00	@	4.40		
		508.96	@	0.45		
		509.60		0.05		
		562.50	@	0.87		
		726.86*	@	0.62	8.80410E+000	5.53370E+000

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
AC-228	0.333	755.32	@	1.00		
		772.29	@	1.49		
		782.14	@	0.49		
		794.95	@	4.25		
		830.49	@	0.54		
		835.71	@	1.61		
		840.38	@	0.91		
		904.19	@	0.77		
		911.20*		25.80	9.23493E-001	1.92120E-001
		964.77	@	4.99		
		968.97*		15.80	5.12831E-001	2.75247E-001
		1247.08	@	0.50		
		1459.14	@	0.83		
		1495.93	@	0.86		
		1501.57	@	0.46		
		1580.53	@	0.60		
		1588.19*	@	3.22	6.89402E-001	7.07308E-001
		1630.63	@	1.51		
		1638.28	@	0.47		
U-235	0.505	89.96*		1.50	2.29263E+000	7.68086E-001
		93.35*		11.00	3.58012E-001	3.48268E-001
		104.82	@	1.30		
		105.60	@	2.40		
		108.70	@	1.20		
		109.16	@	1.54		
		143.76		10.96		
		163.36		5.08		
		185.71*		54.00	6.93547E-002	3.86620E-002
		202.11	@	1.08		
		205.31	@	5.01		
		742.50	@	0.00		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000 sigma

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***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
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	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/gms)	Wt mean Activity Uncertainty
	K-40		0.980	1.014112E+001	1.163002E+000
X	CD-109		0.865		
	Tl-208	@	0.676	2.630655E-001	5.181151E-002
X	BI-211		0.674		
	PB-212	@	0.984	7.214578E-001	1.072288E-001
	BI-214	@	0.410	4.075977E-001	8.922972E-002
	PB-214	@	0.725	4.934104E-001	6.638243E-002
	AC-228	@	0.333	8.267823E-001	1.239286E-001
	U-235	@	0.505	7.416784E-002	3.696139E-002

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 8/1/2008 9:47:16 AM
Peak Locate From Channel: 1
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
1	6.80	1.7384E-001	14.18

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

****
***** G A M M A S P E C T R U M A N A L Y S I S *****
****

Filename: C:\GENIE2K\CAMFILES\2008 Samples\BL07080801.CNF

Report Generated On : 8/1/2008 12:24:53 PM

Sample Title : B&L Bottom of excavation
Sample Description : Suntru Street Remediation
Sample Identification : BL07080801
Sample Type : Soil
Sample Geometry : tub

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 1 - 4096
Identification Energy Tolerance : 1.000 keV

Sample Size : 5.878E+002 gms

Sample Taken On : 7/8/2008 3:30:00 PM
Acquisition Started : 8/1/2008 10:54:33 AM

Live Time : 3600.0 seconds
Real Time : 3600.7 seconds

Dead Time : 0.02 %

Energy Calibration Used Done On : 3/3/2005
Efficiency Calibration Used Done On : 1/24/2002
Efficiency ID : Labsoc 500ml TUB

****
***** PEAK ANALYSIS REPORT *****
****

Detector Name: DET02
Sample Title: B&L Bottom of excavation
Peak Analysis Performed on: 8/1/2008 12:24:53 PM
Peak Analysis From Channel: 1
Peak Analysis To Channel: 4096

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
	1	10-	18	14.33	6.80	1.12	7.78E+002	91.24	5.31E+002
	2	122-	131	126.96	63.15	1.21	1.23E+002	75.45	5.73E+002
M	3	145-	159	150.13	74.74	1.12	3.86E+002	49.92	5.38E+002
m	4	145-	159	154.80	77.08	1.12	4.90E+002	53.94	4.85E+002
M	5	170-	191	174.99	87.18	1.24	1.41E+002	37.37	4.78E+002
m	6	170-	191	180.56	89.96	1.24	1.16E+002	33.94	4.78E+002
m	7	170-	191	186.36	92.87	1.25	2.11E+002	39.57	4.19E+002
	8	193-	201	198.80	99.09	0.53	1.58E+001	54.25	3.37E+002
	9	368-	377	372.37	185.92	1.10	6.39E+001	51.44	2.64E+002
	10	415-	424	419.27	209.38	1.25	1.21E+002	48.41	2.06E+002
M	11	472-	489	477.96	238.74	1.23	9.12E+002	63.68	1.63E+002
m	12	472-	489	483.42	241.47	1.23	1.36E+002	28.35	1.77E+002
	13	535-	546	541.50	270.52	1.19	6.76E+001	44.33	1.69E+002
	14	585-	595	590.97	295.27	1.57	9.25E+001	43.82	1.61E+002
	15	654-	662	656.74	328.17	0.80	6.28E+001	34.28	1.07E+002
	16	671-	681	677.29	338.45	1.40	1.92E+002	43.03	1.14E+002
	17	698-	709	704.54	352.07	1.42	2.95E+002	47.02	1.03E+002
	18	920-	931	927.04	463.36	1.16	6.16E+001	31.34	7.34E+001
	19	1015-	1029	1022.42	511.07	1.58	1.60E+002	41.95	9.75E+001
	20	1162-	1172	1166.89	583.33	1.62	2.85E+002	40.13	4.95E+001
	21	1213-	1225	1219.28	609.52	1.24	2.07E+002	39.72	7.15E+001
	22	1450-	1461	1455.34	727.58	1.06	5.14E+001	29.06	6.36E+001
	23	1586-	1595	1590.33	795.08	1.12	3.15E+001	19.57	2.85E+001
	24	1716-	1728	1721.82	860.83	1.40	2.15E+001	22.65	4.05E+001
	25	1816-	1830	1823.17	911.51	1.83	2.16E+002	35.31	3.35E+001
	26	1934-	1943	1938.76	969.31	1.69	7.44E+001	30.46	6.46E+001
	27	2377-	2384	2380.56	1190.20	0.53	2.00E+000	13.00	2.00E+001
	28	2914-	2931	2923.17	1461.45	2.23	7.05E+002	54.20	9.03E+000
	29	3175-	3182	3178.14	1588.90	1.43	8.45E+000	13.05	1.35E+001
	30	3524-	3538	3531.07	1765.30	2.08	4.37E+001	16.79	9.33E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

****
***** N U C L I D E M D A R E P O R T *****
****

Detector Name: DET02
Sample Geometry: tub
Sample Title: B&L Bottom of excavation
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	BE-7	477.60	10.52	6.6088E-001	6.61E-001	3.5577E-001
+	K-40	1460.83*	10.67	4.3431E-001	4.34E-001	1.1732E+001
	MN-54	834.85	99.98	6.4191E-002	6.42E-002	-3.6306E-003
	CO-57	122.06	85.60	4.4802E-002	4.48E-002	-1.6605E-002
		136.47	10.68	3.8079E-001		1.0626E-001
		692.03	0.16	4.2247E+001		2.0720E+001
	CO-60	1173.24	99.97	7.2017E-002	5.33E-002	-3.7507E-002
		1332.50	99.99	5.3336E-002		-4.8581E-002
	Y-88	898.04	93.70	6.8726E-002	6.09E-002	-3.2069E-002
		1836.06	99.20	6.0890E-002		9.0633E-003
	CD-109	88.04*	3.61	9.8724E-001	9.87E-001	1.2726E+000
	SN-113	255.05	1.82	2.6543E+000	7.93E-002	-4.2037E-001
		391.69	64.00	7.9291E-002		-4.6539E-002
	I-131	80.18	2.62	1.4287E+001	4.32E-001	-1.5917E+001
		284.30	6.05	5.6938E+000		-3.1623E+000
		364.48	81.20	4.3219E-001		-2.1057E-001
		636.97	7.26	5.6069E+000		1.3275E-001
		722.89	1.80	3.1856E+001		2.0545E-001
	CS-134	475.35	1.46	3.3746E+000	7.36E-002	-1.6140E+000
		563.23	8.38	6.6487E-001		4.4852E-001
		569.32	15.43	3.3651E-001		-1.6529E-001
		604.70	97.60	8.9042E-002		6.0312E-003
		795.84	85.40	7.3583E-002		1.3987E-002
		801.93	8.73	6.5196E-001		1.0375E-001
		1038.57	1.00	6.0710E+000		-8.1729E-001
		1167.94	1.80	4.1517E+000		4.7020E-001
		1365.15	3.04	1.9779E+000		-2.0410E-002
	CS-136	66.91	12.50	1.2537E+000	2.05E-001	-3.9446E-001
		86.29	6.30	2.7325E+000		1.6556E-001
		153.22	7.46	1.8514E+000		1.0713E+000
		163.89	4.61	2.8293E+000		2.3452E-003
		176.55	13.56	1.0527E+000		-2.2578E-001
		273.65	12.66	1.3856E+000		7.1896E-002
		340.57	48.50	4.4016E-001		-3.6295E-001
		818.50	99.70	2.0511E-001		-1.9265E-003
		1048.07	79.60	2.5033E-001		3.3134E-002
		1235.34	19.70	1.6200E+000		1.1534E+000
	CS-137	661.66	85.10	6.6448E-002	6.64E-002	3.0508E-002
	HG-203	279.20	81.00	8.0999E-002	8.10E-002	4.5342E-002
	Tl-207	897.80	0.26	2.1487E+001	2.15E+001	-1.6707E+000
+	Tl-208	72.81	2.09	2.6077E+000	4.68E-002	-5.8395E-001
		74.97*	3.51	1.0494E+000		3.4672E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	Tl-208	84.45	0.42	1.1446E+001	4.68E-002	-2.4929E+000
		84.94	0.80	5.9485E+000		-1.1679E+000
		87.30*	0.29	1.1737E+001		1.5130E+001
		211.40	0.18	2.5912E+001		-7.3421E+000
		233.36	0.31	1.5719E+001		6.3059E+000
		252.61	0.69	6.1332E+000		-1.7883E+000
		277.35	6.31	7.2817E-001		3.7259E-001
		510.77*	22.60	2.5413E-001		3.2239E-001
		583.19*	84.50	4.6759E-002		3.1310E-001
		722.04	0.20	3.5936E+001		-2.5021E+000
		763.13	1.81	3.5013E+000		1.2533E+000
		860.56*	12.42	3.7809E-001		2.2202E-001
		927.60	0.13	4.6008E+001		-8.7686E+000
		982.70	0.20	2.8809E+001		-1.3908E+001
		1093.90	0.40	1.6860E+001		2.9291E+000
	BI-211	72.87	1.27	4.2910E+000	5.20E-001	-9.6091E-001
		351.06	12.91	5.2012E-001		1.2228E+000
	PB-211	404.85	3.78	1.2466E+000	1.25E+000	-2.1941E-001
		427.09	1.76	2.5092E+000		4.4768E-001
		832.01	3.52	1.7253E+000		-9.6206E-002
	BI-212	39.86	1.09	3.2566E+000	1.15E+000	-2.8320E-002
		72.87	0.13	4.1920E+001		-9.3873E+000
		288.07	0.31	1.4386E+001		7.7593E+000
		327.96	0.14	3.6179E+001		3.0721E+001
		452.83	0.31	1.5715E+001		2.2026E+000
		727.33	6.58	1.1457E+000		1.6791E+000
		785.37	1.10	5.6268E+000		3.8237E+000
		893.41	0.38	1.4920E+001		1.0352E+000
		952.12	0.17	3.4581E+001		-4.9057E-001
		1078.62	0.56	1.2048E+001		8.2646E-001
		1512.70	0.29	1.8707E+001		9.9191E+000
		1620.50	1.49	3.7329E+000		2.0889E+000
+	PB-212	74.82*	10.41	3.5385E-001	7.56E-002	1.1690E+000
		77.11*	17.50	2.0075E-001		8.7037E-001
		87.18*	6.10	5.6377E-001		7.2675E-001
		89.78*	1.46	2.3486E+000		2.6153E+000
		115.18	0.59	6.3422E+000		1.4171E+000
		238.63*	43.30	7.5584E-002		9.7194E-001
		300.09	3.28	1.6590E+000		-3.8764E-001
		415.20	0.14	3.1415E+001		-1.9353E+001
	BI-214	76.86	0.58	1.0625E+001	1.93E-001	4.8056E+001
		79.29	0.98	5.3692E+000		-3.2268E+000
		386.77	0.31	1.4248E+001		-4.7701E-001
		388.88	0.37	1.2059E+001		4.8816E-001
		454.77	0.30	1.6343E+001		-4.5562E-001
		609.31	46.10	1.9253E-001		4.7885E-001
		665.45	1.46	3.7865E+000		-9.4804E-001
		703.11	0.47	1.2333E+001		-2.4865E+000
		719.86	0.38	1.5807E+001		-4.1150E+000
		768.36	4.94	1.3774E+000		1.5861E+000
		786.10	0.31	1.9756E+001		9.3533E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	BI-214	806.17	1.22	4.6053E+000	1.93E-001	2.3602E+000
		934.06	3.03	2.1520E+000		1.6729E+000
		964.08	0.36	2.7185E+001		1.1498E+001
		1051.96	0.31	1.8882E+001		6.1163E+000
		1069.96	0.28	2.4448E+001		-1.3908E+000
		1120.29	15.10	5.8294E-001		3.5704E-001
		1155.19	1.69	3.9427E+000		-4.0942E+000
		1207.68	0.45	1.8221E+001		4.1037E+000
		1238.11	5.79	1.5038E+000		8.3726E-001
		1280.96	1.43	5.3803E+000		4.0850E+000
		1377.67	4.00	1.5963E+000		6.4492E-001
		1385.31	0.76	7.5233E+000		-5.9639E+000
		1401.50	1.27	4.9543E+000		-6.5397E-002
		1407.98	2.15	3.0162E+000		1.1225E+000
		1509.23	2.11	2.4930E+000		1.0059E+000
		1538.50	0.38	1.1842E+001		-3.4561E+000
		1583.22	0.69	8.2604E+000		-7.7623E+000
		1661.28	1.15	3.4115E+000		-1.1820E+000
		1729.59	2.92	1.8866E+000		9.8009E-001
		1847.42	2.11	2.4111E+000		9.5367E-001
>		2118.55	1.14	0.0000E+000		0.0000E+000
+	PB-214	53.23	1.20	3.2204E+000	9.79E-002	-1.8885E+000
		74.82*	4.80	7.6743E-001		2.5354E+000
		77.11*	8.00	4.3916E-001		1.9040E+000
		86.83	1.00	4.9962E+000		5.3408E-001
		87.35*	1.80	1.9106E+000		2.4629E+000
		89.78*	0.67	5.1181E+000		5.6992E+000
		242.00*	7.43	4.2873E-001		9.0268E-001
		258.87	0.52	8.1960E+000		-1.1728E+000
		274.80	0.47	1.0471E+001		2.9754E+000
		295.22*	19.30	2.0036E-001		2.7472E-001
		351.93*	37.60	9.7934E-002		5.0952E-001
		462.00	0.22	2.5057E+001		1.2254E+001
		480.43	0.32	1.5896E+001		-5.1341E+000
		487.09	0.42	1.1838E+001		-5.6940E+000
		580.13	0.35	2.6200E+001		-1.6099E+001
		785.96	1.07	5.7227E+000		2.7094E+000
		839.04	0.59	1.0946E+001		4.4465E-001
+	RN-219	271.23*	10.80	3.4967E-001	3.50E-001	3.3564E-001
		401.81	6.37	7.3937E-001		2.0533E-001
	Rn-220	549.76	0.11	4.4449E+001	4.44E+001	2.5313E+001
	Ra-223	81.07	15.20	2.8424E-001	1.86E-001	-3.4777E-001
		83.79	25.20	1.8608E-001		-5.4962E-002
		94.25	3.01	1.5036E+000		3.6998E-001
		94.87	5.74	7.7632E-001		-7.9857E-002
		122.32	1.19	3.0356E+000		-1.4598E+000
		144.23	3.22	1.2427E+000		4.2992E-001
		154.21	5.62	6.9616E-001		3.5248E-001
		269.46	13.70	3.4436E-001		1.7032E-001
		323.87	3.93	1.2160E+000		-1.3385E+000
		338.28	2.79	2.1587E+000		3.8410E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
	Ra-223	445.03	1.27	3.7011E+000	1.86E-001	-2.5073E+000
+	Ra-224	81.07	0.13	3.3753E+001	7.77E-001	-4.1297E+001
		83.79	0.21	2.2016E+001		-6.5026E+000
		240.99*	4.10	7.7692E-001		1.6358E+000
+	RA-226	186.21*	3.28	1.0800E+000	2.78E-001	4.3801E-001
		1764.49*	15.80	2.7771E-001		5.4794E-001
	TH-227	50.13	8.00	5.1283E-001	5.13E-001	1.3450E-001
		79.72	1.89	2.7338E+000		-2.2741E+000
		85.43	2.08	2.2977E+000		-5.5569E-002
		88.47	3.40	1.4525E+000		-1.3541E+000
		93.93	1.37	3.3922E+000		2.9344E+000
		210.65	1.11	4.1936E+000		4.6649E+000
		235.97	12.30	6.6507E-001		5.9737E-002
		256.25	7.00	5.8971E-001		-3.3848E-001
		286.12	1.54	2.8758E+000		5.9489E-001
		300.00	2.66	2.0453E+000		-4.7789E-001
		304.52	1.20	3.9205E+000		1.3845E+000
		329.85	2.70	1.8870E+000		1.7341E+000
		334.38	1.05	5.6195E+000		-1.2860E+000
+	AC-228	57.77	0.47	8.6866E+000	1.80E-001	-2.3683E+000
		89.96*	1.96	1.7495E+000		1.9481E+000
		93.35*	3.19	1.0522E+000		1.4551E+000
		99.51*	1.26	2.3904E+000		4.1485E-001
		105.60	0.74	5.2196E+000		3.2486E+000
		129.07	2.42	1.6556E+000		1.0225E+000
		153.98	0.72	5.4151E+000		2.7418E+000
		209.25*	3.89	8.4709E-001		1.3964E+000
		270.24*	3.46	1.0914E+000		1.0477E+000
		328.00*	2.95	1.1122E+000		1.3245E+000
		332.37	0.40	1.2684E+001		-3.3595E+000
		338.32*	11.27	3.2181E-001		1.0860E+000
		409.46	1.92	2.4283E+000		-9.3668E-002
		463.00*	4.40	8.8005E-001		1.1457E+000
		508.96	0.45	1.6182E+001		-1.6023E+000
		509.60	0.05	1.4553E+002		-1.4833E+001
		562.50	0.87	6.3022E+000		5.0211E+000
		726.86*	0.62	8.2560E+000		8.8127E+000
		755.32	1.00	5.6898E+000		-3.5173E-001
		772.29	1.49	4.3553E+000		1.6119E+000
		782.14	0.49	1.2639E+001		6.6217E+000
		794.95*	4.25	8.3020E-001		9.0117E-001
		830.49	0.54	1.1123E+001		-2.8903E+000
		835.71	1.61	3.9275E+000		2.9246E+000
		840.38	0.91	7.1910E+000		4.4607E+000
		904.19	0.77	7.9995E+000		-2.7713E+000
		911.20*	25.80	1.8012E-001		1.1100E+000
		964.77	4.99	2.0202E+000		3.6502E-001
		968.97*	15.80	3.8511E-001		6.5093E-001
		1247.08	0.50	1.5271E+001		-1.2331E+001
		1459.14	0.83	2.7941E+001		1.5235E+002
		1495.93	0.86	5.4958E+000		3.4439E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	AC-228	1501.57	0.46	1.0679E+001	1.80E-001	-1.1228E+001
		1580.53	0.60	6.8706E+000		-1.5922E+001
		1588.19*	3.22	1.3218E+000		5.0992E-001
		1630.63	1.51	4.0215E+000		1.5686E-001
		1638.28	0.47	1.1194E+001		5.8562E+000
	Th-230	67.67	0.38	1.1769E+001	1.18E+001	-1.8702E+000
		253.73	0.01	3.8741E+002		1.7215E+002
	PA-231	27.36	10.30	3.2614E-001	3.26E-001	-2.8302E-002
		90.89	1.28	4.0189E+000		8.4322E+000
		283.69	1.70	2.6067E+000		-2.3803E+000
		300.07	2.46	2.2120E+000		-5.1684E-001
		302.65	2.20	2.2119E+000		-6.7273E-001
		330.06	1.40	3.6515E+000		3.3556E+000
	TH-231	25.65	14.50	2.2798E-001	2.28E-001	2.0470E-002
		84.22	6.60	7.2491E-001		-1.5789E-001
		89.94	0.94	5.5504E+000		1.0273E+001
	PA-234	62.70	1.50	3.1429E+000	1.62E-001	2.6974E+000
		94.65	14.40	3.1441E-001		7.7365E-002
		98.43	23.30	1.6167E-001		-1.3504E-001
		99.85	3.20	1.1812E+000		-2.1025E-001
		111.30	5.44	7.0028E-001		-3.1528E-002
		131.30	18.00	2.2388E-001		2.2750E-001
		140.90	0.31	1.2798E+001		7.2139E+000
		152.72	6.00	6.5651E-001		2.7971E-001
		186.15	1.76	2.5538E+000		1.9094E+000
		203.12	1.23	3.4138E+000		-2.0451E+000
		226.94	10.00	4.4966E-001		-4.2902E-002
		249.22	2.50	1.7219E+000		-3.8470E-001
		293.79	2.99	1.7420E+000		8.5861E-002
		369.50	2.47	1.8125E+000		-3.4086E-001
		569.32	11.80	4.3051E-001		-2.1146E-001
		699.03	3.60	1.6503E+000		-3.2873E-001
		705.90	2.27	2.6140E+000		2.4013E-001
		733.39	6.90	1.0250E+000		6.6227E-002
		742.81	2.06	2.7439E+000		5.3826E-002
		796.10	2.58	2.3727E+000		-1.9791E-001
		805.80	2.52	2.2530E+000		1.8611E+000
		831.50	4.12	1.4662E+000		-1.6319E-001
		880.50	10.20	5.5785E-001		2.6943E-002
		883.24	9.60	6.1837E-001		3.9564E-001
		925.20	9.60	5.9728E-001		-2.4065E-001
		926.72	7.20	8.3653E-001		-1.4954E-001
		946.00	13.40	4.3413E-001		-4.0158E-002
		949.00	7.80	7.3781E-001		1.1605E-001
	PA-234M	94.65	0.14	3.1660E+001	7.34E+000	7.7906E+000
		98.43	0.23	1.6378E+001		-1.3680E+001
		258.23	0.07	5.8596E+001		1.3070E+001
		742.81	0.08	7.0655E+001		1.3860E+000
		766.38	0.29	2.2620E+001		6.7165E+000
		1001.03	0.84	7.3445E+000		4.9774E+000
+	Th-234	63.29*	4.80	8.7089E-001	6.02E-001	5.1317E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gms)	Nuclide MDA (pCi/gms)	Activity (pCi/gms)
+	Th-234	92.28	0.50	9.6959E+000	6.02E-001	7.3740E+000
		92.59*	5.58	6.0153E-001		8.3187E-001
		95.86	0.80	5.6054E+000		6.8831E+000
		108.42	0.18	2.1254E+001		-4.2919E+000
		112.81	0.28	1.3624E+001		4.2409E+000
	U-234	53.20	0.12	3.1421E+001	3.14E+001	-1.8426E+001
	U-235	89.96*	1.50	2.2860E+000	6.56E-002	2.5456E+000
		93.35*	11.00	3.0514E-001		4.2199E-001
		104.82	1.30	2.9748E+000		5.9739E-001
		105.60	2.40	1.6094E+000		1.0016E+000
		108.70	1.20	3.2005E+000		-4.6511E-001
		109.16	1.54	2.4960E+000		-3.6273E-001
		143.76	10.96	3.6291E-001		5.2720E-002
		163.36	5.08	7.3244E-001		2.8112E-001
		185.71*	54.00	6.5600E-002		2.6604E-002
		202.11	1.08	3.8615E+000		-1.9939E-001
		205.31	5.01	8.9079E-001		-4.1360E-001
		742.50	0.00	1.4127E+004		2.7712E+002
	AM-241	26.34	2.40	1.3751E+000	1.18E-001	-4.1087E-001
		59.54	35.90	1.1847E-001		1.7449E-002

\+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

****
***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****
****

Sample Title: B&L Bottom of excavation
Nuclide Library Used: C:\GENIE2K\CAMFILES\nat+.nlb

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
K-40	0.940	1460.83*		10.67	1.17316E+001	1.27997E+000
Tl-208	0.792	72.81	@	2.09		
		74.97*	@	3.51	3.46717E+000	6.34441E-001
		84.45	@	0.42		
		84.94	@	0.80		
		87.30*	@	0.29	1.51303E+001	4.55265E+000
		211.40	@	0.18		
		233.36	@	0.31		
		252.61	@	0.69		
		277.35	@	6.31		
		510.77*	@	22.60	3.22393E-001	1.67015E-001
		583.19*		84.50	3.13097E-001	5.34255E-002
		722.04	@	0.20		
		763.13	@	1.81		
		860.56*		12.42	2.22018E-001	2.33846E-001
		927.60	@	0.13		
		982.70	@	0.20		
		1093.90	@	0.40		
PB-212	0.931	74.82*	@	10.41	1.16905E+000	2.12985E-001
		77.11*	@	17.50	8.70373E-001	1.47564E-001
		87.18*	@	6.10	7.26751E-001	2.17948E-001
		89.78*	@	1.46	2.61531E+000	8.21779E-001
		115.18	@	0.59		
		238.63*		43.30	9.71936E-001	1.10435E-001
		300.09	@	3.28		
		415.20	@	0.14		
PB-214	0.884	53.23	@	1.20		
		74.82*	@	4.80	2.53544E+000	1.44500E+000
		77.11*	@	8.00	1.90399E+000	1.09236E+000
		86.83	@	1.00		
		87.35*	@	1.80	2.46295E+000	1.55284E+000
		89.78*	@	0.67	5.69920E+000	3.53970E+000
		242.00*		7.43	9.02681E-001	2.04663E-001
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	2.74721E-001	1.32280E-001
		351.93*		37.60	5.09521E-001	9.46594E-002
		462.00	@	0.22		
		480.43	@	0.32		
		487.09	@	0.42		
		580.13	@	0.35		
		785.96		1.07		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gms)	Activity Uncertainty
PB-214	0.884	839.04	@	0.59		
RN-219	0.413	271.23*		10.80	3.35638E-001	2.22638E-001
		401.81		6.37		
Ra-224	0.818	81.07	@	0.13		
		83.79	@	0.21		
		240.99*		4.10	1.63579E+000	3.69860E-001
RA-226	0.915	186.21*		3.28	4.38007E-001	6.54194E-001
		1764.49*		15.80	5.47943E-001	2.52296E-001
AC-228	0.623	57.77	@	0.47		
		89.96*	@	1.96	1.94814E+000	6.76182E-001
		93.35*	@	3.19	1.45513E+000	4.93788E-001
		99.51*	@	1.26	4.14847E-001	1.42668E+000
		105.60	@	0.74		
		129.07	@	2.42		
		153.98	@	0.72		
		209.25*	@	3.89	1.39636E+000	5.72483E-001
		270.24*	@	3.46	1.04765E+000	6.93448E-001
		328.00*	@	2.95	1.32453E+000	7.40273E-001
		332.37	@	0.40		
		338.32*		11.27	1.08599E+000	2.64089E-001
		409.46	@	1.92		
		463.00*	@	4.40	1.14568E+000	5.93704E-001
		508.96	@	0.45		
		509.60		0.05		
		562.50	@	0.87		
		726.86*	@	0.62	8.81272E+000	5.85187E+000
		755.32	@	1.00		
		772.29	@	1.49		
		782.14	@	0.49		
		794.95*	@	4.25	9.01174E-001	5.62587E-001
		830.49	@	0.54		
		835.71	@	1.61		
		840.38	@	0.91		
		904.19	@	0.77		
		911.20*		25.80	1.10998E+000	1.98818E-001
		964.77	@	4.99		
		968.97*		15.80	6.50926E-001	2.71440E-001
		1247.08	@	0.50		
		1459.14	@	0.83		
		1495.93	@	0.86		
		1501.57	@	0.46		
		1580.53	@	0.60		
		1588.19*	@	3.22	5.09916E-001	7.89171E-001
		1630.63	@	1.51		
		1638.28	@	0.47		
Th-234	0.761	63.29*		4.80	5.13170E-001	5.45104E-001
		92.28	@	0.50		
		92.59*	@	5.58	8.31874E-001	2.57377E-001
		95.86	@	0.80		
		108.42	@	0.18		
		112.81	@	0.28		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gms)	Activity Uncertainty

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 2.000 sigma

****
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****

	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/gms)	Wt mean Activity Uncertainty
	K-40		0.940	1.173160E+001	1.279971E+000
X	CD-109		0.888		
	Tl-208	@	0.792	3.085784E-001	5.208352E-002
	PB-212	@	0.931	9.719362E-001	1.094120E-001
	PB-214	@	0.884	4.305998E-001	7.661980E-002
	RN-219		0.413	1.910716E-002	2.260686E-001
	Ra-224	@	0.818	8.554790E-001	3.930430E-001
	RA-226		0.915	5.337093E-001	2.353970E-001
	AC-228	@	0.623	9.880133E-001	1.356004E-001
	Th-234	@	0.761	5.131700E-001	5.451037E-001
X	U-235		0.502		

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 8/1/2008 12:24:53 PM
Peak Locate From Channel: 1
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
1	6.80	2.1605E-001	11.73
21	609.52	5.6981E-002	19.39
27	1190.20	5.5556E-004	650.06

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 2.000 sigma

Attachment 15

Selected Work Site Photos

Photo 1 – Excavation As Found
Photo 2 – Stone Berm Laydown Area 1
Photo 3 – Laydown Area 1 As Left
Photo 4 – Laydown Area 2 As Left
Photo 5 – Excavation As Left
Photo 6 – Excavation With Security Fence Replaced

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	585-733-7550	0007

GENERATOR

5. Generator's Name and Mailing Address
Bausch & Lomb
One Bausch & Lomb Place
Rochester, NY 14604
Generator's Phone: 585-338-5087

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Page E.T.C., Inc.

U.S. EPA ID Number
NYD069869947

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
20400 LEMLEY RD
GRAND VIEW, ID 83624
Facility's Phone: 801-274-1516

U.S. EPA ID Number
IDD[illegible]14554

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY, (LSA-1), 7, UN2912					
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID# 20111
24 HOUR EMERGENCY CONTACT 585-733-7550
ERG # 162

INT'L

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Frank Chiappone
Signature: Frank Chiappone
Month: 9 Day: 19 Year: 2008

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: CHRIS SEPANIAK
Signature:
Month: 9 Day: 19 Year: 2008

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name
Signature
Month Day Year

GENERATOR'S/SHIPPER'S INITIAL COPY

0809242049S 9620# 4.81

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number N/A	2. Page 1 of 1	3. Emergency Response Phone 585-733-7580	4. Waste Tracking Number 0007

5. Generator's Name and Mailing Address
Bausch & Lamb
One Bausch & Lamb Place
Rochester, NY 14604

Generator's Site Address (if different than mailing address)

Generator's Phone: 585-338-5087

6. Transporter 1 Company Name: Page E.T.C., Inc. — U.S. EPA ID Number: NYD986969947

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US ECOLOGY IDAHO INC
20400 LEMLEY RD
GRAND VIEW, ID 83624

U.S. EPA ID Number: IDD073114654

Facility's Phone: 800-274-1516

	9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1.	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY, (LSA-1),7,UN2912	1	CM	EST 15	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID# 20111
24 HOUR EMERGENCY CONTACT 585-733-7580
ERG # 162

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Frank Chiappone — Signature: Frank Chiappone — Month 9 Day 19 Year 2008

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: CHRIS SEPANIAK — Signature — Month 9 Day 19 Year 2008
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
USE weight ok per John Elmore Viatelecom 9/30/08 [illegible]
11: Driver Released pending Resolution per KT 9/24/08 LK
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Laura Kivlehan for USEI — Signature: Laura Kivlehan — Month 9 Day 24 Year 08

169-BLS-C 6 10497 (Rev. 8/06)

DESIGNATED FACILITY TO GENERATOR

080924204195   1620# 4.2

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of 1	3. Emergency Response Phone: 585-733-7580	4. Waste Tracking Number: 0007

5. Generator's Name and Mailing Address
Bausch & Lamb
One Bausch & Lamb Place
Rochester, NY 14604

Generator's Site Address (if different than mailing address)

Generator's Phone: 585-338-5087

6. Transporter 1 Company Name: Page E.T.C., Inc — U.S. EPA ID Number: [illegible]969947

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address — U.S. EPA ID Number: [illegible]114654
20400 LEMLELY RD
GRAND VIEW, ID 83624

Facility's Phone: 800-274-1516

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY, (LSA-1),7,UN2912	1	[illegible]	[illegible]	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID# 20111
24 HOUR EMERGENCY CONTACT 585-733-7580
ERG # 162

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Frank Chiappone — Signature: Frank Chiappone — Month 9 Day 19 Year 2008

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. — Port of entry/exit:
Transporter Signature (for exports only): — Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: CHRIS SEPANIAK — Signature: [signature] — Month 9 Day 19 Year 2008
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
USEI weight 0k per JOAN Email Pete.com 4/23/08 by mm 4/24/08 LK
11: Driver Released pending Resolution per KT
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Laura Kivlehanfer USEI — Signature: Laura Kivlehan — Month 4 Day 24 Year 08

CERTIFICATE OF DISPOSAL

September 25,2008

BAUSCH & LOMB
FOOL OF SUNIRU STREET
ROCHESTER, NY 14604

This is to certify that waste as defined on Uniform Hazardous Waste Manifest number **0007/** was received by U.S. Ecology, Inc., on **09/24/2008** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **09/24/2008** in accordance with permits and laws regulating this facility.

Reference Number: 08092420495-0007-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: **NON-RCRA WASTE**

Customer: WASTE MANAGEMENT

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR