

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

1. LICENSEE/LOCATION INSPECTED: Great Lakes Naval Training Center Great Lakes, IL		2. NRC/REGIONAL OFFICE REGION III US NUCLEAR REGULATORY COMMISSION 801 WARRENVILLE ROAD LISLE IL 60532-4351	
REPORT NUMBER(S) 04008306/2003-001			
3. DOCKET NUMBER(S) 040-08306, 040-08680	4. LICENSE NUMBER(S) SMC-01207, SUC-01332	5. DATE(S) OF INSPECTION 10.8.03	
6. INSPECTION PROCEDURES USED 87104	7. INSPECTION FOCUS AREAS Soil Pile Remediation, Field Laboratory QA and Sample Analysis		

LICENSEE:
The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

1. Based on the inspection findings, no violations were identified.

2. Previous violation(s) closed.

3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

_____ non-cited violation(s) were discussed involving the following requirement(s):

4. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.

CM 10-9-03

STATEMENT OF CORRECTIVE ACTIONS

I hereby state that, within 30 days, the actions described by me to the Inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE			
NRC INSPECTOR	Eugenio A. Bonano	<i>Eugenio A. Bonano</i>	10.8.03

MATERIALS DECOMMISSIONING INSPECTION FIELD NOTES

Region III

Inspection Report No.: 040-08306/2003-001

License No.: SMC-01207, SUC-01332

Docket Nos.: 040-08306, 040-08680

Non-Licensee: Great Lakes Naval Training Center

Contact: Pat A. Hayworth

Telephone No: 757-887-4692

Date of Amendment:

Last Amendment No.:

Program Code:

Date of Last Inspection: September 15, 2003

Date of This Inspection: October 8, 2003

Date of Next Inspection: TBD (dependent on progress of Phase III project)

Type of Inspection: Announced Unannounced
 Routine Special
 Initial Decomm. Reinspection of Decomm.
Level of Inspection: Normal Reduced Extended

Brief Description of the Site/Project:

In 2000 NRC inspectors identified radiological contamination in the form of monazite sand, a thorium-bearing material, at the Great Lakes Naval Training Center. As a result, the U.S. Army Joint Munitions Command (AJMC) contracted Cabrera Services, Inc. (Cabrera) to remediate the monazite sand and conduct a final status survey (FSS) of soils located within the boundaries of the Great Lakes Naval Training Center. This site was formerly used by the Defense Logistics Agency as a storage area for strategic quantities of monazite sands, a thorium-bearing material. The Navy, who is the site owner, assumed responsibility for the cleanup and the AJMC agreed to support the Navy in the cleanup of the site and disposal of the waste.

Region III decommissioning staff have reviewed the Navy's remediation plans, and conducted several onsite inspections. Remediation activities have involved a number of phases. In the first phase Cabrera performed characterization surveys in March 2000, and identified radiological concentrations of Thorium-232 ranging from 0.93 picocuries per gram (pCi/g) to 64.31 pCi/g with an average concentration of approximately 17 pCi/g. The monazite sand encompasses an area of approximately 90,000 square yards (yds) (300 yds x 300 yds) in a former tank farm area. The majority of the residual contamination to be remediated resides along a north fence line, in locations surrounding and between the former storage tanks. A small area in a parking lot and picnic area are cordoned off and also designated for cleanup. Due to the relatively insoluble nature of the thorium, ground-water impact is not a concern. The second phase involved a FSS of a construction zone, characterization of a perimeter area, and the characterization of an excavated soil pile {(3000 y³) or (100 ft x 50 ft x 16 ft)}. Phase II was completed in 2000 and 2001. The third phase is currently in progress. In this phase, Cabrera will remediate and conduct a FSS of the north fence area and the excavated soil pile. The Phase III project is scheduled to be completed by December of 2003. The date for the final phase is pending.

Brief Description of Inspection Activities:

The NRC inspector observed soil pile remediation activities, field laboratory QA and sample analysis. The inspector, the site owners (non-NRC licensees) and their contractors discussed NRC requirements

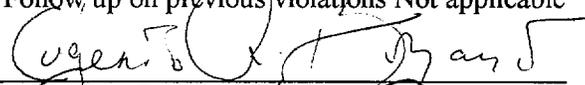
regarding: the site meeting acceptable levels of cleanup for unrestricted use, funding, and the time table for completion of the Great Lakes site cleanup.

Brief Description of Findings and Actions:

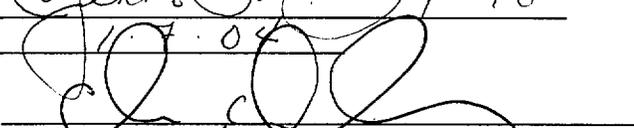
The contractor started work on the Phase III Project USN 2000-003, Modification I (remediation and final status survey) to release the north fence area and soil pile for unrestricted use. Work is being conducted in a safe manner. The NRC inspector conducted confirmatory surveys of soil taken from the soil pile which was designated as clean. No contamination was found. Contaminated soil from the lifts, taken from the soil pile, was put into intermodals for disposal. No problems were found with the laboratory QA program and sample analysis. Attached are copies of the survey unit SP-SU-6 (Lift 6) and the laboratory results of soil samples taken from each lift of the soil pile. No problems were noted.

Summary of Findings and Action: NRC Inspectors did not identify any violations or weaknesses in site security or radiological postings.

- No violations cited, regional letter issued
- Violation(s), clear NRC Form 591 issued
- Violation(s), regional letter issued
- Follow up on previous violations Not applicable

Inspector: 

Date: 1-7-04

Approved: 
Christopher G. Miller, Chief, Decommissioning Branch

Date: 1-7-04

I. **SUMMARY OF DECOMMISSIONING STATUS**

- A. Operational program ceased. (x) Y () N
- B. Final survey required (x) Y () N
- C. NRC confirmatory survey required. (x) Y () N
- D. NRC closeout inspection required. (x) Y () N
- E. Non-licensee actively remediating site. (x) Y () N
- F. Non-licensee completed site remediation. () Y (x) N

Description of Facility Status:

The site is maintained and secured on the Great Lakes Naval Base with fencing, walls, and security guards. Contractor started the Phase III Project USN 2000-003, Modification I (remediation and final status survey) to release the north fence area and soil pile for unrestricted use. Work is scheduled to be completed by December.

II. **INSPECTION OF KEY DECOMMISSIONING ACTIVITIES**

A. **ACTIVITIES INSPECTED BEFORE DISMANTLEMENT**

- 1. Licensed material used during operations has been removed from site. (x) Y () N
- 2. Site security and control of contaminated material being maintained in compliance with 1801 and 20.1802. (x) Y () N
- 3. Support systems and services (e.g., lighting, water supply) are in place (x) Y () N
- 4. Non-licensee is conducting site remediation in accordance with applicable radiation protection procedures. (x) Y () N

B. **ACTIVITIES INSPECTED DURING DECONTAMINATION, DISMANTLEMENT, AND SITE REMEDIATION**

- 1. Site security and control of contaminated material being maintained in compliance with 10 CFR Part 20. (x) Y () N
- 2. Decontamination/remediation of soil is being performed consistent with sound industry practice. (x) Y () N

III. INSPECTION OF STANDARD HEALTH AND SAFETY AREAS FROM THE OPERATIONAL INSPECTION PROGRAM

A. GENERAL OVERVIEW

1. Describe the non-licensee's decommissioning organizational structure:

The site cleanup is project managed for the Navy by: Ms. Pat Hayworth, Radiological Affairs Support Organization, NAVSEADET RASO, NWS PO Drawer 260 Yorktown, VA 23691-0260

At the base level, the site is managed by: Mark R. Schultz, Head, Environmental Department, ACOS Installation & Environment, Environmental Department, Code N45, 201 Decatur Avenue, Great Lakes, IL 60088-5600

The contractor is Cabrera Services, 2216 Troy Road, Suite 282, Edwardsville, IL 62025 hired by the U.S. Army Joint Munitions Command (POC: Michael Styvaert), Rock Island, IL who is responsible for cleanup and waste disposal.

B. FACILITIES

1. Describe, from field observation, the identified facilities and outdoor areas to be decommissioned: Residual contamination to be remediated are along the north fence line, in locations surrounding tanks H, L, and K, and in locations between tanks H, L, and K (see attached Figure 3 from the Cabrera Services Phase III work plan). A small area in a parking lot and picnic area are cordoned off and designated for cleanup.
2. All essential systems and services (e.g., electrical power, water supply, communications systems) are in place and functional for the planned decommissioning activities (x) Y () N

C. EQUIPMENT AND INSTRUMENTATION

1. Survey instruments are applicable to contaminants of interest. (x) Y () N
2. Use of survey instruments appropriate for site. (x) Y () N

Basis for Findings: The NRC inspector observed work performed by the contractor and determined that instrumentation was used correctly.

D. MATERIALS

1. Radioactive materials licensed during operations have been removed offsite. (x) Y () N
2. Security and control of licensed materials, including contaminated areas, is being maintained. (x) Y () N

Basis for Findings: The NRC inspector observed radiological postings and site security. The licensee is meeting all requirements under 10 CFR Part 20, Subpart J, Paragraph 1902, "Posting requirements", and Subpart I, "Storage and Control of Licensed Material".

E. TRAINING

1. Licensee has developed training program for new decommissioning activities (e.g., demolition of structures, excavation of soil); program is adequate. () Y () N
2. Training program being effectively implemented. () Y () N

Basis for Findings: THIS SECTION NOT EVALUATED DURING THIS INSPECTION.

F. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL

1. Area surveys are being performed in areas being decommissioned (x) Y () N
2. Where active remediation (e.g., demolition of structures, excavation of soil) is being performed, radiation levels in unrestricted areas do not exceed 2 mrem in any one hour. (x) Y () N

Basis for findings: The NRC inspector observed work performed by the contractor and determined that surveys met NRC regulations.

G. RADIATION PROTECTION

1. Site security and control of contaminated material are in compliance with 10 CFR 20.1801 and 20.1802. (x) Y () N

Basis for Findings: Based on observations.

H. RADIOACTIVE WASTE MANAGEMENT/EFFLUENTS/ENVIRONMENTAL MONITORING

1. Offsite disposal of decommissioning wastes conforms to free release criteria and disposal site requirements. (x) Y () N
2. All new effluent releases conform to DP and applicable regulations. (x) Y () N
3. The licensee's environmental monitoring program is being implemented in conformance with the DP and all applicable limits are being met. (x) Y () N
4. Temporary storage/staging areas for radioactive wastes from building demolition, equipment dismantlement, soil excavation, etc., are adequately posted and protected. (x) Y () N

Basis for Findings: The NRC inspector observed work performed by the contractor. The non-licensee's work plan for the Phase III project is used in lieu of a DP.

I. RECORD KEEPING FOR DECOMMISSIONING

1. Copies of the licensee's decommissioning cost estimates and funding methods are on file. Y N

2. Licensee has adequate records for decommissioning activities performed (e.g., for decontamination and dismantlement of structures; decontamination and remediation of soil, sediment, surface waters, groundwater; surveys of remediated facilities). Y N

3. Licensee's financial assurance conforms with the financial assurance requirements of NRC-approved possession limits and NRC regulations. Y N

Basis for Findings: Item 2 was based on record review at the site and documentation received at the regional office. Item 1 and 3 was not evaluated during this inspection.

J. TRANSPORTATION

1. Describe the licensee's program to package and ship decommissioning waste materials: Contractor placed contaminated soil from individual lifts into intermodals for disposal to burial sites.

2. Licensee's program meets all applicable 10 CFR and 49 CFR requirements for marking labeling, placarding, and shipping paper requirements for radioactive waste shipments. Y N

Basis for Findings: Section evaluated from observations and record reviews.

K. POSTING AND LABELING

1. All contaminated areas, waste processing areas, and waste handling areas are posted in conformance with regulations. Y N

Basis for Findings: Based on observations..

L. OCCUPATIONAL HEALTH AND SAFETY

1. Describe the occupational health and safety observations made at the licensee's facilities: Non-licensee's contractor took all necessary precautions and followed regulatory requirements to ensure safe work practices were adhere to.

Basis for Findings: Based on observations.

IV. **VIOLATIONS, NON-CITED VIOLATIONS, FOLLOWUP ITEMS, AND OTHER ISSUES**

Briefly state (1) the requirements and (2) how and when the licensee violated the requirement. For non-cited violations, indicate why the violation was not cited. Briefly describe follow-up items and other issues.

NONE



CABRERA SERVICES
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

**GREAT LAKES FINAL STATUS SURVEY
TRANSMITTAL FORM
(October 07, 2003)**

SURVEY UNIT: SP-SU-6

Attachment 1 – Gamma Walkover Survey Z-Score

Attachment 2 – Soil Sample Activity Concentrations

Attachment 3 - Survey Unit Statistics Running Summaries

Attachment 4 – Retrospective Power Test

Attachment 5 – WRS Test

Based on evaluation of the attached data, CABRERA, recommends release of the above survey unit lift for unrestricted use. The survey unit meets MARSSIM Final Status Release Criteria.

Henry W. Siegrist
Henry W. Siegrist P.E., CHP
Cabrera Corporate Health Physicist

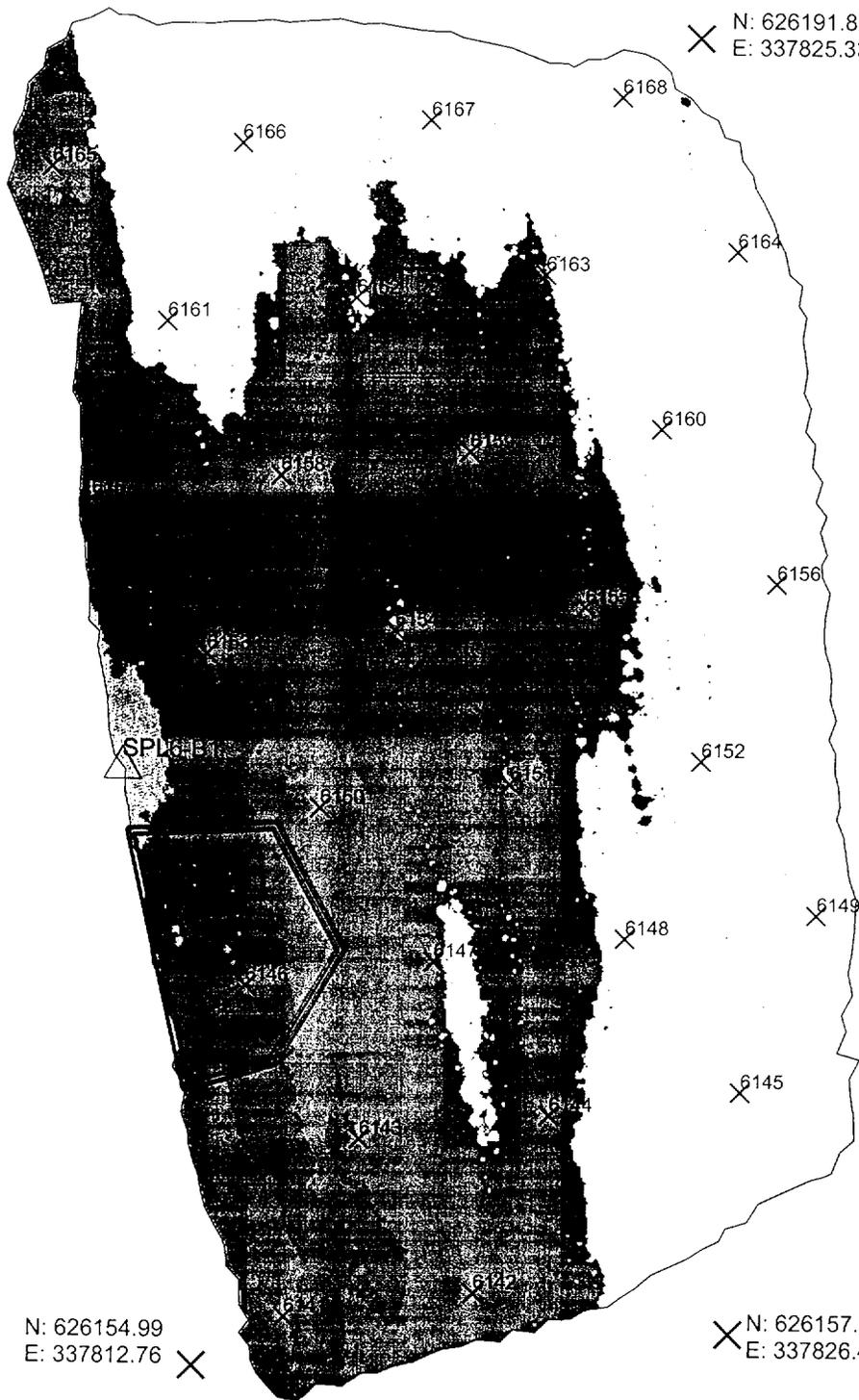
10/7/03
date

APPROVED
NAVSEADET RASO Project Manager

date

N: 626189.07
E: 337804.68 X

X N: 626191.87
E: 337825.33



Legend

- X Reference Sample Points
- △ Bias Sample Points
- ==== Contaminated Area

Soil Pile Area Analysis

Z- score

- -2.76 - 0
- ▨ 0 - 1
- 1 - 2
- ▩ 2 - 3
- 3 - 4.26

N: 626154.99
E: 337812.76 X

X N: 626157.95
E: 337826.45



CABRERA SERVICES

AN ENVIRONMENTAL CONSULTING COMPANY
WWW.CABRERASERVICES.COM

Gamma Walkover Survey
Z-Score SP-SU-6

Great Lakes
NTC Remediation

Date: 10-07-03 Rev. 10-09-03

Project #: 01-3030.36

File Name: Site_Pile6.mxd

Prepared By: JTM/JFD

Attachment
1

**Attachment 2
Soil Sample Activity Concentrations**

Great Lakes Remediation SP-SU-6

Location I/D	Pile Sample Points	Internal ID	Units	K-40 Result	Uncertainty	MDA	Cs-137 Result	Uncertainty	MDA	TL-208 Result	Uncertainty	MDA	Bi-211 Result	Uncertainty	MDA
SPL6-01	6141	id188	(pCi/gram)	1.74E+01	± 1.87E+00	8.17E-01	ND	± ND	1.03E-01	3.23E-01	± 6.82E-02	7.27E-02	ND	± ND	7.81E+00
SPL6-02	6142	id189	(pCi/gram)	1.56E+01	± 1.72E+00	7.88E-01	ND	± ND	1.02E-01	2.96E-01	± 6.05E-02	5.92E-02	ND	± ND	7.03E+00
SPL6-03	6143	id190	(pCi/gram)	1.37E+01	± 1.57E+00	6.63E-01	ND	± ND	9.24E-02	2.93E-01	± 6.48E-02	7.28E-02	ND	± ND	7.69E+00
SPL6-04	6144	id191	(pCi/gram)	1.61E+01	± 1.78E+00	9.70E-01	ND	± ND	1.01E-01	3.19E-01	± 6.39E-02	6.36E-02	ND	± ND	7.35E+00
SPL6-05	6145	id192	(pCi/gram)	1.72E+01	± 1.78E+00	5.15E-01	ND	± ND	9.98E-02	2.69E-01	± 5.99E-02	6.41E-02	ND	± ND	6.97E+00
SPL6-06	6146	id193	(pCi/gram)	1.46E+01	± 1.68E+00	7.17E-01	ND	± ND	1.20E-01	7.71E-01	± 9.68E-02	8.35E-02	ND	± ND	1.01E+01
SPL6-07	6147	id194	(pCi/gram)	1.61E+01	± 1.77E+00	3.87E-01	ND	± ND	1.18E-01	3.91E-01	± 7.38E-02	7.31E-02	ND	± ND	8.34E+00
SPL6-08	6148	id195	(pCi/gram)	1.44E+01	± 1.60E+00	4.59E-01	ND	± ND	9.11E-02	1.93E-01	± 5.18E-02	5.84E-02	ND	± ND	6.76E+00
SPL6-09	6149	id196	(pCi/gram)	1.65E+01	± 1.77E+00	7.90E-01	ND	± ND	9.95E-02	2.70E-01	± 5.88E-02	6.03E-02	ND	± ND	7.10E+00
SPL6-10	6150	id197	(pCi/gram)	1.57E+01	± 1.79E+00	7.58E-01	ND	± ND	1.12E-01	3.95E-01	± 7.73E-02	8.17E-02	ND	± ND	8.75E+00
SPL6-11	6151	id198	(pCi/gram)	1.50E+01	± 1.71E+00	5.86E-01	ND	± ND	1.07E-01	3.73E-01	± 6.91E-02	6.92E-02	ND	± ND	7.76E+00
SPL6-12	6152	id199	(pCi/gram)	2.01E+01	± 2.00E+00	4.98E-01	ND	± ND	1.02E-01	2.89E-01	± 6.93E-02	8.26E-02	ND	± ND	7.79E+00
SPL6-13	6153	id200	(pCi/gram)	1.62E+01	± 1.82E+00	8.87E-01	ND	± ND	1.15E-01	4.51E-01	± 7.71E-02	6.98E-02	ND	± ND	8.39E+00
SPL6-14	6154	id201	(pCi/gram)	1.53E+01	± 1.73E+00	6.40E-01	ND	± ND	9.99E-02	3.34E-01	± 6.82E-02	6.92E-02	ND	± ND	7.64E+00
SPL6-15	6155	id202	(pCi/gram)	1.54E+01	± 1.72E+00	6.88E-01	ND	± ND	1.11E-01	3.55E-01	± 6.68E-02	7.07E-02	ND	± ND	7.48E+00
SPL6-16	6156	id203	(pCi/gram)	1.52E+01	± 1.67E+00	6.03E-01	ND	± ND	9.72E-02	2.23E-01	± 5.76E-02	6.75E-02	ND	± ND	7.00E+00
SPL6-17	6157	id204	(pCi/gram)	1.79E+01	± 1.94E+00	8.90E-01	ND	± ND	1.19E-01	5.82E-01	± 9.09E-02	8.63E-02	ND	± ND	9.43E+00
SPL6-18	6158	id205	(pCi/gram)	1.90E+01	± 1.97E+00	5.66E-01	ND	± ND	1.06E-01	3.55E-01	± 6.95E-02	6.74E-02	ND	± ND	7.90E+00
SPL6-19	6159	id206	(pCi/gram)	1.83E+01	± 1.95E+00	8.66E-01	ND	± ND	1.03E-01	3.28E-01	± 6.92E-02	7.30E-02	ND	± ND	7.35E+00
SPL6-20	6160	id207	(pCi/gram)	1.37E+01	± 1.57E+00	5.90E-01	ND	± ND	8.44E-02	2.80E-01	± 5.71E-02	5.17E-02	ND	± ND	6.05E+00
SPL6-21	6161	id208	(pCi/gram)	1.65E+01	± 1.84E+00	8.48E-01	ND	± ND	8.62E-02	2.71E-01	± 6.14E-02	6.31E-02	ND	± ND	7.51E+00
SPL6-22	6162	id209	(pCi/gram)	1.54E+01	± 1.72E+00	6.96E-01	ND	± ND	1.13E-01	3.34E-01	± 6.69E-02	6.72E-02	ND	± ND	7.78E+00
SPL6-23	6163	id210	(pCi/gram)	1.50E+01	± 1.70E+00	7.32E-01	ND	± ND	1.01E-01	2.99E-01	± 5.70E-02	5.98E-02	ND	± ND	7.22E+00
SPL6-24	6164	id211	(pCi/gram)	1.60E+01	± 1.73E+00	7.11E-01	ND	± ND	9.37E-02	2.71E-01	± 5.98E-02	6.33E-02	ND	± ND	6.92E+00
SPL6-25	6165	id212	(pCi/gram)	1.88E+01	± 1.97E+00	7.29E-01	ND	± ND	1.16E-01	3.01E-01	± 6.74E-02	7.31E-02	ND	± ND	7.61E+00
SPL6-26	6166	id213	(pCi/gram)	1.68E+01	± 1.82E+00	8.07E-01	ND	± ND	1.13E-01	2.40E-01	± 5.58E-02	6.10E-02	ND	± ND	7.04E+00
SPL6-27	6167	id214	(pCi/gram)	1.67E+01	± 1.80E+00	8.09E-01	ND	± ND	1.05E-01	3.11E-01	± 5.90E-02	4.82E-02	ND	± ND	7.34E+00
SPL6-28	6168	id215	(pCi/gram)	1.60E+01	± 1.80E+00	8.99E-01	ND	± ND	8.03E-02	2.67E-01	± 5.93E-02	5.92E-02	ND	± ND	7.24E+00
SPL6-B1		id216	(pCi/gram)	1.70E+01	± 1.82E+00	7.84E-01	ND	± ND	1.09E-01	4.79E-01	± 8.08E-02	7.98E-02	ND	± ND	9.30E+00

Attachment 2
Soil Sample Activity Concentrations

Great Lakes Remediation SP-SU-6

Location I/D	Pile Sample Points	PB-211 Result	Uncertainty	MDA	BI-212 Result	Uncertainty	MDA	PB-212 Result	Uncertainty	MDA	BI-214 Result	Uncertainty	MDA			
SPL6-01	6141	ND	±	ND	1.82E+00	1.31E+00	±	6.01E-01	8.05E-01	8.08E-01	±	1.38E-01	1.80E-01			
SPL6-02	6142	ND	±	ND	1.86E+00	ND	±	ND	1.52E+00	9.69E-01	±	1.15E-01	1.08E-01			
SPL6-03	6143	ND	±	ND	1.74E+00	1.43E+00	±	5.50E-01	6.55E-01	9.64E-01	±	1.15E-01	1.12E-01			
SPL6-04	6144	ND	±	ND	1.67E+00	ND	±	ND	1.49E+00	8.90E-01	±	1.11E-01	1.18E-01			
SPL6-05	6145	ND	±	ND	1.77E+00	ND	±	ND	1.55E+00	6.48E-01	±	1.19E-01	1.47E-01			
SPL6-06	6146	ND	±	ND	2.09E+00	2.47E+00	±	8.29E-01	1.07E+00	2.48E+00	±	2.16E-01	1.36E-01			
SPL6-07	6147	ND	±	ND	2.01E+00	1.86E+00	±	6.86E-01	8.47E-01	1.18E+00	±	1.49E-01	1.51E-01			
SPL6-08	6148	ND	±	ND	1.61E+00	7.32E-01	±	4.52E-01	6.42E-01	5.98E-01	±	1.07E-01	1.24E-01			
SPL6-09	6149	ND	±	ND	1.65E+00	1.03E+00	±	5.39E-01	7.53E-01	6.51E-01	±	1.16E-01	1.39E-01			
SPL6-10	6150	ND	±	ND	1.94E+00	ND	±	ND	1.71E+00	1.39E+00	±	1.46E-01	1.18E-01			
SPL6-11	6151	ND	±	ND	1.90E+00	ND	±	ND	1.51E+00	1.05E+00	±	1.26E-01	1.14E-01			
SPL6-12	6152	ND	±	ND	1.80E+00	6.55E-01	±	4.86E-01	7.35E-01	8.53E-01	±	1.09E-01	1.05E-01			
SPL6-13	6153	ND	±	ND	2.00E+00	7.50E-01	±	5.62E-01	8.66E-01	1.11E+00	±	1.53E-01	1.79E-01			
SPL6-14	6154	ND	±	ND	1.85E+00	1.17E+00	±	5.66E-01	7.56E-01	1.00E+00	±	1.21E-01	1.13E-01			
SPL6-15	6155	ND	±	ND	1.97E+00	ND	±	ND	1.71E+00	8.68E-01	±	1.52E-01	1.95E-01			
SPL6-16	6156	ND	±	ND	1.85E+00	ND	±	ND	1.48E+00	8.53E-01	±	1.07E-01	1.04E-01			
SPL6-17	6157	ND	±	ND	2.27E+00	ND	±	ND	2.06E+00	1.65E+00	±	1.92E-01	1.84E-01			
SPL6-18	6158	ND	±	ND	1.92E+00	9.63E-01	±	5.65E-01	8.11E-01	9.86E-01	±	1.48E-01	1.67E-01			
SPL6-19	6159	ND	±	ND	1.80E+00	1.01E+00	±	6.33E-01	9.49E-01	9.97E-01	±	1.20E-01	1.03E-01			
SPL6-20	6160	ND	±	ND	1.50E+00	ND	±	ND	1.34E+00	5.73E-01	±	8.66E-02	9.71E-02			
SPL6-21	6161	ND	±	ND	1.87E+00	ND	±	ND	1.51E+00	6.98E-01	±	1.28E-01	1.58E-01			
SPL6-22	6162	ND	±	ND	1.89E+00	1.27E+00	±	5.77E-01	7.59E-01	8.67E-01	±	1.35E-01	1.65E-01			
SPL6-23	6163	ND	±	ND	1.68E+00	ND	±	ND	1.45E+00	6.25E-01	±	1.11E-01	1.29E-01			
SPL6-24	6164	ND	±	ND	1.79E+00	ND	±	ND	1.39E+00	7.35E-01	±	9.85E-02	1.07E-01			
SPL6-25	6165	ND	±	ND	1.83E+00	9.53E-01	±	5.32E-01	7.38E-01	7.32E-01	±	1.31E-01	1.58E-01			
SPL6-26	6166	ND	±	ND	1.68E+00	ND	±	ND	1.73E+00	6.72E-01	±	1.32E-01	1.71E-01			
SPL6-27	6167	ND	±	ND	1.72E+00	ND	±	ND	1.39E+00	8.68E-01	±	1.08E-01	1.04E-01			
SPL6-28	6168	ND	±	ND	1.68E+00	ND	±	ND	1.40E+00	6.07E-01	±	1.24E-01	1.62E-01			
SPL6-B1		ND	±	ND	1.94E+00	2.33E+00	±	7.37E-01	8.79E-01	1.31E+00	±	1.65E-01	1.66E-01			
													6.93E-01	±	1.35E-01	1.39E-01

**Attachment 2
Soil Sample Activity Concentrations**

Great Lakes Remediation SP-SU-6

Location I/D	Pile Sample Points	PB-214 Result	Uncertainty	MDA	RA-226 Result	Uncertainty	MDA	AC-228 Result	Uncertainty	MDA	PA-234M Result	Uncertainty	MDA
SPL6-01	6141	7.71E-01	± 1.01E-01	1.35E-01	1.40E+00	± 8.08E-01	1.27E+00	1.07E+00	± 1.72E-01	1.91E-01	ND	± ND	1.09E+01
SPL6-02	6142	7.63E-01	± 9.47E-02	1.04E-01	1.51E+00	± 9.01E-01	1.44E+00	9.10E-01	± 1.55E-01	2.18E-01	ND	± ND	1.26E+01
SPL6-03	6143	1.17E+00	± 1.20E-01	1.39E-01	2.94E+00	± 1.13E+00	1.72E+00	8.57E-01	± 1.54E-01	2.20E-01	ND	± ND	1.14E+01
SPL6-04	6144	7.98E-01	± 1.02E-01	1.57E-01	1.89E+00	± 8.75E-01	1.34E+00	1.08E+00	± 1.92E-01	2.58E-01	ND	± ND	1.32E+01
SPL6-05	6145	6.25E-01	± 1.01E-01	1.41E-01	1.66E+00	± 8.88E-01	1.40E+00	7.22E-01	± 1.37E-01	2.25E-01	ND	± ND	1.27E+01
SPL6-06	6146	8.47E-01	± 1.09E-01	1.87E-01	2.10E+00	± 1.06E+00	1.67E+00	2.23E+00 ^a	± 2.15E-01	3.26E-01	ND	± ND	1.18E+01
SPL6-07	6147	6.77E-01	± 9.79E-02	1.27E-01	2.39E+00	± 1.03E+00	1.58E+00	1.24E+00	± 1.96E-01	2.25E-01	ND	± ND	1.22E+01
SPL6-08	6148	6.79E-01	± 9.73E-02	1.17E-01	1.78E+00	± 8.11E-01	1.23E+00	6.60E-01	± 1.51E-01	2.19E-01	ND	± ND	1.07E+01
SPL6-09	6149	6.78E-01	± 9.97E-02	1.18E-01	1.61E+00	± 8.82E-01	1.39E+00	7.41E-01	± 1.44E-01	2.10E-01	ND	± ND	1.19E+01
SPL6-10	6150	7.81E-01	± 9.99E-02	1.52E-01	1.96E+00	± 9.14E-01	1.40E+00	1.49E+00	± 2.12E-01	2.91E-01	ND	± ND	1.21E+01
SPL6-11	6151	6.52E-01	± 9.53E-02	1.36E-01	8.28E-01	± 8.08E-01	1.34E+00	1.06E+00	± 1.65E-01	2.28E-01	ND	± ND	1.12E+01
SPL6-12	6152	6.94E-01	± 9.58E-02	1.27E-01	1.96E+00	± 7.45E-01	1.07E+00	9.05E-01	± 1.86E-01	2.39E-01	ND	± ND	1.40E+01
SPL6-13	6153	8.25E-01	± 1.07E-01	1.38E-01	ND	± ND	2.18E+00	1.25E+00	± 1.92E-01	2.40E-01	ND	± ND	1.22E+01
SPL6-14	6154	7.05E-01	± 1.02E-01	1.36E-01	1.74E+00	± 8.41E-01	1.29E+00	1.07E+00	± 1.66E-01	3.10E-01	ND	± ND	1.26E+01
SPL6-15	6155	6.15E-01	± 1.05E-01	1.59E-01	1.10E+00	± 7.87E-01	1.27E+00	1.05E+00	± 1.66E-01	2.15E-01	ND	± ND	1.11E+01
SPL6-16	6156	6.13E-01	± 9.61E-02	1.38E-01	2.49E+00	± 9.69E-01	1.46E+00	7.66E-01	± 1.50E-01	2.54E-01	ND	± ND	1.19E+01
SPL6-17	6157	8.56E-01	± 1.22E-01	1.47E-01	1.75E+00	± 9.54E-01	1.50E+00	1.65E+00	± 2.02E-01	2.76E-01	ND	± ND	1.29E+01
SPL6-18	6158	7.32E-01	± 1.09E-01	1.29E-01	1.98E+00	± 9.67E-01	1.50E+00	1.01E+00	± 1.79E-01	2.72E-01	ND	± ND	1.34E+01
SPL6-19	6159	7.17E-01	± 1.03E-01	1.43E-01	1.26E+00	± 7.16E-01	1.11E+00	8.61E-01	± 1.62E-01	1.97E-01	ND	± ND	1.29E+01
SPL6-20	6160	5.02E-01	± 8.14E-02	9.95E-02	1.18E+00	± 7.26E-01	1.14E+00	6.49E-01	± 1.38E-01	1.73E-01	ND	± ND	1.10E+01
SPL6-21	6161	6.76E-01	± 1.08E-01	1.35E-01	ND	± ND	1.99E+00	9.32E-01	± 1.65E-01	2.28E-01	ND	± ND	1.20E+01
SPL6-22	6162	6.68E-01	± 9.71E-02	1.41E-01	1.47E+00	± 9.42E-01	1.51E+00	1.04E+00	± 1.55E-01	2.09E-01	ND	± ND	1.23E+01
SPL6-23	6163	5.84E-01	± 9.10E-02	9.74E-02	1.75E+00	± 7.23E-01	1.05E+00	8.10E-01	± 1.60E-01	2.40E-01	ND	± ND	1.28E+01
SPL6-24	6164	7.21E-01	± 9.53E-02	1.32E-01	1.32E+00	± 7.53E-01	1.18E+00	7.78E-01	± 1.44E-01	2.35E-01	ND	± ND	1.25E+01
SPL6-25	6165	6.71E-01	± 1.06E-01	1.45E-01	1.41E+00	± 9.22E-01	1.48E+00	7.81E-01	± 1.71E-01	3.13E-01	ND	± ND	1.18E+01
SPL6-26	6166	6.98E-01	± 1.08E-01	1.27E-01	1.89E+00	± 8.35E-01	1.26E+00	7.48E-01	± 1.45E-01	2.32E-01	ND	± ND	1.22E+01
SPL6-27	6167	7.97E-01	± 1.02E-01	1.45E-01	ND	± ND	2.00E+00	8.59E-01	± 1.76E-01	2.61E-01	ND	± ND	1.16E+01
SPL6-28	6168	6.07E-01	± 1.02E-01	1.32E-01	ND	± ND	1.91E+00	8.27E-01	± 1.53E-01	2.44E-01	ND	± ND	1.24E+01
SPL6-B1		7.91E-01	± 1.13E-01	1.43E-01	8.74E-01	± 9.62E-01	1.60E+00	1.34E+00	± 1.81E-01	2.70E-01	ND	± ND	1.28E+01

^a Result not included in sample statistics since this sample point is associated with a contaminated portion of lift not available for unrestricted release

Sample Average 9.56E-01
Sample SD 2.41E-01
Sample Count 27
Sample Maximum 1.65E+00
Sample Minimum 6.49E-01

**Attachment 2
Soil Sample Activity Concentrations**

Great Lakes Remediation SP-SU-6

Location I/D	Pile Sample Points	TH-234 Result		Uncertainty	MDA	U-235 Result		Uncertainty	MDA	Sample Type	Volume	Sample Analysis Date/Time	Duration	Dead Time
SPL6-01	6141	ND	±	ND	1.83E+00	ND	±	ND	6.10E-01	DET 6185	1.406E+003 gram	10/6/2003 10:03	600.0 seconds	0.14%
SPL6-02	6142	ND	±	ND	1.69E+00	ND	±	ND	5.66E-01	DET 6185	1.481E+003 gram	10/6/2003 10:15	600.0 seconds	0.14%
SPL6-03	6143	8.95E-01	±	9.24E-01	1.44E+00	ND	±	ND	6.00E-01	DET 6185	1.493E+003 gram	10/6/2003 10:28	600.0 seconds	0.15%
SPL6-04	6144	ND	±	ND	1.75E+00	ND	±	ND	5.51E-01	DET 6185	1.477E+003 gram	10/6/2003 10:41	600.0 seconds	0.14%
SPL6-05	6145	ND	±	ND	1.65E+00	ND	±	ND	5.38E-01	DET 6185	1.489E+003 gram	10/6/2003 10:56	600.0 seconds	0.13%
SPL6-06	6146	ND	±	ND	2.24E+00	ND	±	ND	7.64E-01	DET 6185	1.405E+003 gram	10/6/2003 11:14	600.0 seconds	0.20%
SPL6-07	6147	ND	±	ND	1.89E+00	ND	±	ND	6.24E-01	DET 6185	1.357E+003 gram	10/6/2003 11:26	600.0 seconds	0.14%
SPL6-08	6148	1.39E+00	±	9.39E-01	1.27E+00	ND	±	ND	5.43E-01	DET 6185	1.478E+003 gram	10/6/2003 11:38	600.0 seconds	0.13%
SPL6-09	6149	ND	±	ND	1.59E+00	ND	±	ND	5.67E-01	DET 6185	1.483E+003 gram	10/6/2003 11:50	600.0 seconds	0.14%
SPL6-10	6150	9.64E-01	±	1.04E+00	1.64E+00	ND	±	ND	6.17E-01	DET 6185	1.333E+003 gram	10/6/2003 12:02	600.0 seconds	0.15%
SPL6-11	6151	5.93E-01	±	7.41E-01	1.19E+00	ND	±	ND	5.85E-01	DET 6185	1.369E+003 gram	10/6/2003 12:14	600.0 seconds	0.13%
SPL6-12	6152	9.98E-01	±	7.13E-01	9.75E-01	ND	±	ND	5.93E-01	DET 6185	1.399E+003 gram	10/6/2003 12:25	600.0 seconds	0.13%
SPL6-13	6153	ND	±	ND	1.92E+00	ND	±	ND	6.07E-01	DET 6185	1.357E+003 gram	10/6/2003 12:47	600.0 seconds	0.14%
SPL6-14	6154	ND	±	ND	1.80E+00	ND	±	ND	5.97E-01	DET 6185	1.381E+003 gram	10/6/2003 13:02	600.0 seconds	0.13%
SPL6-15	6155	ND	±	ND	1.90E+00	ND	±	ND	6.00E-01	DET 6185	1.423E+003 gram	10/6/2003 13:16	600.0 seconds	0.14%
SPL6-16	6156	8.57E-01	±	8.46E-01	1.30E+00	ND	±	ND	5.76E-01	DET 6185	1.485E+003 gram	10/6/2003 13:27	600.0 seconds	0.14%
SPL6-17	6157	ND	±	ND	2.11E+00	ND	±	ND	7.26E-01	DET 6185	1.340E+003 gram	10/6/2003 13:40	600.0 seconds	0.17%
SPL6-18	6158	5.44E-01	±	6.06E-01	9.51E-01	ND	±	ND	6.06E-01	DET 6185	1.348E+003 gram	10/6/2003 13:52	600.0 seconds	0.14%
SPL6-19	6159	ND	±	ND	1.75E+00	ND	±	ND	5.76E-01	DET 6185	1.369E+003 gram	10/6/2003 14:06	600.0 seconds	0.13%
SPL6-20	6160	ND	±	ND	1.52E+00	ND	±	ND	4.75E-01	DET 6185	1.483E+003 gram	10/6/2003 14:19	600.0 seconds	0.12%
SPL6-21	6161	ND	±	ND	1.76E+00	ND	±	ND	6.21E-01	DET 6185	1.363E+003 gram	10/6/2003 14:32	600.0 seconds	0.13%
SPL6-22	6162	ND	±	ND	1.70E+00	ND	±	ND	5.84E-01	DET 6185	1.410E+003 gram	10/6/2003 14:49	600.0 seconds	0.14%
SPL6-23	6163	ND	±	ND	1.65E+00	ND	±	ND	5.55E-01	DET 6185	1.413E+003 gram	10/6/2003 15:01	600.0 seconds	0.12%
SPL6-24	6164	ND	±	ND	1.71E+00	ND	±	ND	5.65E-01	DET 6185	1.495E+003 gram	10/6/2003 15:12	600.0 seconds	0.14%
SPL6-25	6165	ND	±	ND	1.83E+00	ND	±	ND	5.92E-01	DET 6185	1.339E+003 gram	10/6/2003 15:25	600.0 seconds	0.13%
SPL6-26	6166	ND	±	ND	1.79E+00	ND	±	ND	5.75E-01	DET 6185	1.408E+003 gram	10/6/2003 15:36	600.0 seconds	0.13%
SPL6-27	6167	ND	±	ND	1.76E+00	ND	±	ND	5.96E-01	DET 6185	1.448E+003 gram	10/6/2003 15:49	600.0 seconds	0.13%
SPL6-28	6168	ND	±	ND	1.91E+00	ND	±	ND	5.43E-01	DET 6185	1.397E+003 gram	10/6/2003 16:03	600.0 seconds	0.13%
SPL6-B1		ND	±	ND	2.33E+00	ND	±	ND	6.60E-01	DET 6185	1.424E+003 gram	10/6/2003 16:16	600.0 seconds	0.17%

Attachment 3

Survey Unit Statistics Running Summaries

Survey Unit Statistic ^a	SP-SU-1	SP-SU-2	SP-SU-3	SP-SU-4	SP-SU-5	SP-SU-6	SP-SU-7	SP-SU-8	SP-SU-9	SP-SU-10	SP-SU-11	SP-SU-12
Reference Area Sample Size, m	34	34	34	34	34	34						
Lift Sample Size, n	29	28	28	23	28	27						
DCGL (²³² Th), pCi/g	1	1	1	1	1	1						
Alpha	0.05	0.05	0.05	0.05	0.05	0.05						
Z-score for 0.05	1.645	1.645	1.645	1.645	1.645	1.645						
Calculated W _{crit} (retrospective power test)	1207	1187	1187	1087	1187	1167						
Prospective Assumed Sigma	0.45	0.45	0.45	0.45	0.45	0.45						
Lift Sample Average, pCi/g ²³² Th	0.86	0.94	1.03	0.96	1.01	0.96						
Lift Sample Maximum, pCi/g ²³² Th	1.03	1.37	1.51	1.44	1.56	1.65						
Lift Sample Minimum, pCi/g ²³² Th	0.60	0.64	0.73	0.74	0.69	0.65						
Lift Sample Retrospective Sigma	0.10	0.18	0.20	0.17	0.21	0.24						
Lift Bias CPM _{max}	13453	12857	12855	< 11308 ^e	11443	< 10446 ^f						
Lift CPM _{avg}	9110	8840	8758	< 8969 ^e	9262	< 8773 ^f						
Lift Bias Sample Maximum, pCi/g ²³² Th	1.43	1.43	1.42	1.15	1.75	1.34						
Lift Bias Sample Minimum, pCi/g ²³² Th	0.68	b	0.98	b	b	b						
Reference Area Average, pCi/g ²³² Th	0.86	0.86	0.86	0.86	0.86	0.86						
Reference Area Retrospective Sigma	0.10	0.10	0.10	0.10	0.10	0.10						
Reference Area CPM _{avg}	10211	10211	10211	10211	10211	10211						
Lift Bias CPM _{max} per Bias pCi/g ²³² Th _{max} ^c	9408	8991	9053	9833	6539	7796						
Net CPM _{avg} per pCi/g ²³² Th _{avg} ^d	-1280	-1459	-1411	-1294	-940	-1498						

^a Following NUREG-1575 (Marssim) Criteria

^b Only one bias sample was necessary since no contoured z-score > 3.0; lowest is the same as highest

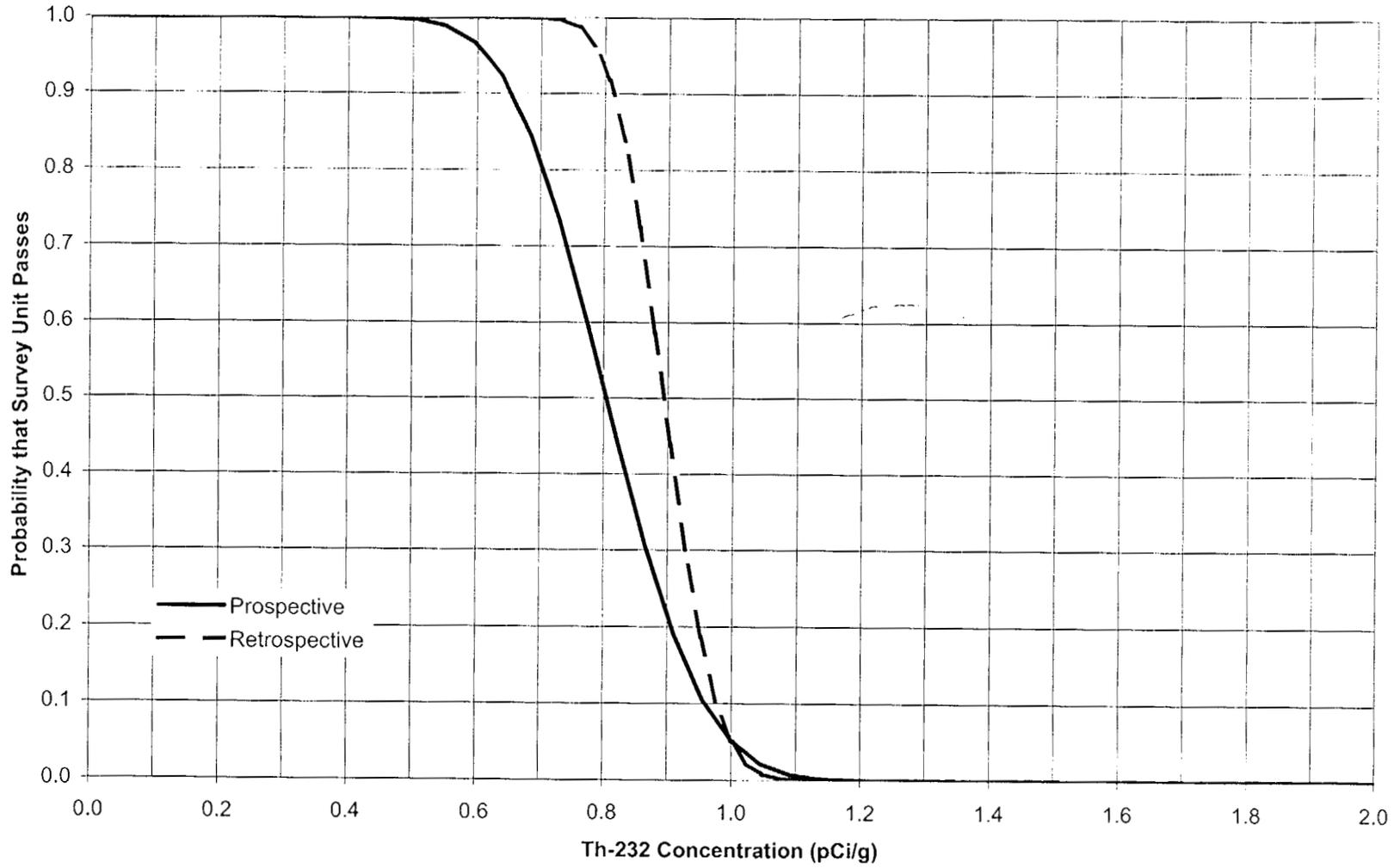
^c Lift Bias CPM_{max}/Bias pCi/g_{max} ²³²Th

^d (Lift CPM_{avg} - Reference Area CPM_{avg})/Lift ²³²Th_{avg}

^e Less than, since approximately 20-25% of lift NOT included with unrestricted release portion of lift was contaminated and had higher general count rate than the average

^f Less than, since approximately 5-10% of lift NOT included with unrestricted release portion of lift was contaminated and had higher general count rate than the average

**Attachment 4
Great Lakes Soil Pile Lift 6
Retrospective Power Test**



**Attachment 5
Great Lakes Soil Pile Lift 6
WRS Test**

Results (pCi/g)	Survey Area	Adjusted Data	Ranks	References Area Ranks
0.89	R	1.89	54.5	54.5
0.68	R	1.68	34.5	34.5
0.82	R	1.82	49	49
0.67	R	1.67	33	33
0.68	R	1.68	34.5	34.5
0.66	R	1.66	31.5	31.5
0.91	R	1.91	57	57
1.04	R	2.04	61	61
0.89	R	1.89	54.5	54.5
0.69	R	1.69	37	37
0.70	R	1.70	39	39
0.81	R	1.81	47.5	47.5
0.69	R	1.69	37	37
0.66	R	1.66	31.5	31.5
0.69	R	1.69	37	37
0.79	R	1.79	45.5	45.5
0.61	R	1.61	27	27
0.86	R	1.86	53	53
0.79	R	1.79	45.5	45.5
0.65	R	1.65	29	29
1.02	R	2.02	60	60
0.85	R	1.85	51	51
0.81	R	1.81	47.5	47.5
0.91	R	1.91	57	57
0.91	R	1.91	57	57
0.71	R	1.71	40	40
0.85	R	1.85	51	51
0.63	R	1.63	28	28
0.75	R	1.75	42	42
0.73	R	1.73	41	41
0.85	R	1.85	51	51
0.95	R	1.95	59	59
0.76	R	1.76	43	43
0.78	R	1.78	44	44
1.07	S	1.07	21	0
0.91	S	0.91	15	0
0.86	S	0.86	11	0
1.08	S	1.08	23	0
0.72	S	0.72	3	0
1.24	S	1.24	24	0
0.66	S	0.66	2	0
0.74	S	0.74	4	0
1.49	S	1.49	26	0
1.06	S	1.06	20	0
0.90	S	0.90	14	0
1.25	S	1.25	25	0
1.07	S	1.07	22	0
1.05	S	1.05	19	0
0.77	S	0.77	6	0
1.65	S	1.65	30	0
1.01	S	1.01	17	0
0.86	S	0.86	13	0
0.65	S	0.65	1	0
0.93	S	0.93	16	0
1.04	S	1.04	18	0
0.81	S	0.81	9	0
0.78	S	0.78	7	0
0.78	S	0.78	8	0
0.75	S	0.75	5	0
0.86	S	0.86	12	0
0.83	S	0.83	10	0
		Sum =	1891	1510

Notes: S represents samples collected in Survey Unit.
R represents samples collected in Reference Unit.

Sample ID	Sample Mass (g)	Half Full	Sample ID (min)	Time (min)	Low Peak 351.063 keV	High Peak 1460.3 keV	HL-202 Results (pCi/g) via ACS	Technician Initials
SPL1-22, id061	1400	F	9/23/2003	17:26	238.66	1460.94	0.57MDA	wb
SPL1-23, id062	1280	F	9/23/2003	17:40	238.60	1460.94	0.89	wb
SPL1-24, id063	1288	F	9/23/2003	17:53	238.68	1460.95	0.84	wb
SPL1-25, id059	1409	F	9/23/2003	18:06	238.69	1460.92	0.76	wb
SPL1-26, id065	1308	F	9/23/2003	18:19	238.73	1460.98	0.82	wb
SPL1-B3, id066	1428	F	9/23/2003	18:33	238.75	1460.90	0.83	wb
SPL1-B4, id067	1368	F	9/23/2003	18:50	238.63	1460.90	0.57MDA	wb
SPL1-B5, id068	1354	F	9/23/2003	19:14	238.63	1460.96	0.86	wb
SPL1-B6, id069	1409	F	9/23/2003	19:27	238.55	1460.98	0.93	wb
SPL2-01, id070	1293	F	9/25/2003	17:27	238.54	1460.97	1.00	wb
SPL2-02, id071	1203	F	9/25/2003	17:42	238.46	1461.05	0.64	wb
SPL2-03, id072	1294	F	9/25/2003	17:58	238.47	1460.98	0.98	wb
SPL2-04, id073	1393	F	9/25/2003	18:14	238.57	1460.89	1.00	wb
SPL2-05, id074	1399	F	9/25/2003	18:33	238.46	1460.88	0.91	wb
SPL2-06, id075	1309	F	9/25/2003	18:46	238.44	1460.94	0.83	wb
SPL2-07, id076	1223	F	9/25/2003	18:59	238.39	1460.73	0.94	wb
SPL2-08, id077	1425	F	9/25/2003	19:12	238.40	1460.98	0.80	wb
SPL2-09, id078	1436	F	9/25/2003	19:25	238.47	1460.99	0.72	wb
SPL2-10, id079	1373	F	9/25/2003	19:39	238.38	1460.99	0.93	wb
SPL2-11, id080	1413	F	9/25/2003	19:52	238.47	1460.80	1.04	wb
SPL2-12, id081	1445	F	9/25/2003	20:05	238.48	1461.01	0.84	wb
SPL2-13, id082	1413	F	9/25/2003	20:18	238.47	1460.99	0.84	wb
SPL2-14, id083	1250	F	9/25/2003	20:31	238.50	1461.06	1.32	wb
SPL2-15, id084	1409	F	9/26/2003	6:01	238.15	1460.90	0.87	wb
SPL2-16, id085	1413	F	9/26/2003	6:17	238.17	1460.89	1.34	wb
SPL2-17, id086	1458	F	9/26/2003	6:45	238.39	1460.95	0.95	wb
SPL2-18, id087	1344	F	9/26/2003	6:59	238.55	1460.94	1.00	wb
SPL2-19, id088	1429	F	9/26/2003	7:14	238.59	1460.98	1.33	wb
SPL2-20, id089	1433	F	9/26/2003	7:32	238.69	1460.94	1.17	wb
SPL2-21, id090	1405	F	9/26/2003	7:47	238.61	1460.89	0.87	wb
SPL2-22, id091	1377	F	9/26/2003	8:03	238.60	1460.99	0.91	wb
SPL2-23, id092	1392	F	9/26/2003	8:17	238.71	1461.05	0.61MDA	wb
SPL2-24, id093	1416	F	9/26/2003	8:32	238.76	1460.95	0.88	wb
SPL2-25, id094	1387	F	9/26/2003	8:56	238.76	1461.03	0.85	wb
SPL2-26, id095	1289	F	9/26/2003	9:10	238.73	1460.89	0.92	wb
SPL2-27, id096	1354	F	9/26/2003	9:29	238.79	1460.87	1.04	wb
SPL2-28, id097	1454	F	9/26/2003	9:47	238.94	1460.94	0.79	wb
SPL2-B1, id098	1412	F	9/26/2003	15:33	238.72	1460.84	1.43	wb
SPL3-01, id099	1479	F	9/29/2003	10:56	238.56	1460.99	0.78	LP
SPL3-02, id100	1377	F	9/29/2003	11:13	238.58	1461.11	0.94	LP
SPL3-03, id101	1455	F	9/29/2003	11:30	238.51	1460.99	1.11	LP
SPL3-04, id102	1365	F	9/29/2003	11:46	238.57	1460.99	0.85	LP
SPL3-05, id103	1479	F	9/29/2003	12:13	238.57	1460.80	0.94	LP
SPL3-06, id104	1443	F	9/29/2003	12:27	238.60	1460.93	1.00	LP
SPL3-07, id105	1378	F	9/29/2003	12:40	238.66	1461.01	0.94	LP
SPL3-08, id106	1441	F	9/29/2003	12:56	238.64	1460.92	1.31	LP
SPL3-09, id107	1397	F	9/29/2003	13:13	238.68	1460.97	0.98	LP
SPL3-10, id108	1338	F	9/29/2003	13:44	238.65	1460.93	0.85	LP
SPL3-11, id109	1480	F	9/29/2003	14:04	238.68	1460.92	1.50	LP
SPL3-12, id110	1470	F	9/29/2003	14:16	238.64	1461.00	1.06	LP
SPL3-13, id111	1349	F	9/29/2003	14:29	238.56	1460.92	1.30	LP
SPL3-14, id112	1409	F	9/29/2003	14:45	238.52	1460.87	0.72	LP
SPL3-15, id113	1491	F	9/29/2003	14:57	238.50	1460.90	1.37	LP
SPL3-16, id114	1390	F	9/29/2003	15:12	238.48	1460.90	1.03	LP
SPL3-17, id115	1451	F	9/29/2003	15:25	238.51	1461.05	1.03	LP
SPL3-18, id116	1396	F	9/29/2003	15:38	238.44	1460.91	1.18	LP
SPL3-19, id117	1470	F	9/29/2003	16:37	238.42	1460.95	0.91	LP
SPL3-20, id118	1489	F	9/29/2003	16:50	238.36	1460.98	1.26	LP
SPL3-21, id119	1408	F	9/29/2003	17:03	238.39	1460.84	1.03	LP
SPL3-22, id120	1439	F	9/29/2003	17:14	238.30	1460.84	1.15	LP
SPL3-23, id121	1314	F	9/29/2003	17:28	238.36	1461.00	1.17	LP

Sample ID	Sample Mass (g)	Filter (m/Epil)	Date of Sample	Time of Sample (gmt)	Low Peak 238Pu 5.15-5.52 keV	High Peak 238Pu 1460.3-1461.3 keV	Tl-232 Results (d/g) via Ac	Technician Initials
SPL3-24, id122	1416	F	9/29/2003	17:41	238.37	1460.92	0.88	LP
SPL3-25, id123	1446	F	9/29/2003	17:53	238.35	1460.92	0.89	LP
SPL3-26, id124	1436	F	9/29/2003	18:05	238.36	1460.97	0.76	LP
SPL3-27, id125	1411	F	9/29/2003	18:17	238.43	1460.87	0.83	LP
SPL3-28, id126	1475	F	9/29/2003	18:29	238.47	1460.94	0.85	LP
SPL3-B1, id127	1399	F	9/29/2003	18:41	238.51	1460.97	1.03	LP
SPL3-B2, id128	1447	F	9/29/2003	18:58	238.45	1460.90	1.41	LP
SPL3-B3, id129	1426	F	9/29/2003	19:09	238.46	1460.97	0.97	LP
SPL1-05, id020 DUP	1360	F	9/30/2003	12:31	238.88	1460.94	0.60MDA	LP
SPL1-29, id040 DUP	1321	F	9/30/2003	12:22	238.78	1461.01	0.99	LP
SPL1-B2, id060 DUP	1270	F	9/30/2003	12:42	238.79	1460.99	1.23	LP
SPL2-11, id080 DUP	1413	F	9/30/2003	13:06	238.62	1460.92	1.17	LP
SPL3-02, id100 DUP	1377	F	9/30/2003	13:35	238.66	1460.93	0.97	LP
SPL3-22, id120 DUP	1439	F	9/30/2003	13:50	238.60	1461.00	1.15	LP
SPL4-01, id130	1420	F	9/30/2003	16:28	238.37	1460.97	0.80	wb
SPL4-02, id131	1361	F	9/30/2003	16:44	238.46	1461.01	1.17	wb
SPL4-03, id132	1323	F	9/30/2003	17:01	238.34	1460.92	2.65	wb
SPL4-04, id133	1423	F	9/30/2003	17:24	238.25	1460.87	0.83	wb
SPL4-05, id134	1476	F	9/30/2003	17:56	238.22	1460.89	0.84	wb
SPL4-06, id135	1323	F	9/30/2003	18:17	238.26	1460.86	2.33	wb
SPL4-07, id136	1432	F	9/30/2003	18:37	238.30	1460.97	1.05	wb
SPL4-08, id137	1438	F	9/30/2003	19:05	238.46	1460.84	0.91	wb
SPL4-09, id138	1386	F	9/30/2003	19:18	238.46	1460.98	0.93	wb
SPL4-10, id139	1350	F	9/30/2003	19:30	238.49	1461.07	1.44	wb
SPL4-11, id140	1424	F	9/30/2003	19:43	238.55	1460.92	1.25	wb
SPL4-12, id141	1409	F	9/30/2003	19:55	238.55	1460.99	0.89	wb
SPL4-13, id142	1470	F	9/30/2003	20:08	238.54	1461.00	0.77	wb
SPL4-14, id143	1438	F	10/1/2003	9:27	238.13	1460.87	1.81	wb
SPL4-15, id144	1436	F	10/1/2003	9:41	238.20	1460.88	1.64	wb
SPL4-16, id145	1463	F	10/1/2003	9:57	238.35	1461.02	0.94	wb
SPL4-17, id146	1456	F	10/1/2003	10:48	238.41	1460.98	0.88	wb
SPL4-18, id147	1425	F	10/1/2003	10:18	238.42	1460.98	1.46	wb
SPL4-19, id148	1495	F	10/1/2003	10:34	238.47	1460.96	1.10	wb
SPL4-20, id149	1465	F	10/1/2003	11:24	238.45	1460.94	0.74	wb
SPL4-21, id150	1414	F	10/1/2003	11:38	238.51	1460.88	0.90	wb
SPL4-22, id151	1423	F	10/1/2003	11:01	238.45	1460.98	0.99	wb
SPL4-23, id152	1496	F	10/1/2003	11:51	238.49	1460.96	1.11	wb
SPL4-24, id153	1485	F	10/1/2003	12:04	238.56	1460.98	0.85	wb
SPL4-25, id154	1313	F	10/1/2003	12:17	238.51	1460.93	0.97	wb
SPL4-26, id155	1439	F	10/1/2003	12:31	238.54	1461.08	1.04	wb
SPL4-27, id156	1417	F	10/1/2003	12:44	238.66	1460.80	0.85	wb
SPL4-28, id157	1477	F	10/1/2003	13:52	238.73	1460.94	0.83	wb
SPL4-11, id140 DUP	1424	F	10/1/2003	14:18	238.77	1460.94	1.30	wb
SPL4-B1, id158	1403	F	10/2/2003	9:14	238.72	1460.92	1.15	wb
SPL5-28, id159	1413	F	10/2/2003	16:15	238.11	1460.91	0.75	LP
SPL5-27, id160	1461	F	10/2/2003	16:27	238.13	1460.96	0.97	LP
SPL5-26, id161	1455	F	10/2/2003	16:42	238.30	1460.94	0.87	LP
SPL5-25, id162	1483	F	10/2/2003	16:57	238.31	1461.00	0.78	LP
SPL5-24, id163	1475	F	10/2/2003	17:13	238.31	1460.98	0.88	LP
SPL5-23, id164	1443	F	10/2/2003	17:42	238.34	1460.89	0.93	wb
SPL5-22, id165	1351	F	10/2/2003	17:57	238.40	1460.81	0.69	wb
SPL5-21, id166	1425	F	10/2/2003	18:12	238.31	1460.98	0.82	wb
SPL5-20, id167	1446	F	10/2/2003	18:37	238.38	1460.98	0.94	wb
SPL5-19, id168	1374	F	10/2/2003	18:53	238.33	1460.94	1.44	wb
SPL5-18, id169	1409	F	10/2/2003	19:07	238.36	1460.89	1.16	wb
SPL5-17, id170	1422	F	10/2/2003	19:21	238.34	1460.90	1.02	wb
SPL5-16, id171	1466	F	10/2/2003	19:37	238.37	1460.91	1.09	wb
SPL5-15, id172	1307	F	10/2/2003	19:51	238.26	1460.87	1.24	wb
SPL5-14, id173	1421	F	10/3/2003	7:39	238.30	1460.83	0.89	wb
SPL5-13, id174	1485	F	10/3/2003	7:53	238.33	1460.92	1.56	wb
SPL5-12, id175	1383	F	10/3/2003	8:08	238.31	1460.89	1.23	wb

Sample ID	Sample Mass (g)	Half-life (yrs)	Date of Sample Coll.	Time of Sample Coll.	Low Peak (238.31 keV)	High Peak (214.64 keV)	232 Results (Bq/g) vs 238	Technician Initials
SPL5-11, id176	1380	F	10/3/2003	8:21	238.31	1460.84	1.20	wb
SPL5-10, id177	1486	F	10/3/2003	8:35	238.31	1461.00	1.01	wb
SPL5-09, id178	1346	F	10/3/2003	8:48	238.26	1460.95	1.09	wb
SPL5-08, id179	1425	F	10/3/2003	9:00	238.25	1460.93	0.71	wb
SPL5-07, id180	1488	F	10/3/2003	9:14	238.33	1460.98	0.81	wb
SPL5-06, id181	1467	F	10/3/2003	9:28	238.33	1460.94	0.98	wb
SPL5-05, id182	1436	F	10/3/2003	9:42	238.32	1460.91	1.26	wb
SPL5-04, id183	1429	F	10/3/2003	9:58	238.32	1460.93	1.05	wb
SPL5-03, id184	1461	F	10/3/2003	10:11	238.27	1460.94	0.87	wb
SPL5-02, id185	1385	F	10/3/2003	10:26	238.37	1460.94	0.91	wb
SPL5-01, id186	1403	F	10/3/2003	10:39	238.33	1460.95	1.11	wb
SPL5-27, id160 DUP	1461	F	10/3/2003	10:58	238.44	1461.00	0.80	LP
SPL5-07, id180	1488	F	10/3/2003	11:11	238.42	1460.92	0.80	LP
SPL5-B1, id187	1444	F	10/3/2003	11:40	238.32	1460.98	1.76	wb
SPL6-01, id188	1406	F	10/6/2003	10:03	238.69	1460.87	1.06	LP
SPL6-02, id189	1481	F	10/6/2003	10:15	238.63	1460.97	0.90	LP
SPL6-03, id190	1493	F	10/6/2003	10:28	238.69	1460.88	0.85	LP
SPL6-04, id191	1477	F	10/6/2003	10:41	238.76	1461.03	1.07	LP
SPL6-05, id192	1489	F	10/6/2003	10:56	238.69	1460.96	0.72	LP
SPL6-06, id193	1405	F	10/6/2003	11:14	238.70	1461.03	2.23	LP
SPL6-07, id194	1357	F	10/6/2003	11:26	238.63	1460.86	1.24	LP
SPL6-08, id195	1478	F	10/6/2003	11:38	238.68	1460.90	0.66	LP
SPL6-09, id196	1483	F	10/6/2003	11:50	238.59	1460.90	0.74	LP
SPL6-10, id197	1333	F	10/6/2003	12:02	238.60	1460.97	1.49	LP
SPL6-11, id198	1369	F	10/6/2003	12:14	238.57	1461.00	1.06	LP
SPL6-12, id199	1399	F	10/6/2003	12:25	238.55	1460.88	0.90	LP
SPL6-13, id200	1357	F	10/6/2003	12:47	238.52	1460.88	1.25	LP
SPL6-14, id201	1381	F	10/6/2003	13:02	238.59	1460.99	1.07	LP
SPL6-15, id202	1423	F	10/6/2003	13:16	238.64	1460.92	1.04	LP
SPL6-16, id203	1485	F	10/6/2003	13:27	238.63	1460.89	0.76	LP
SPL6-17, id204	1340	F	10/6/2003	13:40	238.58	1461.00	1.65	LP
SPL6-18, id205	1348	F	10/6/2003	13:52	238.59	1460.88	1.01	LP
SPL6-19, id206	1369	F	10/6/2003	14:06	238.62	1461.00	0.86	LP
SPL6-20, id207	1483	F	10/6/2003	14:19	238.59	1460.85	0.65	LP
SPL6-21, id208	1363	F	10/6/2003	14:32	238.61	1460.86	0.93	LP
SPL6-22, id209	1410	F	10/6/2003	14:49	238.60	1460.95	1.03	LP
SPL6-23, id210	1413	F	10/6/2003	15:01	238.61	1460.95	0.81	LP
SPL6-24, id211	1495	F	10/6/2003	15:12	238.72	1461.03	0.77	LP
SPL6-25, id212	1339	F	10/6/2003	15:25	238.68	1460.90	0.78	LP
SPL6-26, id213	1408	F	10/6/2003	15:36	238.63	1460.91	0.75	LP
SPL6-27, id214	1448	F	10/6/2003	15:49	238.74	1460.93	0.86	LP
SPL6-28, id215	1397	F	10/6/2003	16:03	238.83	1460.85	0.83	LP
SPL6-B1, id216	1424	F	10/6/2003	16:16	238.83	1460.81	1.34	LP
SPL6-13, id200 DUP	1357	F	10/6/2003	16:36	238.79	1461.04	1.23	LP

ISOCs SAMPLE ANALYSIS RECORD DRAFT RESULTS ONLY

Sample ID	Sample Mass (g)	Half Full	Date of Sample	Time of Sample (GMT)	Low Peak 257.4 - 3.924 - 86.7	High Peak 1460.92	Final Results (ng/g) via Av. 228	Technician Initials
R5041, id001	1258	F	9/22/2003	8:00	238.53	1460.92	0.89	wb
R5066, id002	1221	F	9/22/2003	8:32	238.46	1460.86	0.68	wb
R5037, id003	1204	F	9/22/2003	9:29	238.43	1460.98	0.82	wb
R5038, id004	1202	F	9/22/2003	9:47	238.46	1461.04	0.67MDA	wb
R5042, id005	1216	F	9/22/2003	10:12	238.43	1461.04	0.68MDA	wb
R5050, id006	1242	F	9/22/2003	10:39	238.49	1460.88	0.66MDA	wb
R5065, id007	1322	F	9/22/2003	11:04	238.51	1460.90	0.91	wb
R5044, id008	1205	F	9/22/2003	11:23	238.55	1460.88	1.04	wb
R5049, id009	1220	F	9/22/2003	11:38	238.58	1460.98	0.89	wb
R5035, id010	1212	F	9/22/2003	11:55	238.56	1460.95	0.69MDA	wb
R5034, id011	1230	F	9/22/2003	12:16	238.61	1461.08	0.70	wb
R5043, id012	1182	F	9/22/2003	12:33	238.58	1460.87	0.81	wb
R5039, id013	1227	F	9/22/2003	13:18	238.62	1460.89	0.69MDA	wb
R5053, id014	1216	F	9/22/2003	13:32	238.64	1460.98	0.66MDA	wb
R5047, id015	1215	F	9/22/2003	14:16	238.70	1461.01	0.69	wb
SPL1-01, id016	1360	F	9/22/2003	14:56	238.83	1460.89	0.72	wb
SPL1-02, id017	1405	F	9/22/2003	15:13	238.74	1460.95	0.80	wb
SPL1-03, id018	1315	F	9/22/2003	15:27	238.77	1460.95	0.69MDA	wb
SPL1-04, id019	1300	F	9/22/2003	15:40	238.03	1461.00	1.03	wb
SPL1-05, id020	1360	F	9/22/2003	15:55	238.79	1460.91	0.58MDA	wb
SPL1-06, id021	1329	F	9/22/2003	16:47	238.74	1460.96	0.89	wb
SPL1-07, id022	1313	F	9/22/2003	17:07	238.74	1460.89	0.97	wb
SPL1-08, id023	1316	F	9/22/2003	17:23	238.69	1460.98	0.91	wb
SPL1-09, id024	1368	F	9/22/2003	17:37	238.76	1460.85	0.89	wb
SPL1-10, id025	1317	F	9/22/2003	17:51	238.70	1460.92	0.66MDA	wb
SPL1-11, id026	1380	F	9/23/2003	7:39	238.30	1461.03	0.53MDA	wb
SPL1-12, id027	1339	F	9/23/2003	7:53	238.25	1460.99	0.97	wb
SPL1-13, id028	1306	F	9/23/2003	8:23	238.35	1460.93	0.98	wb
SPL1-14, id029	1248	F	9/23/2003	8:36	238.20	1460.96	0.87	wb
SPL1-15, id030	1339	F	9/23/2003	8:49	238.23	1460.91	0.60MDA	wb
R5046, id031	1282	F	9/23/2003	9:05	238.32	1460.87	0.79	wb
R5036, id032	1223	F	9/23/2003	9:20	238.32	1461.07	0.61MDA	wb
R5040, id033	1238	F	9/23/2003	9:36	238.42	1460.87	0.86	wb
R5054, id034	1202	F	9/23/2003	9:52	238.43	1460.95	0.79	wb
R5033, id035	1248	F	9/23/1993	10:08	238.53	1461.09	0.65MDA	wb
R5045, id036	1215	F	9/23/2003	10:23	238.46	1461.00	1.02	wb
R5051, id037	1235	F	9/23/2003	10:42	238.58	1460.94	0.85MDA	wb
SPL1-27, id038	1355	F	9/23/2003	10:54	238.62	1461.06	0.96	wb
SPL1-28, id039	1408	F	9/23/2003	11:09	238.58	1460.88	0.82	wb
SPL1-29, id040	1321	F	9/23/2003	11:30	238.61	1460.87	0.95	wb
R5052, id041	1217	F	9/23/2003	11:47	238.69	1460.96	0.81	wb
R5055, id042	1204	F	9/23/2003	12:04	238.69	1460.98	0.91	wb
R5058, id043	1233	F	9/23/2003	12:18	238.64	1460.96	0.91	wb
R5061, id044	1214	F	9/23/2003	12:36	238.63	1460.96	0.71MDA	wb
R5062, id045	1249	F	9/23/2003	12:50	238.62	1461.12	0.85	wb
R5063, id046	1222	F	9/23/2003	13:03	238.64	1460.86	0.63MDA	wb
R5060, id047	1200	F	9/23/2000	13:18	238.59	1461.00	0.75	wb
R5064, id048	1244	F	9/23/2003	12:47	238.64	1460.91	0.73	wb
R5057, id049	1221	F	9/23/2003	13:54	238.56	1460.92	0.85	wb
R5059, id050	1207	F	9/23/2003	14:10	238.63	1460.90	0.95	wb
R5048, id051	1220	F	9/23/2003	14:26	238.60	1460.98	0.76	wb
R5056, id052	1255	F	9/23/2003	14:59	238.60	1461.01	0.78	wb
SPL1-16, id053	1307	F	9/23/2003	15:13	238.57	1460.81	0.83	wb
SPL1-17, id054	1395	F	9/23/2003	15:30	238.68	1461.01	0.75	wb
SPL1-18, id055	1402	F	9/23/2003	15:47	238.67	1460.97	0.76	wb
SPL1-19, id056	1455	F	9/23/2003	16:02	238.68	1460.95	0.79	wb
SPL1-20, id057	1345	F	9/23/2003	16:19	238.74	1460.98	1.03	wb
SPL1-21, id058	1394	F	9/23/2003	16:33	238.65	1460.94	0.89	wb
SPL1-B1, id059	1357	F	9/23/2003	16:52	238.69	1460.93	0.87	wb
SPL1-B2, id060	1270	F	9/23/2003	17:10	238.69	1460.84	1.43	wb